GOVERNMENT OF INDIA
INDIA METEOROLOGICAL DEPARTMENT

Marine Climatological Summary Charts 1991-2000

FOR THE INDIAN OCEAN BETWEEN 20°E & 100°E AND NORTH OF 15°S

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1991-2000

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P R E F A C E

One of the major obstacles that continue to be faced by the meteorological community in developing dynamical models for the weather and climate forecasting is the scarcity of data particularly from the vast areas of the global oceans. Knowledge of weather conditions over the oceans is also essential for operational planning for maritime activities, the design of vessels and coastal and offshore facilities, the exploitation of marine and sea-bed resources, the response to oil spills at sea, climate research etc. The valuable observations collected by the World Meteorological Organization (WMO)'s Voluntary Observing Ships (VOS) have been therefore vital for these important activities. The VOS Scheme is a cost effective international programme comprising member countries of the World Meteorological Organization (WMO). Under the aegis of WMO, India Meteorological Department has enlisted a Voluntary Observing Fleet (VOF) that are regularly visiting Indian shores to take marine meteorological observations and transmit them to shore at no cost to the ship. The VOF consists of merchant ships of Indian registry, some foreign merchant vessels and a few ships of the Indian Navy. The ships provide observations free of charge in return for the instrumentation and the forecasting and warning services.

Following the WMO recommendations, the decadal marine climatological summary for the period 1971-1980 and a marine climate atlas based on the data of 1961-1990 has been published by IMD in the chart form. This publication presents the Charts of Marine Climatological Summary over the Indian region prepared based on marine observations recorded during the decade 1991-2000.

India Meteorological Department acknowledges deep appreciation for the excellent efforts of the officers and staff of all the ships involved in the recording of marine data used in the preparation of this climatological summary.

Dr. D. S. Pai, Director developed software for the computation and supervised the entire work. Shri. A.K. Jaswal, Director helped in the compilation and quality checking of the data and Shri. O.P. Sreejith, Met II assisted in the graphical work of the charts. Smt. S.T. Jadhav, AM-I, Shri. Sunil Narke, S.O. and other staff of the Marine Climatology Section have provided assistance in the various stages of this publication. Smt. Latha Sridhar and Smt. N.S. Satbhai, S.A. of the Long Range Forecasting Section also assisted in the work. Shri. A. Phillipose, AM-II of the DTP unit helped in the designing, typesetting and preparation of electronic copy of this publication.

I express my sincere appreciation to their efforts and overall guidance of Dr. R. D. Vashishta, LACD ADGM (R) and Shri. Thakur Prasad, DDGM(C) in bringing out his informative and useful publication

New Delhi
December, 2007

R.C. Bhatia
Director General of Meteorology

I N T R O D U C T I O N

India is one of the eight responsible members (RMs) of Marine Climatological Summaries Scheme (MCSS) established by the WMO Commission for Marine Meteorology (CMM) in 1963. The objective of MCSS was to develop and maintain a joint effort of all maritime nations in the collection of marine data and production of climatological statistics. Each of the eight RMs was assigned a specific area of responsibility. Area of responsibility assigned to India was north of latitude 15^0 S and between longitude 20^0 E and 100^0 E of Indian Ocean. Following the revision of the MCSS, in line with Rec. 11, CMM-XI and Resolution 10, EC-XLV 1993, two Global Climate Centers (GCCs) for marine climatological data were established in 1994 at Germany and United Kingdom. GCCs collect Voluntary Observing Fleet (VOF) data from member countries of MCSS quarterly and after ensuring that these data meet the Minimum Quality Control Standards (MQCS) re-distribute the data to the RMs. The marine data regularly received from GCCs are archived at National Data Center (NDC), India Meteorological Department (IMD), Pune. As per the present practice, the decadal summaries are prepared in the chart form. IMD published first chart form of decadal marine climatological summary for the period 1971-80 in 1999. Subsequently, in 2002, a marine climate atlas based on the data of 1961-1990 was published. This volume of the decadal marine climatological summary was prepared using the data for the period 1991-2000.

At the end of climatological summary charts for each month and that for the annual, the spatial distribution of the ship positions from where the observations were recorded is presented along with the bar diagrams showing the country wise and year wise distribution of the number of observations contributed by the member countries of MCSS.

Data Sources & Computation of the Statistics

The data used to prepare the summary charts were obtained from two sources: (i) Weather observations recorded by Indian VOF and (ii) Weather observations recorded by other ships while in the India area of responsibility but passed on to the other member countries of MCSS. For the preparation of these climatological summary charts, all the data for the period 1991-2000 available in the data archive of NDC were used.

The weather observations obtained from the meteorological log books of VOF were scrutinized to eliminate instrumental, positional and coding errors. The GCCs ensure that the data from various countries meet MQCS standards. As the data used for this publication were received quarterly from the GCCs, all the data (for the period 1991-2000) were once again checked for duplication and other errors and were corrected as far as possible so that data meet MQCS standards. For the computation of the climatological statistics, only those values of the meteorological and oceanographic elements were used which were appeared to be correct after the quality control (QC) or corrected as a result of QC. The statistics was computed at each spatial grid boxes of

$5^{o}X5^{o}$, latitude X longitude over the Indian Oceanic region under Indian responsibility. There were 96 such grid boxes. The computations were done using FORTRAN programs developed in house. For the computation of the statistics the following points were considered.

1. The formula for calculating standard deviation (σ) is

$$\sigma = \sqrt{\frac{n\sum x^2 - \left(\sum x\right)^2}{n(n-1)}}$$

Where, x is the value of an individual observation and n is the number of observations.

2. Steadiness = (vector average) / (scalar average)
Calm winds were rejected in calculating the steadiness; wind speed of variable directions was taken as 0 in calculating the vector average but retained in calculating the scalar average. The steadiness is expressed in percentage.

3. The prevailing wind direction is the direction in which the number of occurrence is the greatest, irrespective of the associated wind speed. Winds of variable directions were rejected in the calculation.

4. When the sea and swell waves were reported simultaneously, only the group with the greatest height (or with the greatest period if the heights were equal) was included in the calculation.

Presentation of the Climatological Summary Charts

For the presentation of climatological data, a chart with spatial domain bounded between $15^{o}S$-$40^{o}N$ and $20^{o}E$-$100^{o}E$ has been used. The charts were prepared using Generic Mapping Tools (GMT). In each of the summary chart, 3 different statistical values of the eighteen elements as specified in the Table-A were plotted on each of the $5^{o}X5^{o}$ grid boxes. The charts are arranged in the order of month and annual charts are given in the end.

TABLE - A

Chart	Parameter	Details
I	1	Mean Air Temperature (0.1^0C)
	2	Standard deviation of air temperature (0.1^0C)
	3	Number of observation of air temperature
II	1	Mean Sea surface Temperature (0.1^0C)
	2	Standard deviation of sea surface temperature (0.1^0C)
	3	Number of observation of sea surface temperature
III	1	Mean dew point temperature (0.1^0C)
	2	Standard deviation of dew point temperature (0.1^0C)
	3	Number of observation of dew point temperature
IV	1	Mean air-sea temperature difference (0.1^0C)
	2	Standard deviation of air-sea temperature difference (0.1^0C)
	3	Number of observation of air-sea temperature difference
V	1	Median wind speed (f_{50}, 0.1m/s)
	2	Standard deviation of wind speed (0.1m/s)
	3	Steadiness of wind (0.1%)
VI	1	Prevailing wind direction (to the nearest 10 degrees)
	2	Number of total wind speed observations
	3	Number of measured wind speed observations
VII	1	Percentage of light winds (≤ 3 m/s) (0.1%)
	2	Percentage of strong winds (≥ 11 m/s) (0.1%)
	3	Prevailing direction of strong winds (to the nearest 10 degree)
VIII	1	Percentage of gales (≥17 m/s) (0.1%)
	2	Prevailing direction of gales (to the nearest 10 degree)
	3	Maximum wind (direction in tens of degree, speed in m/s)
IX	1	Median wave height (to the nearest 0.5m)
	2	Standard deviation of wave height (0.1%)
	3	Number of observations
X	1	Percentage of wave ≤ 1.5 m (0.1%)
	2	Percentage of wave ≥ 4.0m (0.1%)
	3	Percentage of wave ≥ 6.0m (0.1%)
XI	1	Percentage of wave periods ≥ 6s (0.1%)
	2	Prevailing swell direction (to the nearest 10 degrees)
	3	Number of observations of swell
XII	1	Mean wave period (1s)
	2	Maximum wave height (0.5m)
	3	Period of highest wave (1s)
XIII	1	Mean sea-level pressure (0.1hpa)
	2	Standard deviation of mean-sea level pressure (0.1hpa)
	3	Number of observation of sea-level pressure
XIV	1	Percentage of observation with rain or drizzle (0.1%)
	2	Percentage of observation with other forms of precipitation (0.1%)
	3	Number of observation of present weather
XV	1	Percentage of observations with total cloud amount ≤ 2/8 (0.1%)
	2	Percentage of observations with total cloud amount ≥ 6/8 (0.1%)
	3	Number of observations of total cloud amount
XVI	1	Percentage of observation with visibility < 1km (0.1%)
	2	Percentage of observation with visibility ≥ 10km (0.1%)
	3	Number of observations of visibility
XVII	1	Mean latitude of observations (0.1degree)
	2	Mean Longitude of observations (0.1degree)
	3	Total number of observations
XVIII	1	Standard deviation of latitude of observations (0.1degree)
	2	Standard deviation of longitude of observations (0.1degree)
	3	Number of ship reports containing both wind speed and air temperature

N O T E

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Marine Climatological Summary Charts 1991-2000

JANUARY
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

FEBRUARY
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

MARCH
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

APRIL
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

MAY
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

CONTENTS

JUNE
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

JULY
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

AUGUST
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

SEPTEMBER
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

OCTOBER
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

NOVEMBER
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

DECEMBER
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

ANNUAL
Climatological Charts
Spatial distribution of reported ship positions
Countrywise and yearwise distribution of number of observations

Marine Climatological Summary Charts 1991-2000

CHARTS OF JANUARY 1991 - 2000

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CHART - II : SEA SURFACE TEMPERATURE

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CHART - VIII : GALE AND MAXIMUM WINDS

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CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

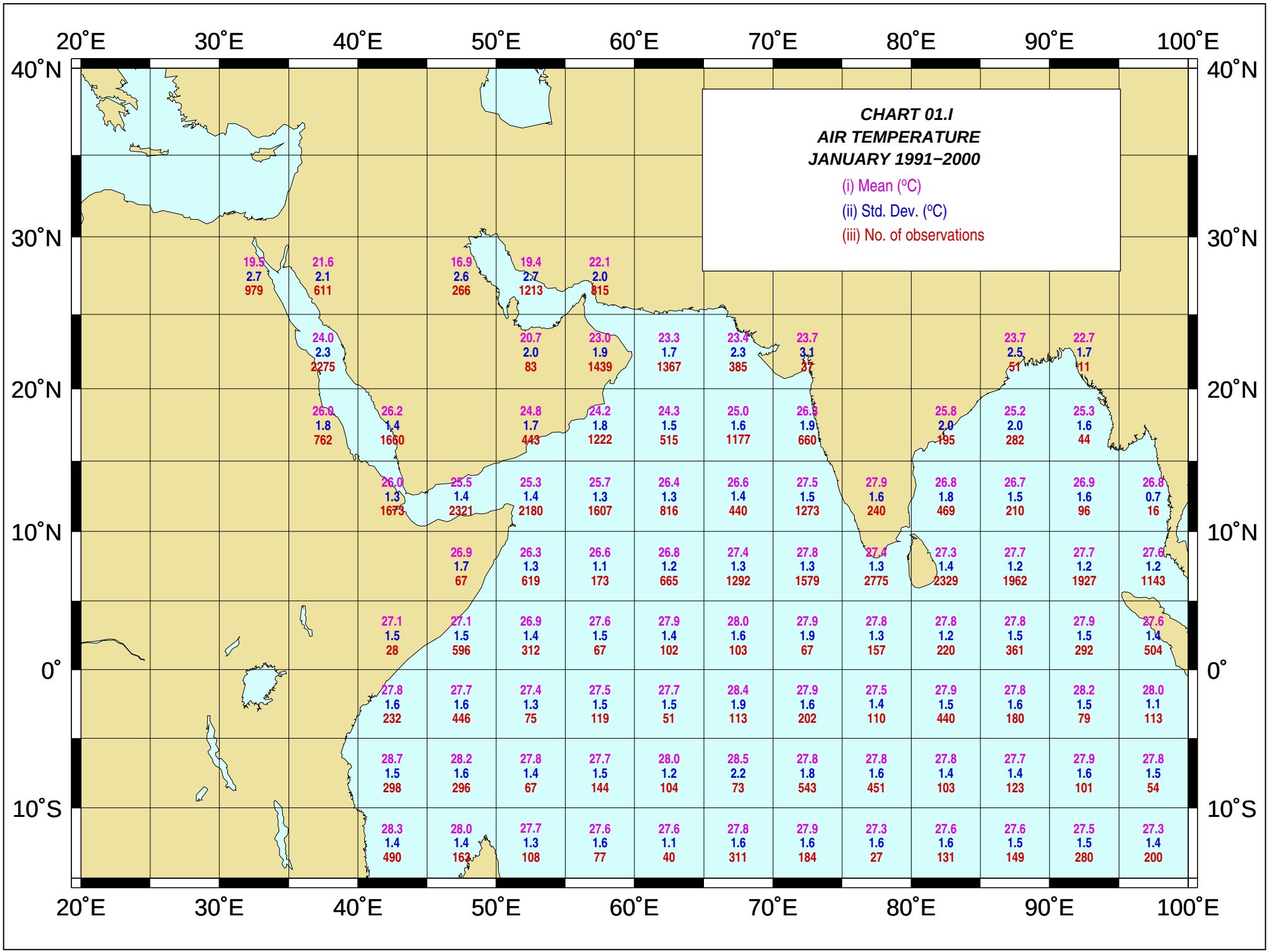


CHART 01.I
AIR TEMPERATURE
JANUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
19.5 2.7 979
21.6 2.1 611
16.9 2.6 266
19.4 2.7 1213
22.1 2.0 815
24.0 2.3 2275
20.7 2.0 83
23.0 1.9 1439
23.3 1.7 1367
23.4 2.3 385
23.7 3.1 37
23.7 2.5 51
22.7 1.7 11
26.0 1.8 762
26.2 1.4 1660
24.8 1.7 443
24.2 1.8 1222
24.3 1.5 515
25.0 1.6 1177
26.3 1.9 660
25.8 2.0 195
25.2 2.0 282
25.3 1.6 44
26.0 1.3 1673
25.5 1.4 2321
25.3 1.4 2180
25.7 1.3 1607
26.4 1.3 816
26.6 1.4 440
27.5 1.5 1273
27.9 1.6 240
26.8 1.8 469
26.7 1.5 210
26.9 1.6 96
26.8 0.7 16
26.9 1.7 67
26.3 1.3 619
26.6 1.1 173
26.8 1.2 665
27.4 1.3 1292
27.8 1.3 1579
27.4 1.3 2775
27.3 1.4 2329
27.7 1.2 1962
27.7 1.2 1927
27.6 1.2 1143
27.1 1.5 28
27.1 1.5 596
26.9 1.4 312
27.6 1.5 67
27.9 1.4 102
28.0 1.6 103
27.9 1.9 67
27.8 1.3 157
27.8 1.2 220
27.8 1.5 361
27.9 1.5 292
27.6 1.4 504
27.8 1.6 232
27.7 1.6 446
27.4 1.3 75
27.5 1.5 119
27.7 1.5 51
28.4 1.9 113
27.9 1.6 202
27.5 1.4 110
27.9 1.5 440
27.8 1.6 180
28.2 1.5 79
28.0 1.1 113
28.7 1.5 298
28.2 1.6 296
27.8 1.4 67
27.7 1.5 144
28.0 1.2 104
28.5 2.2 73
27.8 1.8 543
27.8 1.6 451
27.8 1.4 103
27.7 1.4 123
27.9 1.6 101
27.8 1.5 54
28.3 1.4 490
28.0 1.4 163
27.7 1.3 108
27.6 1.6 77
27.6 1.1 40
27.8 1.6 311
27.9 1.6 184
27.3 1.6 27
27.6 1.6 131
27.6 1.5 149
27.5 1.5 280
27.3 1.4 200

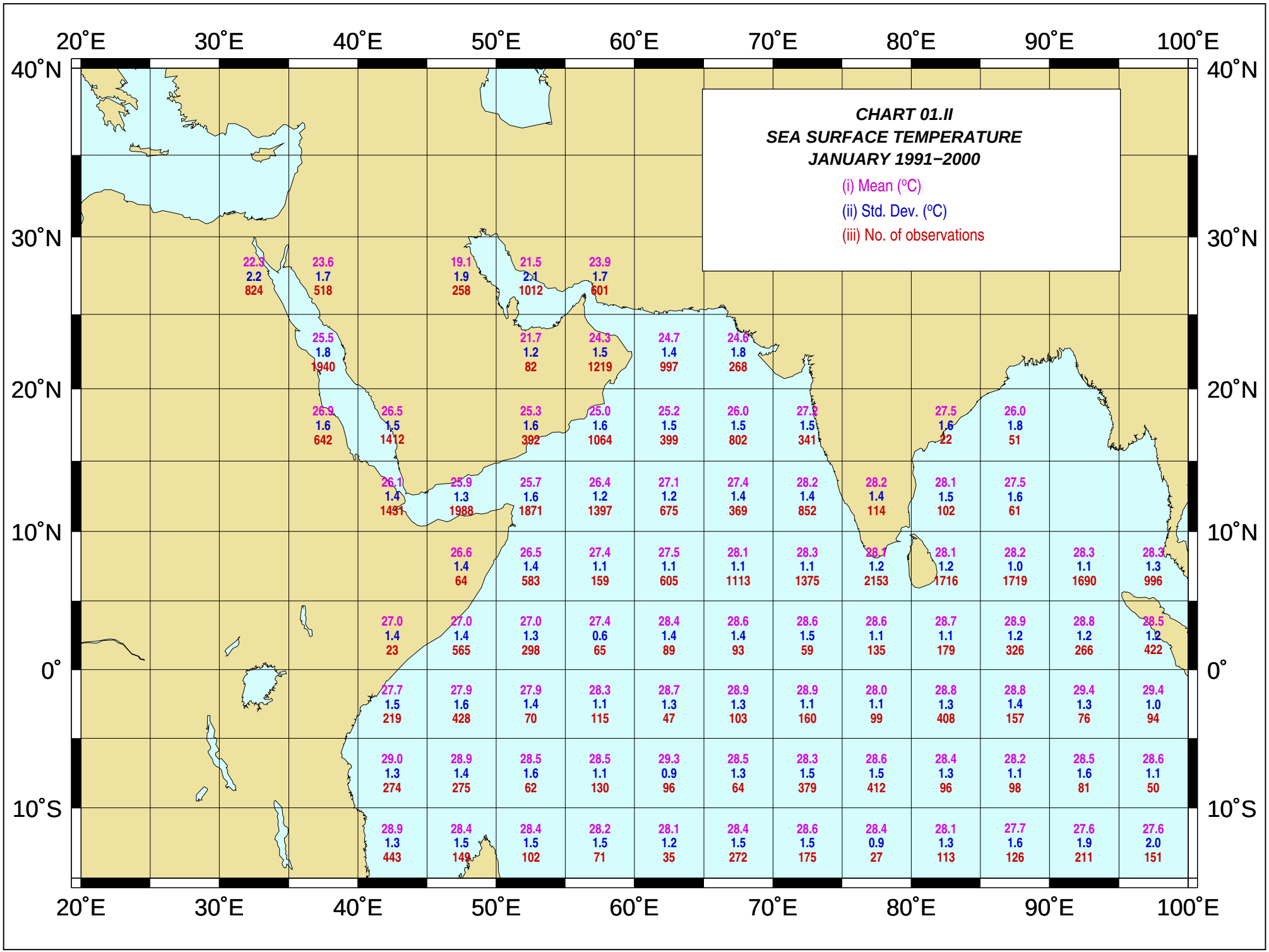


CHART 01.II
SEA SURFACE TEMPERATURE
JANUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
22.3 2.2 824
23.6 1.7 518
19.1 1.9 258
21.5 2.1 1012
23.9 1.7 601
25.5 1.8 1940
21.7 1.2 82
24.3 1.5 1219
24.7 1.4 997
24.6 1.8 268
26.9 1.6 642
26.5 1.5 1412
25.3 1.6 392
25.0 1.6 1064
25.2 1.5 399
26.0 1.5 802
27.2 1.5 341
27.5 1.6 22
26.0 1.8 51
26.1 1.4 1451
25.9 1.3 1988
25.7 1.6 1871
26.4 1.2 1397
27.1 1.2 675
27.4 1.4 369
28.2 1.4 852
28.2 1.4 114
28.1 1.5 102
27.5 1.6 61
26.6 1.4 64
26.5 1.4 583
27.4 1.1 159
27.5 1.1 605
28.1 1.1 1113
28.3 1.1 1375
28.1 1.2 2153
28.1 1.2 1716
28.2 1.0 1719
28.3 1.1 1690
28.3 1.3 996
27.0 1.4 23
27.0 1.4 565
27.0 1.3 298
27.4 0.6 65
28.4 1.4 89
28.6 1.4 93
28.6 1.5 59
28.6 1.1 135
28.7 1.1 179
28.9 1.2 326
28.8 1.2 266
28.5 1.2 422
27.7 1.5 219
27.9 1.6 428
27.9 1.4 70
28.3 1.1 115
28.7 1.3 47
28.9 1.3 103
28.9 1.1 160
28.0 1.1 99
28.8 1.3 408
28.8 1.4 157
29.4 1.3 76
29.4 1.0 94
29.0 1.3 274
28.9 1.4 275
28.5 1.6 62
28.5 1.1 130
29.3 0.9 96
28.5 1.3 64
28.3 1.5 379
28.6 1.5 412
28.4 1.3 96
28.2 1.1 98
28.5 1.6 81
28.6 1.1 50
28.9 1.3 443
28.4 1.5 149
28.4 1.5 102
28.2 1.5 71
28.1 1.2 35
28.4 1.5 272
28.6 1.5 175
28.4 0.9 27
28.1 1.3 113
27.7 1.6 126
27.6 1.9 211
27.6 2.0 151

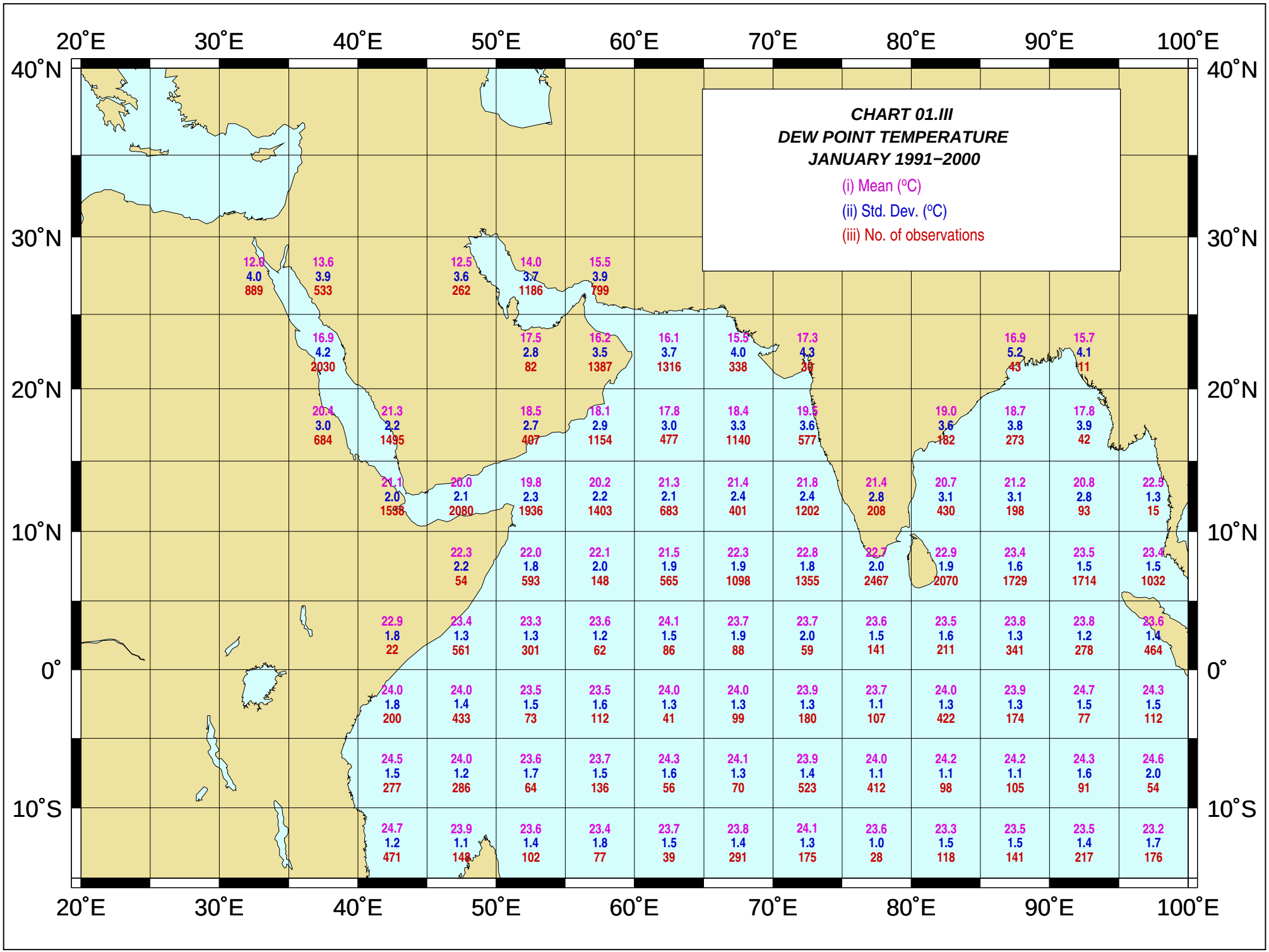


CHART 01.III
DEW POINT TEMPERATURE
JANUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
12.8 4.0 889
13.6 3.9 533
12.5 3.6 262
14.0 3.7 1186
15.5 3.9 799
16.9 4.2 2030
17.5 2.8 82
16.2 3.5 1387
16.1 3.7 1316
15.5 4.0 338
17.3 4.3 30
16.9 5.2 43
15.7 4.1 11
20.4 3.0 684
21.3 2.2 1495
18.5 2.7 407
18.1 2.9 1154
17.8 3.0 477
18.4 3.3 1140
19.5 3.6 577
19.0 3.6 182
18.7 3.8 273
17.8 3.9 42
21.1 2.0 1538
20.0 2.1 2080
19.8 2.3 1936
20.2 2.2 1403
21.3 2.1 683
21.4 2.4 401
21.8 2.4 1202
21.4 2.8 208
20.7 3.1 430
21.2 3.1 198
20.8 2.8 93
22.5 1.3 15
22.3 2.2 54
22.0 1.8 593
22.1 2.0 148
21.5 1.9 565
22.3 1.9 1098
22.8 1.8 1355
22.7 2.0 2467
22.9 1.9 2070
23.4 1.6 1729
23.5 1.5 1714
23.4 1.5 1032
22.9 1.8 22
23.4 1.3 561
23.3 1.3 301
23.6 1.2 62
24.1 1.5 86
23.7 1.9 88
23.7 2.0 59
23.6 1.5 141
23.5 1.6 211
23.8 1.3 341
23.8 1.2 278
23.6 1.4 464
24.0 1.8 200
24.0 1.4 433
23.5 1.5 73
23.5 1.6 112
24.0 1.3 41
24.0 1.3 99
23.9 1.3 180
23.7 1.1 107
24.0 1.3 422
23.9 1.3 174
24.7 1.5 77
24.3 1.5 112
24.5 1.5 277
24.0 1.2 286
23.6 1.7 64
23.7 1.5 136
24.3 1.6 56
24.1 1.3 70
23.9 1.4 523
24.0 1.1 412
24.2 1.1 98
24.2 1.1 105
24.3 1.6 91
24.6 2.0 54
24.7 1.2 471
23.9 1.1 148
23.6 1.4 102
23.4 1.8 77
23.7 1.5 39
23.8 1.4 291
24.1 1.3 175
23.6 1.0 28
23.3 1.5 118
23.5 1.5 141
23.5 1.4 217
23.2 1.7 176

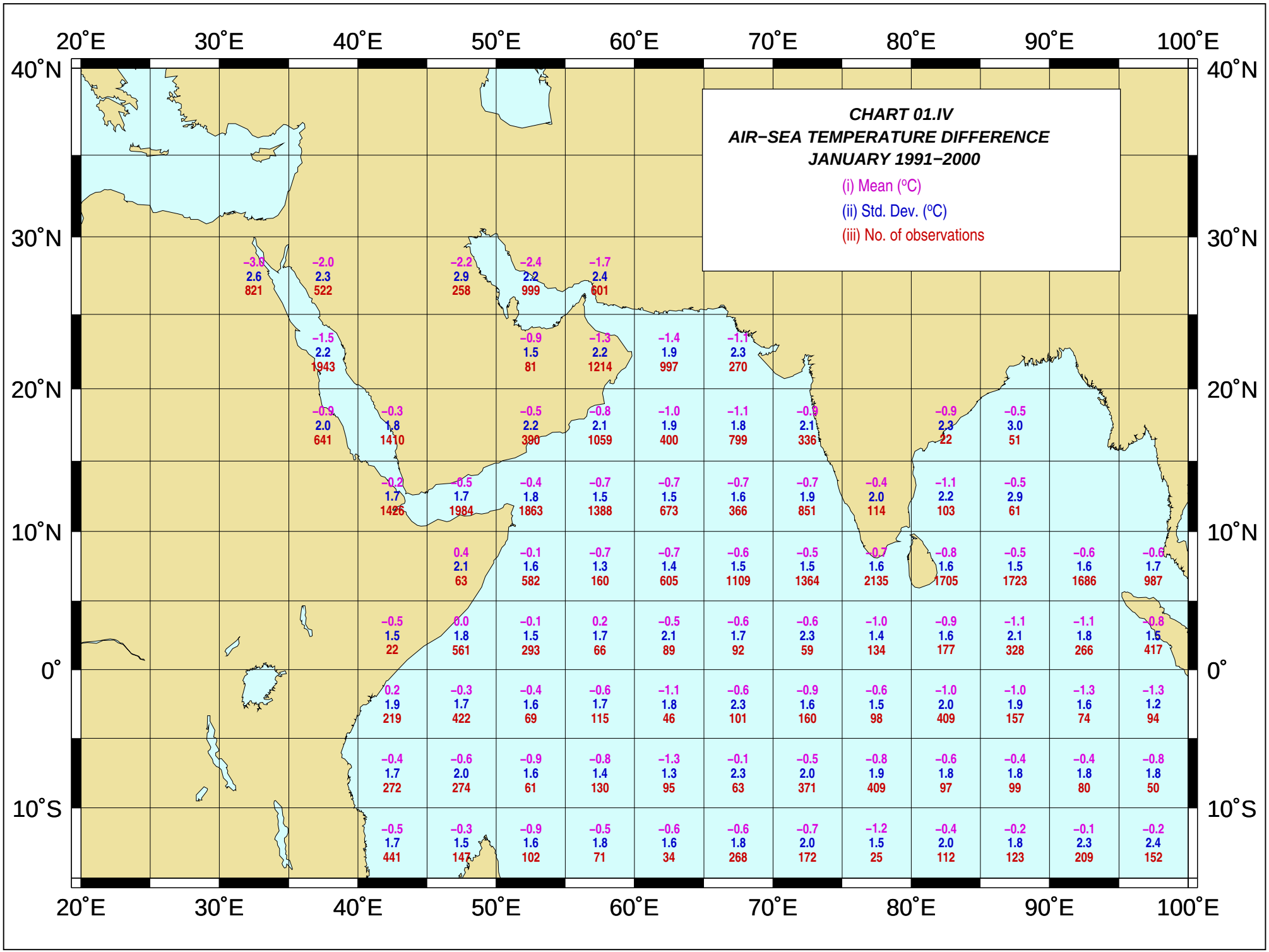


CHART 01.IV
AIR–SEA TEMPERATURE DIFFERENCE
JANUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
−3.8 2.6 821
−2.0 2.3 522
−2.2 2.9 258
−2.4 2.2 999
−1.7 2.4 601
−1.5 2.2 1943
−0.9 1.5 81
−1.3 2.2 1214
−1.4 1.9 997
−1.1 2.3 270
−0.9 2.0 641
−0.3 1.8 1410
−0.5 2.2 390
−0.8 2.1 1059
−1.0 1.9 400
−1.1 1.8 799
−0.9 2.1 336
−0.9 2.3 22
−0.5 3.0 51
−0.2 1.7 1426
−0.5 1.7 1984
−0.4 1.8 1863
−0.7 1.5 1388
−0.7 1.5 673
−0.7 1.6 366
−0.7 1.9 851
−0.4 2.0 114
−1.1 2.2 103
−0.5 2.9 61
0.4 2.1 63
−0.1 1.6 582
−0.7 1.3 160
−0.7 1.4 605
−0.6 1.5 1109
−0.5 1.5 1364
−0.7 1.6 2135
−0.8 1.6 1705
−0.5 1.5 1723
−0.6 1.6 1686
−0.6 1.7 987
−0.5 1.5 22
0.0 1.8 561
−0.1 1.5 293
0.2 1.7 66
−0.5 2.1 89
−0.6 1.7 92
−0.6 2.3 59
−1.0 1.4 134
−0.9 1.6 177
−1.1 2.1 328
−1.1 1.8 266
−0.8 1.5 417
0.2 1.9 219
−0.3 1.7 422
−0.4 1.6 69
−0.6 1.7 115
−1.1 1.8 46
−0.6 2.3 101
−0.9 1.6 160
−0.6 1.5 98
−1.0 2.0 409
−1.0 1.9 157
−1.3 1.6 74
−1.3 1.2 94
−0.4 1.7 272
−0.6 2.0 274
−0.9 1.6 61
−0.8 1.4 130
−1.3 1.3 95
−0.1 2.3 63
−0.5 2.0 371
−0.8 1.9 409
−0.6 1.8 97
−0.4 1.8 99
−0.4 1.8 80
−0.8 1.8 50
−0.5 1.7 441
−0.3 1.5 147
−0.9 1.6 102
−0.5 1.8 71
−0.6 1.6 34
−0.6 1.8 268
−0.7 2.0 172
−1.2 1.5 25
−0.4 2.0 112
−0.2 1.8 123
−0.1 2.3 209
−0.2 2.4 152

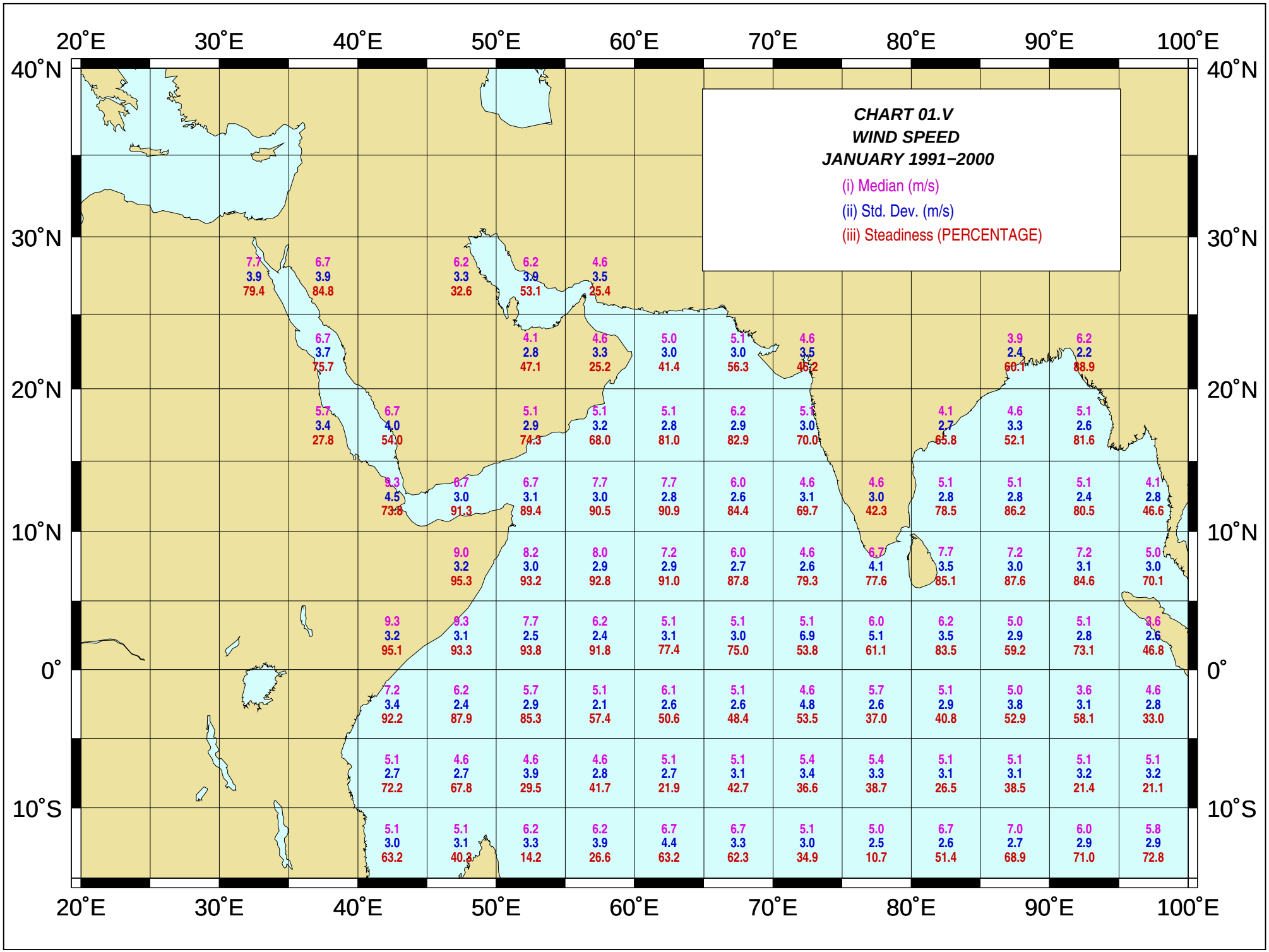


CHART 01.V
WIND SPEED
JANUARY 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 3.9 79.4
6.7 3.9 84.8
6.2 3.3 32.6
6.2 3.9 53.1
4.6 3.5 25.4
6.7 3.7 75.7
4.1 2.8 47.1
4.6 3.3 25.2
5.0 3.0 41.4
5.1 3.0 56.3
4.6 3.5 45.2
3.9 2.4 60.1
6.2 2.2 88.9
5.7 3.4 27.8
6.7 4.0 54.0
5.1 2.9 74.3
5.1 3.2 68.0
5.1 2.8 81.0
6.2 2.9 82.9
5.1 3.0 70.0
4.1 2.7 65.8
4.6 3.3 52.1
5.1 2.6 81.6
9.3 4.5 73.8
6.7 3.0 91.3
6.7 3.1 89.4
7.7 3.0 90.5
7.7 2.8 90.9
6.0 2.6 84.4
4.6 3.1 69.7
4.6 3.0 42.3
5.1 2.8 78.5
5.1 2.8 86.2
5.1 2.4 80.5
4.1 2.8 46.6
9.0 3.2 95.3
8.2 3.0 93.2
8.0 2.9 92.8
7.2 2.9 91.0
6.0 2.7 87.8
4.6 2.6 79.3
6.7 4.1 77.6
7.7 3.5 85.1
7.2 3.0 87.6
7.2 3.1 84.6
5.0 3.0 70.1
9.3 3.2 95.1
9.3 3.1 93.3
7.7 2.5 93.8
6.2 2.4 91.8
5.1 3.1 77.4
5.1 3.0 75.0
5.1 6.9 53.8
6.0 5.1 61.1
6.2 3.5 83.5
5.0 2.9 59.2
5.1 2.8 73.1
3.6 2.6 46.8
7.2 3.4 92.2
6.2 2.4 87.9
5.7 2.9 85.3
5.1 2.1 57.4
6.1 2.6 50.6
5.1 2.6 48.4
4.6 4.8 53.5
5.7 2.6 37.0
5.1 2.9 40.8
5.0 3.8 52.9
3.6 3.1 58.1
4.6 2.8 33.0
5.1 2.7 72.2
4.6 2.7 67.8
4.6 3.9 29.5
4.6 2.8 41.7
5.1 2.7 21.9
5.1 3.1 42.7
5.4 3.4 36.6
5.4 3.3 38.7
5.1 3.1 26.5
5.1 3.1 38.5
5.1 3.2 21.4
5.1 3.2 21.1
5.1 3.0 63.2
5.1 3.1 40.3
6.2 3.3 14.2
6.2 3.9 26.6
6.7 4.4 63.2
6.7 3.3 62.3
5.1 3.0 34.9
5.0 2.5 10.7
6.7 2.6 51.4
7.0 2.7 68.9
6.0 2.9 71.0
5.8 2.9 72.8

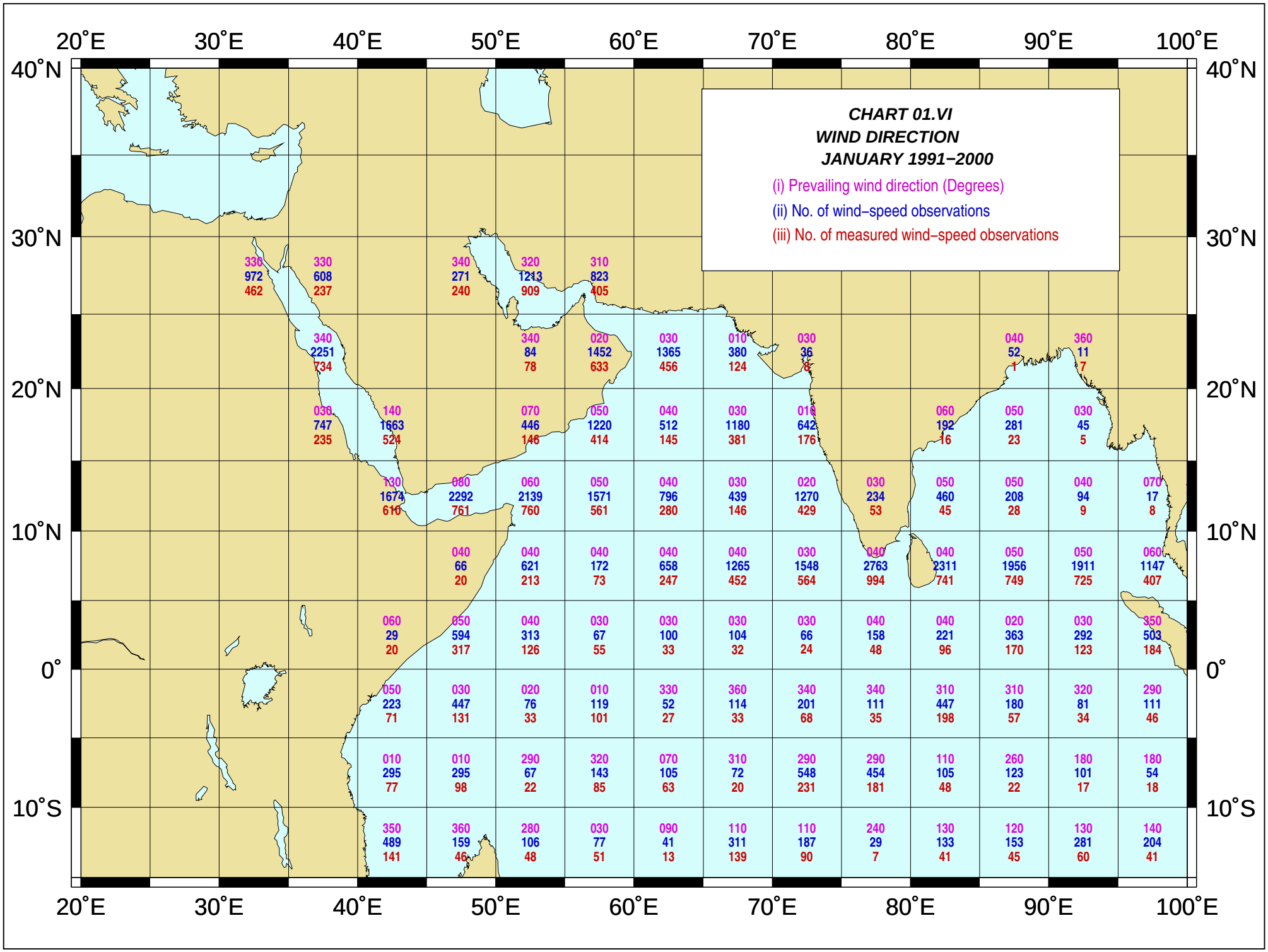


CHART 01.VI
WIND DIRECTION
JANUARY 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
330 330 340 320 310
972 608 271 1213 823
462 237 240 909 405
340 340 020 030 010 030 040 360
2251 84 1452 1365 380 36 52 11
734 78 633 456 124 8 1 7
030 140 070 050 040 030 010 060 050 030
747 1663 446 1220 512 1180 642 192 281 45
235 524 146 414 145 381 176 16 23 5
130 080 060 050 040 030 020 030 050 050 040 070
1674 2292 2139 1571 796 439 1270 234 460 208 94 17
610 761 760 561 280 146 429 53 45 28 9 8
040 040 040 040 040 030 040 040 050 050 060
66 621 172 658 1265 1548 2763 2311 1956 1911 1147
20 213 73 247 452 564 994 741 749 725 407
060 050 040 030 030 030 030 040 040 020 030 350
29 594 313 67 100 104 66 158 221 363 292 503
20 317 126 55 33 32 24 48 96 170 123 184
050 030 020 010 330 360 340 340 310 310 320 290
223 447 76 119 52 114 201 111 447 180 81 111
71 131 33 101 27 33 68 35 198 57 34 46
010 010 290 320 070 310 290 290 110 260 180 180
295 295 67 143 105 72 548 454 105 123 101 54
77 98 22 85 63 20 231 181 48 22 17 18
350 360 280 030 090 110 110 240 130 120 130 140
489 159 106 77 41 311 187 29 133 153 281 204
141 46 48 51 13 139 90 7 41 45 60 41

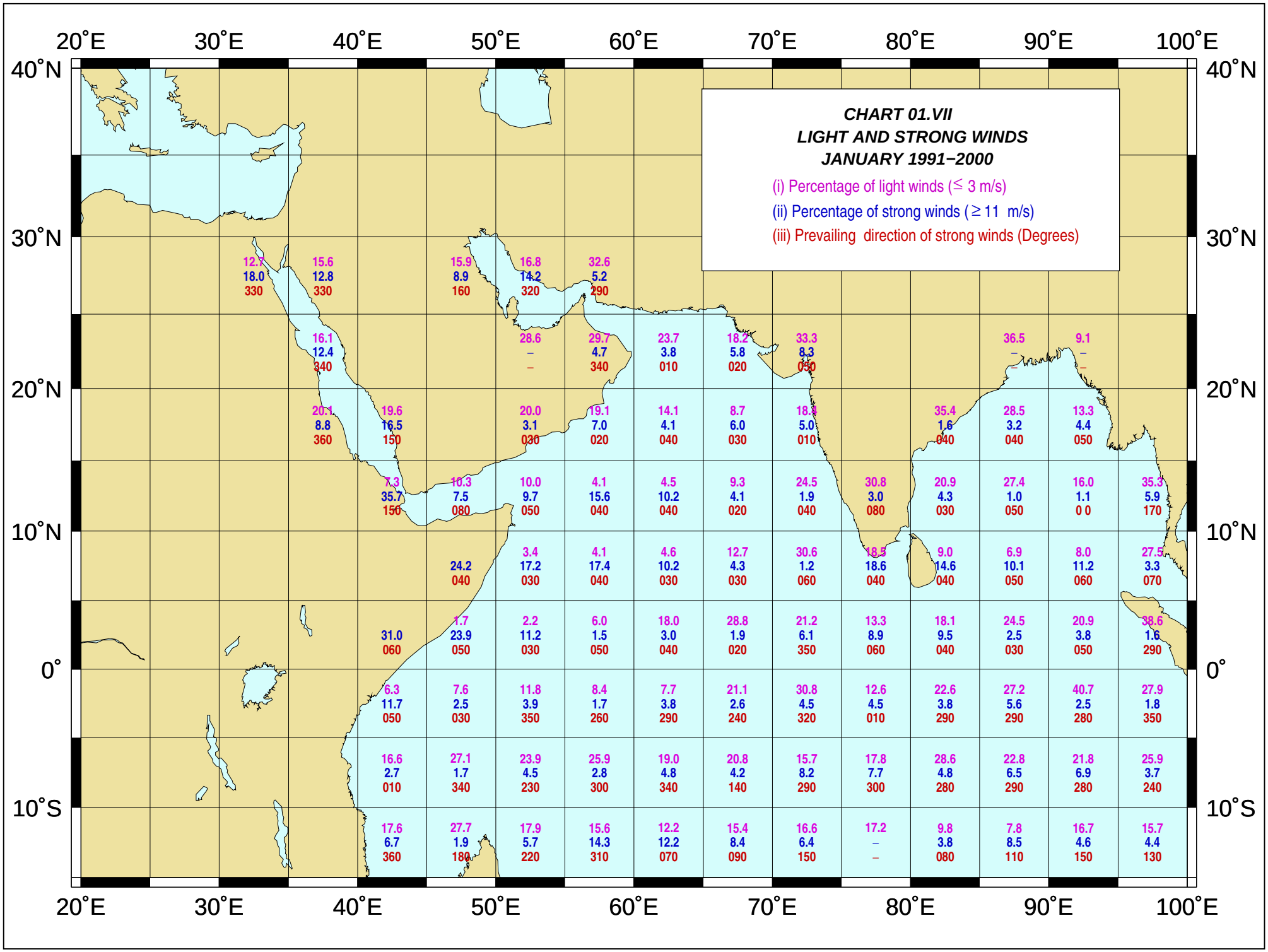


CHART 01.VII
LIGHT AND STRONG WINDS
JANUARY 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
12.7 18.0 330
15.6 12.8 330
15.9 8.9 160
16.8 14.2 320
32.6 5.2 290
16.1 12.4 340
28.6 – –
29.7 4.7 340
23.7 3.8 010
18.2 5.8 020
33.3 8.3 050
36.5 – –
9.1 – –
20.1 8.8 360
19.6 16.5 150
20.0 3.1 030
19.1 7.0 020
14.1 4.1 040
8.7 6.0 030
18.9 5.0 010
35.4 1.6 040
28.5 3.2 040
13.3 4.4 050
7.3 35.7 150
10.3 7.5 080
10.0 9.7 050
4.1 15.6 040
4.5 10.2 040
9.3 4.1 020
24.5 1.9 040
30.8 3.0 080
20.9 4.3 030
27.4 1.0 050
16.0 1.1 0 0
35.3 5.9 170
24.2 040
3.4 17.2 030
4.1 17.4 040
4.6 10.2 030
12.7 4.3 030
30.6 1.2 060
18.9 18.6 040
9.0 14.6 040
6.9 10.1 050
8.0 11.2 060
27.5 3.3 070
31.0 060
1.7 23.9 050
2.2 11.2 030
6.0 1.5 050
18.0 3.0 040
28.8 1.9 020
21.2 6.1 350
13.3 8.9 060
18.1 9.5 040
24.5 2.5 030
20.9 3.8 050
38.6 1.6 290
6.3 11.7 050
7.6 2.5 030
11.8 3.9 350
8.4 1.7 260
7.7 3.8 290
21.1 2.6 240
30.8 4.5 320
12.6 4.5 010
22.6 3.8 290
27.2 5.6 290
40.7 2.5 280
27.9 1.8 350
16.6 2.7 010
27.1 1.7 340
23.9 4.5 230
25.9 2.8 300
19.0 4.8 340
20.8 4.2 140
15.7 8.2 290
17.8 7.7 300
28.6 4.8 280
22.8 6.5 290
21.8 6.9 280
25.9 3.7 240
17.6 6.7 360
27.7 1.9 180
17.9 5.7 220
15.6 14.3 310
12.2 12.2 070
15.4 8.4 090
16.6 6.4 150
17.2 – –
9.8 3.8 080
7.8 8.5 110
16.7 4.6 150
15.7 4.4 130

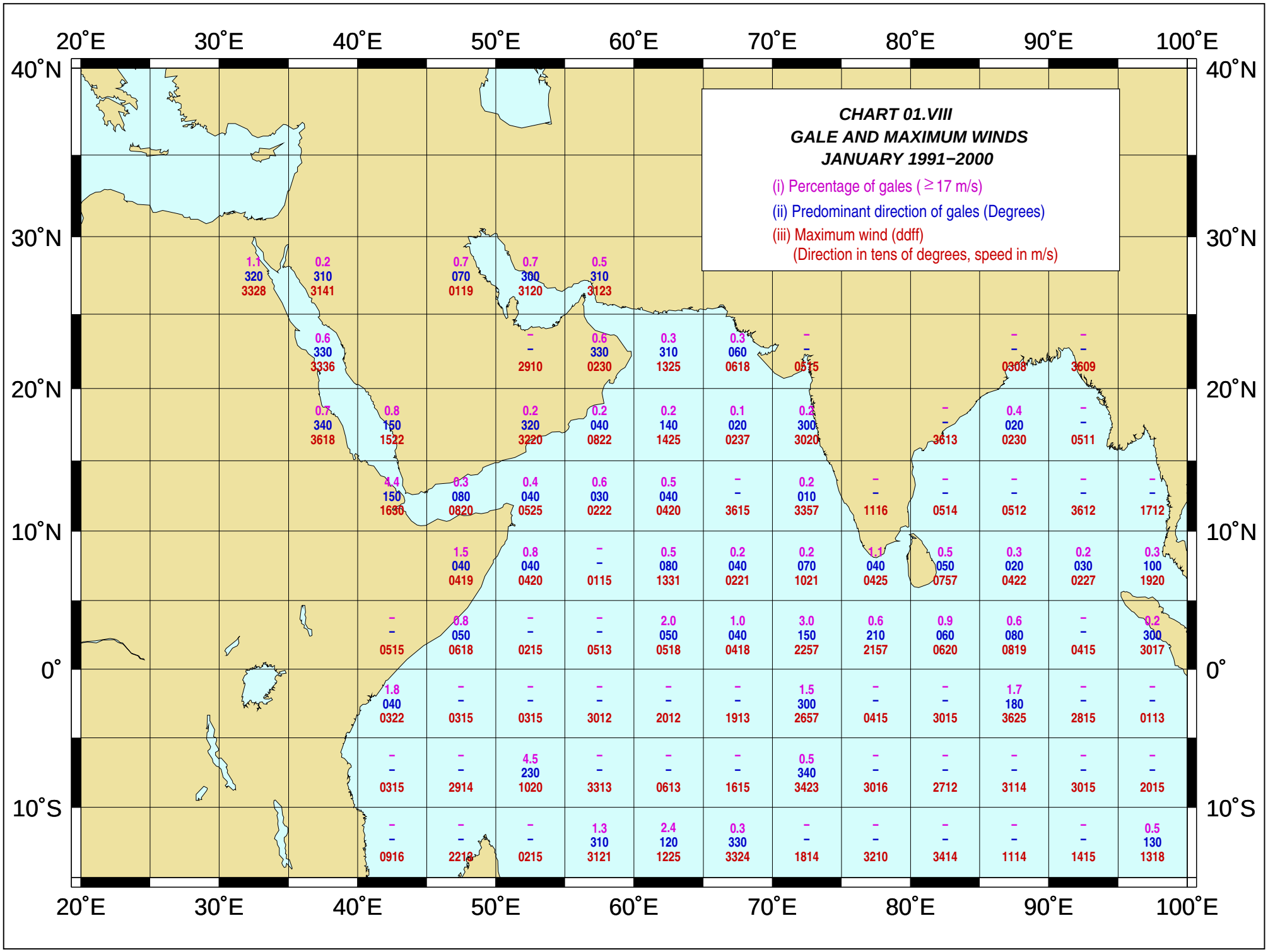


CHART 01.VIII
GALE AND MAXIMUM WINDS
JANUARY 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.1 320 3328
0.2 310 3141
0.7 070 0119
0.7 300 3120
0.5 310 3123
0.6 330 3336
– – 2910
0.6 330 0230
0.3 310 1325
0.3 060 0618
– – 0515
– – 0308
– – 3609
0.7 340 3618
0.8 150 1522
0.2 320 3220
0.2 040 0822
0.2 140 1425
0.1 020 0237
0.2 300 3020
– – 3613
0.4 020 0230
– – 0511
4.4 150 1630
0.3 080 0820
0.4 040 0525
0.6 030 0222
0.5 040 0420
– – 3615
0.2 010 3357
– – 1116
– – 0514
– – 0512
– – 3612
– – 1712
1.5 040 0419
0.8 040 0420
– – 0115
0.5 080 1331
0.2 040 0221
0.2 070 1021
1.1 040 0425
0.5 050 0757
0.3 020 0422
0.2 030 0227
0.3 100 1920
– – 0515
0.8 050 0618
– – 0215
– – 0513
2.0 050 0518
1.0 040 0418
3.0 150 2257
0.6 210 2157
0.9 060 0620
0.6 080 0819
– – 0415
0.2 300 3017
1.8 040 0322
– – 0315
– – 0315
– – 3012
– – 2012
– – 1913
1.5 300 2657
– – 0415
– – 3015
1.7 180 3625
– – 2815
– – 0113
– – 0315
– – 2914
4.5 230 1020
– – 3313
– – 0613
– – 1615
0.5 340 3423
– – 3016
– – 2712
– – 3114
– – 3015
– – 2015
– – 0916
– – 2210
– – 0215
1.3 310 3121
2.4 120 1225
0.3 330 3324
– – 1814
– – 3210
– – 3414
– – 1114
– – 1415
0.5 130 1318

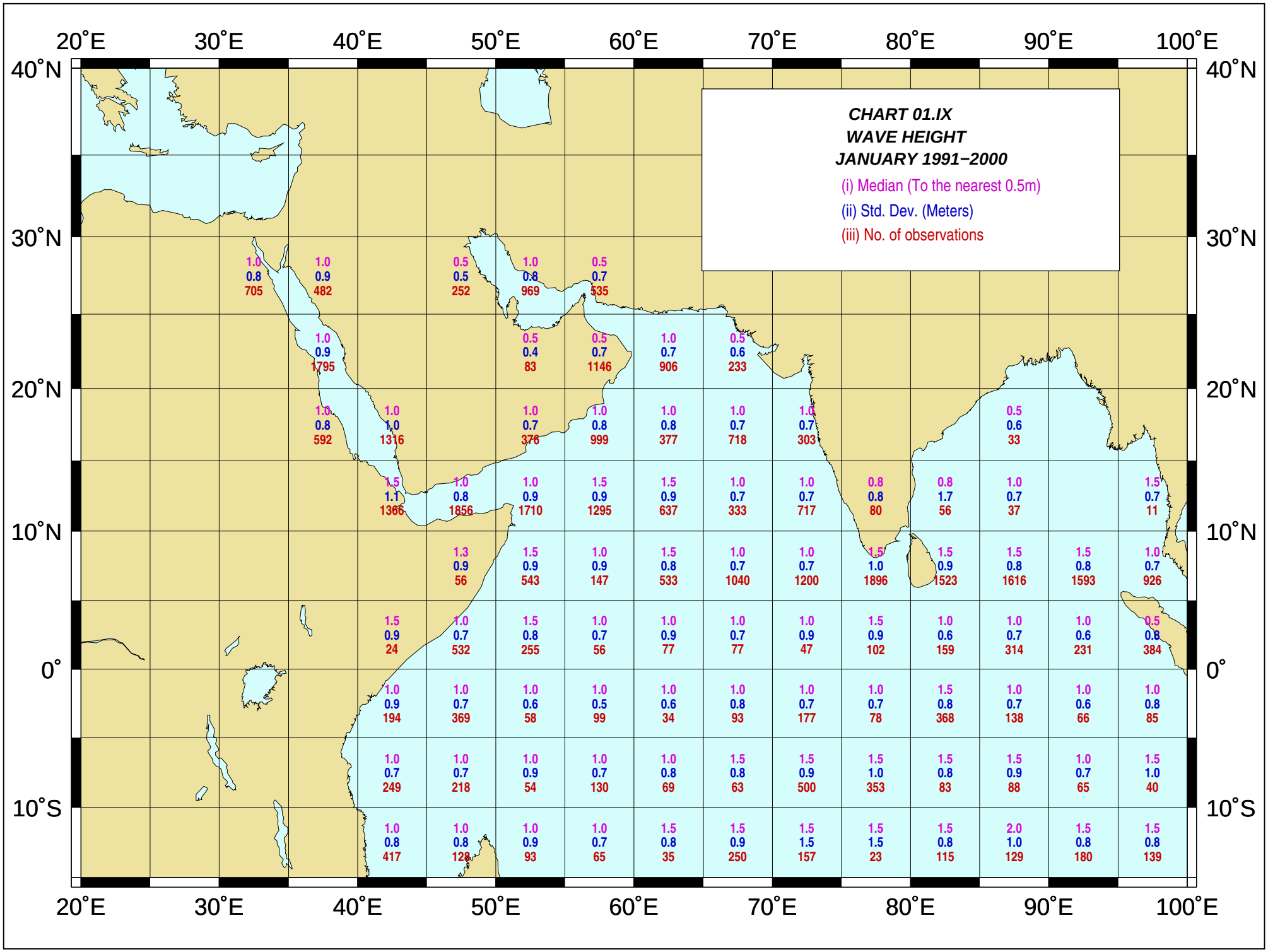


CHART 01.IX
WAVE HEIGHT
JANUARY 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.8 705
1.0 0.9 482
0.5 0.5 252
1.0 0.8 969
0.5 0.7 535
1.0 0.9 1795
0.5 0.4 83
0.5 0.7 1146
1.0 0.7 906
0.5 0.6 233
1.0 0.8 592
1.0 1.0 1316
1.0 0.7 376
1.0 0.8 999
1.0 0.8 377
1.0 0.7 718
1.0 0.7 303
0.5 0.6 33
1.5 1.1 1366
1.0 0.8 1856
1.0 0.9 1710
1.5 0.9 1295
1.5 0.9 637
1.0 0.7 333
1.0 0.7 717
0.8 0.8 80
0.8 1.7 56
1.0 0.7 37
1.5 0.7 11
1.3 0.9 56
1.5 0.9 543
1.0 0.9 147
1.5 0.8 533
1.0 0.7 1040
1.0 0.7 1200
1.5 1.0 1896
1.5 0.9 1523
1.5 0.8 1616
1.5 0.8 1593
1.0 0.7 926
1.5 0.9 24
1.0 0.7 532
1.5 0.8 255
1.0 0.7 56
1.0 0.9 77
1.0 0.7 77
1.0 0.9 47
1.5 0.9 102
1.0 0.6 159
1.0 0.7 314
1.0 0.6 231
0.5 0.8 384
1.0 0.9 194
1.0 0.7 369
1.0 0.6 58
1.0 0.5 99
1.0 0.6 34
1.0 0.8 93
1.0 0.7 177
1.0 0.7 78
1.5 0.8 368
1.0 0.7 138
1.0 0.6 66
1.0 0.8 85
1.0 0.7 249
1.0 0.7 218
1.0 0.9 54
1.0 0.7 130
1.0 0.8 69
1.5 0.8 63
1.5 0.9 500
1.5 1.0 353
1.5 0.8 83
1.5 0.9 88
1.0 0.7 65
1.5 1.0 40
1.0 0.8 417
1.0 0.8 128
1.0 0.9 93
1.0 0.7 65
1.5 0.8 35
1.5 0.9 250
1.5 1.5 157
1.5 1.5 23
1.5 0.8 115
2.0 1.0 129
1.5 0.8 180
1.5 0.8 139

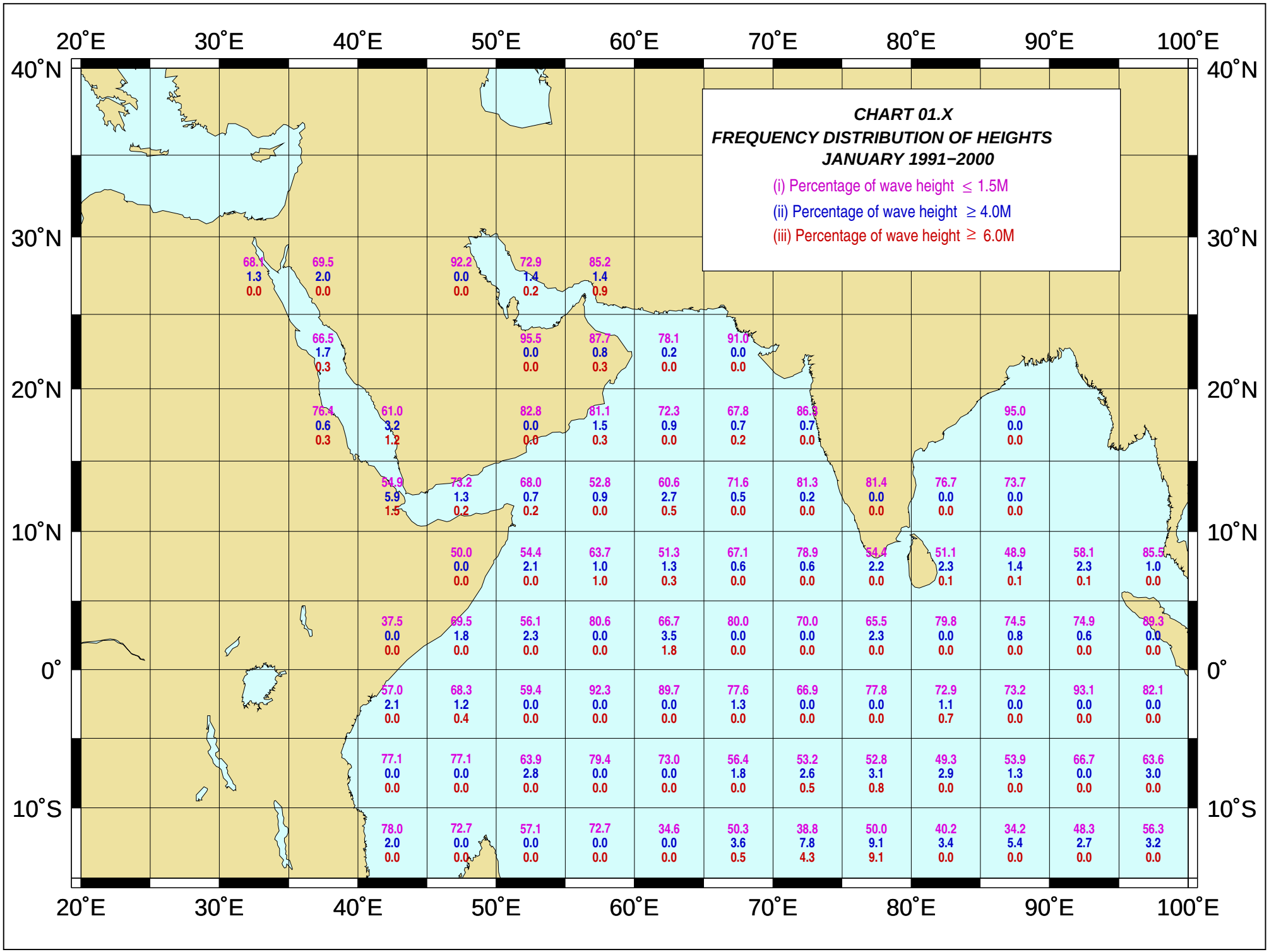


CHART 01.X
FREQUENCY DISTRIBUTION OF HEIGHTS
JANUARY 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
68.1 1.3 0.0
69.5 2.0 0.0
92.2 0.0 0.0
72.9 1.4 0.2
85.2 1.4 0.9
66.5 1.7 0.3
95.5 0.0 0.0
87.7 0.8 0.3
78.1 0.2 0.0
91.0 0.0 0.0
76.4 0.6 0.3
61.0 3.2 1.2
82.8 0.0 0.0
81.1 1.5 0.3
72.3 0.9 0.0
67.8 0.7 0.2
86.3 0.7 0.0
95.0 0.0 0.0
51.9 5.9 1.5
73.2 1.3 0.2
68.0 0.7 0.2
52.8 0.9 0.0
60.6 2.7 0.5
71.6 0.5 0.0
81.3 0.2 0.0
81.4 0.0 0.0
76.7 0.0 0.0
73.7 0.0 0.0
50.0 0.0 0.0
54.4 2.1 0.0
63.7 1.0 1.0
51.3 1.3 0.3
67.1 0.6 0.0
78.9 0.6 0.0
54.4 2.2 0.0
51.1 2.3 0.1
48.9 1.4 0.1
58.1 2.3 0.1
85.5 1.0 0.0
37.5 0.0 0.0
69.5 1.8 0.0
56.1 2.3 0.0
80.6 0.0 0.0
66.7 3.5 1.8
80.0 0.0 0.0
70.0 0.0 0.0
65.5 2.3 0.0
79.8 0.0 0.0
74.5 0.8 0.0
74.9 0.6 0.0
89.3 0.0 0.0
57.0 2.1 0.0
68.3 1.2 0.4
59.4 0.0 0.0
92.3 0.0 0.0
89.7 0.0 0.0
77.6 1.3 0.0
66.9 0.0 0.0
77.8 0.0 0.0
72.9 1.1 0.7
73.2 0.0 0.0
93.1 0.0 0.0
82.1 0.0 0.0
77.1 0.0 0.0
77.1 0.0 0.0
63.9 2.8 0.0
79.4 0.0 0.0
73.0 0.0 0.0
56.4 1.8 0.0
53.2 2.6 0.5
52.8 3.1 0.8
49.3 2.9 0.0
53.9 1.3 0.0
66.7 0.0 0.0
63.6 3.0 0.0
78.0 2.0 0.0
72.7 0.0 0.0
57.1 0.0 0.0
72.7 0.0 0.0
34.6 0.0 0.0
50.3 3.6 0.5
38.8 7.8 4.3
50.0 9.1 9.1
40.2 3.4 0.0
34.2 5.4 0.0
48.3 2.7 0.0
56.3 3.2 0.0

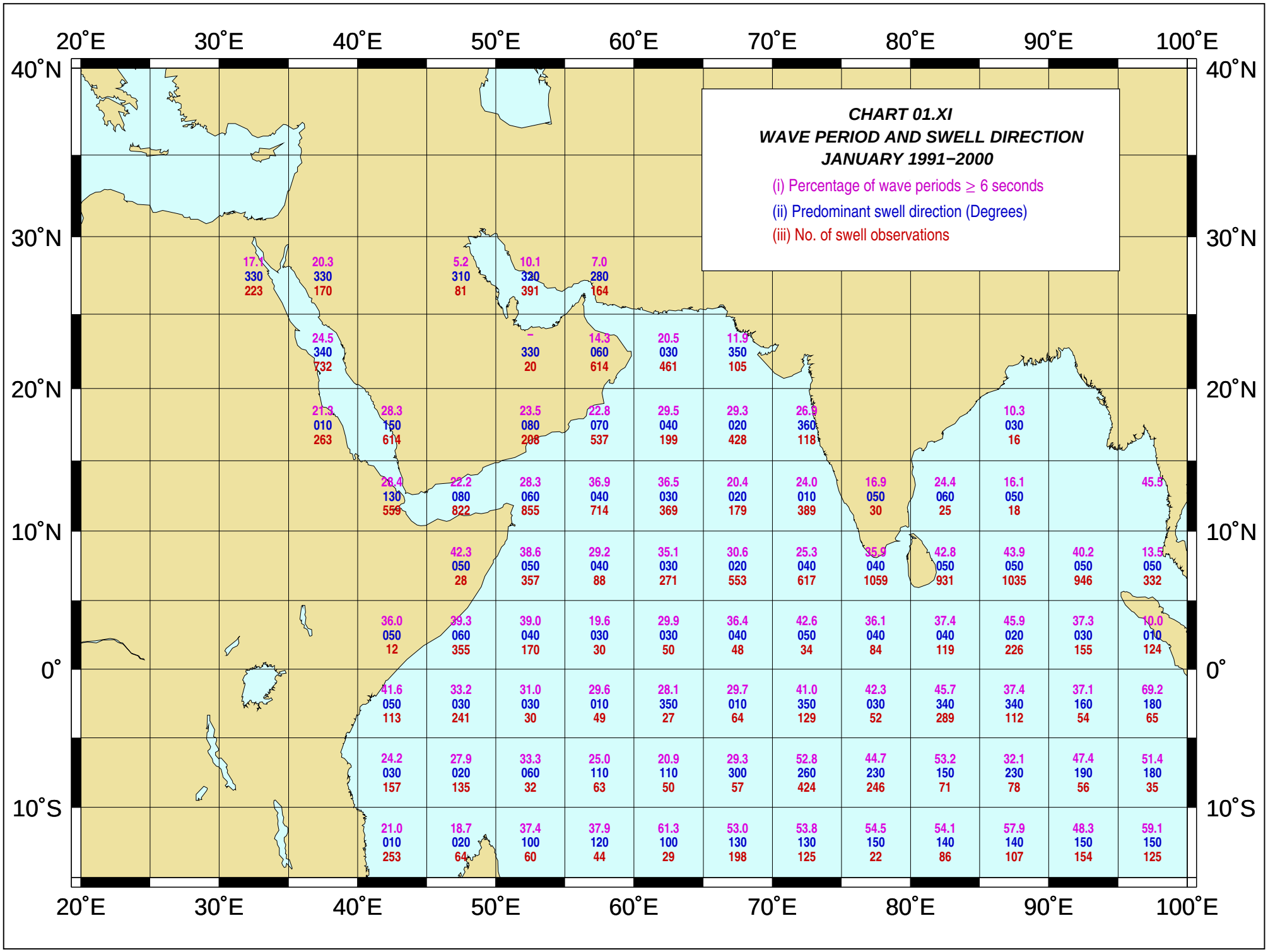


CHART 01.XI
WAVE PERIOD AND SWELL DIRECTION
JANUARY 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
17.1 330 223
20.3 330 170
5.2 310 81
10.1 320 391
7.0 280 164
24.5 340 732
– 330 20
14.3 060 614
20.5 030 461
11.9 350 105
21.3 010 263
28.3 150 614
23.5 080 208
22.8 070 537
29.5 040 199
29.3 020 428
26.9 360 118
10.3 030 16
28.4 130 559
22.2 080 822
28.3 060 855
36.9 040 714
36.5 030 369
20.4 020 179
24.0 010 389
16.9 050 30
24.4 060 25
16.1 050 18
45.5
42.3 050 28
38.6 050 357
29.2 040 88
35.1 030 271
30.6 020 553
25.3 040 617
35.9 040 1059
42.8 050 931
43.9 050 1035
40.2 050 946
13.5 050 332
36.0 050 12
39.3 060 355
39.0 040 170
19.6 030 30
29.9 030 50
36.4 040 48
42.6 050 34
36.1 040 84
37.4 040 119
45.9 020 226
37.3 030 155
10.0 010 124
41.6 050 113
33.2 030 241
31.0 030 30
29.6 010 49
28.1 350 27
29.7 010 64
41.0 350 129
42.3 030 52
45.7 340 289
37.4 340 112
37.1 160 54
69.2 180 65
24.2 030 157
27.9 020 135
33.3 060 32
25.0 110 63
20.9 110 50
29.3 300 57
52.8 260 424
44.7 230 246
53.2 150 71
32.1 230 78
47.4 190 56
51.4 180 35
21.0 010 253
18.7 020 64
37.4 100 60
37.9 120 44
61.3 100 29
53.0 130 198
53.8 130 125
54.5 150 22
54.1 140 86
57.9 140 107
48.3 150 154
59.1 150 125

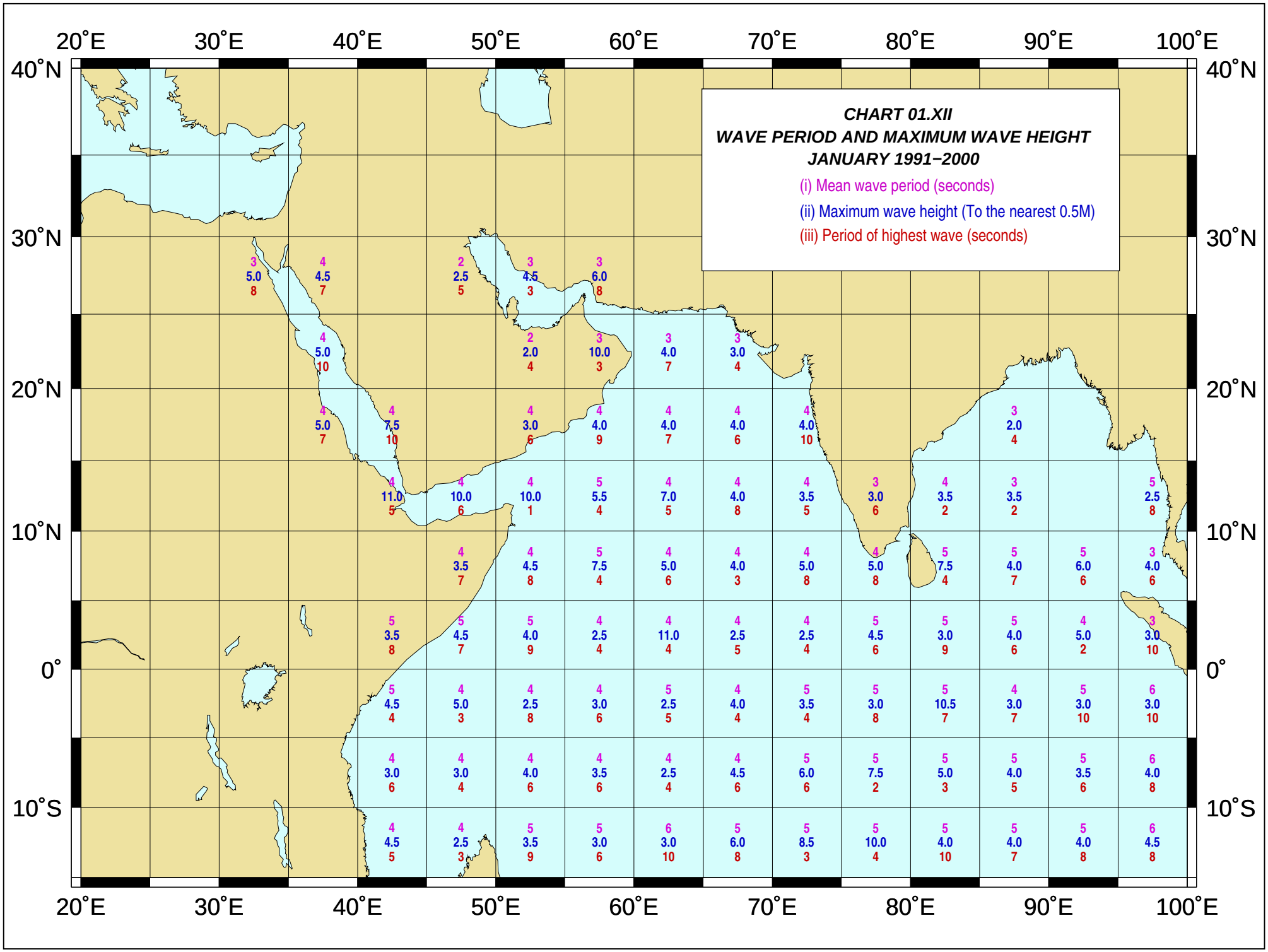


CHART 01.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
JANUARY 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S

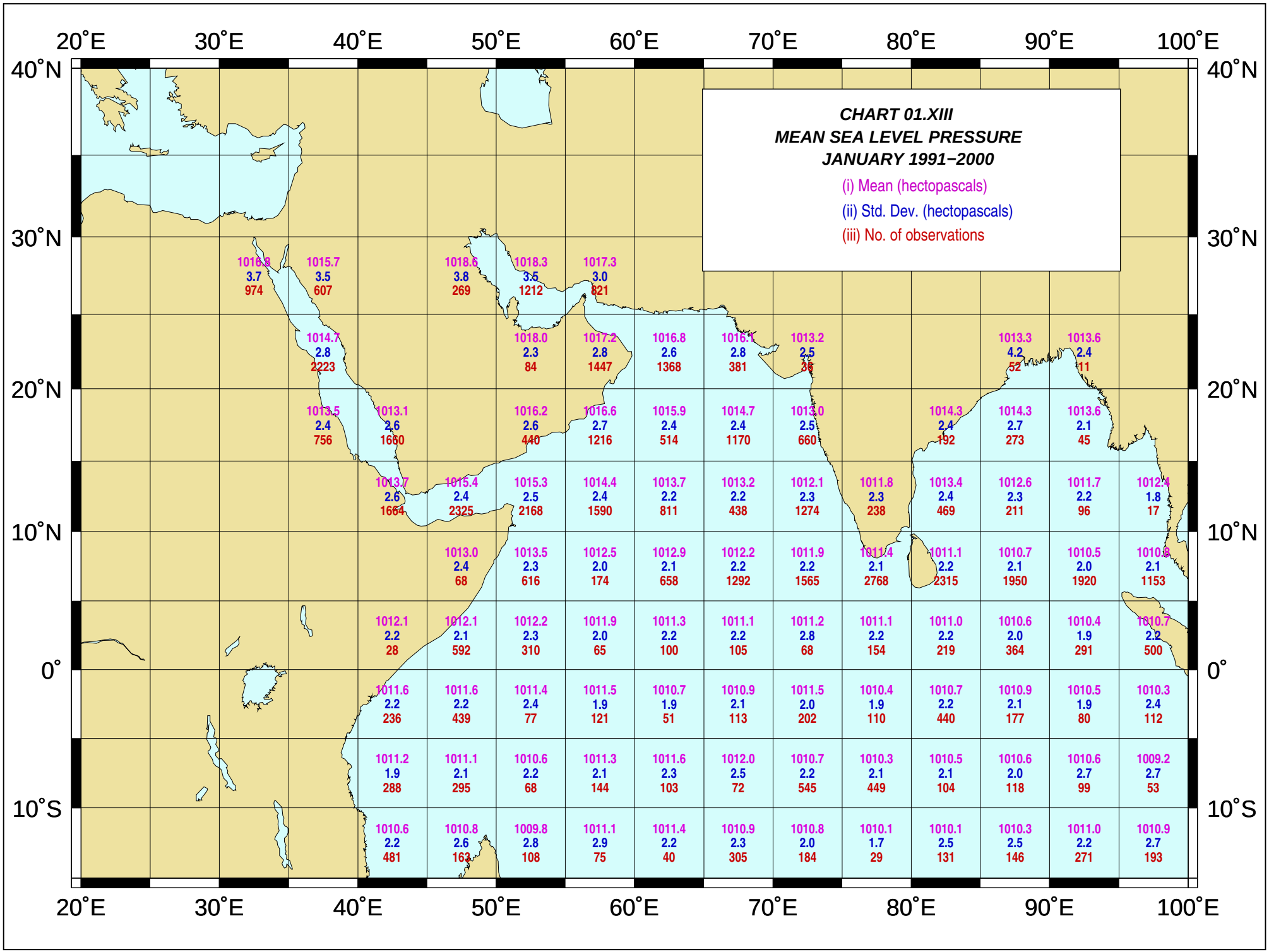


CHART 01.XIII
MEAN SEA LEVEL PRESSURE
JANUARY 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1016.3 3.7 974
1015.7 3.5 607
1018.6 3.8 269
1018.3 3.5 1212
1017.3 3.0 821
1014.7 2.8 2223
1018.0 2.3 84
1017.2 2.8 1447
1016.8 2.6 1368
1016.1 2.8 381
1013.2 2.5 36
1013.3 4.2 52
1013.6 2.4 11
1013.5 2.4 756
1013.1 2.6 1660
1016.2 2.6 440
1016.6 2.7 1216
1015.9 2.4 514
1014.7 2.4 1170
1013.0 2.5 660
1014.3 2.4 192
1014.3 2.7 273
1013.6 2.1 45
1013.7 2.6 1664
1015.4 2.4 2325
1015.3 2.5 2168
1014.4 2.4 1590
1013.7 2.2 811
1013.2 2.2 438
1012.1 2.3 1274
1011.8 2.3 238
1013.4 2.4 469
1012.6 2.3 211
1011.7 2.2 96
1012.4 1.8 17
1013.0 2.4 68
1013.5 2.3 616
1012.5 2.0 174
1012.9 2.1 658
1012.2 2.2 1292
1011.9 2.2 1565
1011.4 2.1 2768
1011.1 2.2 2315
1010.7 2.1 1950
1010.5 2.0 1920
1010.8 2.1 1153
1012.1 2.2 28
1012.1 2.1 592
1012.2 2.3 310
1011.9 2.0 65
1011.3 2.2 100
1011.1 2.2 105
1011.2 2.8 68
1011.1 2.2 154
1011.0 2.2 219
1010.6 2.0 364
1010.4 1.9 291
1010.7 2.2 500
1011.6 2.2 236
1011.6 2.2 439
1011.4 2.4 77
1011.5 1.9 121
1010.7 1.9 51
1010.9 2.1 113
1011.5 2.0 202
1010.4 1.9 110
1010.7 2.2 440
1010.9 2.1 177
1010.5 1.9 80
1010.3 2.4 112
1011.2 1.9 288
1011.1 2.1 295
1010.6 2.2 68
1011.3 2.1 144
1011.6 2.3 103
1012.0 2.5 72
1010.7 2.2 545
1010.3 2.1 449
1010.5 2.1 104
1010.6 2.0 118
1010.6 2.7 99
1009.2 2.7 53
1010.6 2.2 481
1010.8 2.6 163
1009.8 2.8 108
1011.1 2.9 75
1011.4 2.2 40
1010.9 2.3 305
1010.8 2.0 184
1010.1 1.7 29
1010.1 2.5 131
1010.3 2.5 146
1011.0 2.2 271
1010.9 2.7 193

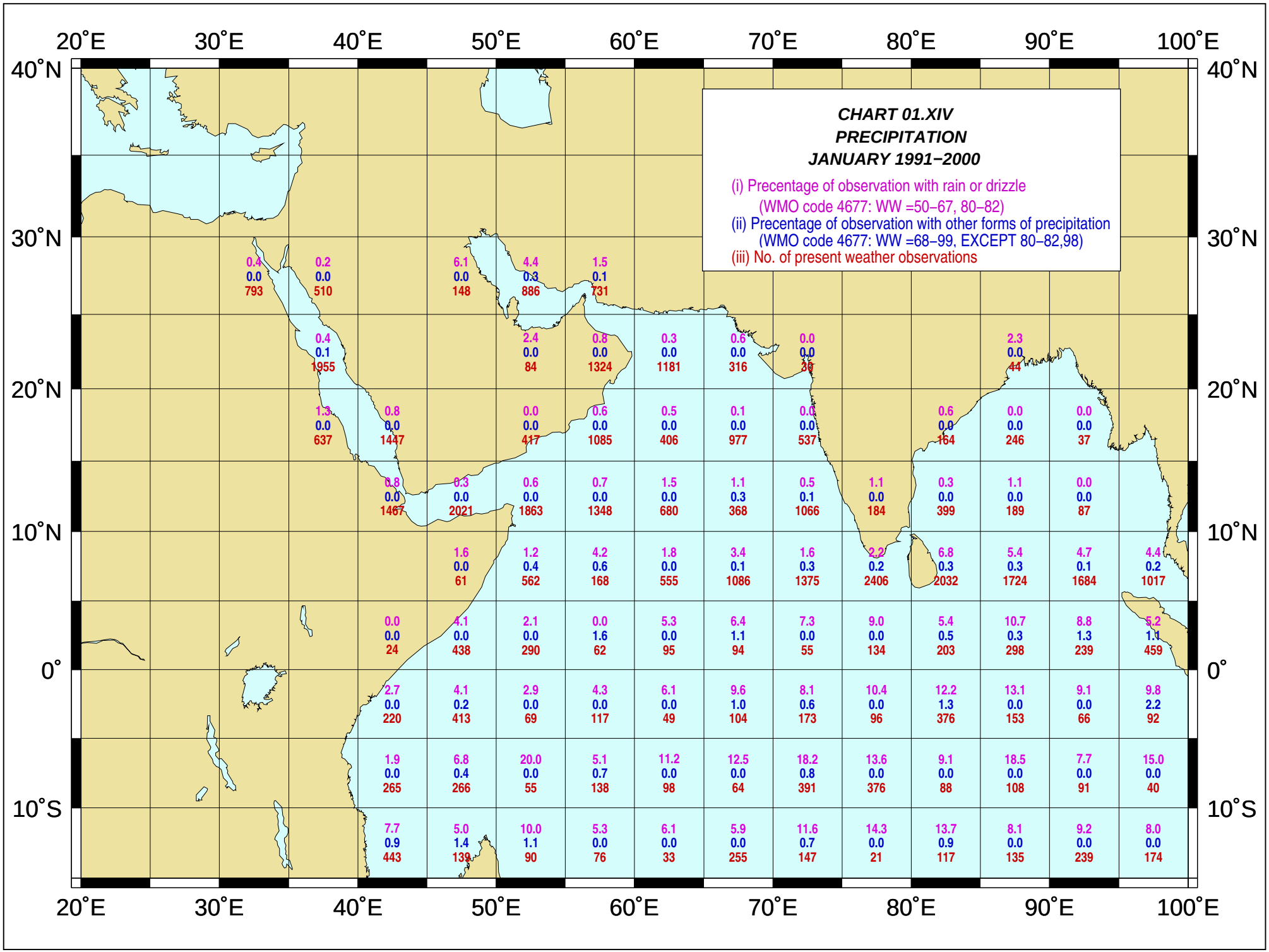


CHART 01.XIV
PRECIPITATION
JANUARY 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.4 0.0 793
0.2 0.0 510
6.1 0.0 148
4.4 0.3 886
1.5 0.1 731
0.4 0.1 1955
2.4 0.0 84
0.8 0.0 1324
0.3 0.0 1181
0.6 0.0 316
0.0 0.0 30
2.3 0.0 44
1.3 0.0 637
0.8 0.0 1447
0.0 0.0 417
0.6 0.0 1085
0.5 0.0 406
0.1 0.0 977
0.0 0.0 537
0.6 0.0 164
0.0 0.0 246
0.0 0.0 37
0.8 0.0 1467
0.3 0.0 2021
0.6 0.0 1863
0.7 0.0 1348
1.5 0.0 680
1.1 0.3 368
0.5 0.1 1066
1.1 0.0 184
0.3 0.0 399
1.1 0.0 189
0.0 0.0 87
1.6 0.0 61
1.2 0.4 562
4.2 0.6 168
1.8 0.0 555
3.4 0.1 1086
1.6 0.3 1375
2.2 0.2 2406
6.8 0.3 2032
5.4 0.3 1724
4.7 0.1 1684
4.4 0.2 1017
0.0 0.0 24
4.1 0.0 438
2.1 0.0 290
0.0 1.6 62
5.3 0.0 95
6.4 1.1 94
7.3 0.0 55
9.0 0.0 134
5.4 0.5 203
10.7 0.3 298
8.8 1.3 239
5.2 1.1 459
2.7 0.0 220
4.1 0.2 413
2.9 0.0 69
4.3 0.0 117
6.1 0.0 49
9.6 1.0 104
8.1 0.6 173
10.4 0.0 96
12.2 1.3 376
13.1 0.0 153
9.1 0.0 66
9.8 2.2 92
1.9 0.0 265
6.8 0.4 266
20.0 0.0 55
5.1 0.7 138
11.2 0.0 98
12.5 0.0 64
18.2 0.8 391
13.6 0.0 376
9.1 0.0 88
18.5 0.0 108
7.7 0.0 91
15.0 0.0 40
7.7 0.9 443
5.0 1.4 139
10.0 1.1 90
5.3 0.0 76
6.1 0.0 33
5.9 0.0 255
11.6 0.7 147
14.3 0.0 21
13.7 0.9 117
8.1 0.0 135
9.2 0.0 239
8.0 0.0 174

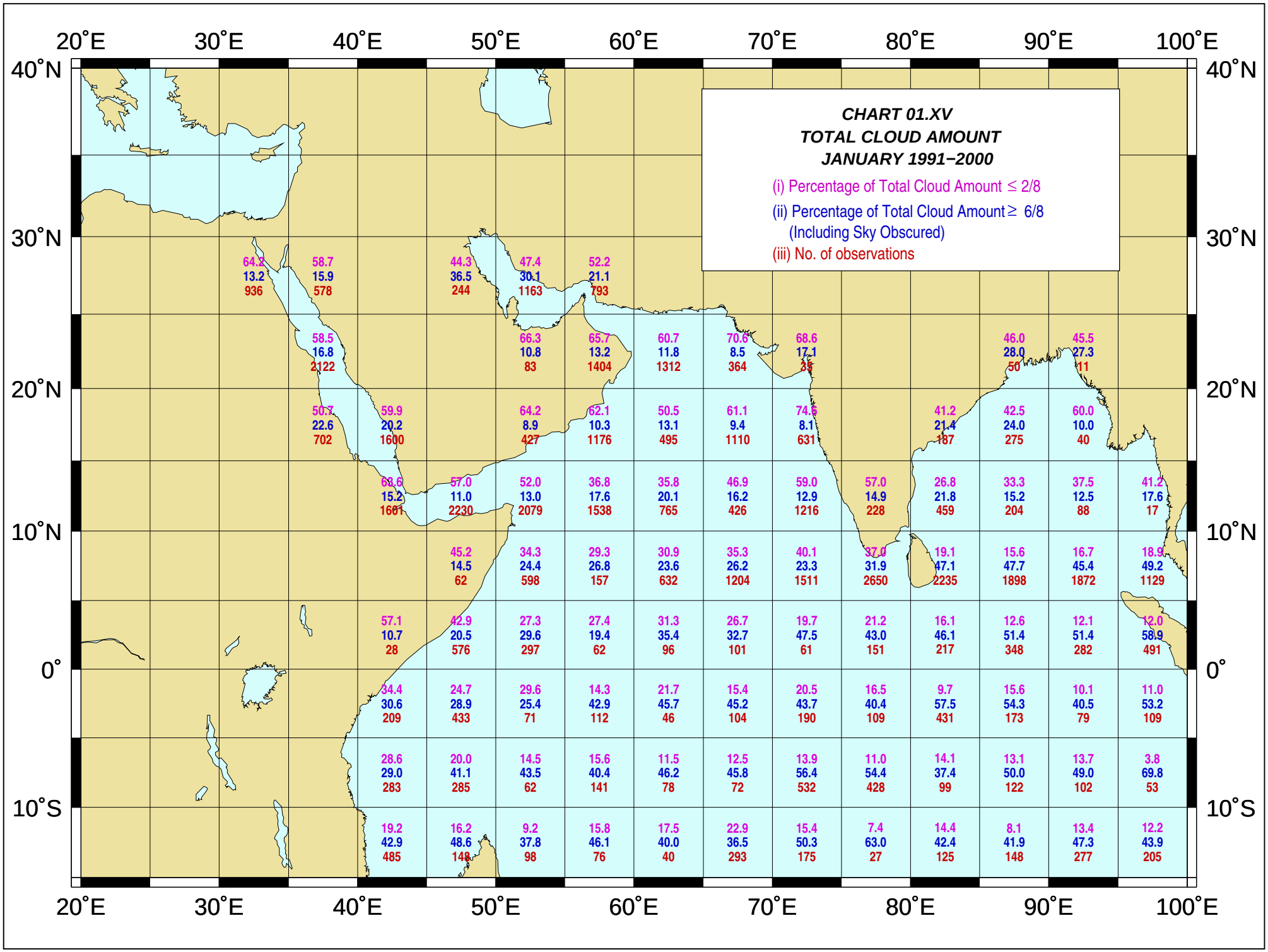


CHART 01.XV
TOTAL CLOUD AMOUNT
JANUARY 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
64.2 13.2 936
58.7 15.9 578
44.3 36.5 244
47.4 30.1 1163
52.2 21.1 793
58.5 16.8 2122
66.3 10.8 83
65.7 13.2 1404
60.7 11.8 1312
70.6 8.5 364
68.6 17.1 35
46.0 28.0 50
45.5 27.3 11
50.7 22.6 702
59.9 20.2 1600
64.2 8.9 427
62.1 10.3 1176
50.5 13.1 495
61.1 9.4 1110
74.6 8.1 631
41.2 21.4 187
42.5 24.0 275
60.0 10.0 40
60.6 15.2 1601
57.0 11.0 2230
52.0 13.0 2079
36.8 17.6 1538
35.8 20.1 765
46.9 16.2 426
59.0 12.9 1216
57.0 14.9 228
26.8 21.8 459
33.3 15.2 204
37.5 12.5 88
41.2 17.6 17
45.2 14.5 62
34.3 24.4 598
29.3 26.8 157
30.9 23.6 632
35.3 26.2 1204
40.1 23.3 1511
37.0 31.9 2650
19.1 47.1 2235
15.6 47.7 1898
16.7 45.4 1872
18.9 49.2 1129
57.1 10.7 28
42.9 20.5 576
27.3 29.6 297
27.4 19.4 62
31.3 35.4 96
26.7 32.7 101
19.7 47.5 61
21.2 43.0 151
16.1 46.1 217
12.6 51.4 348
12.1 51.4 282
12.0 58.9 491
34.4 30.6 209
24.7 28.9 433
29.6 25.4 71
14.3 42.9 112
21.7 45.7 46
15.4 45.2 104
20.5 43.7 190
16.5 40.4 109
9.7 57.5 431
15.6 54.3 173
10.1 40.5 79
11.0 53.2 109
28.6 29.0 283
20.0 41.1 285
14.5 43.5 62
15.6 40.4 141
11.5 46.2 78
12.5 45.8 72
13.9 56.4 532
11.0 54.4 428
14.1 37.4 99
13.1 50.0 122
13.7 49.0 102
3.8 69.8 53
19.2 42.9 485
16.2 48.6 148
9.2 37.8 98
15.8 46.1 76
17.5 40.0 40
22.9 36.5 293
15.4 50.3 175
7.4 63.0 27
14.4 42.4 125
8.1 41.9 148
13.4 47.3 277
12.2 43.9 205

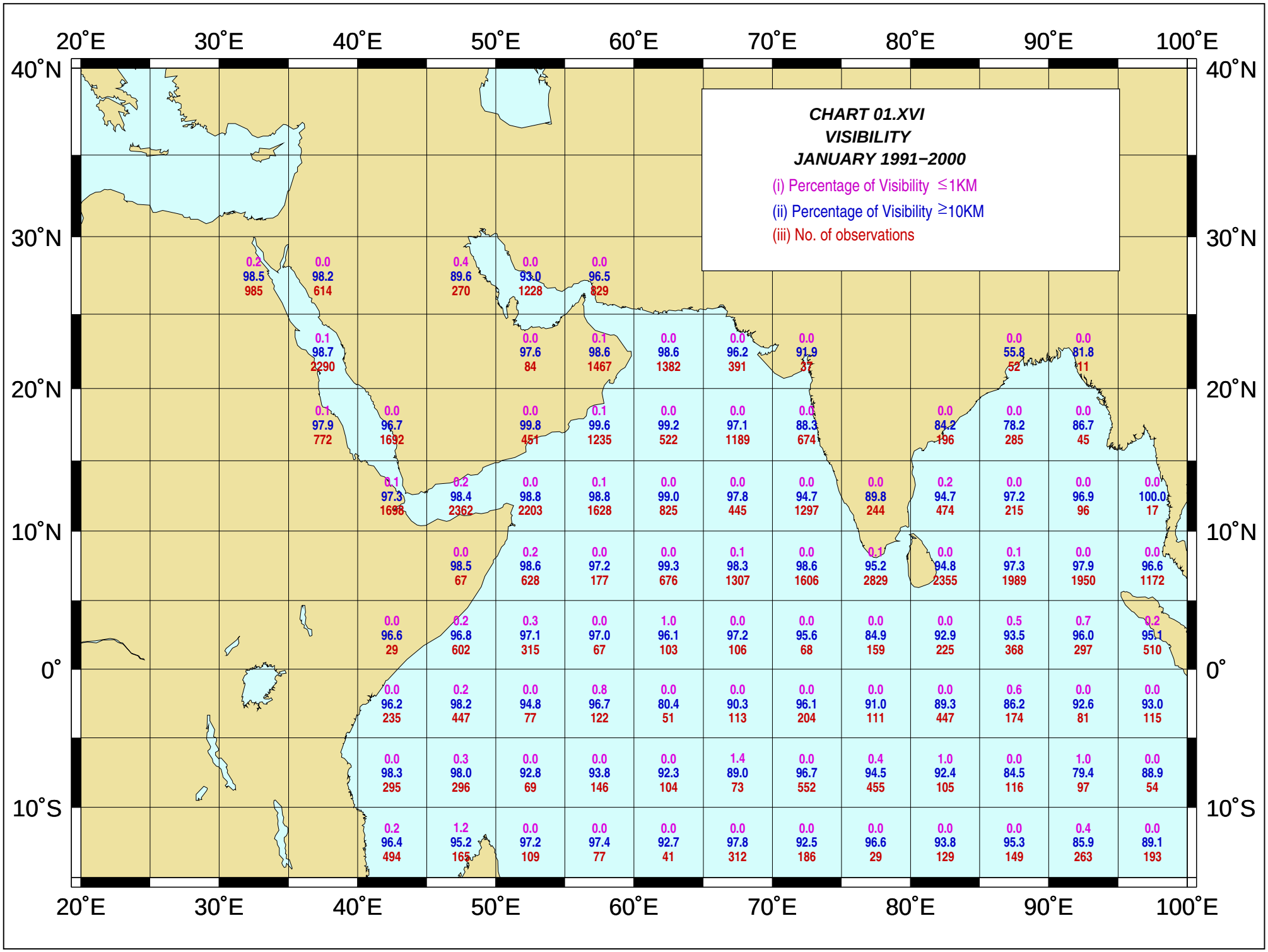


CHART 01.XVI
VISIBILITY
JANUARY 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.2 98.5 985
0.0 98.2 614
0.4 89.6 270
0.0 93.0 1228
0.0 96.5 829
0.1 98.7 2290
0.0 97.6 84
0.1 98.6 1467
0.0 98.6 1382
0.0 96.2 391
0.0 91.9 37
0.0 55.8 52
0.0 81.8 11
0.1 97.9 772
0.0 96.7 1692
0.0 99.8 451
0.1 99.6 1235
0.0 99.2 522
0.0 97.1 1189
0.0 88.3 674
0.0 84.2 196
0.0 78.2 285
0.0 86.7 45
0.1 97.3 1698
0.2 98.4 2362
0.0 98.8 2203
0.1 98.8 1628
0.0 99.0 825
0.0 97.8 445
0.0 94.7 1297
0.0 89.8 244
0.2 94.7 474
0.0 97.2 215
0.0 96.9 96
0.0 100.0 17
0.0 98.5 67
0.2 98.6 628
0.0 97.2 177
0.0 99.3 676
0.1 98.3 1307
0.0 98.6 1606
0.1 95.2 2829
0.0 94.8 2355
0.1 97.3 1989
0.0 97.9 1950
0.0 96.6 1172
0.0 96.6 29
0.2 96.8 602
0.3 97.1 315
0.0 97.0 67
1.0 96.1 103
0.0 97.2 106
0.0 95.6 68
0.0 84.9 159
0.0 92.9 225
0.5 93.5 368
0.7 96.0 297
0.2 95.1 510
0.0 96.2 235
0.2 98.2 447
0.0 94.8 77
0.8 96.7 122
0.0 80.4 51
0.0 90.3 113
0.0 96.1 204
0.0 91.0 111
0.0 89.3 447
0.6 86.2 174
0.0 92.6 81
0.0 93.0 115
0.0 98.3 295
0.3 98.0 296
0.0 92.8 69
0.0 93.8 146
0.0 92.3 104
1.4 89.0 73
0.0 96.7 552
0.4 94.5 455
1.0 92.4 105
0.0 84.5 116
1.0 79.4 97
0.0 88.9 54
0.2 96.4 494
1.2 95.2 165
0.0 97.2 109
0.0 97.4 77
0.0 92.7 41
0.0 97.8 312
0.0 92.5 186
0.0 96.6 29
0.0 93.8 129
0.0 95.3 149
0.4 85.9 263
0.0 89.1 193

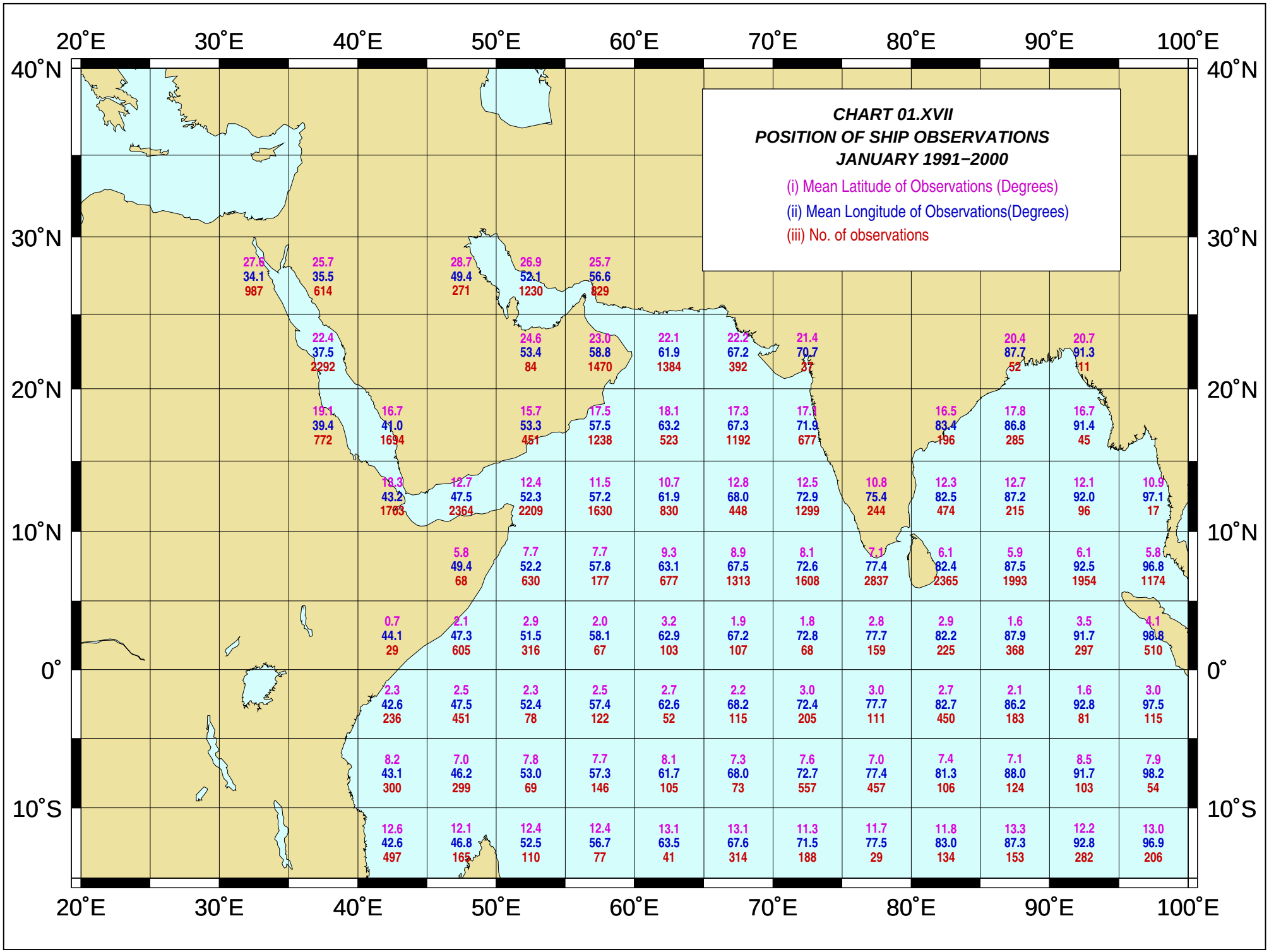


CHART 01.XVII
POSITION OF SHIP OBSERVATIONS
JANUARY 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.6 34.1 987
25.7 35.5 614
28.7 49.4 271
26.9 52.1 1230
25.7 56.6 829
22.4 37.5 2292
24.6 53.4 84
23.0 58.8 1470
22.1 61.9 1384
22.2 67.2 392
21.4 70.7 37
20.4 87.7 52
20.7 91.3 11
19.1 39.4 772
16.7 41.0 1694
15.7 53.3 451
17.5 57.5 1238
18.1 63.2 523
17.3 67.3 1192
17.1 71.9 677
16.5 83.4 196
17.8 86.8 285
16.7 91.4 45
10.3 43.2 1703
12.7 47.5 2364
12.4 52.3 2209
11.5 57.2 1630
10.7 61.9 830
12.8 68.0 448
12.5 72.9 1299
10.8 75.4 244
12.3 82.5 474
12.7 87.2 215
12.1 92.0 96
10.9 97.1 17
5.8 49.4 68
7.7 52.2 630
7.7 57.8 177
9.3 63.1 677
8.9 67.5 1313
8.1 72.6 1608
7.1 77.4 2837
6.1 82.4 2365
5.9 87.5 1993
6.1 92.5 1954
5.8 96.8 1174
0.7 44.1 29
2.1 47.3 605
2.9 51.5 316
2.0 58.1 67
3.2 62.9 103
1.9 67.2 107
1.8 72.8 68
2.8 77.7 159
2.9 82.2 225
1.6 87.9 368
3.5 91.7 297
4.1 98.8 510
2.3 42.6 236
2.5 47.5 451
2.3 52.4 78
2.5 57.4 122
2.7 62.6 52
2.2 68.2 115
3.0 72.4 205
3.0 77.7 111
2.7 82.7 450
2.1 86.2 183
1.6 92.8 81
3.0 97.5 115
8.2 43.1 300
7.0 46.2 299
7.8 53.0 69
7.7 57.3 146
8.1 61.7 105
7.3 68.0 73
7.6 72.7 557
7.0 77.4 457
7.4 81.3 106
7.1 88.0 124
8.5 91.7 103
7.9 98.2 54
12.6 42.6 497
12.1 46.8 165
12.4 52.5 110
12.4 56.7 77
13.1 63.5 41
13.1 67.6 314
11.3 71.5 188
11.7 77.5 29
11.8 83.0 134
13.3 87.3 153
12.2 92.8 282
13.0 96.9 206

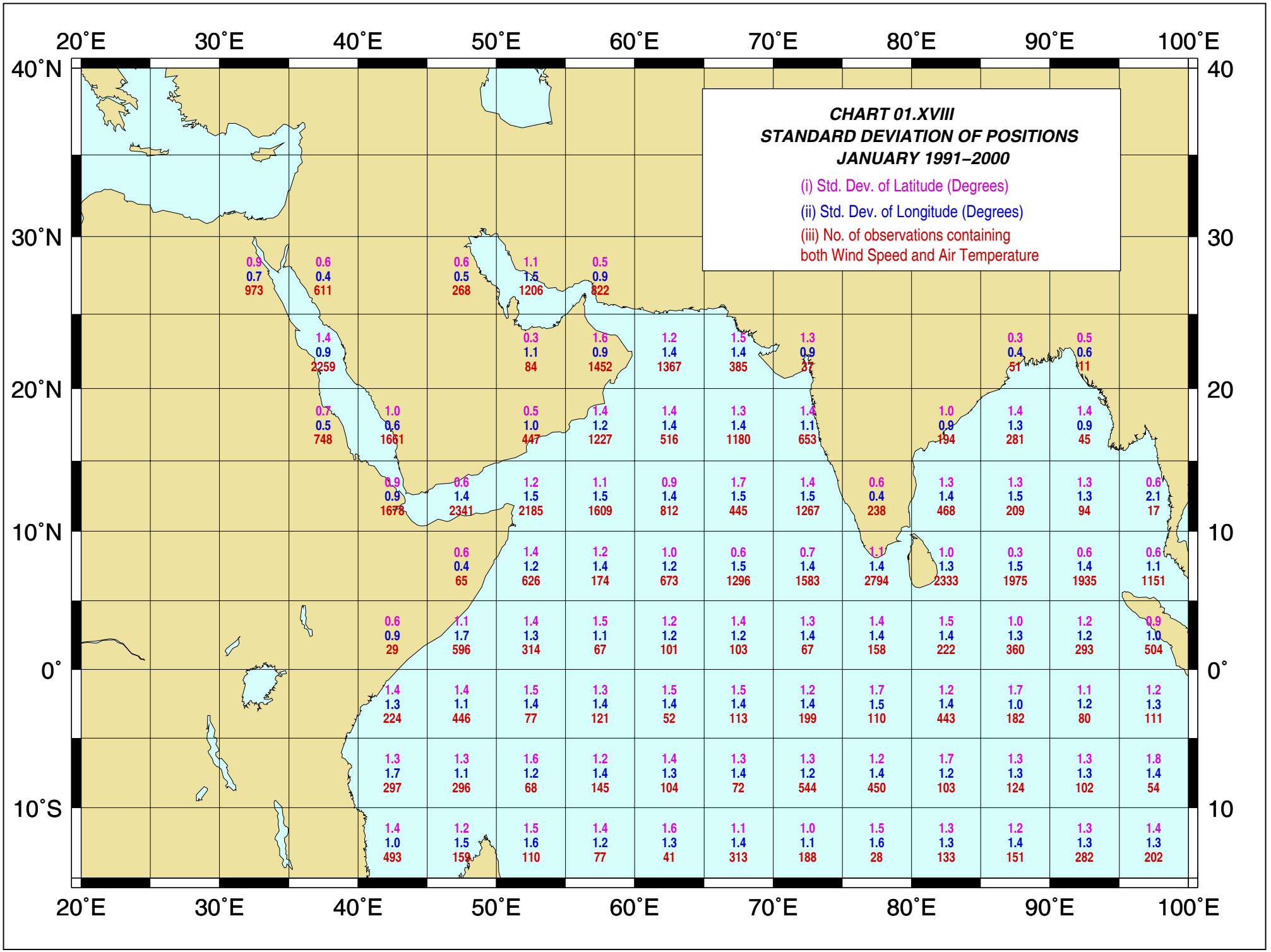
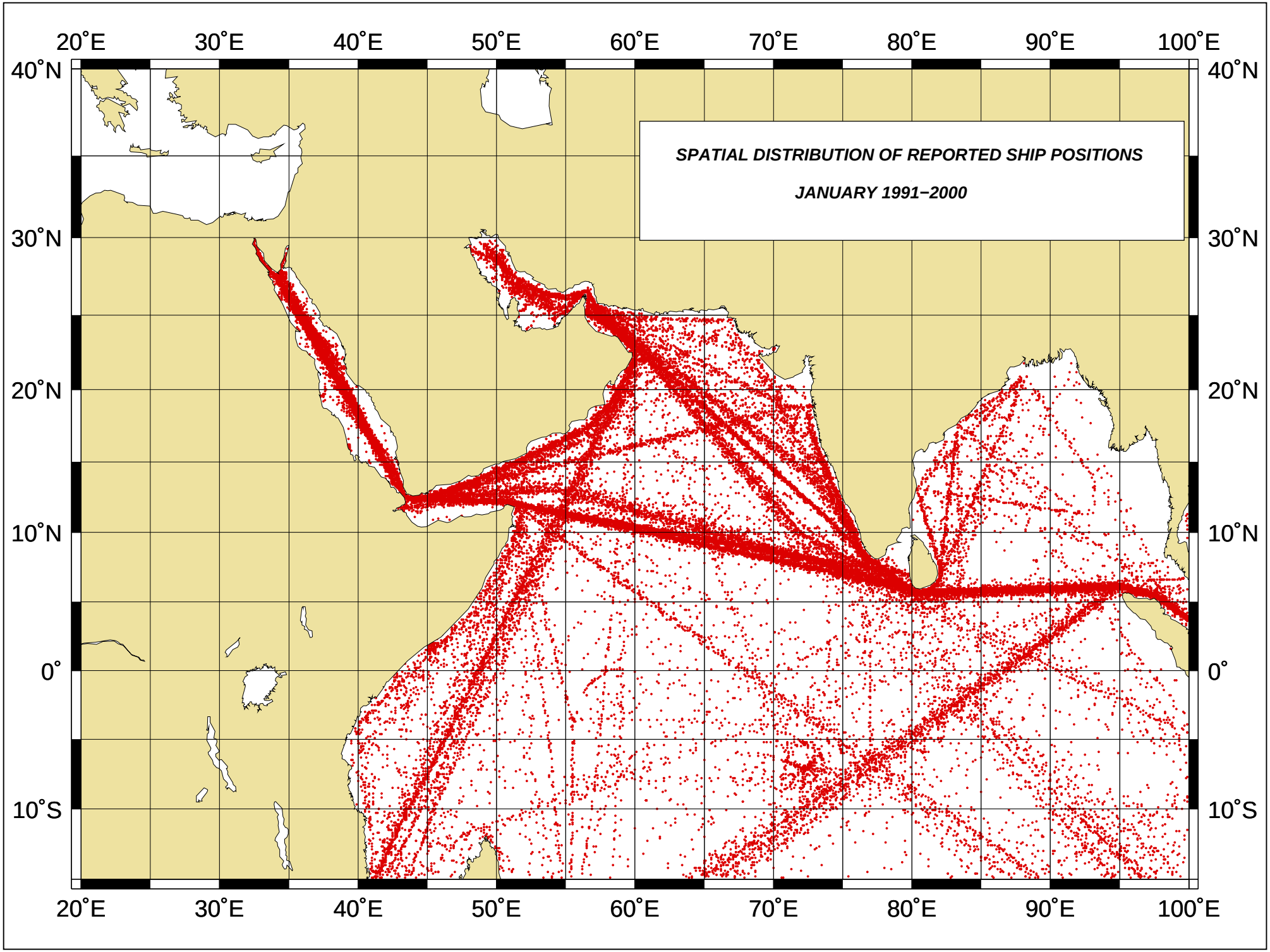
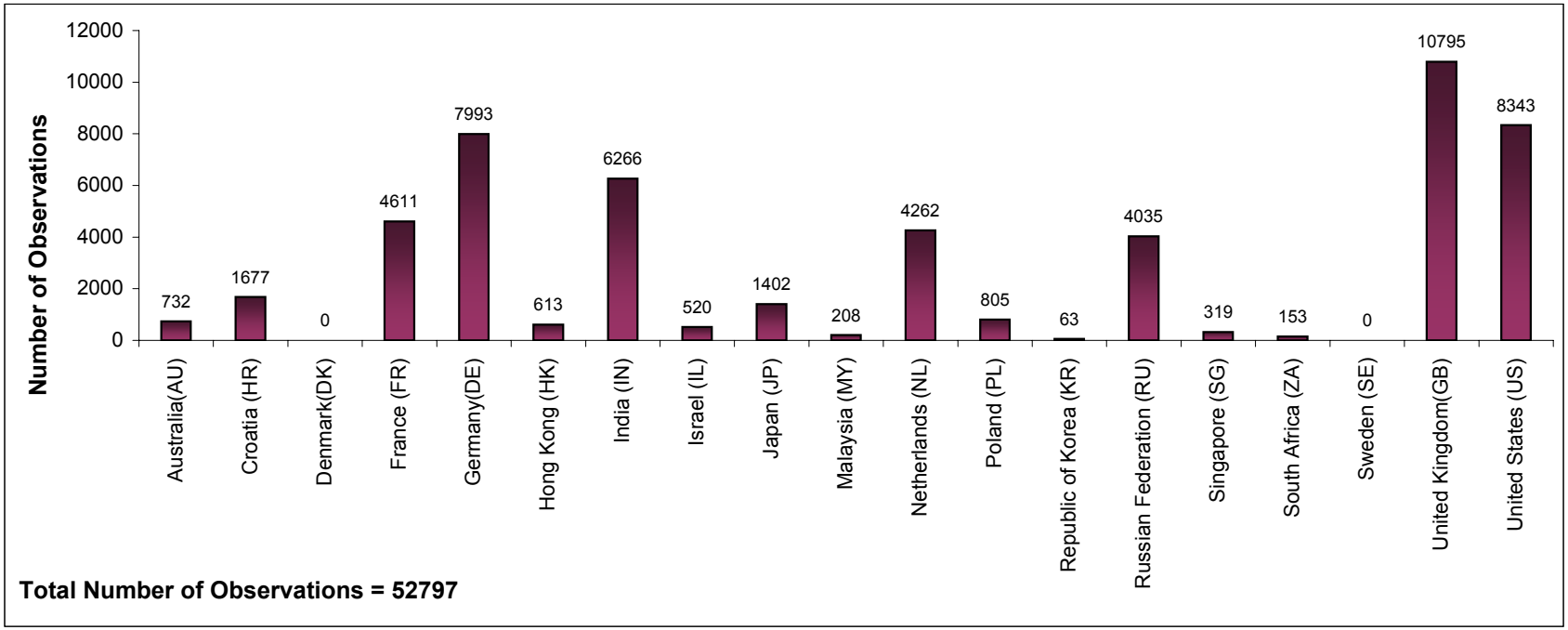


CHART 01.XVIII
STANDARD DEVIATION OF POSITIONS
JANUARY 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.9 0.7 973
0.6 0.4 611
0.6 0.5 268
1.1 1.5 1206
0.5 0.9 822
1.4 0.9 2259
0.3 1.1 84
1.6 0.9 1452
1.2 1.4 1367
1.5 1.4 385
1.3 0.9 37
0.3 0.4 51
0.5 0.6 11
0.7 0.5 748
1.0 0.6 1661
0.5 1.0 447
1.4 1.2 1227
1.4 1.4 516
1.3 1.4 1180
1.4 1.1 653
1.0 0.9 194
1.4 1.3 281
1.4 0.9 45
0.9 0.9 1678
0.6 1.4 2341
1.2 1.5 2185
1.1 1.5 1609
0.9 1.4 812
1.7 1.5 445
1.4 1.5 1267
0.6 0.4 238
1.3 1.4 468
1.3 1.5 209
1.3 1.3 94
0.6 2.1 17
0.6 0.4 65
1.4 1.2 626
1.2 1.4 174
1.0 1.2 673
0.6 1.5 1296
0.7 1.4 1583
1.1 1.4 2794
1.0 1.3 2333
0.3 1.5 1975
0.6 1.4 1935
0.6 1.1 1151
0.6 0.9 29
1.1 1.7 596
1.4 1.3 314
1.5 1.1 67
1.2 1.2 101
1.4 1.2 103
1.3 1.4 67
1.4 1.4 158
1.5 1.4 222
1.0 1.3 360
1.2 1.2 293
0.9 1.0 504
1.4 1.3 224
1.4 1.1 446
1.5 1.4 77
1.3 1.4 121
1.5 1.4 52
1.5 1.4 113
1.2 1.4 199
1.7 1.5 110
1.2 1.4 443
1.7 1.0 182
1.1 1.2 80
1.2 1.3 111
1.3 1.7 297
1.3 1.1 296
1.6 1.2 68
1.2 1.4 145
1.4 1.3 104
1.3 1.4 72
1.3 1.2 544
1.2 1.4 450
1.7 1.2 103
1.3 1.3 124
1.3 1.3 102
1.8 1.4 54
1.4 1.0 493
1.2 1.5 159
1.5 1.6 110
1.4 1.2 77
1.6 1.3 41
1.1 1.4 313
1.0 1.1 188
1.5 1.6 28
1.3 1.3 133
1.2 1.4 151
1.3 1.3 282
1.4 1.3 202


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
JANUARY 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

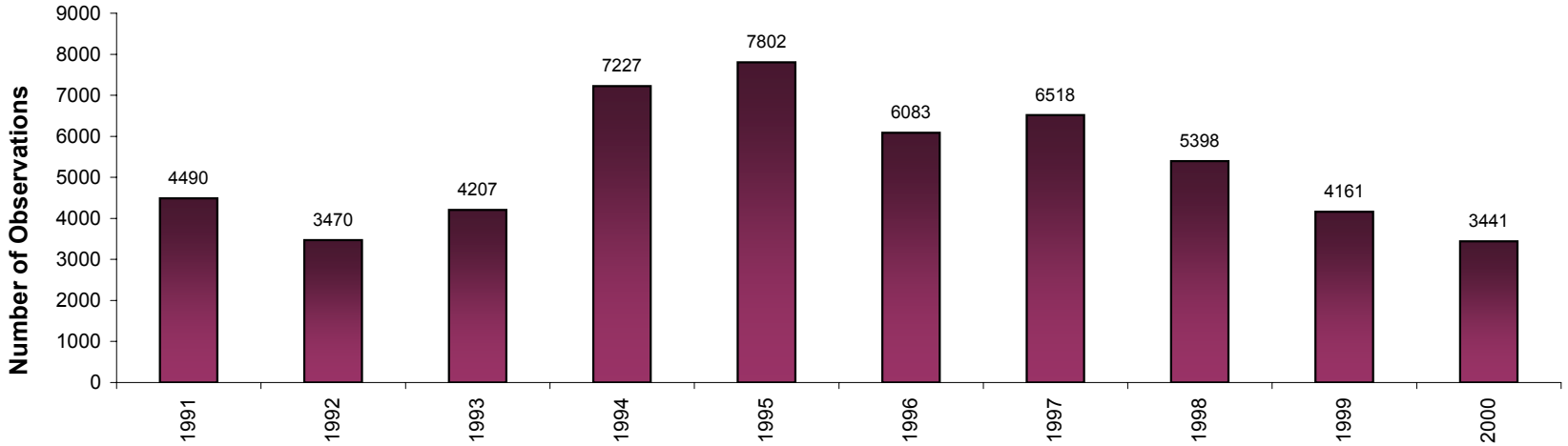
JANUARY : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52797

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52797

Marine Climatological Summary Charts 1991-2000

CHARTS OF FEBRUARY 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

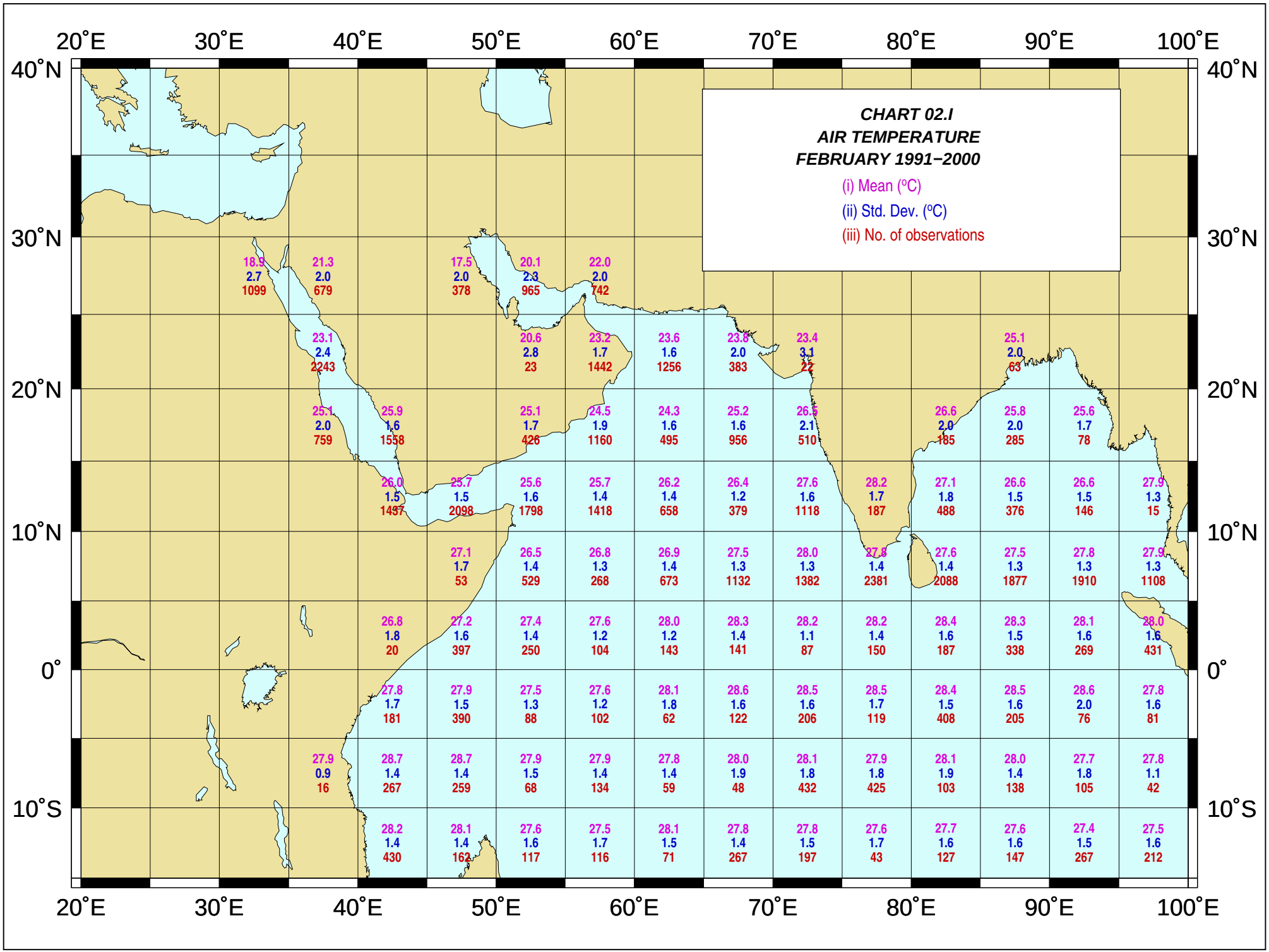


CHART 02.I
AIR TEMPERATURE
FEBRUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
18.9 2.7 1099
21.3 2.0 679
17.5 2.0 378
20.1 2.3 965
22.0 2.0 742
23.1 2.4 2243
20.6 2.8 23
23.2 1.7 1442
23.6 1.6 1256
23.8 2.0 383
23.4 3.1 22
25.1 2.0 63
25.1 2.0 759
25.9 1.6 1558
25.1 1.7 426
24.5 1.9 1160
24.3 1.6 495
25.2 1.6 956
26.3 2.1 510
26.6 2.0 185
25.8 2.0 285
25.6 1.7 78
26.0 1.5 1457
25.7 1.5 2098
25.6 1.6 1798
25.7 1.4 1418
26.2 1.4 658
26.4 1.2 379
27.6 1.6 1118
28.2 1.7 187
27.1 1.8 488
26.6 1.5 376
26.6 1.5 146
27.9 1.3 15
27.1 1.7 53
26.5 1.4 529
26.8 1.3 268
26.9 1.4 673
27.5 1.3 1132
28.0 1.3 1382
27.9 1.4 2381
27.6 1.4 2088
27.5 1.3 1877
27.8 1.3 1910
27.9 1.3 1108
26.8 1.8 20
27.2 1.6 397
27.4 1.4 250
27.6 1.2 104
28.0 1.2 143
28.3 1.4 141
28.2 1.1 87
28.2 1.4 150
28.4 1.6 187
28.3 1.5 338
28.1 1.6 269
28.0 1.6 431
27.8 1.7 181
27.9 1.5 390
27.5 1.3 88
27.6 1.2 102
28.1 1.8 62
28.6 1.6 122
28.5 1.6 206
28.5 1.7 119
28.4 1.5 408
28.5 1.6 205
28.6 2.0 76
27.8 1.6 81
27.9 0.9 16
28.7 1.4 267
28.7 1.4 259
27.9 1.5 68
27.9 1.4 134
27.8 1.4 59
28.0 1.9 48
28.1 1.8 432
27.9 1.8 425
28.1 1.9 103
28.0 1.4 138
27.7 1.8 105
27.8 1.1 42
28.2 1.4 430
28.1 1.4 162
27.6 1.6 117
27.5 1.7 116
28.1 1.5 71
27.8 1.4 267
27.8 1.5 197
27.6 1.7 43
27.7 1.6 127
27.6 1.6 147
27.4 1.5 267
27.5 1.6 212

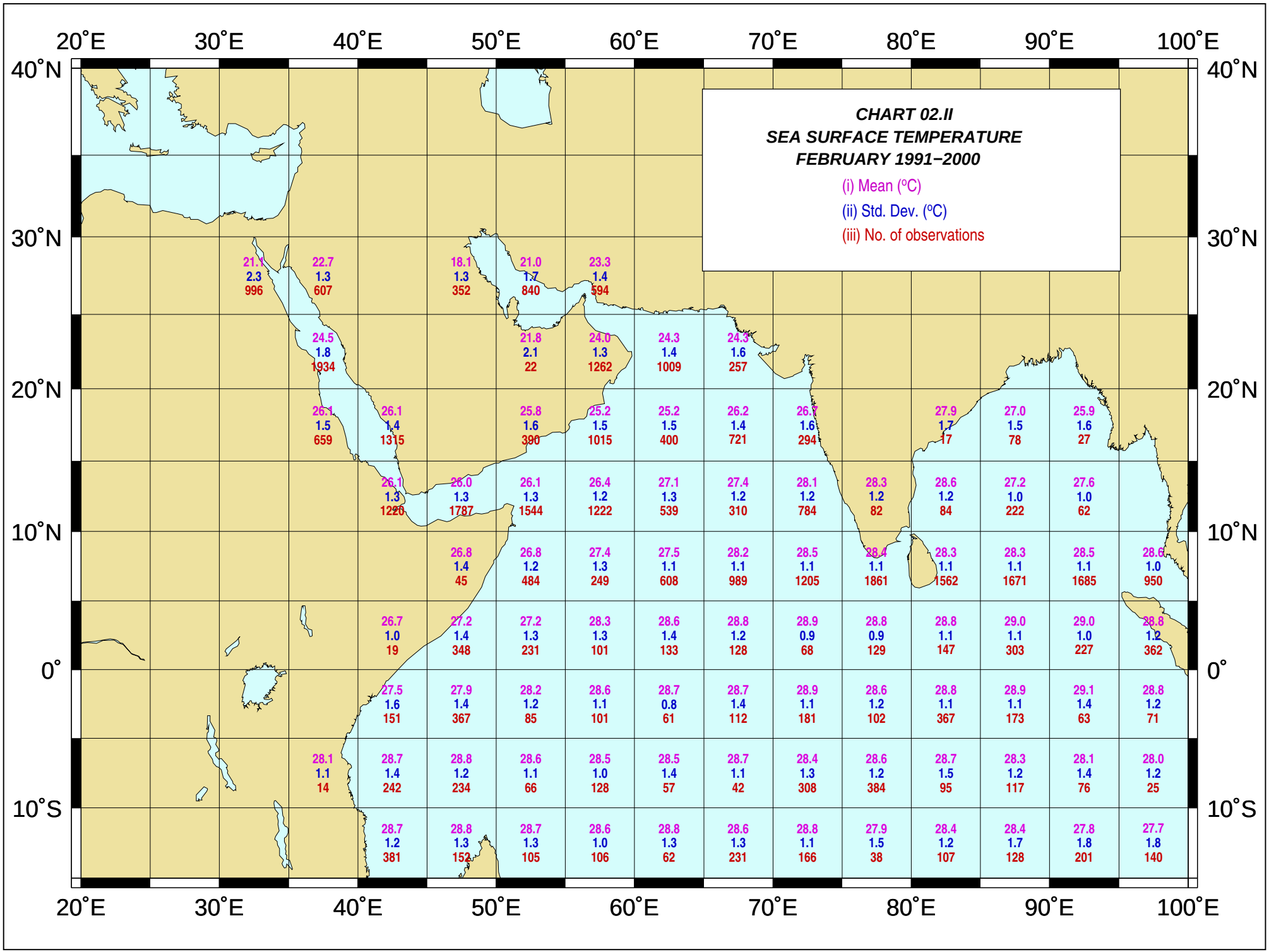


CHART 02.II
SEA SURFACE TEMPERATURE
FEBRUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
21.1 2.3 996
22.7 1.3 607
18.1 1.3 352
21.0 1.7 840
23.3 1.4 594
24.5 1.8 1934
21.8 2.1 22
24.0 1.3 1262
24.3 1.4 1009
24.3 1.6 257
26.1 1.5 659
26.1 1.4 1315
25.8 1.6 390
25.2 1.5 1015
25.2 1.5 400
26.2 1.4 721
26.7 1.6 294
27.9 1.7 17
27.0 1.5 78
25.9 1.6 27
26.1 1.3 1226
26.0 1.3 1787
26.1 1.3 1544
26.4 1.2 1222
27.1 1.3 539
27.4 1.2 310
28.1 1.2 784
28.3 1.2 82
28.6 1.2 84
27.2 1.0 222
27.6 1.0 62
26.8 1.4 45
26.8 1.2 484
27.4 1.3 249
27.5 1.1 608
28.2 1.1 989
28.5 1.1 1205
28.4 1.1 1861
28.3 1.1 1562
28.3 1.1 1671
28.5 1.1 1685
28.6 1.0 950
26.7 1.0 19
27.2 1.4 348
27.2 1.3 231
28.3 1.3 101
28.6 1.4 133
28.8 1.2 128
28.9 0.9 68
28.8 0.9 129
28.8 1.1 147
29.0 1.1 303
29.0 1.0 227
28.8 1.2 362
27.5 1.6 151
27.9 1.4 367
28.2 1.2 85
28.6 1.1 101
28.7 0.8 61
28.7 1.4 112
28.9 1.1 181
28.6 1.2 102
28.8 1.1 367
28.9 1.1 173
29.1 1.4 63
28.8 1.2 71
28.1 1.1 14
28.7 1.4 242
28.8 1.2 234
28.6 1.1 66
28.5 1.0 128
28.5 1.4 57
28.7 1.1 42
28.4 1.3 308
28.6 1.2 384
28.7 1.5 95
28.3 1.2 117
28.1 1.4 76
28.0 1.2 25
28.7 1.2 381
28.8 1.3 152
28.7 1.3 105
28.6 1.0 106
28.8 1.3 62
28.6 1.3 231
28.8 1.1 166
27.9 1.5 38
28.4 1.2 107
28.4 1.7 128
27.8 1.8 201
27.7 1.8 140

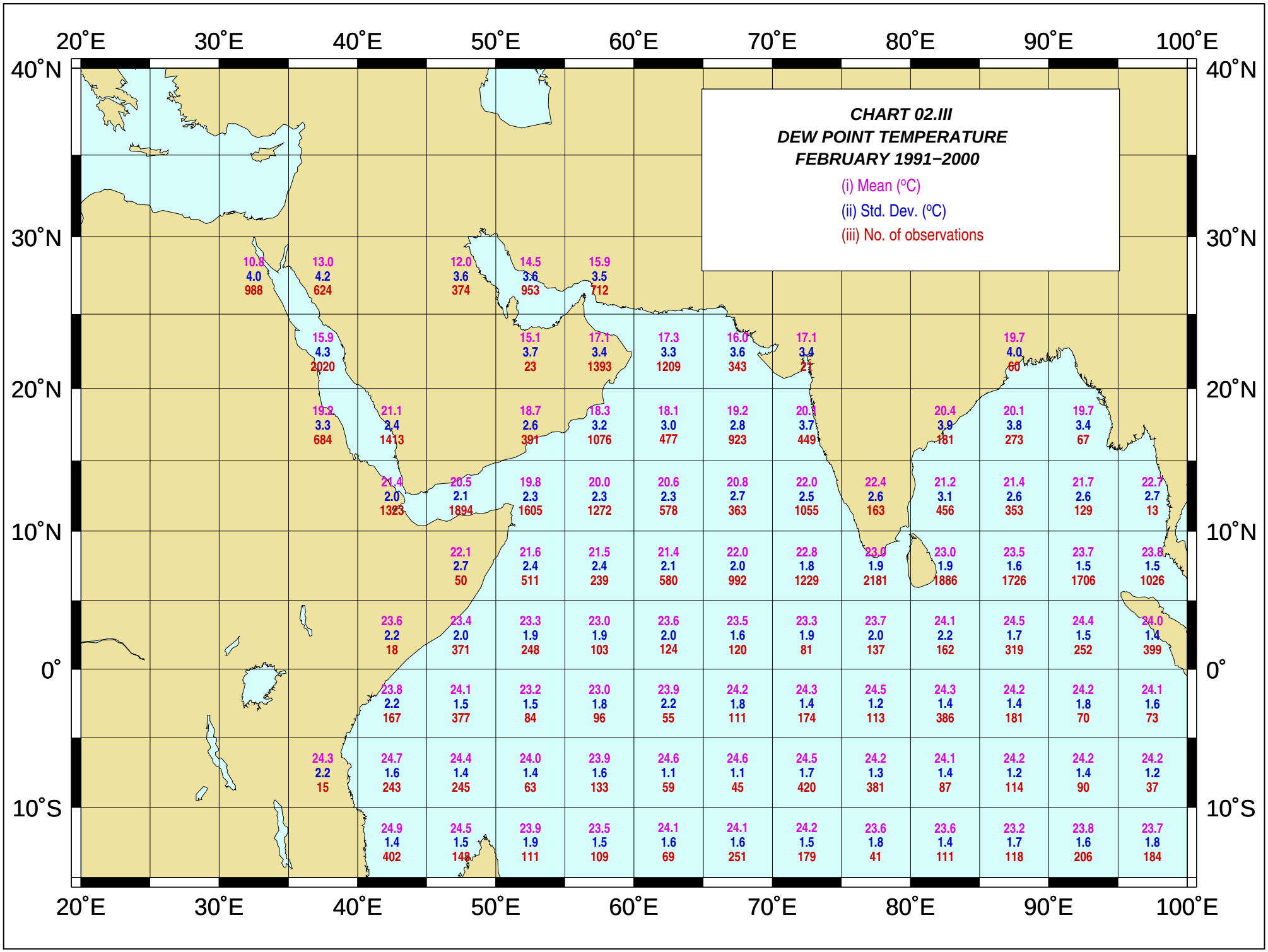


CHART 02.III
DEW POINT TEMPERATURE
FEBRUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
10.8 4.0 988
13.0 4.2 624
12.0 3.6 374
14.5 3.6 953
15.9 3.5 712
15.9 4.3 2020
15.1 3.7 23
17.1 3.4 1393
17.3 3.3 1209
16.0 3.6 343
17.1 3.4 21
19.7 4.0 60
19.2 3.3 684
21.1 2.4 1413
18.7 2.6 391
18.3 3.2 1076
18.1 3.0 477
19.2 2.8 923
20.4 3.9 181
20.1 3.8 273
19.7 3.4 67
21.4 2.0 1323
20.5 2.1 1894
19.8 2.3 1605
20.0 2.3 1272
20.6 2.3 578
20.8 2.7 363
22.0 2.5 1055
22.4 2.6 163
21.2 3.1 456
21.4 2.6 353
21.7 2.6 129
22.7 2.7 13
22.1 2.7 50
21.6 2.4 511
21.5 2.4 239
21.4 2.1 580
22.0 2.0 992
22.8 1.8 1229
23.0 1.9 2181
23.0 1.9 1886
23.5 1.6 1726
23.7 1.5 1706
23.8 1.5 1026
23.6 2.2 18
23.4 2.0 371
23.3 1.9 248
23.0 1.9 103
23.6 2.0 124
23.5 1.6 120
23.3 1.9 81
23.7 2.0 137
24.1 2.2 162
24.5 1.7 319
24.4 1.5 252
24.0 1.4 399
23.8 2.2 167
24.1 1.5 377
23.2 1.5 84
23.0 1.8 96
23.9 2.2 55
24.2 1.8 111
24.3 1.4 174
24.5 1.2 113
24.3 1.4 386
24.2 1.4 181
24.2 1.8 70
24.1 1.6 73
24.3 2.2 15
24.7 1.6 243
24.4 1.4 245
24.0 1.4 63
23.9 1.6 133
24.6 1.1 59
24.6 1.1 45
24.5 1.7 420
24.2 1.3 381
24.1 1.4 87
24.2 1.2 114
24.2 1.4 90
24.2 1.2 37
24.9 1.4 402
24.5 1.5 148
23.9 1.9 111
23.5 1.5 109
24.1 1.6 69
24.1 1.6 251
24.2 1.5 179
23.6 1.8 41
23.6 1.4 111
23.2 1.7 118
23.8 1.6 206
23.7 1.8 184

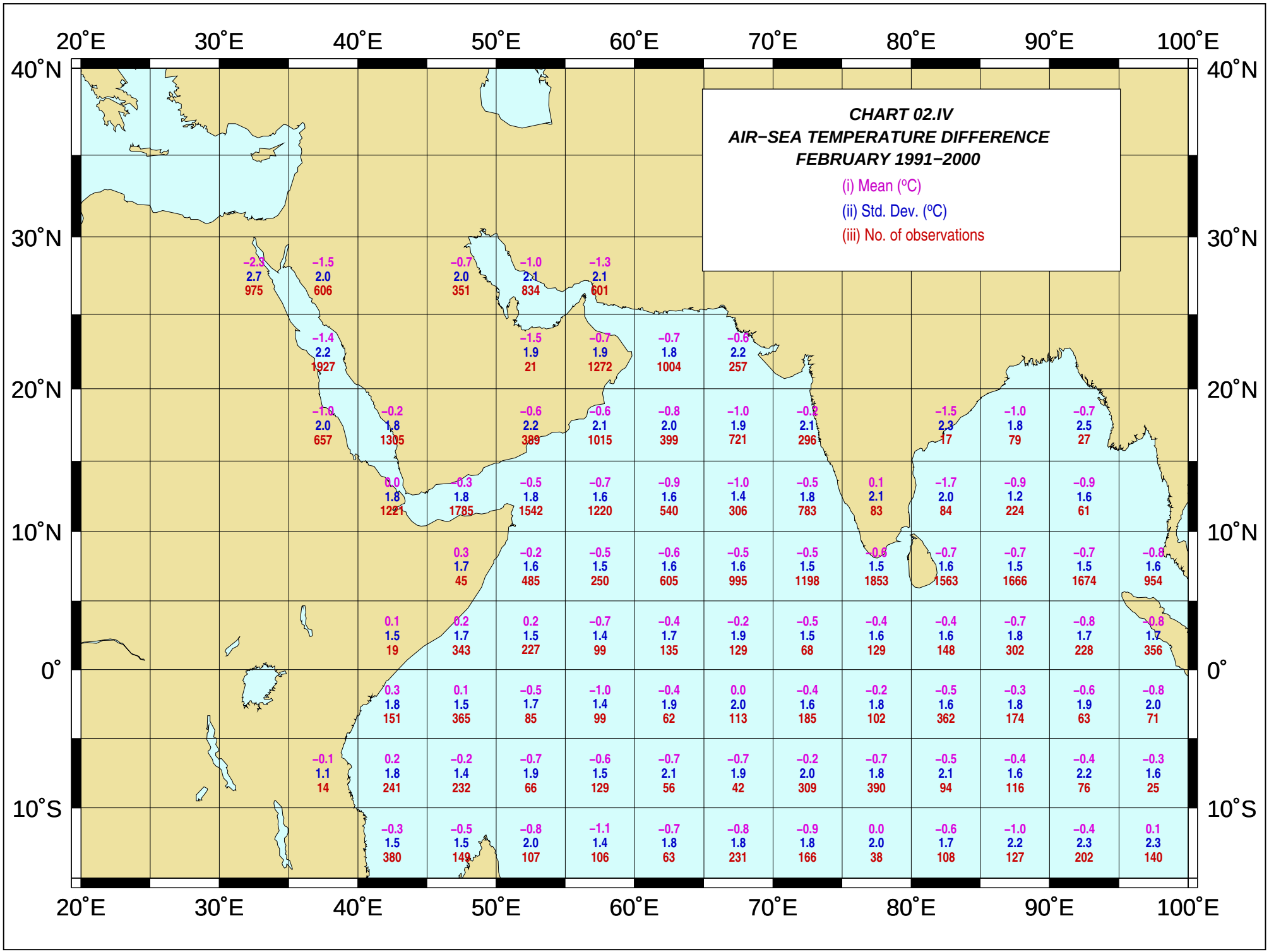


CHART 02.IV
AIR–SEA TEMPERATURE DIFFERENCE
FEBRUARY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
−2.3 2.7 975
−1.5 2.0 606
−0.7 2.0 351
−1.0 2.1 834
−1.3 2.1 601
−1.4 2.2 1927
−1.5 1.9 21
−0.7 1.9 1272
−0.7 1.8 1004
−0.6 2.2 257
−1.0 2.0 657
−0.2 1.8 1305
−0.6 2.2 389
−0.6 2.1 1015
−0.8 2.0 399
−1.0 1.9 721
−0.9 2.1 296
−1.5 2.3 17
−1.0 1.8 79
−0.7 2.5 27
0.0 1.8 1221
−0.3 1.8 1785
−0.5 1.8 1542
−0.7 1.6 1220
−0.9 1.6 540
−1.0 1.4 306
−0.5 1.8 783
0.1 2.1 83
−1.7 2.0 84
−0.9 1.2 224
−0.9 1.6 61
0.3 1.7 45
−0.2 1.6 485
−0.5 1.5 250
−0.6 1.6 605
−0.5 1.6 995
−0.5 1.5 1198
−0.6 1.5 1853
−0.7 1.6 1563
−0.7 1.5 1666
−0.7 1.5 1674
−0.8 1.6 954
0.1 1.5 19
0.2 1.7 343
0.2 1.5 227
−0.7 1.4 99
−0.4 1.7 135
−0.2 1.9 129
−0.5 1.5 68
−0.4 1.6 129
−0.4 1.6 148
−0.7 1.8 302
−0.8 1.7 228
−0.8 1.7 356
0.3 1.8 151
0.1 1.5 365
−0.5 1.7 85
−1.0 1.4 99
−0.4 1.9 62
0.0 2.0 113
−0.4 1.6 185
−0.2 1.8 102
−0.5 1.6 362
−0.3 1.8 174
−0.6 1.9 63
−0.8 2.0 71
−0.1 1.1 14
0.2 1.8 241
−0.2 1.4 232
−0.7 1.9 66
−0.6 1.5 129
−0.7 2.1 56
−0.7 1.9 42
−0.2 2.0 309
−0.7 1.8 390
−0.5 2.1 94
−0.4 1.6 116
−0.4 2.2 76
−0.3 1.6 25
−0.3 1.5 380
−0.5 1.5 149
−0.8 2.0 107
−1.1 1.4 106
−0.7 1.8 63
−0.8 1.8 231
−0.9 1.8 166
0.0 2.0 38
−0.6 1.7 108
−1.0 2.2 127
−0.4 2.3 202
0.1 2.3 140

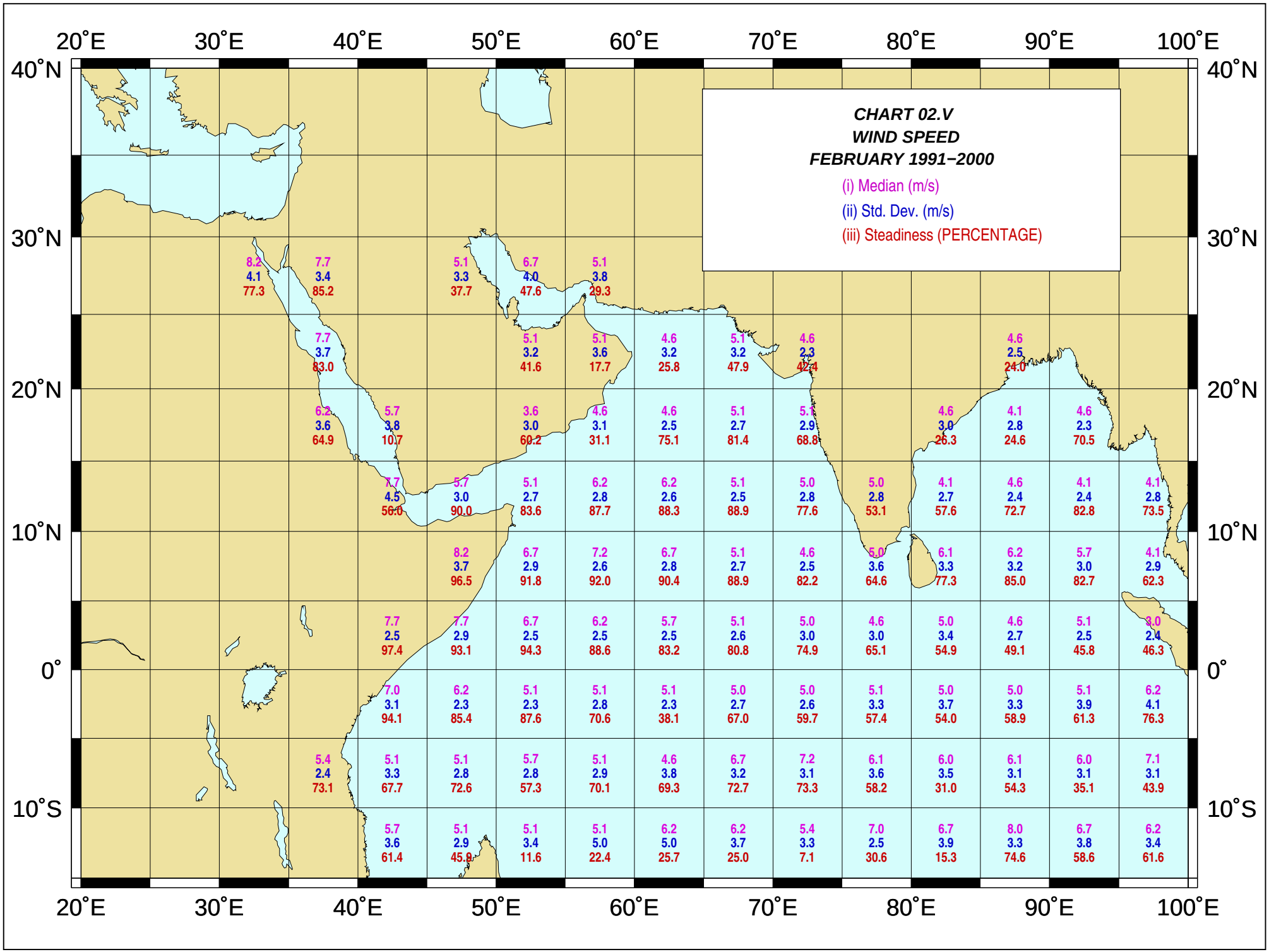


CHART 02.V
WIND SPEED
FEBRUARY 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
8.2 4.1 77.3
7.7 3.4 85.2
5.1 3.3 37.7
6.7 4.0 47.6
5.1 3.8 29.3
7.7 3.7 83.0
5.1 3.2 41.6
5.1 3.6 17.7
4.6 3.2 25.8
5.1 3.2 47.9
4.6 2.3 42.4
4.6 2.5 24.0
6.2 3.6 64.9
5.7 3.8 10.7
3.6 3.0 60.2
4.6 3.1 31.1
4.6 2.5 75.1
5.1 2.7 81.4
5.1 2.9 68.8
4.6 3.0 26.3
4.1 2.8 24.6
4.6 2.3 70.5
7.7 4.5 56.0
5.7 3.0 90.0
5.1 2.7 83.6
6.2 2.8 87.7
6.2 2.6 88.3
5.1 2.5 88.9
5.0 2.8 77.6
5.0 2.8 53.1
4.1 2.7 57.6
4.6 2.4 72.7
4.1 2.4 82.8
4.1 2.8 73.5
8.2 3.7 96.5
6.7 2.9 91.8
7.2 2.6 92.0
6.7 2.8 90.4
5.1 2.7 88.9
4.6 2.5 82.2
5.0 3.6 64.6
6.1 3.3 77.3
6.2 3.2 85.0
5.7 3.0 82.7
4.1 2.9 62.3
7.7 2.5 97.4
7.7 2.9 93.1
6.7 2.5 94.3
6.2 2.5 88.6
5.7 2.5 83.2
5.1 2.6 80.8
5.0 3.0 74.9
4.6 3.0 65.1
5.0 3.4 54.9
4.6 2.7 49.1
5.1 2.5 45.8
3.0 2.4 46.3
7.0 3.1 94.1
6.2 2.3 85.4
5.1 2.3 87.6
5.1 2.8 70.6
5.1 2.3 38.1
5.0 2.7 67.0
5.0 2.6 59.7
5.1 3.3 57.4
5.0 3.7 54.0
5.0 3.3 58.9
5.1 3.9 61.3
6.2 4.1 76.3
5.4 2.4 73.1
5.1 3.3 67.7
5.1 2.8 72.6
5.7 2.8 57.3
5.1 2.9 70.1
4.6 3.8 69.3
6.7 3.2 72.7
7.2 3.1 73.3
6.1 3.6 58.2
6.0 3.5 31.0
6.1 3.1 54.3
6.0 3.1 35.1
7.1 3.1 43.9
5.7 3.6 61.4
5.1 2.9 45.8
5.1 3.4 11.6
5.1 5.0 22.4
6.2 5.0 25.7
6.2 3.7 25.0
5.4 3.3 7.1
7.0 2.5 30.6
6.7 3.9 15.3
8.0 3.3 74.6
6.7 3.8 58.6
6.2 3.4 61.6

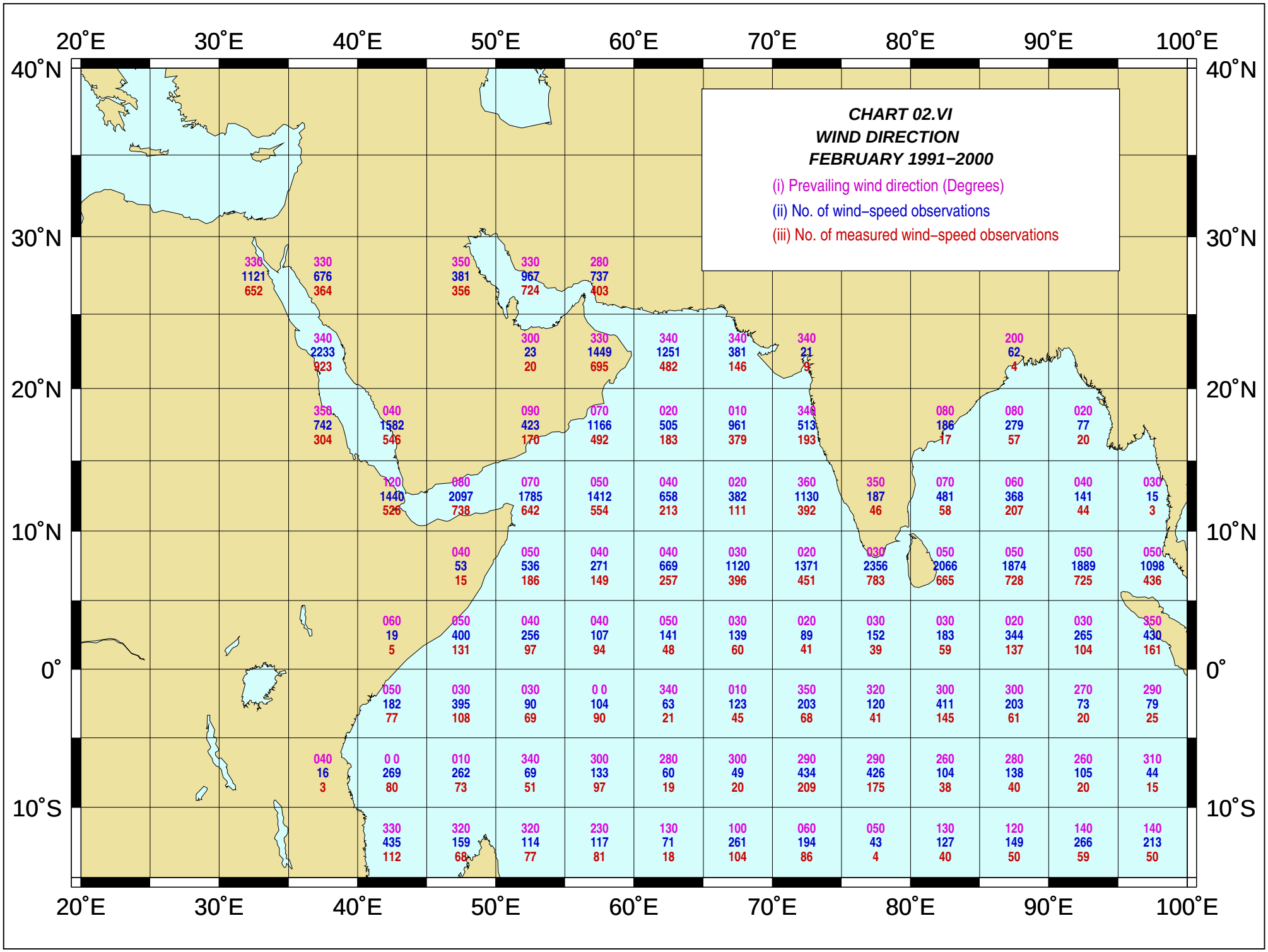


CHART 02.VI
WIND DIRECTION
FEBRUARY 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
330 1121 652
330 676 364
350 381 356
330 967 724
280 737 403
340 2233 923
300 23 20
330 1449 695
340 1251 482
340 381 146
340 21 9
200 62 4
350 742 304
040 1582 546
090 423 170
070 1166 492
020 505 183
010 961 379
340 513 193
080 186 17
080 279 57
020 77 20
120 1440 526
080 2097 738
070 1785 642
050 1412 554
040 658 213
020 382 111
360 1130 392
350 187 46
070 481 58
060 368 207
040 141 44
030 15 3
040 53 15
050 536 186
040 271 149
040 669 257
030 1120 396
020 1371 451
030 2356 783
050 2066 665
050 1874 728
050 1889 725
050 1098 436
060 19 5
050 400 131
040 256 97
040 107 94
050 141 48
030 139 60
020 89 41
030 152 39
030 183 59
020 344 137
030 265 104
350 430 161
050 182 77
030 395 108
030 90 69
0 0 104 90
340 63 21
010 123 45
350 203 68
320 120 41
300 411 145
300 203 61
270 73 20
290 79 25
040 16 3
0 0 269 80
010 262 73
340 69 51
300 133 97
280 60 19
300 49 20
290 434 209
290 426 175
260 104 38
280 138 40
260 105 20
310 44 15
330 435 112
320 159 68
320 114 77
230 117 81
130 71 18
100 261 104
060 194 86
050 43 4
130 127 40
120 149 50
140 266 59
140 213 50

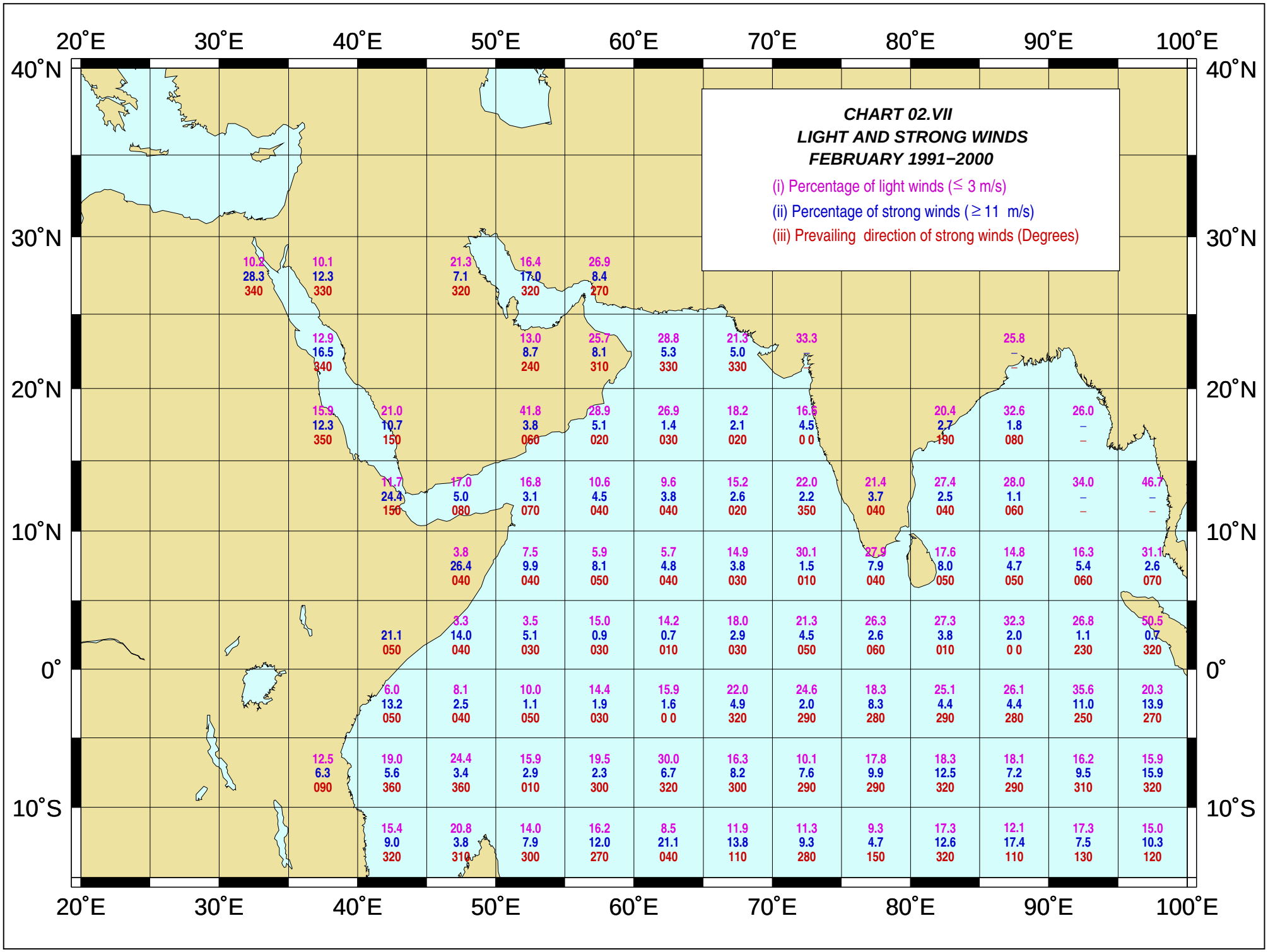


CHART 02.VII
LIGHT AND STRONG WINDS
FEBRUARY 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
10.2 28.3 340
10.1 12.3 330
21.3 7.1 320
16.4 17.0 320
26.9 8.4 270
12.9 16.5 340
13.0 8.7 240
25.7 8.1 310
28.8 5.3 330
21.3 5.0 330
33.3
25.8 – –
15.9 12.3 350
21.0 10.7 150
41.8 3.8 060
28.9 5.1 020
26.9 1.4 030
18.2 2.1 020
16.8 4.5 0 0
20.4 2.7 190
32.6 1.8 080
26.0 – –
11.7 24.4 150
17.0 5.0 080
16.8 3.1 070
10.6 4.5 040
9.6 3.8 040
15.2 2.6 020
22.0 2.2 350
21.4 3.7 040
27.4 2.5 040
28.0 1.1 060
34.0 – –
46.7 – –
3.8 26.4 040
7.5 9.9 040
5.9 8.1 050
5.7 4.8 040
14.9 3.8 030
30.1 1.5 010
27.9 7.9 040
17.6 8.0 050
14.8 4.7 050
16.3 5.4 060
31.1 2.6 070
21.1 050
3.3 14.0 040
3.5 5.1 030
15.0 0.9 030
14.2 0.7 010
18.0 2.9 030
21.3 4.5 050
26.3 2.6 060
27.3 3.8 010
32.3 2.0 0 0
26.8 1.1 230
50.5 0.7 320
6.0 13.2 050
8.1 2.5 040
10.0 1.1 050
14.4 1.9 030
15.9 1.6 0 0
22.0 4.9 320
24.6 2.0 290
18.3 8.3 280
25.1 4.4 290
26.1 4.4 280
35.6 11.0 250
20.3 13.9 270
12.5 6.3 090
19.0 5.6 360
24.4 3.4 360
15.9 2.9 010
19.5 2.3 300
30.0 6.7 320
16.3 8.2 300
10.1 7.6 290
17.8 9.9 290
18.3 12.5 320
18.1 7.2 290
16.2 9.5 310
15.9 15.9 320
15.4 9.0 320
20.8 3.8 310
14.0 7.9 300
16.2 12.0 270
8.5 21.1 040
11.9 13.8 110
11.3 9.3 280
9.3 4.7 150
17.3 12.6 320
12.1 17.4 110
17.3 7.5 130
15.0 10.3 120

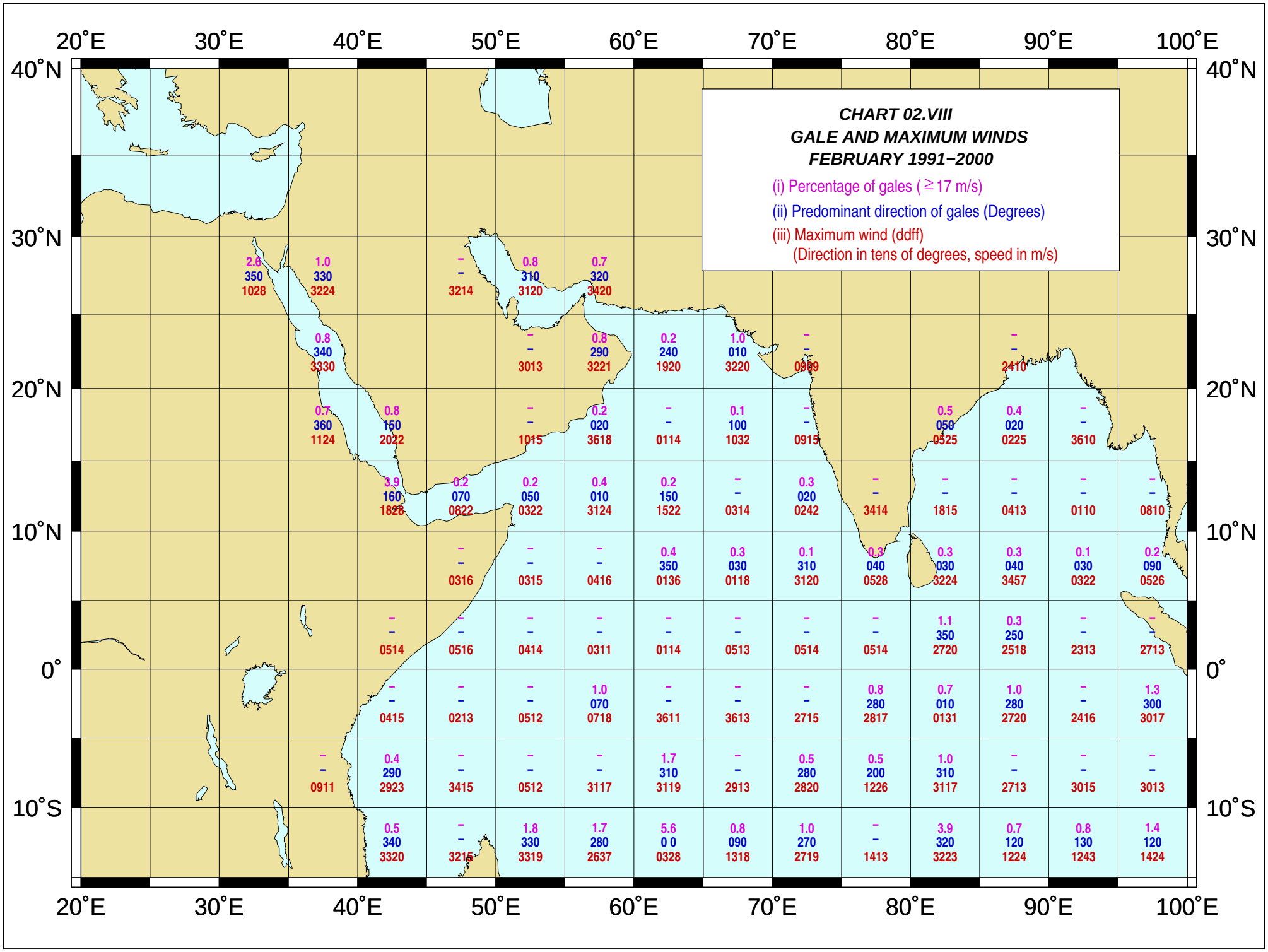


CHART 02.VIII
GALE AND MAXIMUM WINDS
FEBRUARY 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
2.6 350 1028
1.0 330 3224
– – 3214
0.8 310 3120
0.7 320 3420
0.8 340 3330
– – 3013
0.8 290 3221
0.2 240 1920
1.0 010 3220
– – 0909
– – 2410
0.7 360 1124
0.8 150 2022
– – 1015
0.2 020 3618
– – 0114
0.1 100 1032
– – 0915
0.5 050 0525
0.4 020 0225
– – 3610
3.9 160 1828
0.2 070 0822
0.2 050 0322
0.4 010 3124
0.2 150 1522
– – 0314
0.3 020 0242
– – 3414
– – 1815
– – 0413
– – 0110
– – 0810
– – 0316
– – 0315
– – 0416
0.4 350 0136
0.3 030 0118
0.1 310 3120
0.3 040 0528
0.3 030 3224
0.3 040 3457
0.1 030 0322
0.2 090 0526
– – 0514
– – 0516
– – 0414
– – 0311
– – 0114
– – 0513
– – 0514
– – 0514
1.1 350 2720
0.3 250 2518
– – 2313
– – 2713
– – 0415
– – 0213
– – 0512
1.0 070 0718
– – 3611
– – 3613
– – 2715
0.8 280 2817
0.7 010 0131
1.0 280 2720
– – 2416
1.3 300 3017
– – 0911
0.4 290 2923
– – 3415
– – 0512
– – 3117
1.7 310 3119
– – 2913
0.5 280 2820
0.5 200 1226
1.0 310 3117
– – 2713
– – 3015
– – 3013
0.5 340 3320
– – 3215
1.8 330 3319
1.7 280 2637
5.6 0 0 0328
0.8 090 1318
1.0 270 2719
– – 1413
3.9 320 3223
0.7 120 1224
0.8 130 1243
1.4 120 1424

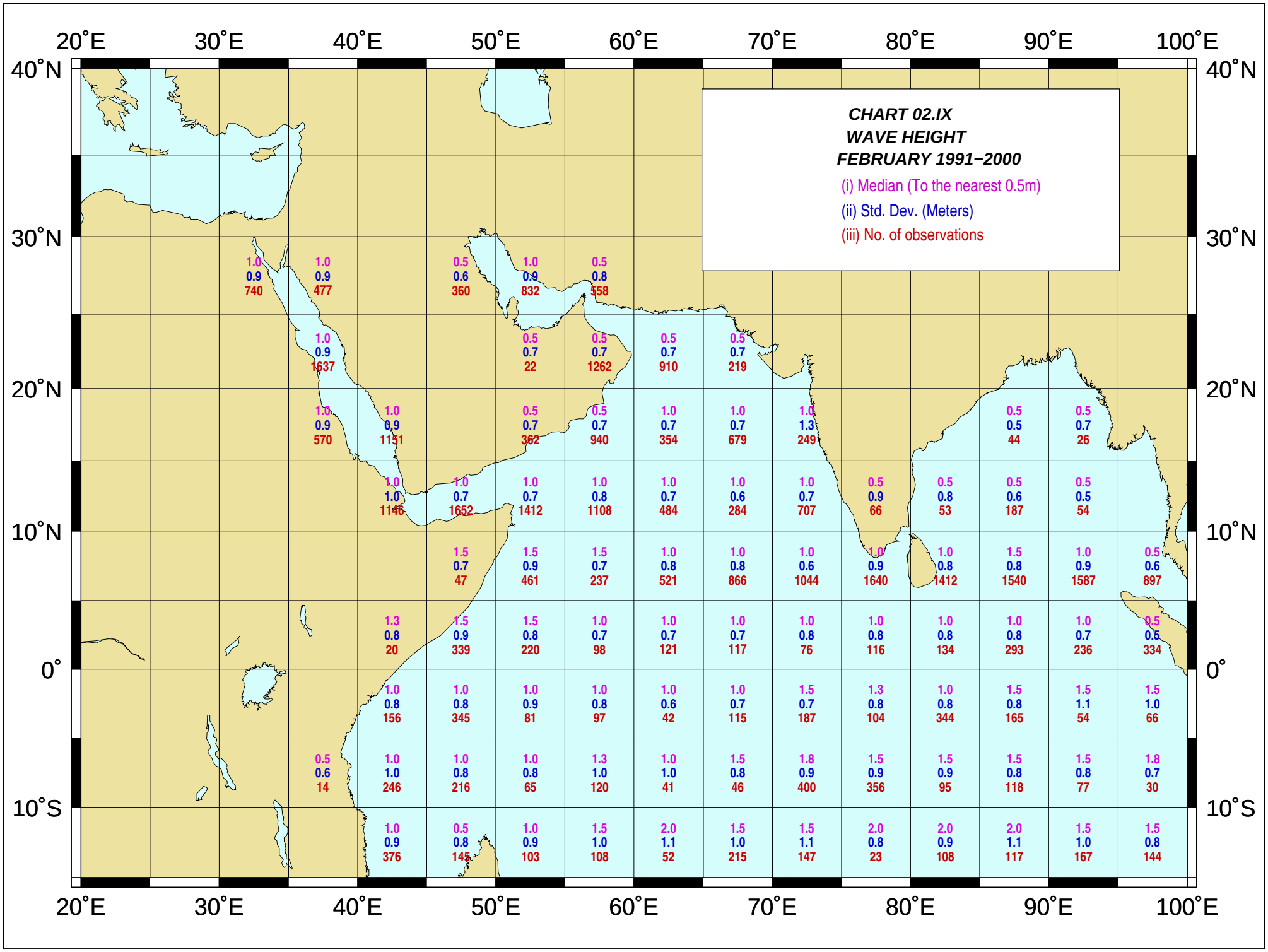


CHART 02.IX
WAVE HEIGHT
FEBRUARY 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.9 740
1.0 0.9 477
0.5 0.6 360
1.0 0.9 832
0.5 0.8 558
1.0 0.9 1637
0.5 0.7 22
0.5 0.7 1262
0.5 0.7 910
0.5 0.7 219
1.0 0.9 570
1.0 0.9 1151
0.5 0.7 362
0.5 0.7 940
1.0 0.7 354
1.0 0.7 679
1.0 1.3 249
0.5 0.5 44
0.5 0.7 26
1.0 1.0 1146
1.0 0.7 1652
1.0 0.7 1412
1.0 0.8 1108
1.0 0.7 484
1.0 0.6 284
1.0 0.7 707
0.5 0.9 66
0.5 0.8 53
0.5 0.6 187
0.5 0.5 54
1.5 0.7 47
1.5 0.9 461
1.5 0.7 237
1.0 0.8 521
1.0 0.8 866
1.0 0.6 1044
1.0 0.9 1640
1.0 0.8 1412
1.5 0.8 1540
1.0 0.9 1587
0.5 0.6 897
1.3 0.8 20
1.5 0.9 339
1.5 0.8 220
1.0 0.7 98
1.0 0.7 121
1.0 0.7 117
1.0 0.8 76
1.0 0.8 116
1.0 0.8 134
1.0 0.8 293
1.0 0.7 236
0.5 0.5 334
1.0 0.8 156
1.0 0.8 345
1.0 0.9 81
1.0 0.8 97
1.0 0.6 42
1.0 0.7 115
1.5 0.7 187
1.3 0.8 104
1.0 0.8 344
1.5 0.8 165
1.5 1.1 54
1.5 1.0 66
0.5 0.6 14
1.0 1.0 246
1.0 0.8 216
1.0 0.8 65
1.3 1.0 120
1.0 1.0 41
1.5 0.8 46
1.8 0.9 400
1.5 0.9 356
1.5 0.9 95
1.5 0.8 118
1.5 0.8 77
1.8 0.7 30
1.0 0.9 376
0.5 0.8 145
1.0 0.9 103
1.5 1.0 108
2.0 1.1 52
1.5 1.0 215
1.5 1.1 147
2.0 0.8 23
2.0 0.9 108
2.0 1.1 117
1.5 1.0 167
1.5 0.8 144

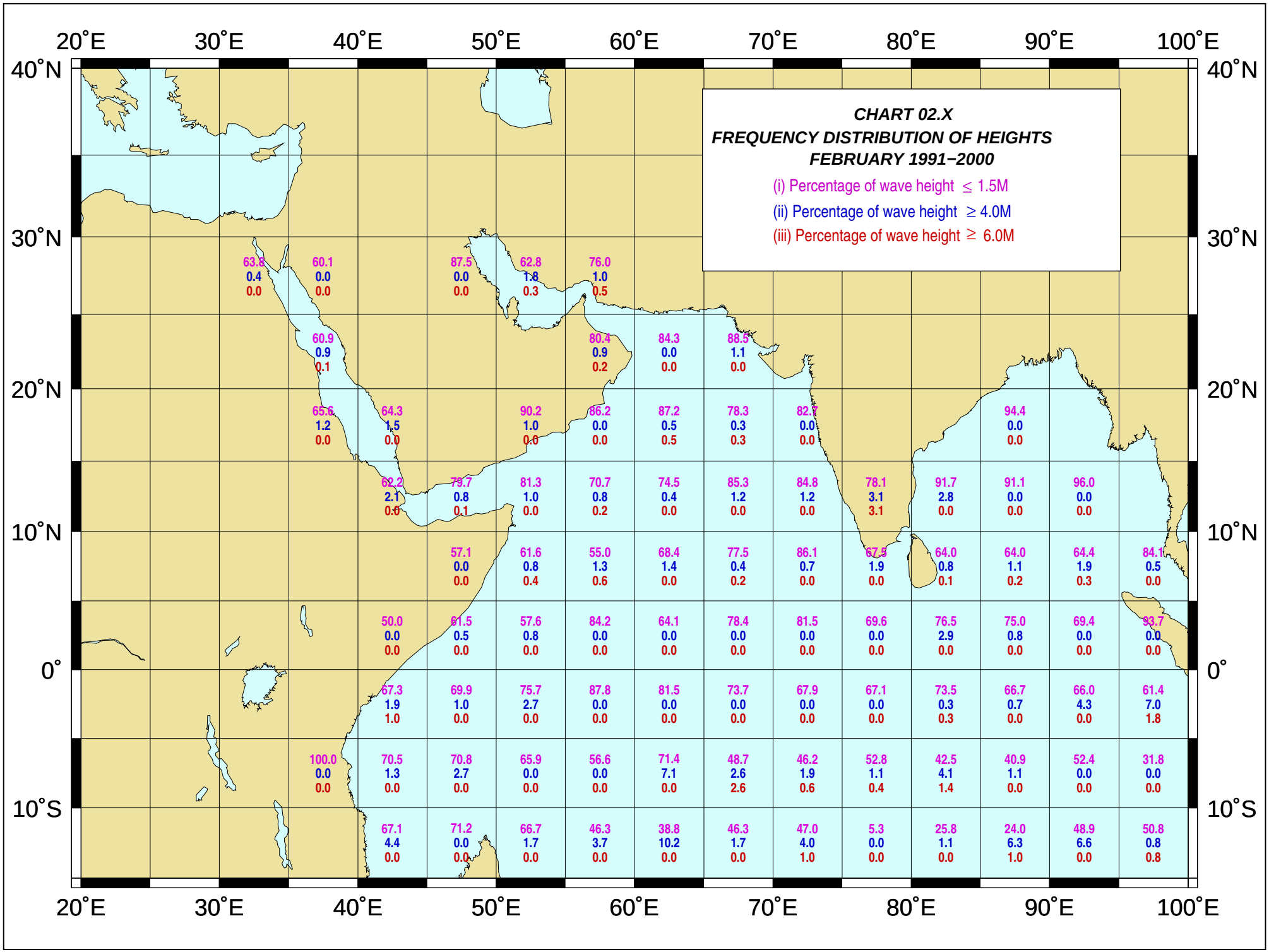


CHART 02.X
FREQUENCY DISTRIBUTION OF HEIGHTS
FEBRUARY 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
63.8 0.4 0.0
60.1 0.0 0.0
87.5 0.0 0.0
62.8 1.8 0.3
76.0 1.0 0.5
60.9 0.9 0.1
80.4 0.9 0.2
84.3 0.0 0.0
88.5 1.1 0.0
65.6 1.2 0.0
64.3 1.5 0.0
90.2 1.0 0.0
86.2 0.0 0.0
87.2 0.5 0.5
78.3 0.3 0.3
82.7 0.0 0.0
94.4 0.0 0.0
62.2 2.1 0.6
79.7 0.8 0.1
81.3 1.0 0.0
70.7 0.8 0.2
74.5 0.4 0.0
85.3 1.2 0.0
84.8 1.2 0.0
78.1 3.1 3.1
91.7 2.8 0.0
91.1 0.0 0.0
96.0 0.0 0.0
57.1 0.0 0.0
61.6 0.8 0.4
55.0 1.3 0.6
68.4 1.4 0.0
77.5 0.4 0.2
86.1 0.7 0.0
67.5 1.9 0.0
64.0 0.8 0.1
64.0 1.1 0.2
64.4 1.9 0.3
84.1 0.5 0.0
50.0 0.0 0.0
61.5 0.5 0.0
57.6 0.8 0.0
84.2 0.0 0.0
64.1 0.0 0.0
78.4 0.0 0.0
81.5 0.0 0.0
69.6 0.0 0.0
76.5 2.9 0.0
75.0 0.8 0.0
69.4 0.0 0.0
93.7 0.0 0.0
67.3 1.9 1.0
69.9 1.0 0.0
75.7 2.7 0.0
87.8 0.0 0.0
81.5 0.0 0.0
73.7 0.0 0.0
67.9 0.0 0.0
67.1 0.0 0.0
73.5 0.3 0.3
66.7 0.7 0.0
66.0 4.3 0.0
61.4 7.0 1.8
100.0 0.0 0.0
70.5 1.3 0.0
70.8 2.7 0.0
65.9 0.0 0.0
56.6 0.0 0.0
71.4 7.1 0.0
48.7 2.6 2.6
46.2 1.9 0.6
52.8 1.1 0.4
42.5 4.1 1.4
40.9 1.1 0.0
52.4 0.0 0.0
31.8 0.0 0.0
67.1 4.4 0.0
71.2 0.0 0.0
66.7 1.7 0.0
46.3 3.7 0.0
38.8 10.2 0.0
46.3 1.7 0.0
47.0 4.0 1.0
5.3 0.0 0.0
25.8 1.1 0.0
24.0 6.3 1.0
48.9 6.6 0.0
50.8 0.8 0.8

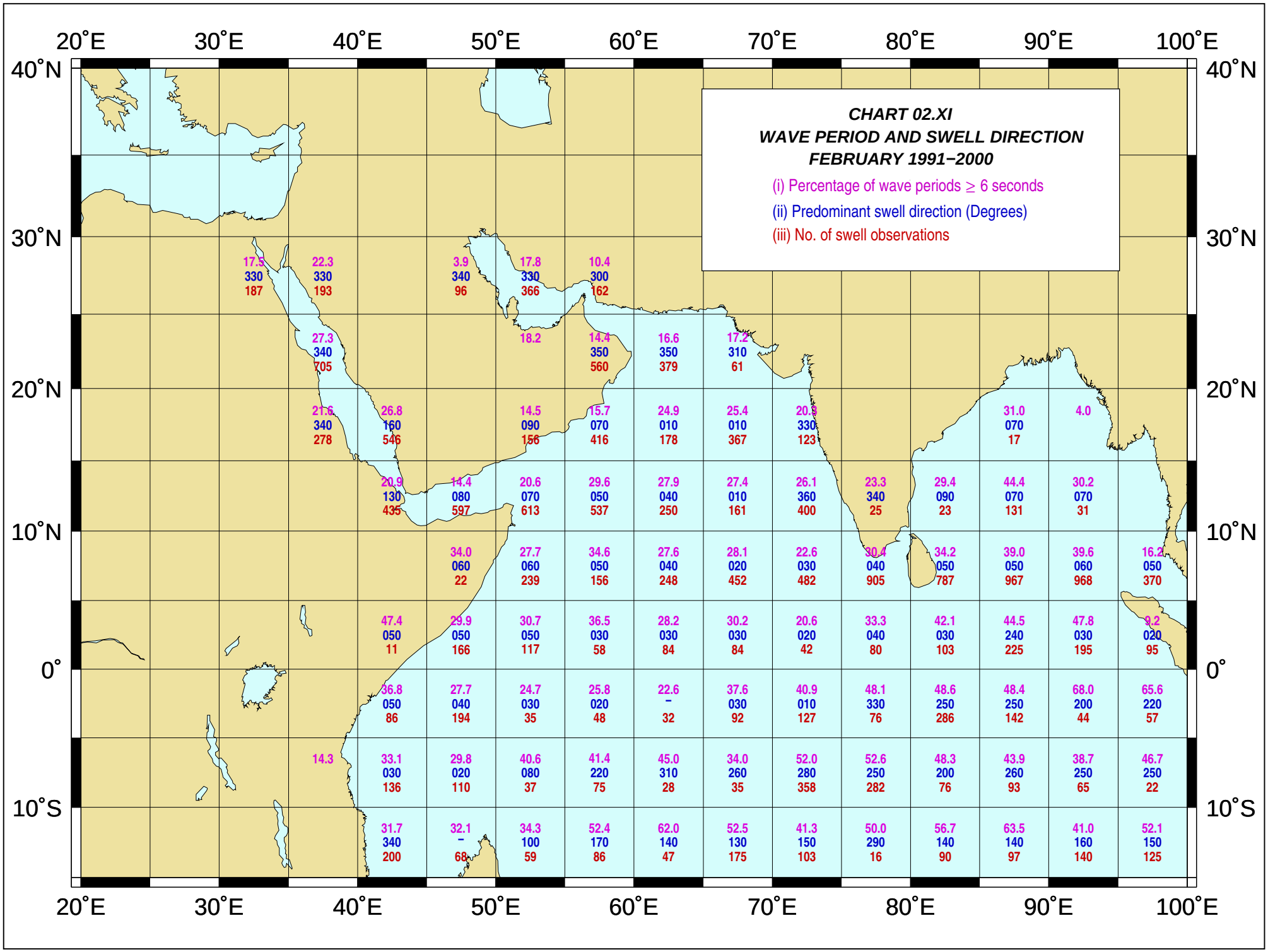


CHART 02.XI
WAVE PERIOD AND SWELL DIRECTION
FEBRUARY 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
17.5 330 187
22.3 330 193
3.9 340 96
17.8 330 366
10.4 300 162
27.3 340 705
18.2
14.4 350 560
16.6 350 379
17.2 310 61
21.6 340 278
26.8 160 546
14.5 090 156
15.7 070 416
24.9 010 178
25.4 010 367
20.9 330 123
31.0 070 17
4.0
20.9 130 435
14.4 080 597
20.6 070 613
29.6 050 537
27.9 040 250
27.4 010 161
26.1 360 400
23.3 340 25
29.4 090 23
44.4 070 131
30.2 070 31
34.0 060 22
27.7 060 239
34.6 050 156
27.6 040 248
28.1 020 452
22.6 030 482
30.4 040 905
34.2 050 787
39.0 050 967
39.6 060 968
16.2 050 370
47.4 050 11
29.9 050 166
30.7 050 117
36.5 030 58
28.2 030 84
30.2 030 84
20.6 020 42
33.3 040 80
42.1 030 103
44.5 240 225
47.8 030 195
9.2 020 95
36.8 050 86
27.7 040 194
24.7 030 35
25.8 020 48
22.6 – 32
37.6 030 92
40.9 010 127
48.1 330 76
48.6 250 286
48.4 250 142
68.0 200 44
65.6 220 57
14.3
33.1 030 136
29.8 020 110
40.6 080 37
41.4 220 75
45.0 310 28
34.0 260 35
52.0 280 358
52.6 250 282
48.3 200 76
43.9 260 93
38.7 250 65
46.7 250 22
31.7 340 200
32.1 – 68
34.3 100 59
52.4 170 86
62.0 140 47
52.5 130 175
41.3 150 103
50.0 290 16
56.7 140 90
63.5 140 97
41.0 160 140
52.1 150 125

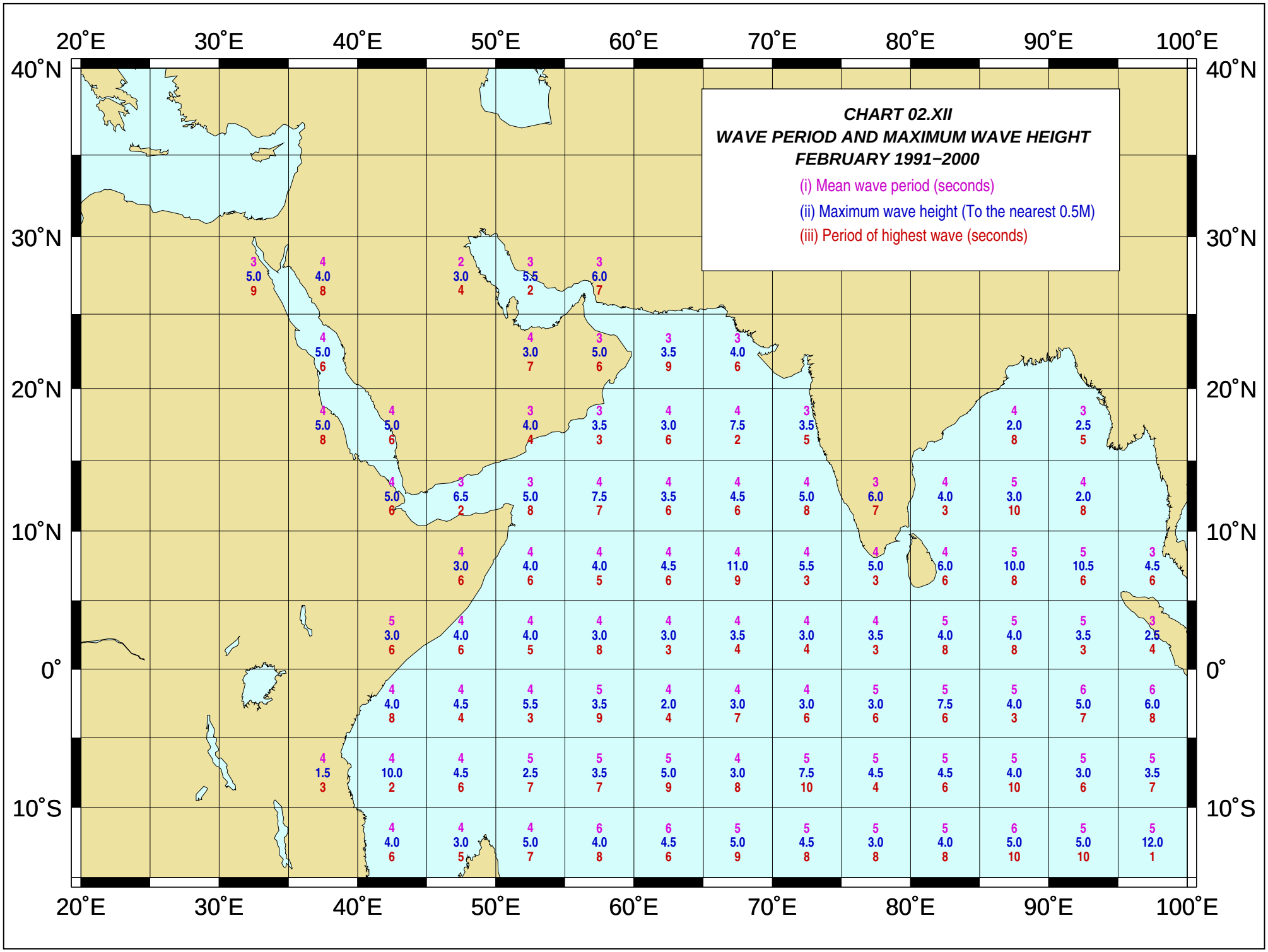


CHART 02.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
FEBRUARY 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
3 5.0 9
4 4.0 8
2 3.0 4
3 5.5 2
3 6.0 7
4 5.0 6
4 3.0 7
3 5.0 6
3 3.5 9
3 4.0 6
4 5.0 8
4 5.0 6
3 4.0 4
3 3.5 3
4 3.0 6
4 7.5 2
3 3.5 5
4 2.0 8
3 2.5 5
4 5.0 6
3 6.5 2
3 5.0 8
4 7.5 7
4 3.5 6
4 4.5 6
4 5.0 8
3 6.0 7
4 4.0 3
5 3.0 10
4 2.0 8
4 3.0 6
4 4.0 6
4 4.0 5
4 4.5 6
4 11.0 9
4 5.5 3
4 5.0 3
4 6.0 6
5 10.0 8
5 10.5 6
3 4.5 6
5 3.0 6
4 4.0 6
4 4.0 5
4 3.0 8
4 3.0 3
4 3.5 4
4 3.0 4
4 3.5 3
5 4.0 8
5 4.0 8
5 3.5 3
3 2.5 4
4 4.0 8
4 4.5 4
4 5.5 3
5 3.5 9
4 2.0 4
4 3.0 7
4 3.0 6
5 3.0 6
5 7.5 6
5 4.0 3
6 5.0 7
6 6.0 8
4 1.5 3
4 10.0 2
4 4.5 6
5 2.5 7
5 3.5 7
5 5.0 9
4 3.0 8
5 7.5 10
5 4.5 4
5 4.5 6
5 4.0 10
5 3.0 6
5 3.5 7
4 4.0 6
4 3.0 5
4 5.0 7
6 4.0 8
6 4.5 6
5 5.0 9
5 4.5 8
5 3.0 8
5 4.0 8
6 5.0 10
5 5.0 10
5 12.0 1

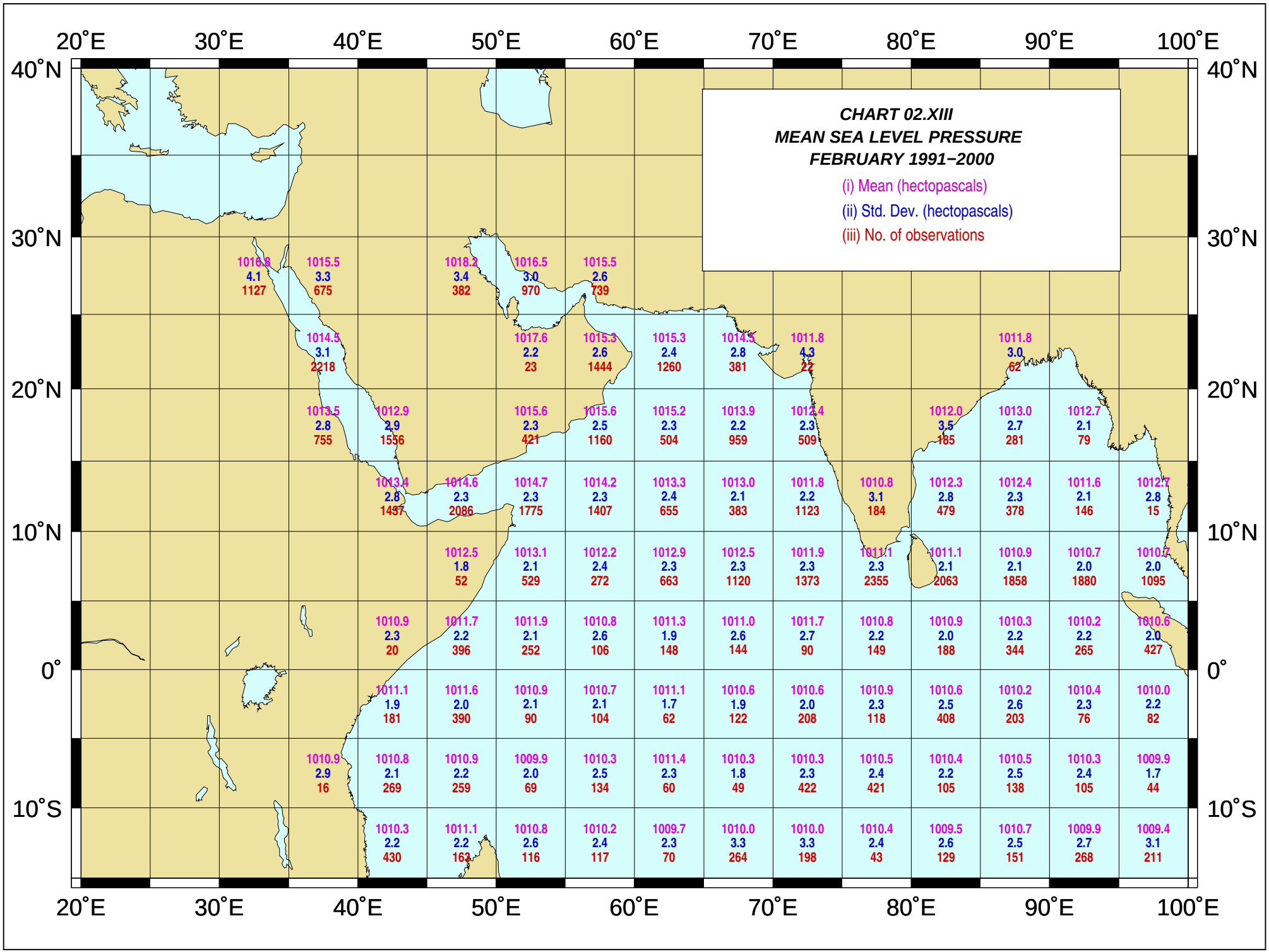


CHART 02.XIII
MEAN SEA LEVEL PRESSURE
FEBRUARY 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1016.3 4.1 1127
1015.5 3.3 675
1018.2 3.4 382
1016.5 3.0 970
1015.5 2.6 739
1014.5 3.1 2218
1017.6 2.2 23
1015.3 2.6 1444
1015.3 2.4 1260
1014.5 2.8 381
1011.8 4.3 22
1011.8 3.0 62
1013.5 2.8 755
1012.9 2.9 1556
1015.6 2.3 421
1015.6 2.5 1160
1015.2 2.3 504
1013.9 2.2 959
1012.4 2.3 509
1012.0 3.5 185
1013.0 2.7 281
1012.7 2.1 79
1013.4 2.8 1457
1014.6 2.3 2086
1014.7 2.3 1775
1014.2 2.3 1407
1013.3 2.4 655
1013.0 2.1 383
1011.8 2.2 1123
1010.8 3.1 184
1012.3 2.8 479
1012.4 2.3 378
1011.6 2.1 146
1012.7 2.8 15
1012.5 1.8 52
1013.1 2.1 529
1012.2 2.4 272
1012.9 2.3 663
1012.5 2.3 1120
1011.9 2.3 1373
1011.1 2.3 2355
1011.1 2.1 2063
1010.9 2.1 1858
1010.7 2.0 1880
1010.7 2.0 1095
1010.9 2.3 20
1011.7 2.2 396
1011.9 2.1 252
1010.8 2.6 106
1011.3 1.9 148
1011.0 2.6 144
1011.7 2.7 90
1010.8 2.2 149
1010.9 2.0 188
1010.3 2.2 344
1010.2 2.2 265
1010.6 2.0 427
1011.1 1.9 181
1011.6 2.0 390
1010.9 2.1 90
1010.7 2.1 104
1011.1 1.7 62
1010.6 1.9 122
1010.6 2.0 208
1010.9 2.3 118
1010.6 2.5 408
1010.2 2.6 203
1010.4 2.3 76
1010.0 2.2 82
1010.9 2.9 16
1010.8 2.1 269
1010.9 2.2 259
1009.9 2.0 69
1010.3 2.5 134
1011.4 2.3 60
1010.3 1.8 49
1010.3 2.3 422
1010.5 2.4 421
1010.4 2.2 105
1010.5 2.5 138
1010.3 2.4 105
1009.9 1.7 44
1010.3 2.2 430
1011.1 2.2 163
1010.8 2.6 116
1010.2 2.4 117
1009.7 2.3 70
1010.0 3.3 264
1010.0 3.3 198
1010.4 2.4 43
1009.5 2.6 129
1010.7 2.5 151
1009.9 2.7 268
1009.4 3.1 211

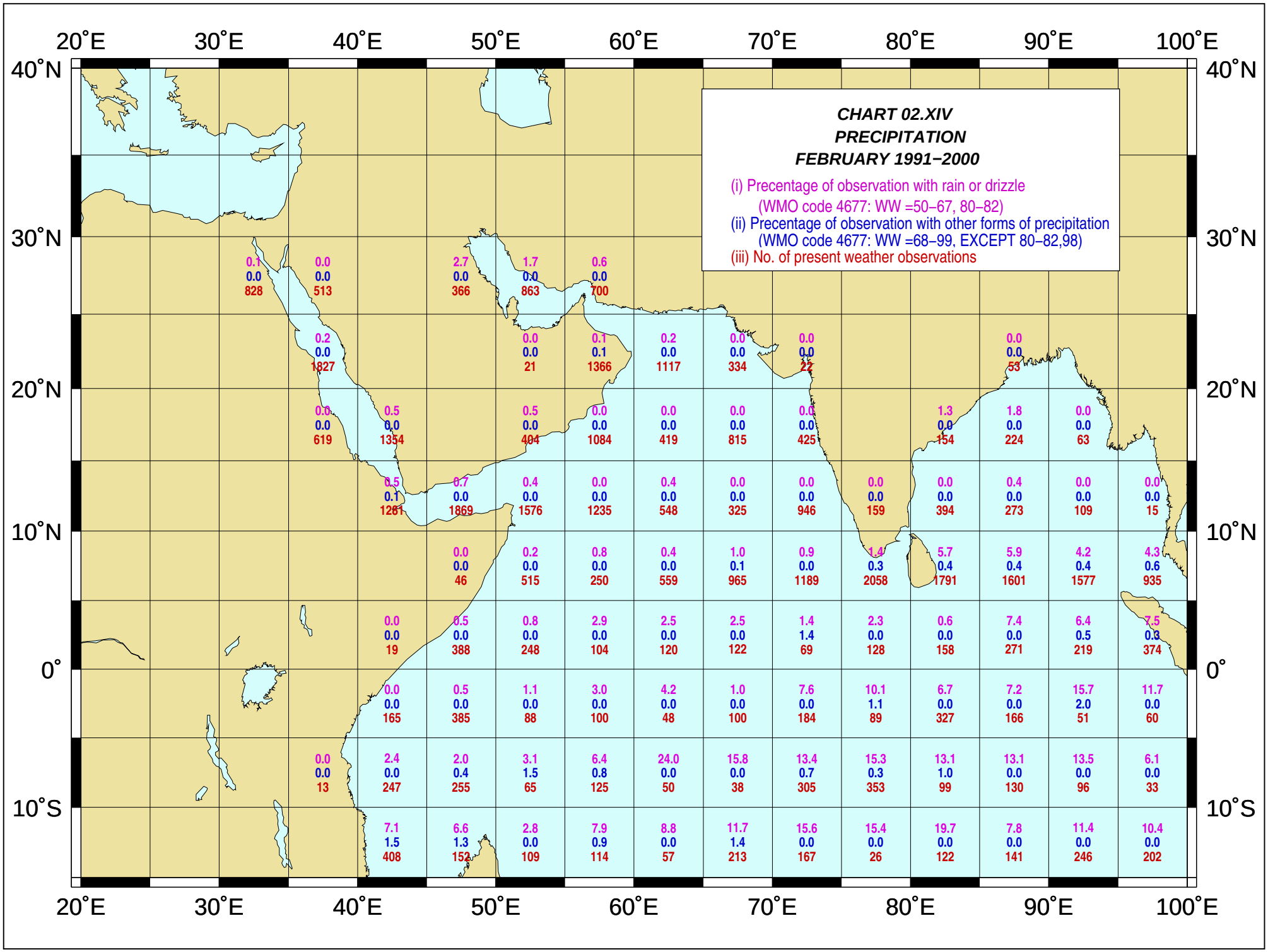


CHART 02.XIV
PRECIPITATION
FEBRUARY 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 0.0 828
0.0 0.0 513
2.7 0.0 366
1.7 0.0 863
0.6 0.0 700
0.2 0.0 1827
0.0 0.0 21
0.1 0.1 1366
0.2 0.0 1117
0.0 0.0 334
0.0 0.0 22
0.0 0.0 53
0.0 0.0 619
0.5 0.0 1354
0.5 0.0 404
0.0 0.0 1084
0.0 0.0 419
0.0 0.0 815
0.0 0.0 425
1.3 0.0 154
1.8 0.0 224
0.0 0.0 63
0.5 0.1 1261
0.7 0.0 1869
0.4 0.0 1576
0.0 0.0 1235
0.4 0.0 548
0.0 0.0 325
0.0 0.0 946
0.0 0.0 159
0.0 0.0 394
0.4 0.0 273
0.0 0.0 109
0.0 0.0 15
0.0 0.0 46
0.2 0.0 515
0.8 0.0 250
0.4 0.0 559
1.0 0.1 965
0.9 0.0 1189
1.4 0.3 2058
5.7 0.4 1791
5.9 0.4 1601
4.2 0.4 1577
4.3 0.6 935
0.0 0.0 19
0.5 0.0 388
0.8 0.0 248
2.9 0.0 104
2.5 0.0 120
2.5 0.0 122
1.4 1.4 69
2.3 0.0 128
0.6 0.0 158
7.4 0.0 271
6.4 0.5 219
7.5 0.3 374
0.0 0.0 165
0.5 0.0 385
1.1 0.0 88
3.0 0.0 100
4.2 0.0 48
1.0 0.0 100
7.6 0.0 184
10.1 1.1 89
6.7 0.0 327
7.2 0.0 166
15.7 2.0 51
11.7 0.0 60
0.0 0.0 13
2.4 0.0 247
2.0 0.4 255
3.1 1.5 65
6.4 0.8 125
24.0 0.0 50
15.8 0.0 38
13.4 0.7 305
15.3 0.3 353
13.1 1.0 99
13.1 0.0 130
13.5 0.0 96
6.1 0.0 33
7.1 1.5 408
6.6 1.3 152
2.8 0.0 109
7.9 0.9 114
8.8 0.0 57
11.7 1.4 213
15.6 0.0 167
15.4 0.0 26
19.7 0.0 122
7.8 0.0 141
11.4 0.0 246
10.4 0.0 202

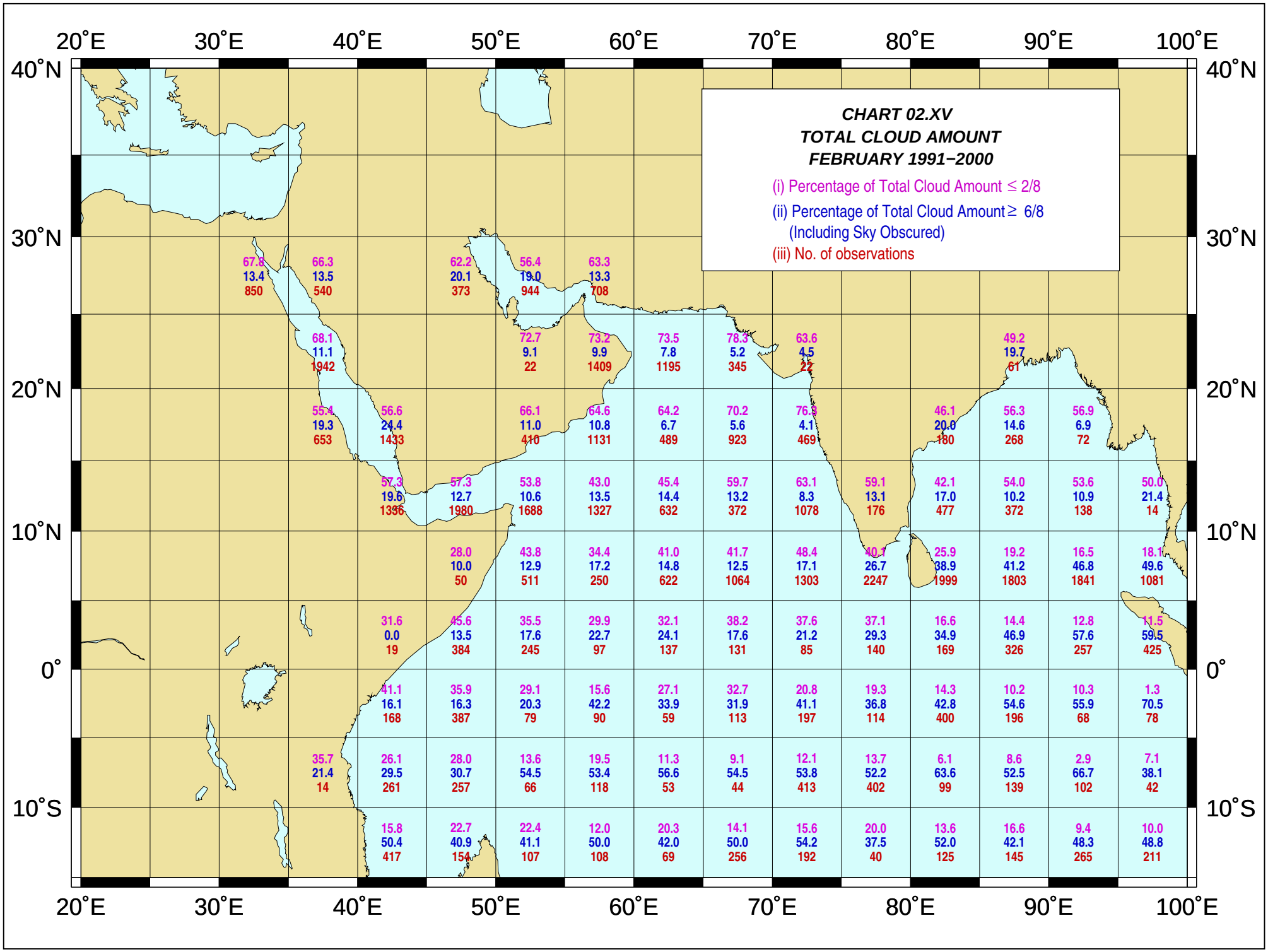


CHART 02.XV
TOTAL CLOUD AMOUNT
FEBRUARY 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
67.8 13.4 850
66.3 13.5 540
62.2 20.1 373
56.4 19.0 944
63.3 13.3 708
68.1 11.1 1942
72.7 9.1 22
73.2 9.9 1409
73.5 7.8 1195
78.3 5.2 345
63.6 4.5 22
49.2 19.7 61
55.4 19.3 653
56.6 24.4 1433
66.1 11.0 410
64.6 10.8 1131
64.2 6.7 489
70.2 5.6 923
76.9 4.1 469
46.1 20.0 180
56.3 14.6 268
56.9 6.9 72
57.3 19.6 1396
57.3 12.7 1980
53.8 10.6 1688
43.0 13.5 1327
45.4 14.4 632
59.7 13.2 372
63.1 8.3 1078
59.1 13.1 176
42.1 17.0 477
54.0 10.2 372
53.6 10.9 138
50.0 21.4 14
28.0 10.0 50
43.8 12.9 511
34.4 17.2 250
41.0 14.8 622
41.7 12.5 1064
48.4 17.1 1303
40.1 26.7 2247
25.9 38.9 1999
19.2 41.2 1803
16.5 46.8 1841
18.1 49.6 1081
31.6 0.0 19
45.6 13.5 384
35.5 17.6 245
29.9 22.7 97
32.1 24.1 137
38.2 17.6 131
37.6 21.2 85
37.1 29.3 140
16.6 34.9 169
14.4 46.9 326
12.8 57.6 257
11.5 59.5 425
41.1 16.1 168
35.9 16.3 387
29.1 20.3 79
15.6 42.2 90
27.1 33.9 59
32.7 31.9 113
20.8 41.1 197
19.3 36.8 114
14.3 42.8 400
10.2 54.6 196
10.3 55.9 68
1.3 70.5 78
35.7 21.4 14
26.1 29.5 261
28.0 30.7 257
13.6 54.5 66
19.5 53.4 118
11.3 56.6 53
9.1 54.5 44
12.1 53.8 413
13.7 52.2 402
6.1 63.6 99
8.6 52.5 139
2.9 66.7 102
7.1 38.1 42
15.8 50.4 417
22.7 40.9 154
22.4 41.1 107
12.0 50.0 108
20.3 42.0 69
14.1 50.0 256
15.6 54.2 192
20.0 37.5 40
13.6 52.0 125
16.6 42.1 145
9.4 48.3 265
10.0 48.8 211

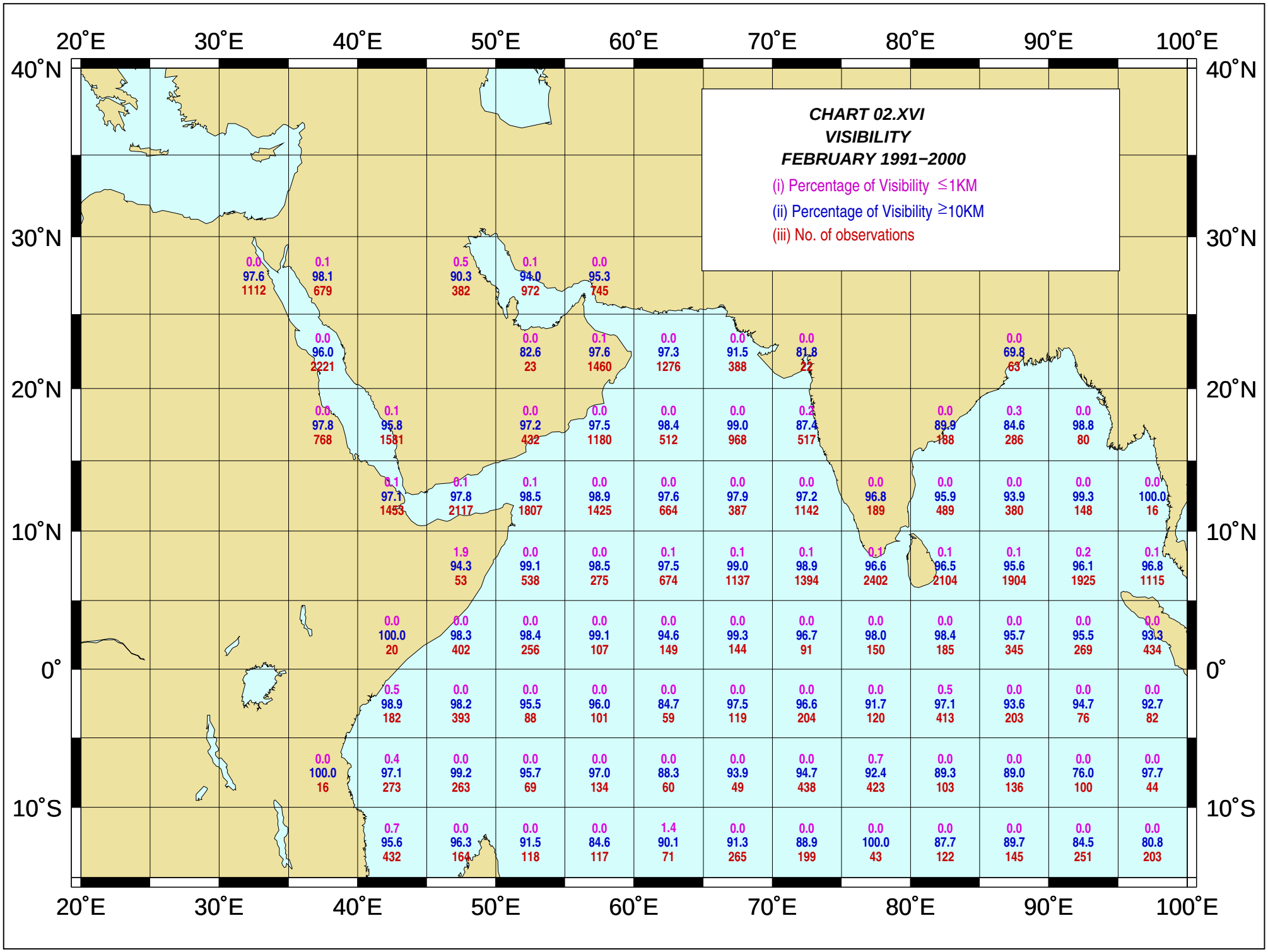


CHART 02.XVI
VISIBILITY
FEBRUARY 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.0 97.6 1112
0.1 98.1 679
0.5 90.3 382
0.1 94.0 972
0.0 95.3 745
0.0 96.0 2221
0.0 82.6 23
0.1 97.6 1460
0.0 97.3 1276
0.0 91.5 388
0.0 81.8 22
0.0 69.8 63
0.0 97.8 768
0.1 95.8 1581
0.0 97.2 432
0.0 97.5 1180
0.0 98.4 512
0.0 99.0 968
0.2 87.4 517
0.0 89.9 188
0.3 84.6 286
0.0 98.8 80
0.1 97.1 1453
0.1 97.8 2117
0.1 98.5 1807
0.0 98.9 1425
0.0 97.6 664
0.0 97.9 387
0.0 97.2 1142
0.0 96.8 189
0.0 95.9 489
0.0 93.9 380
0.0 99.3 148
0.0 100.0 16
1.9 94.3 53
0.0 99.1 538
0.0 98.5 275
0.1 97.5 674
0.1 99.0 1137
0.1 98.9 1394
0.1 96.6 2402
0.1 96.5 2104
0.1 95.6 1904
0.2 96.1 1925
0.1 96.8 1115
0.0 100.0 20
0.0 98.3 402
0.0 98.4 256
0.0 99.1 107
0.0 94.6 149
0.0 99.3 144
0.0 96.7 91
0.0 98.0 150
0.0 98.4 185
0.0 95.7 345
0.0 95.5 269
0.0 93.3 434
0.5 98.9 182
0.0 98.2 393
0.0 95.5 88
0.0 96.0 101
0.0 84.7 59
0.0 97.5 119
0.0 96.6 204
0.0 91.7 120
0.5 97.1 413
0.0 93.6 203
0.0 94.7 76
0.0 92.7 82
0.0 100.0 16
0.4 97.1 273
0.0 99.2 263
0.0 95.7 69
0.0 97.0 134
0.0 88.3 60
0.0 93.9 49
0.0 94.7 438
0.7 92.4 423
0.0 89.3 103
0.0 89.0 136
0.0 76.0 100
0.0 97.7 44
0.7 95.6 432
0.0 96.3 164
0.0 91.5 118
0.0 84.6 117
1.4 90.1 71
0.0 91.3 265
0.0 88.9 199
0.0 100.0 43
0.0 87.7 122
0.0 89.7 145
0.0 84.5 251
0.0 80.8 203

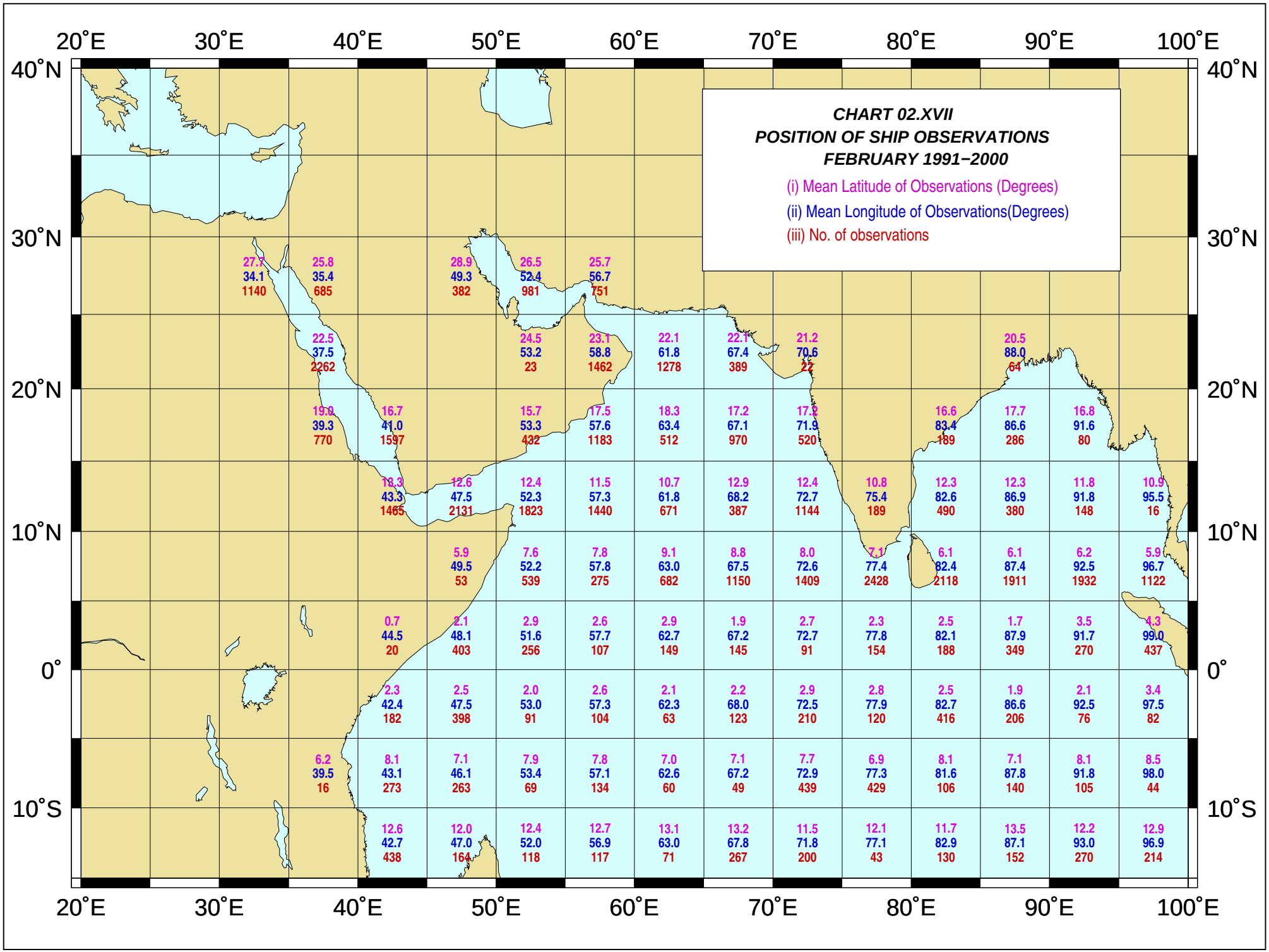


CHART 02.XVII
POSITION OF SHIP OBSERVATIONS
FEBRUARY 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.7 34.1 1140
25.8 35.4 685
28.9 49.3 382
26.5 52.4 981
25.7 56.7 751
22.5 37.5 2262
24.5 53.2 23
23.1 58.8 1462
22.1 61.8 1278
22.1 67.4 389
21.2 70.6 22
20.5 88.0 64
19.0 39.3 770
16.7 41.0 1597
15.7 53.3 432
17.5 57.6 1183
18.3 63.4 512
17.2 67.1 970
17.2 71.9 520
16.6 83.4 189
17.7 86.6 286
16.8 91.6 80
10.3 43.3 1465
12.6 47.5 2131
12.4 52.3 1823
11.5 57.3 1440
10.7 61.8 671
12.9 68.2 387
12.4 72.7 1144
10.8 75.4 189
12.3 82.6 490
12.3 86.9 380
11.8 91.8 148
10.9 95.5 16
5.9 49.5 53
7.6 52.2 539
7.8 57.8 275
9.1 63.0 682
8.8 67.5 1150
8.0 72.6 1409
7.1 77.4 2428
6.1 82.4 2118
6.1 87.4 1911
6.2 92.5 1932
5.9 96.7 1122
0.7 44.5 20
2.1 48.1 403
2.9 51.6 256
2.6 57.7 107
2.9 62.7 149
1.9 67.2 145
2.7 72.7 91
2.3 77.8 154
2.5 82.1 188
1.7 87.9 349
3.5 91.7 270
4.3 99.0 437
2.3 42.4 182
2.5 47.5 398
2.0 53.0 91
2.6 57.3 104
2.1 62.3 63
2.2 68.0 123
2.9 72.5 210
2.8 77.9 120
2.5 82.7 416
1.9 86.6 206
2.1 92.5 76
3.4 97.5 82
6.2 39.5 16
8.1 43.1 273
7.1 46.1 263
7.9 53.4 69
7.8 57.1 134
7.0 62.6 60
7.1 67.2 49
7.7 72.9 439
6.9 77.3 429
8.1 81.6 106
7.1 87.8 140
8.1 91.8 105
8.5 98.0 44
12.6 42.7 438
12.0 47.0 164
12.4 52.0 118
12.7 56.9 117
13.1 63.0 71
13.2 67.8 267
11.5 71.8 200
12.1 77.1 43
11.7 82.9 130
13.5 87.1 152
12.2 93.0 270
12.9 96.9 214

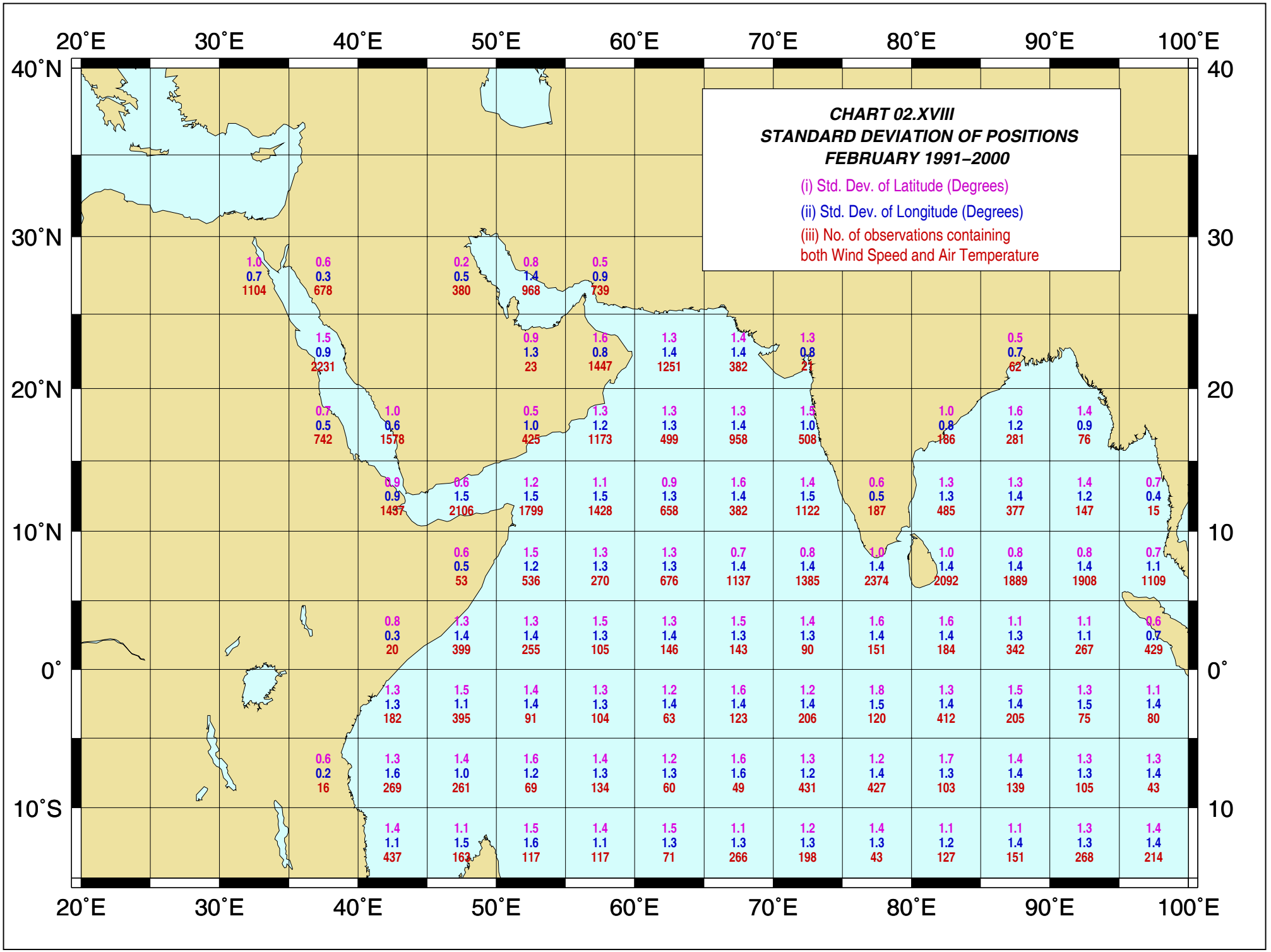
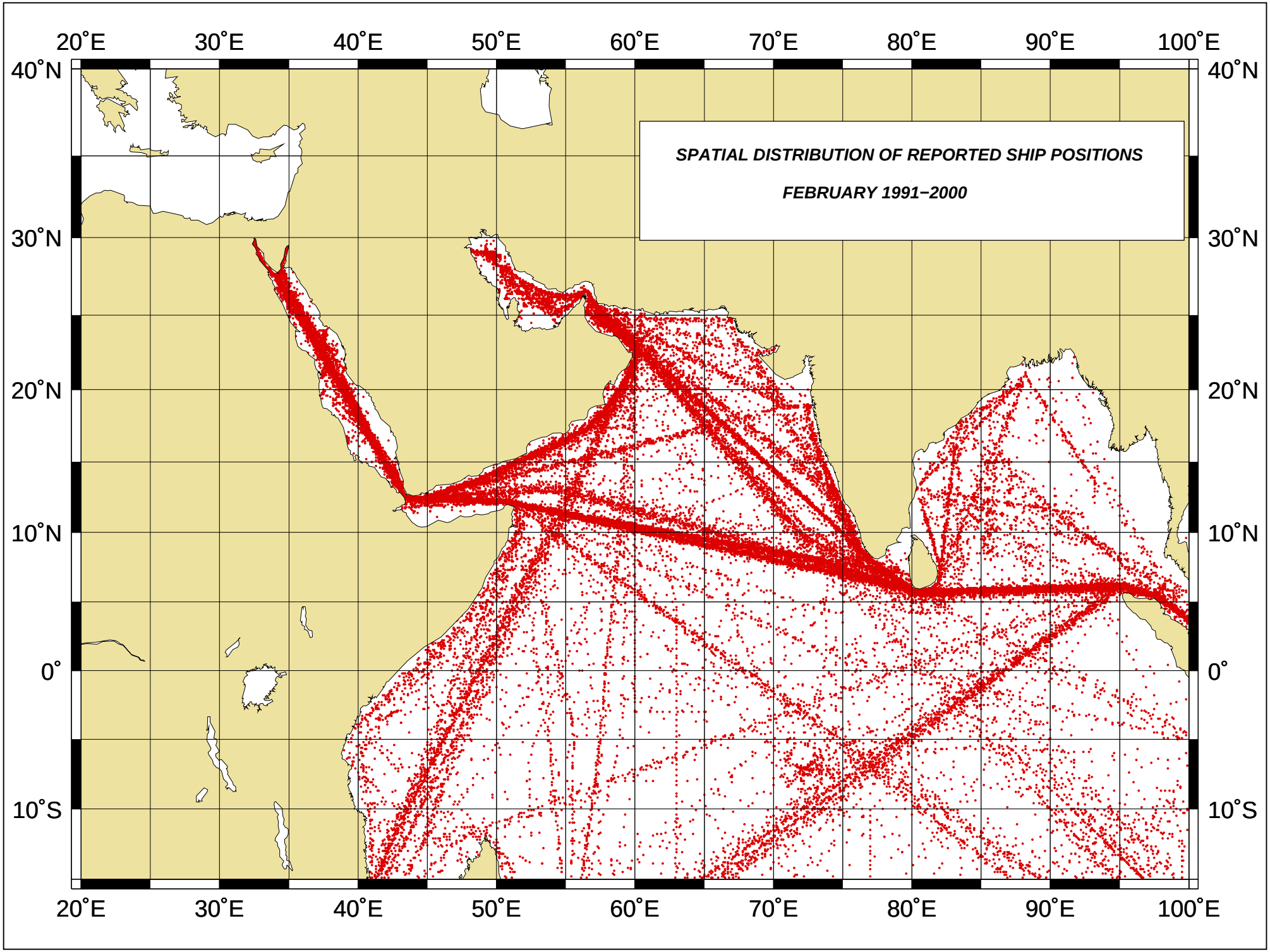
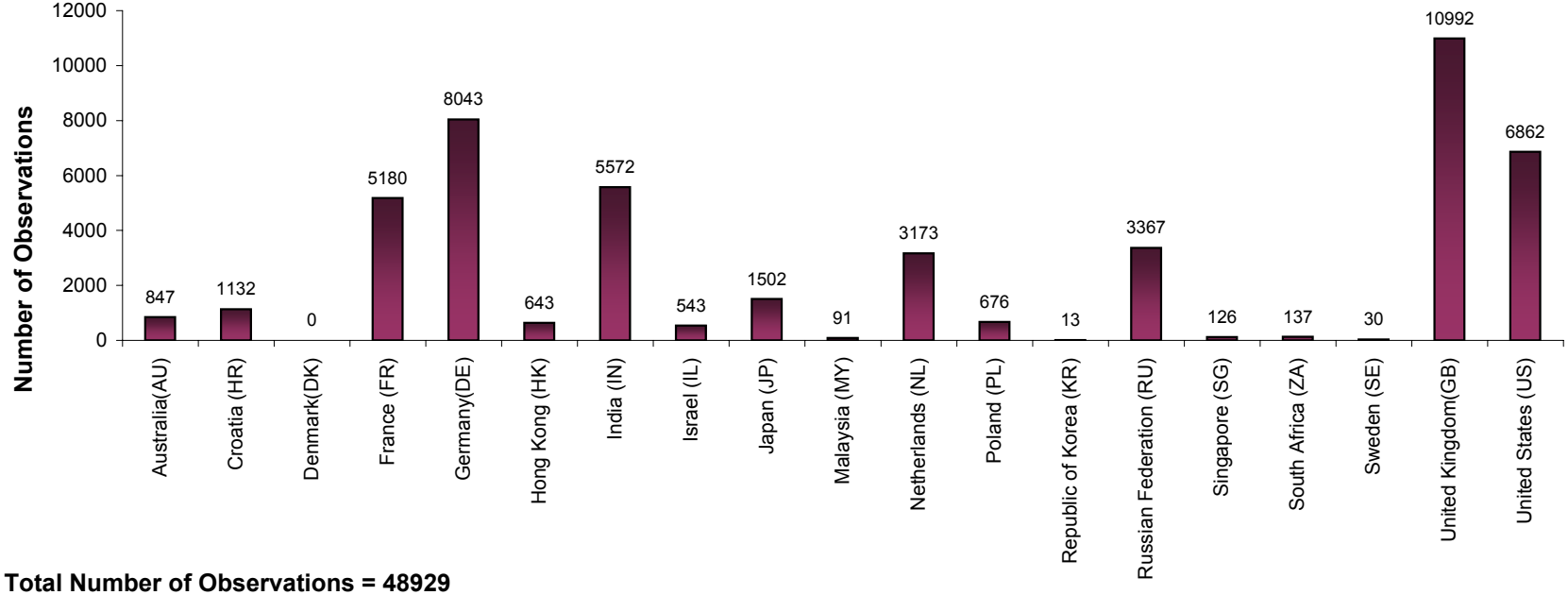


CHART 02.XVIII
STANDARD DEVIATION OF POSITIONS
FEBRUARY 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.7 1104
0.6 0.3 678
0.2 0.5 380
0.8 1.4 968
0.5 0.9 739
1.5 0.9 2231
0.9 1.3 23
1.6 0.8 1447
1.3 1.4 1251
1.4 1.4 382
1.3 0.8 21
0.5 0.7 62
0.7 0.5 742
1.0 0.6 1578
0.5 1.0 425
1.3 1.2 1173
1.3 1.3 499
1.3 1.4 958
1.5 1.0 508
1.0 0.8 186
1.6 1.2 281
1.4 0.9 76
0.9 0.9 1457
0.6 1.5 2106
1.2 1.5 1799
1.1 1.5 1428
0.9 1.3 658
1.6 1.4 382
1.4 1.5 1122
0.6 0.5 187
1.3 1.3 485
1.3 1.4 377
1.4 1.2 147
0.7 0.4 15
0.6 0.5 53
1.5 1.2 536
1.3 1.3 270
1.3 1.3 676
0.7 1.4 1137
0.8 1.4 1385
1.0 1.4 2374
1.0 1.4 2092
0.8 1.4 1889
0.8 1.4 1908
0.7 1.1 1109
0.8 0.3 20
1.3 1.4 399
1.3 1.4 255
1.5 1.3 105
1.3 1.4 146
1.5 1.3 143
1.4 1.3 90
1.6 1.4 151
1.6 1.4 184
1.1 1.3 342
1.1 1.1 267
0.6 0.7 429
1.3 1.3 182
1.5 1.1 395
1.4 1.4 91
1.3 1.3 104
1.2 1.4 63
1.6 1.4 123
1.2 1.4 206
1.8 1.5 120
1.3 1.4 412
1.5 1.4 205
1.3 1.5 75
1.1 1.4 80
0.6 0.2 16
1.3 1.6 269
1.4 1.0 261
1.6 1.2 69
1.4 1.3 134
1.2 1.3 60
1.6 1.6 49
1.3 1.2 431
1.2 1.4 427
1.7 1.3 103
1.4 1.4 139
1.3 1.3 105
1.3 1.4 43
1.4 1.1 437
1.1 1.5 163
1.5 1.6 117
1.4 1.1 117
1.5 1.3 71
1.1 1.3 266
1.2 1.3 198
1.4 1.3 43
1.1 1.2 127
1.1 1.4 151
1.3 1.3 268
1.4 1.4 214


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
FEBRUARY 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

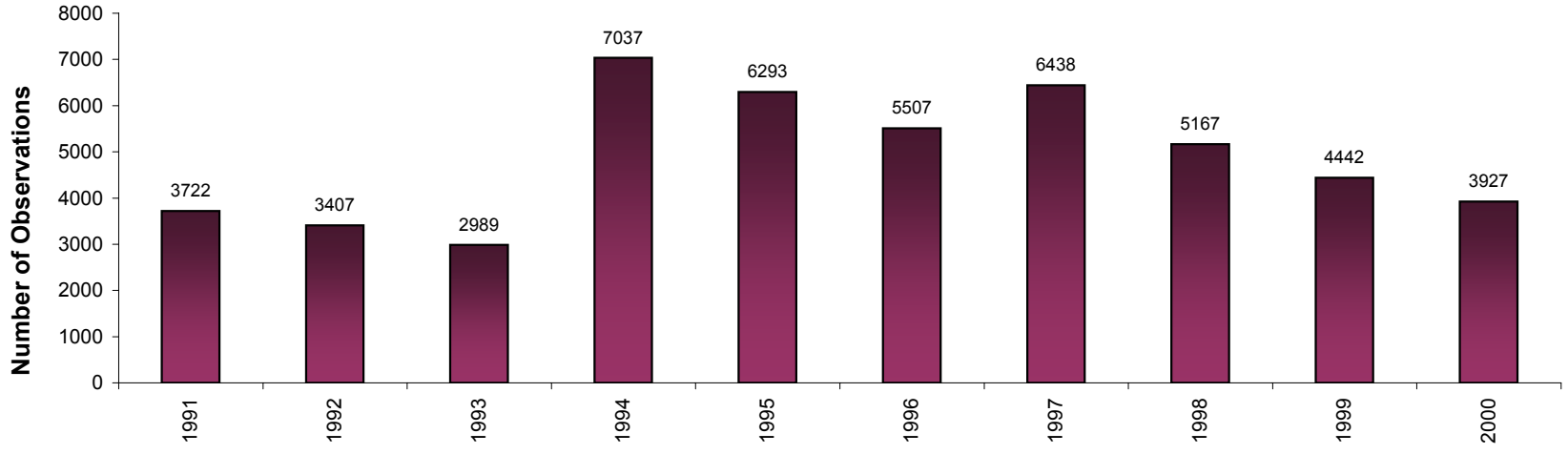
FEBRUARY : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 48929

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations =48929

Marine Climatological Summary Charts 1991-2000

CHARTS OF MARCH 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

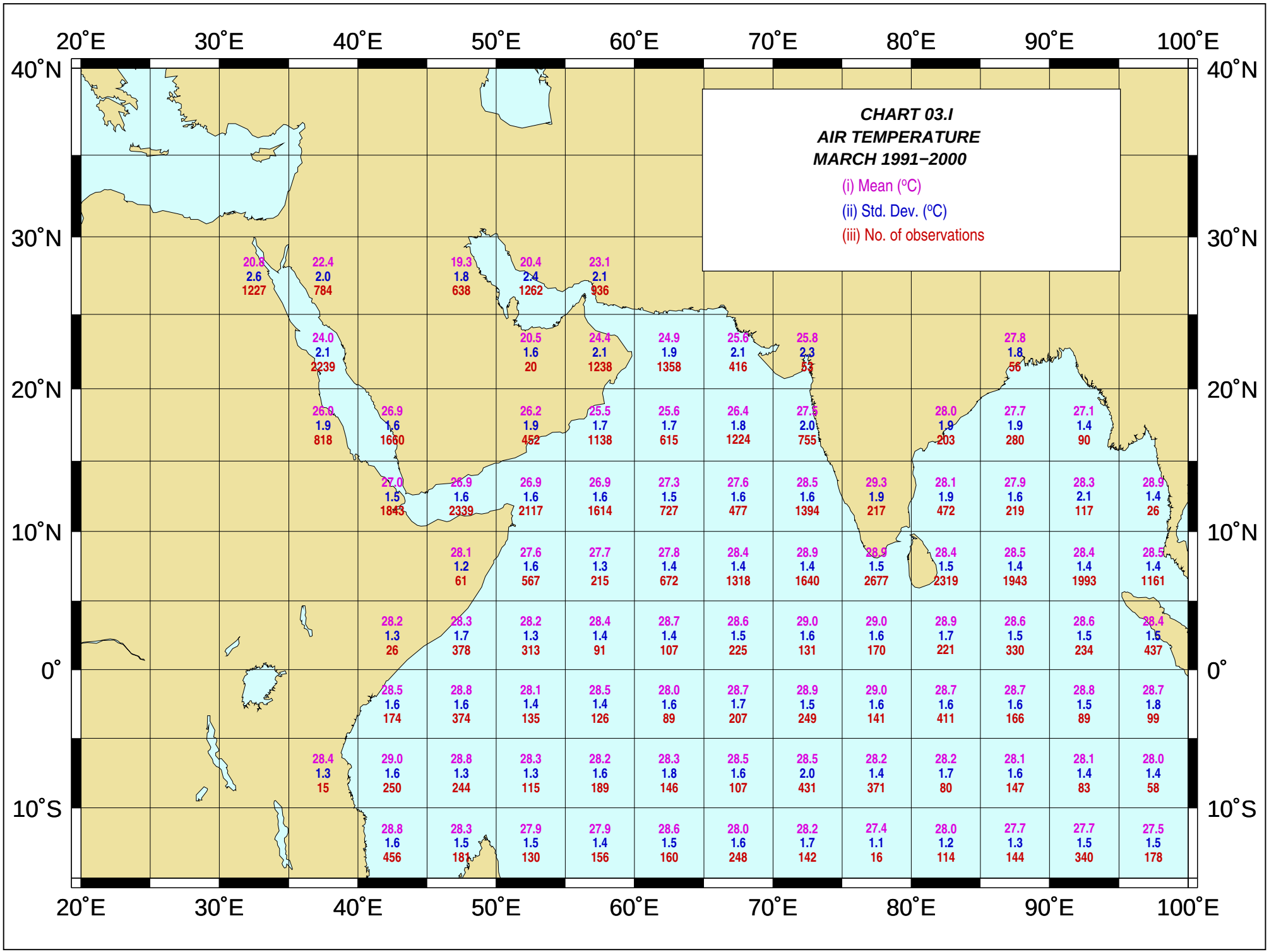


CHART 03.I
AIR TEMPERATURE
MARCH 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
20.8 2.6 1227
22.4 2.0 784
19.3 1.8 638
20.4 2.4 1262
23.1 2.1 936
24.0 2.1 2239
20.5 1.6 20
24.4 2.1 1238
24.9 1.9 1358
25.6 2.1 416
25.8 2.3 53
27.8 1.8 56
26.0 1.9 818
26.9 1.6 1660
26.2 1.9 452
25.5 1.7 1138
25.6 1.7 615
26.4 1.8 1224
27.5 2.0 755
28.0 1.9 203
27.7 1.9 280
27.1 1.4 90
27.0 1.5 1843
26.9 1.6 2339
26.9 1.6 2117
26.9 1.6 1614
27.3 1.5 727
27.6 1.6 477
28.5 1.6 1394
29.3 1.9 217
28.1 1.9 472
27.9 1.6 219
28.3 2.1 117
28.9 1.4 26
28.1 1.2 61
27.6 1.6 567
27.7 1.3 215
27.8 1.4 672
28.4 1.4 1318
28.9 1.4 1640
28.9 1.5 2677
28.4 1.5 2319
28.5 1.4 1943
28.4 1.4 1993
28.5 1.4 1161
28.2 1.3 26
28.3 1.7 378
28.2 1.3 313
28.4 1.4 91
28.7 1.4 107
28.6 1.5 225
29.0 1.6 131
29.0 1.6 170
28.9 1.7 221
28.6 1.5 330
28.6 1.5 234
28.4 1.5 437
28.5 1.6 174
28.8 1.6 374
28.1 1.4 135
28.5 1.4 126
28.0 1.6 89
28.7 1.7 207
28.9 1.5 249
29.0 1.6 141
28.7 1.6 411
28.7 1.6 166
28.8 1.5 89
28.7 1.8 99
28.4 1.3 15
29.0 1.6 250
28.8 1.3 244
28.3 1.3 115
28.2 1.6 189
28.3 1.8 146
28.5 1.6 107
28.5 2.0 431
28.2 1.4 371
28.2 1.7 80
28.1 1.6 147
28.1 1.4 83
28.0 1.4 58
28.8 1.6 456
28.3 1.5 181
27.9 1.5 130
27.9 1.4 156
28.6 1.5 160
28.0 1.6 248
28.2 1.7 142
27.4 1.1 16
28.0 1.2 114
27.7 1.3 144
27.7 1.5 340
27.5 1.5 178

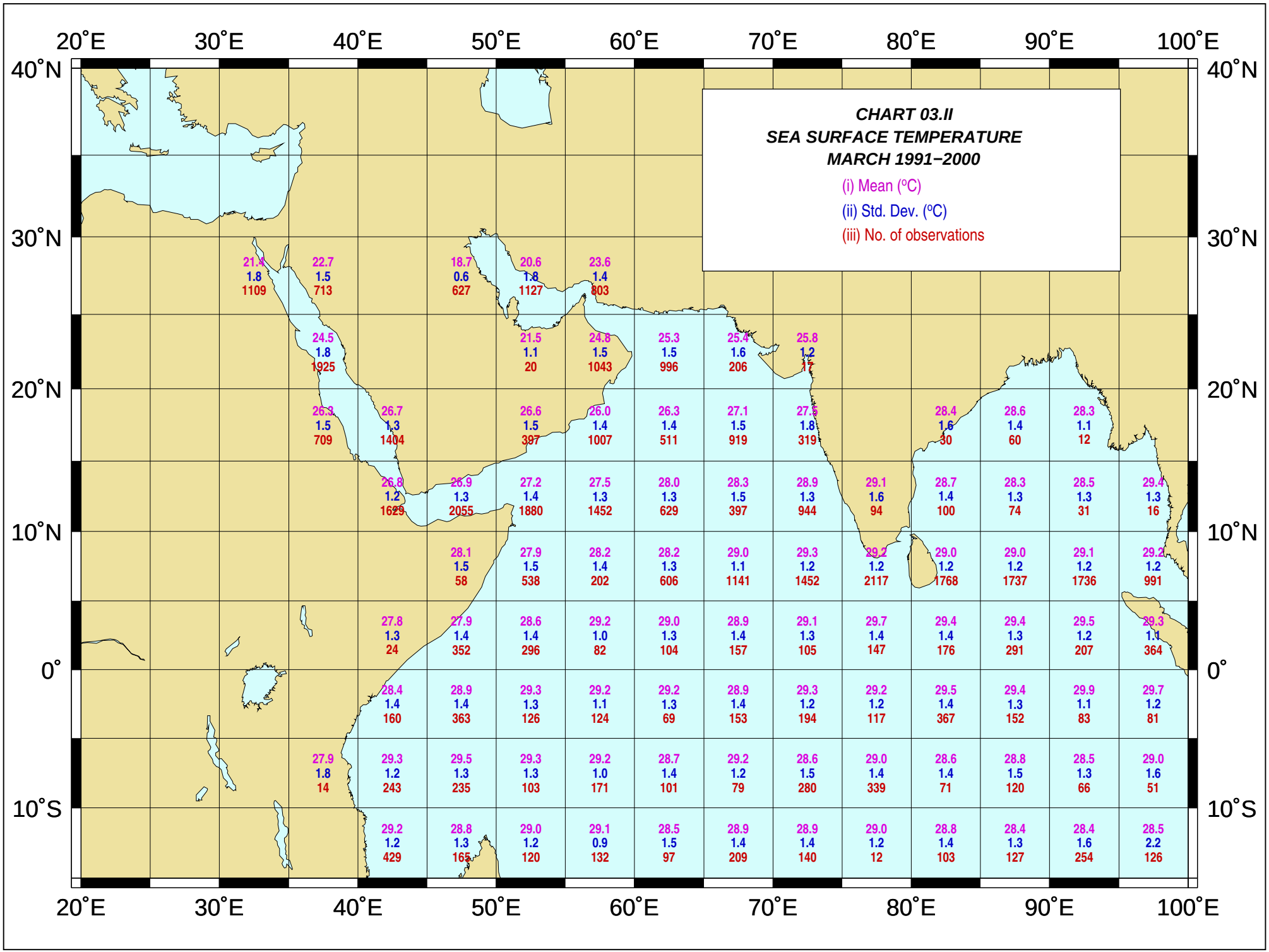


CHART 03.II
SEA SURFACE TEMPERATURE
MARCH 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
21.4 1.8 1109
22.7 1.5 713
18.7 0.6 627
20.6 1.8 1127
23.6 1.4 803
24.5 1.8 1925
21.5 1.1 20
24.8 1.5 1043
25.3 1.5 996
25.4 1.6 206
25.8 1.2 17
26.3 1.5 709
26.7 1.3 1404
26.6 1.5 397
26.0 1.4 1007
26.3 1.4 511
27.1 1.5 919
27.5 1.8 319
28.4 1.6 30
28.6 1.4 60
28.3 1.1 12
26.8 1.2 1629
26.9 1.3 2055
27.2 1.4 1880
27.5 1.3 1452
28.0 1.3 629
28.3 1.5 397
28.9 1.3 944
29.1 1.6 94
28.7 1.4 100
28.3 1.3 74
28.5 1.3 31
29.4 1.3 16
28.1 1.5 58
27.9 1.5 538
28.2 1.4 202
28.2 1.3 606
29.0 1.1 1141
29.3 1.2 1452
29.2 1.2 2117
29.0 1.2 1768
29.0 1.2 1737
29.1 1.2 1736
29.2 1.2 991
27.8 1.3 24
27.9 1.4 352
28.6 1.4 296
29.2 1.0 82
29.0 1.3 104
28.9 1.4 157
29.1 1.3 105
29.7 1.4 147
29.4 1.4 176
29.4 1.3 291
29.5 1.2 207
29.3 1.1 364
28.4 1.4 160
28.9 1.4 363
29.3 1.3 126
29.2 1.1 124
29.2 1.3 69
28.9 1.4 153
29.3 1.2 194
29.2 1.2 117
29.5 1.4 367
29.4 1.3 152
29.9 1.1 83
29.7 1.2 81
27.9 1.8 14
29.3 1.2 243
29.5 1.3 235
29.3 1.3 103
29.2 1.0 171
28.7 1.4 101
29.2 1.2 79
28.6 1.5 280
29.0 1.4 339
28.6 1.4 71
28.8 1.5 120
28.5 1.3 66
29.0 1.6 51
29.2 1.2 429
28.8 1.3 165
29.0 1.2 120
29.1 0.9 132
28.5 1.5 97
28.9 1.4 209
28.9 1.4 140
29.0 1.2 12
28.8 1.4 103
28.4 1.3 127
28.4 1.6 254
28.5 2.2 126

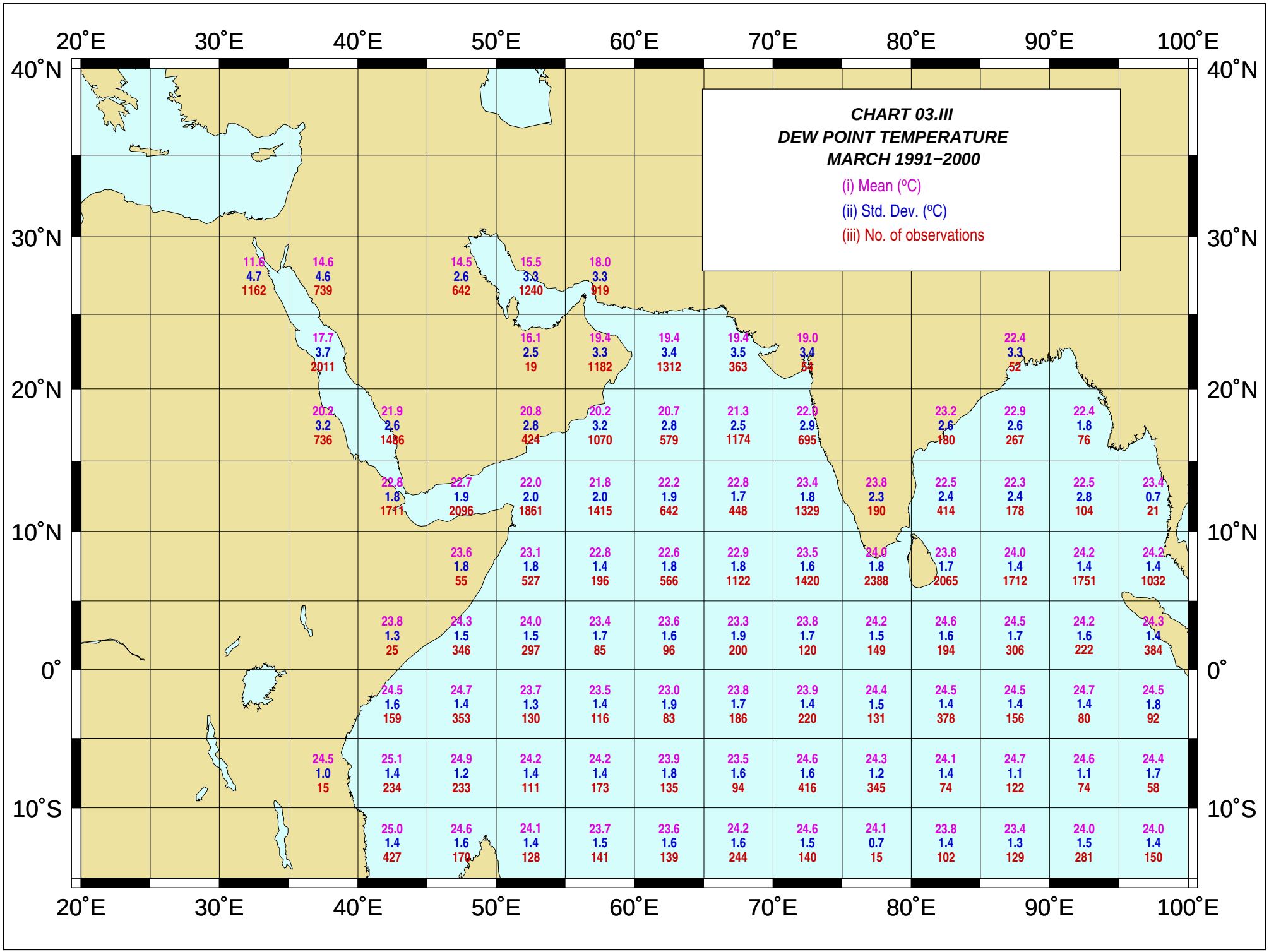


CHART 03.III
DEW POINT TEMPERATURE
MARCH 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
11.6 4.7 1162
14.6 4.6 739
14.5 2.6 642
15.5 3.3 1240
18.0 3.3 919
17.7 3.7 2011
16.1 2.5 19
19.4 3.3 1182
19.4 3.4 1312
19.4 3.5 363
19.0 3.4
22.4 3.3 52
20.2 3.2 736
21.9 2.6 1486
20.8 2.8 424
20.2 3.2 1070
20.7 2.8 579
21.3 2.5 1174
23.2 2.6 180
22.9 2.6 267
22.4 1.8 76
22.8 1.8 1711
22.7 1.9 2096
22.0 2.0 1861
21.8 2.0 1415
22.2 1.9 642
22.8 1.7 448
23.4 1.8 1329
23.8 2.3 190
22.5 2.4 414
22.3 2.4 178
22.5 2.8 104
23.4 0.7 21
23.6 1.8 55
23.1 1.8 527
22.8 1.4 196
22.6 1.8 566
22.9 1.8 1122
23.5 1.6 1420
24.0 1.8 2388
23.8 1.7 2065
24.0 1.4 1712
24.2 1.4 1751
24.2 1.4 1032
23.8 1.3 25
24.3 1.5 346
24.0 1.5 297
23.4 1.7 85
23.6 1.6 96
23.3 1.9 200
23.8 1.7 120
24.2 1.5 149
24.6 1.6 194
24.5 1.7 306
24.2 1.6 222
24.3 1.4 384
24.5 1.6 159
24.7 1.4 353
23.7 1.3 130
23.5 1.4 116
23.0 1.9 83
23.8 1.7 186
23.9 1.4 220
24.4 1.5 131
24.5 1.4 378
24.5 1.4 156
24.7 1.4 80
24.5 1.8 92
24.5 1.0 15
25.1 1.4 234
24.9 1.2 233
24.2 1.4 111
24.2 1.4 173
23.9 1.8 135
23.5 1.6 94
24.6 1.6 416
24.3 1.2 345
24.1 1.4 74
24.7 1.1 122
24.6 1.1 74
24.4 1.7 58
25.0 1.4 427
24.6 1.6 170
24.1 1.4 128
23.7 1.5 141
23.6 1.6 139
24.2 1.6 244
24.6 1.5 140
24.1 0.7 15
23.8 1.4 102
23.4 1.3 129
24.0 1.5 281
24.0 1.4 150

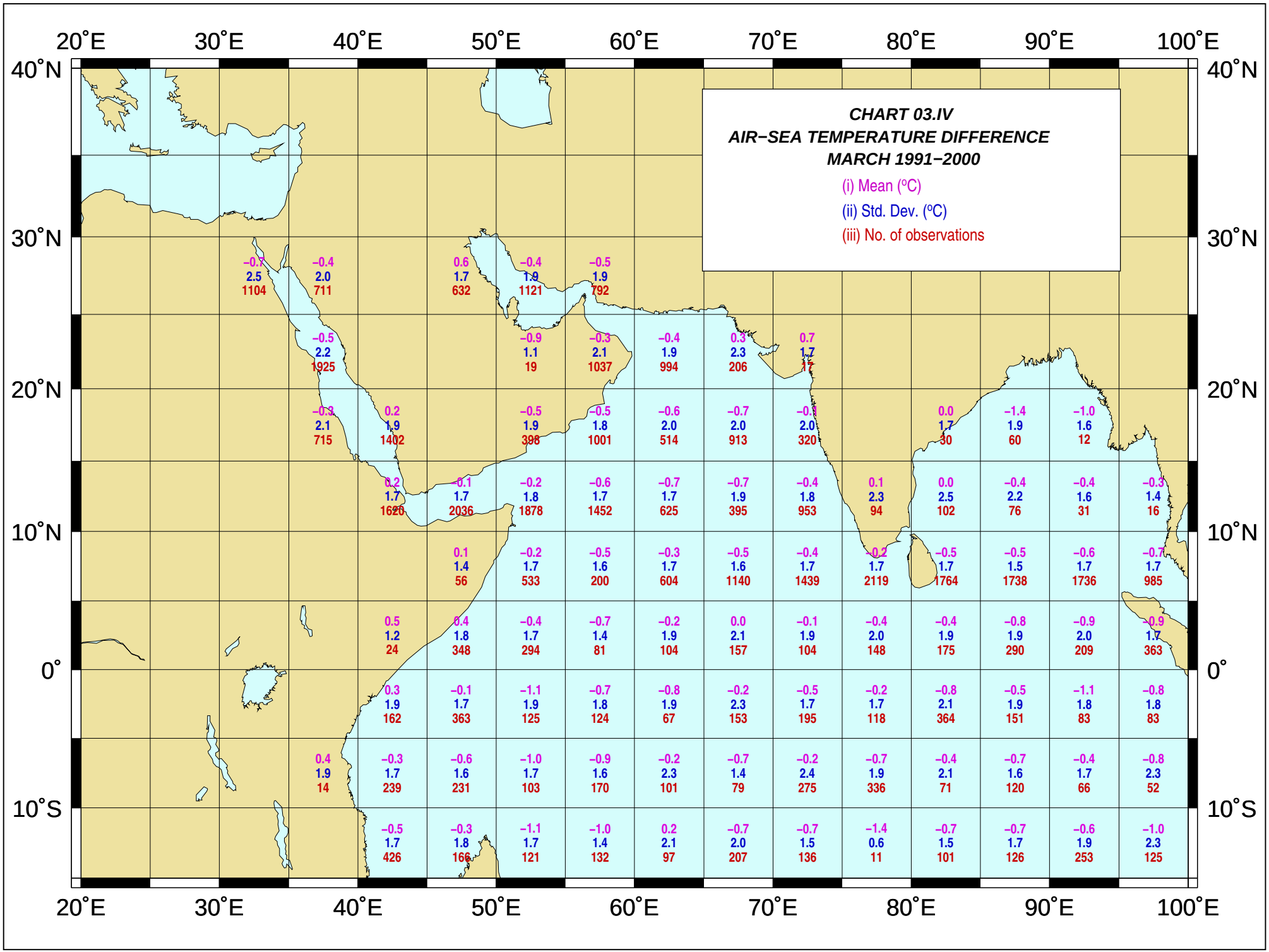


CHART 03.IV
AIR–SEA TEMPERATURE DIFFERENCE
MARCH 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
−0.7 2.5 1104
−0.4 2.0 711
0.6 1.7 632
−0.4 1.9 1121
−0.5 1.9 792
−0.5 2.2 1925
−0.9 1.1 19
−0.3 2.1 1037
−0.4 1.9 994
0.3 2.3 206
0.7 1.7 15
−0.3 2.1 715
0.2 1.9 1402
−0.5 1.9 398
−0.5 1.8 1001
−0.6 2.0 514
−0.7 2.0 913
−0.3 2.0 320
0.0 1.7 30
−1.4 1.9 60
−1.0 1.6 12
0.2 1.7 1626
−0.1 1.7 2036
−0.2 1.8 1878
−0.6 1.7 1452
−0.7 1.7 625
−0.7 1.9 395
−0.4 1.8 953
0.1 2.3 94
0.0 2.5 102
−0.4 2.2 76
−0.4 1.6 31
−0.3 1.4 16
0.1 1.4 56
−0.2 1.7 533
−0.5 1.6 200
−0.3 1.7 604
−0.5 1.6 1140
−0.4 1.7 1439
−0.2 1.7 2119
−0.5 1.7 1764
−0.5 1.5 1738
−0.6 1.7 1736
−0.7 1.7 985
0.5 1.2 24
0.4 1.8 348
−0.4 1.7 294
−0.7 1.4 81
−0.2 1.9 104
0.0 2.1 157
−0.1 1.9 104
−0.4 2.0 148
−0.4 1.9 175
−0.8 1.9 290
−0.9 2.0 209
−0.9 1.7 363
0.3 1.9 162
−0.1 1.7 363
−1.1 1.9 125
−0.7 1.8 124
−0.8 1.9 67
−0.2 2.3 153
−0.5 1.7 195
−0.2 1.7 118
−0.8 2.1 364
−0.5 1.9 151
−1.1 1.8 83
−0.8 1.8 83
0.4 1.9 14
−0.3 1.7 239
−0.6 1.6 231
−1.0 1.7 103
−0.9 1.6 170
−0.2 2.3 101
−0.7 1.4 79
−0.2 2.4 275
−0.7 1.9 336
−0.4 2.1 71
−0.7 1.6 120
−0.4 1.7 66
−0.8 2.3 52
−0.5 1.7 426
−0.3 1.8 166
−1.1 1.7 121
−1.0 1.4 132
0.2 2.1 97
−0.7 2.0 207
−0.7 1.5 136
−1.4 0.6 11
−0.7 1.5 101
−0.7 1.7 126
−0.6 1.9 253
−1.0 2.3 125

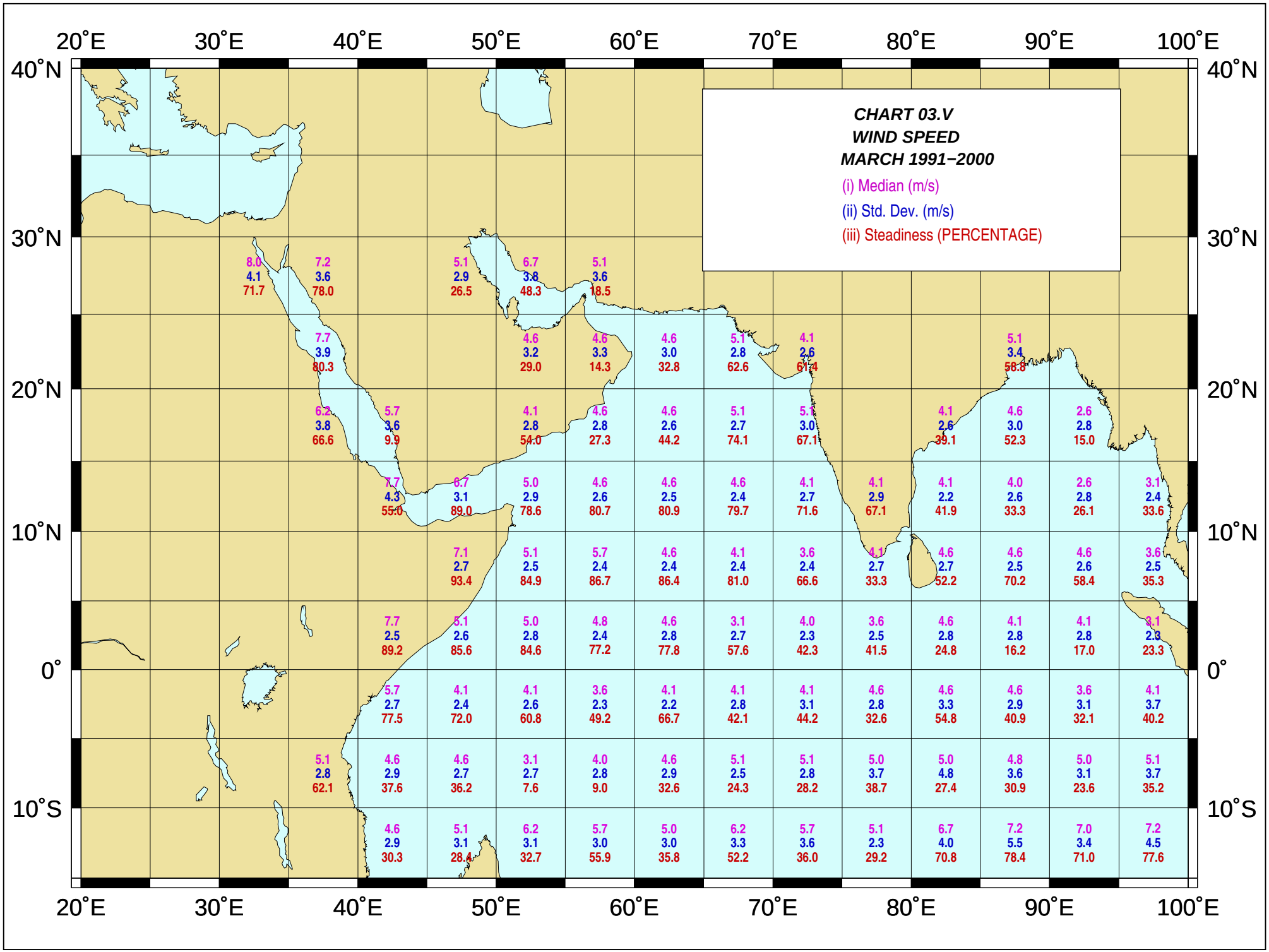


CHART 03.V
WIND SPEED
MARCH 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
8.0 4.1 71.7
7.2 3.6 78.0
5.1 2.9 26.5
6.7 3.8 48.3
5.1 3.6 18.5
7.7 3.9 80.3
4.6 3.2 29.0
4.6 3.3 14.3
4.6 3.0 32.8
5.1 2.8 62.6
4.1 2.6 61.4
5.1 3.4 58.8
6.2 3.8 66.6
5.7 3.6 9.9
4.1 2.8 54.0
4.6 2.8 27.3
4.6 2.6 44.2
5.1 2.7 74.1
5.1 3.0 67.1
4.1 2.6 39.1
4.6 3.0 52.3
2.6 2.8 15.0
7.7 4.3 55.0
6.7 3.1 89.0
5.0 2.9 78.6
4.6 2.6 80.7
4.6 2.5 80.9
4.6 2.4 79.7
4.1 2.7 71.6
4.1 2.9 67.1
4.1 2.2 41.9
4.0 2.6 33.3
2.6 2.8 26.1
3.1 2.4 33.6
7.1 2.7 93.4
5.1 2.5 84.9
5.7 2.4 86.7
4.6 2.4 86.4
4.1 2.4 81.0
3.6 2.4 66.6
4.1 2.7 33.3
4.6 2.7 52.2
4.6 2.5 70.2
4.6 2.6 58.4
3.6 2.5 35.3
7.7 2.5 89.2
5.1 2.6 85.6
5.0 2.8 84.6
4.8 2.4 77.2
4.6 2.8 77.8
3.1 2.7 57.6
4.0 2.3 42.3
3.6 2.5 41.5
4.6 2.8 24.8
4.1 2.8 16.2
4.1 2.8 17.0
3.1 2.3 23.3
5.7 2.7 77.5
4.1 2.4 72.0
4.1 2.6 60.8
3.6 2.3 49.2
4.1 2.2 66.7
4.1 2.8 42.1
4.1 3.1 44.2
4.6 2.8 32.6
4.6 3.3 54.8
4.6 2.9 40.9
3.6 3.1 32.1
4.1 3.7 40.2
5.1 2.8 62.1
4.6 2.9 37.6
4.6 2.7 36.2
3.1 2.7 7.6
4.0 2.8 9.0
4.6 2.9 32.6
5.1 2.5 24.3
5.1 2.8 28.2
5.0 3.7 38.7
5.0 4.8 27.4
4.8 3.6 30.9
5.0 3.1 23.6
5.1 3.7 35.2
4.6 2.9 30.3
5.1 3.1 28.4
6.2 3.1 32.7
5.7 3.0 55.9
5.0 3.0 35.8
6.2 3.3 52.2
5.7 3.6 36.0
5.1 2.3 29.2
6.7 4.0 70.8
7.2 5.5 78.4
7.0 3.4 71.0
7.2 4.5 77.6

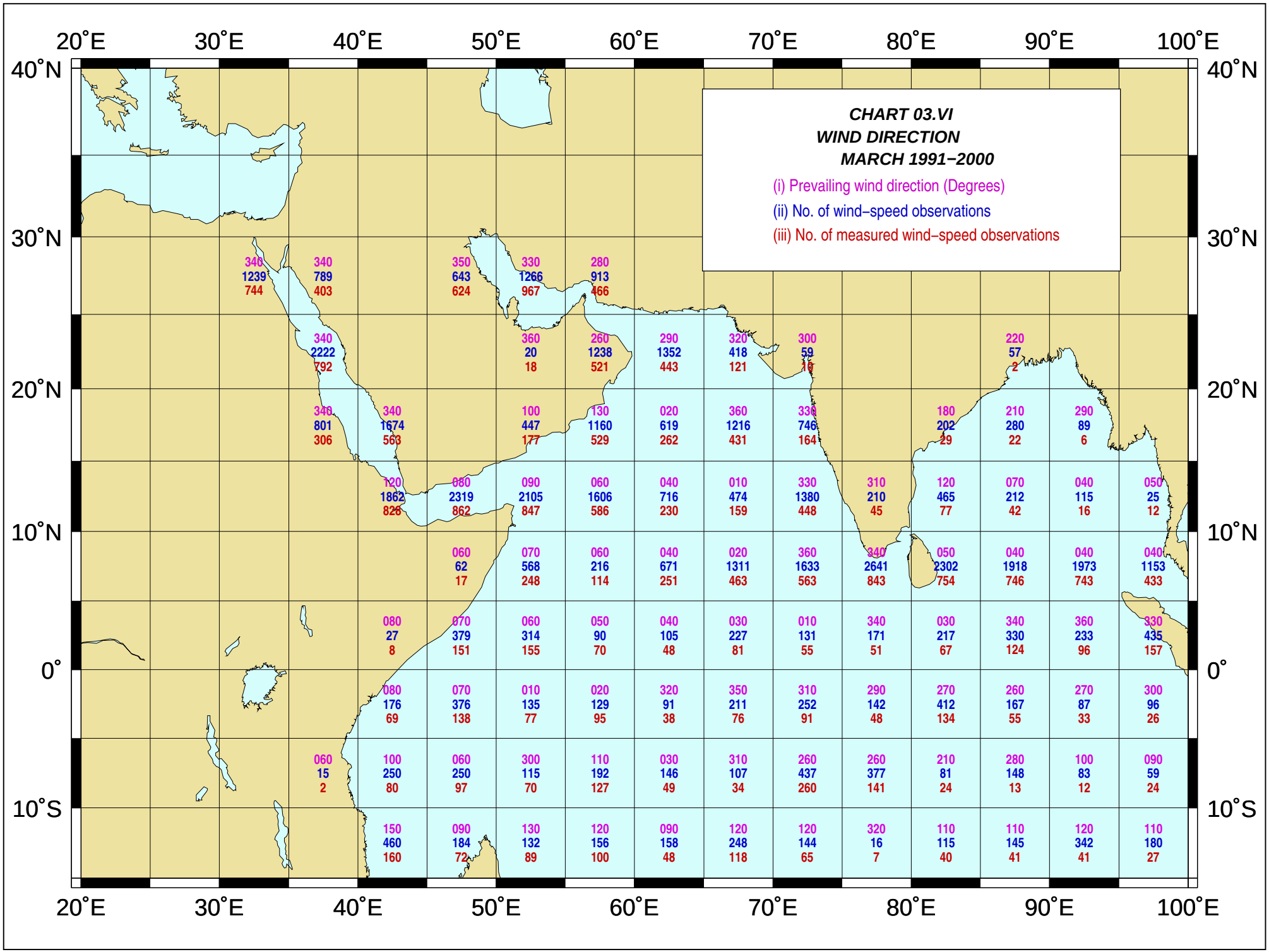


CHART 03.VI
WIND DIRECTION
MARCH 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
340 1239 744
340 789 403
350 643 624
330 1266 967
280 913 466
340 2222 792
360 20 18
260 1238 521
290 1352 443
320 418 121
300 59 19
220 57 2
340 801 306
340 1674 563
100 447 177
130 1160 529
020 619 262
360 1216 431
330 746 164
180 202 29
210 280 22
290 89 6
120 1862 826
080 2319 862
090 2105 847
060 1606 586
040 716 230
010 474 159
330 1380 448
310 210 45
120 465 77
070 212 42
040 115 16
050 25 12
060 62 17
070 568 248
060 216 114
040 671 251
020 1311 463
360 1633 563
340 2641 843
050 2302 754
040 1918 746
040 1973 743
040 1153 433
080 27 8
070 379 151
060 314 155
050 90 70
040 105 48
030 227 81
010 131 55
340 171 51
030 217 67
340 330 124
360 233 96
330 435 157
080 176 69
070 376 138
010 135 77
020 129 95
320 91 38
350 211 76
310 252 91
290 142 48
270 412 134
260 167 55
270 87 33
300 96 26
060 15 2
100 250 80
060 250 97
300 115 70
110 192 127
030 146 49
310 107 34
260 437 260
260 377 141
210 81 24
280 148 13
100 83 12
090 59 24
150 460 160
090 184 72
130 132 89
120 156 100
090 158 48
120 248 118
120 144 65
320 16 7
110 115 40
110 145 41
120 342 41
110 180 27

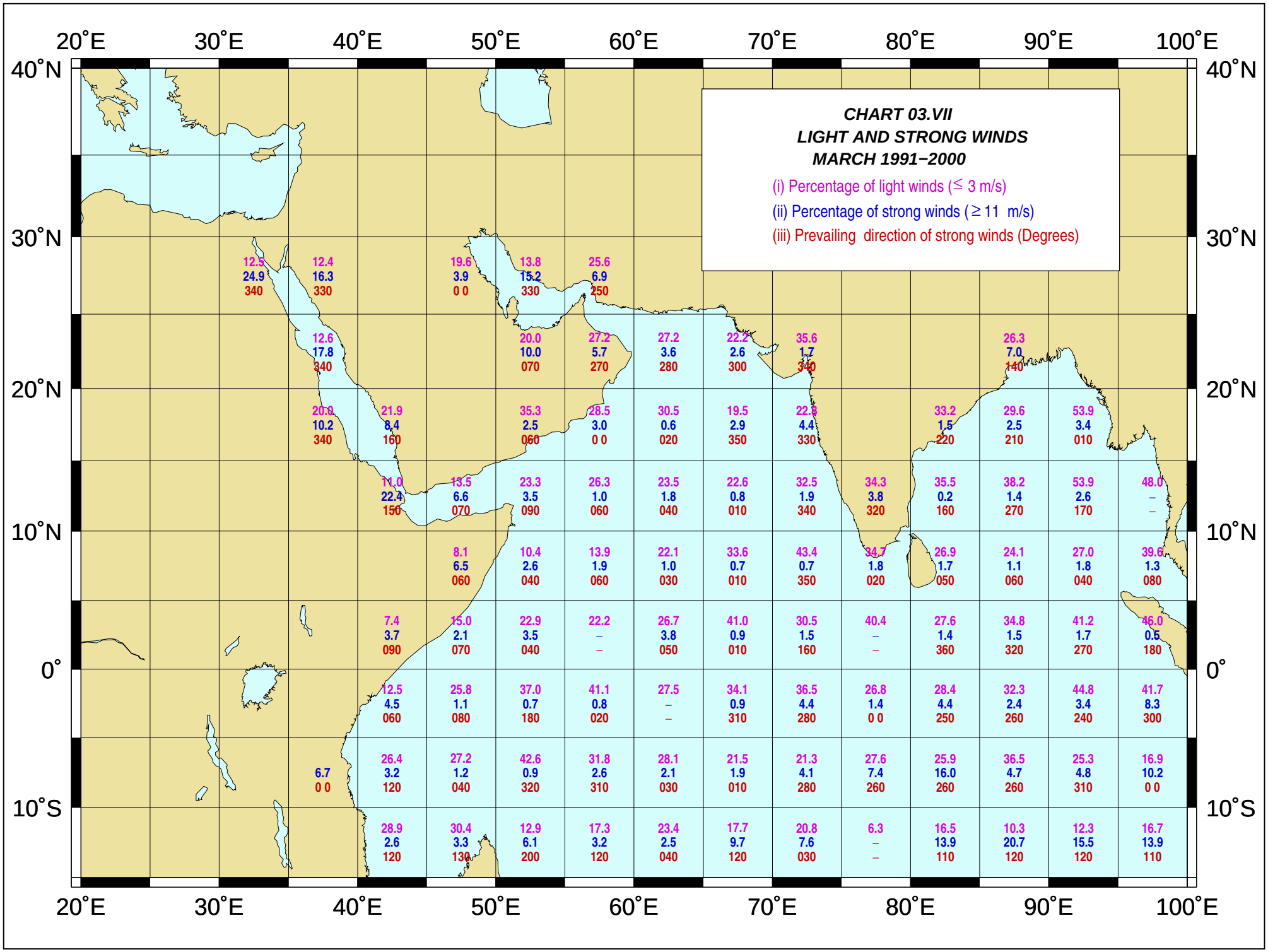


CHART 03.VII
LIGHT AND STRONG WINDS
MARCH 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
12.5 24.9 340
12.4 16.3 330
19.6 3.9 0 0
13.8 15.2 330
25.6 6.9 250
12.6 17.8 340
20.0 10.0 070
27.2 5.7 270
27.2 3.6 280
22.2 2.6 300
35.6 1.7 340
26.3 7.0 140
20.0 10.2 340
21.9 8.4 160
35.3 2.5 060
28.5 3.0 0 0
30.5 0.6 020
19.5 2.9 350
22.8 4.4 330
33.2 1.5 220
29.6 2.5 210
53.9 3.4 010
11.0 22.4 150
13.5 6.6 070
23.3 3.5 090
26.3 1.0 060
23.5 1.8 040
22.6 0.8 010
32.5 1.9 340
34.3 3.8 320
35.5 0.2 160
38.2 1.4 270
53.9 2.6 170
48.0 – –
8.1 6.5 060
10.4 2.6 040
13.9 1.9 060
22.1 1.0 030
33.6 0.7 010
43.4 0.7 350
34.7 1.8 020
26.9 1.7 050
24.1 1.1 060
27.0 1.8 040
39.6 1.3 080
7.4 3.7 090
15.0 2.1 070
22.9 3.5 040
22.2 – –
26.7 3.8 050
41.0 0.9 010
30.5 1.5 160
40.4 – –
27.6 1.4 360
34.8 1.5 320
41.2 1.7 270
46.0 0.5 180
12.5 4.5 060
25.8 1.1 080
37.0 0.7 180
41.1 0.8 020
27.5 – –
34.1 0.9 310
36.5 4.4 280
26.8 1.4 0 0
28.4 4.4 250
32.3 2.4 260
44.8 3.4 240
41.7 8.3 300
6.7 0 0
26.4 3.2 120
27.2 1.2 040
42.6 0.9 320
31.8 2.6 310
28.1 2.1 030
21.5 1.9 010
21.3 4.1 280
27.6 7.4 260
25.9 16.0 260
36.5 4.7 260
25.3 4.8 310
16.9 10.2 0 0
28.9 2.6 120
30.4 3.3 130
12.9 6.1 200
17.3 3.2 120
23.4 2.5 040
17.7 9.7 120
20.8 7.6 030
6.3 – –
16.5 13.9 110
10.3 20.7 120
12.3 15.5 120
16.7 13.9 110

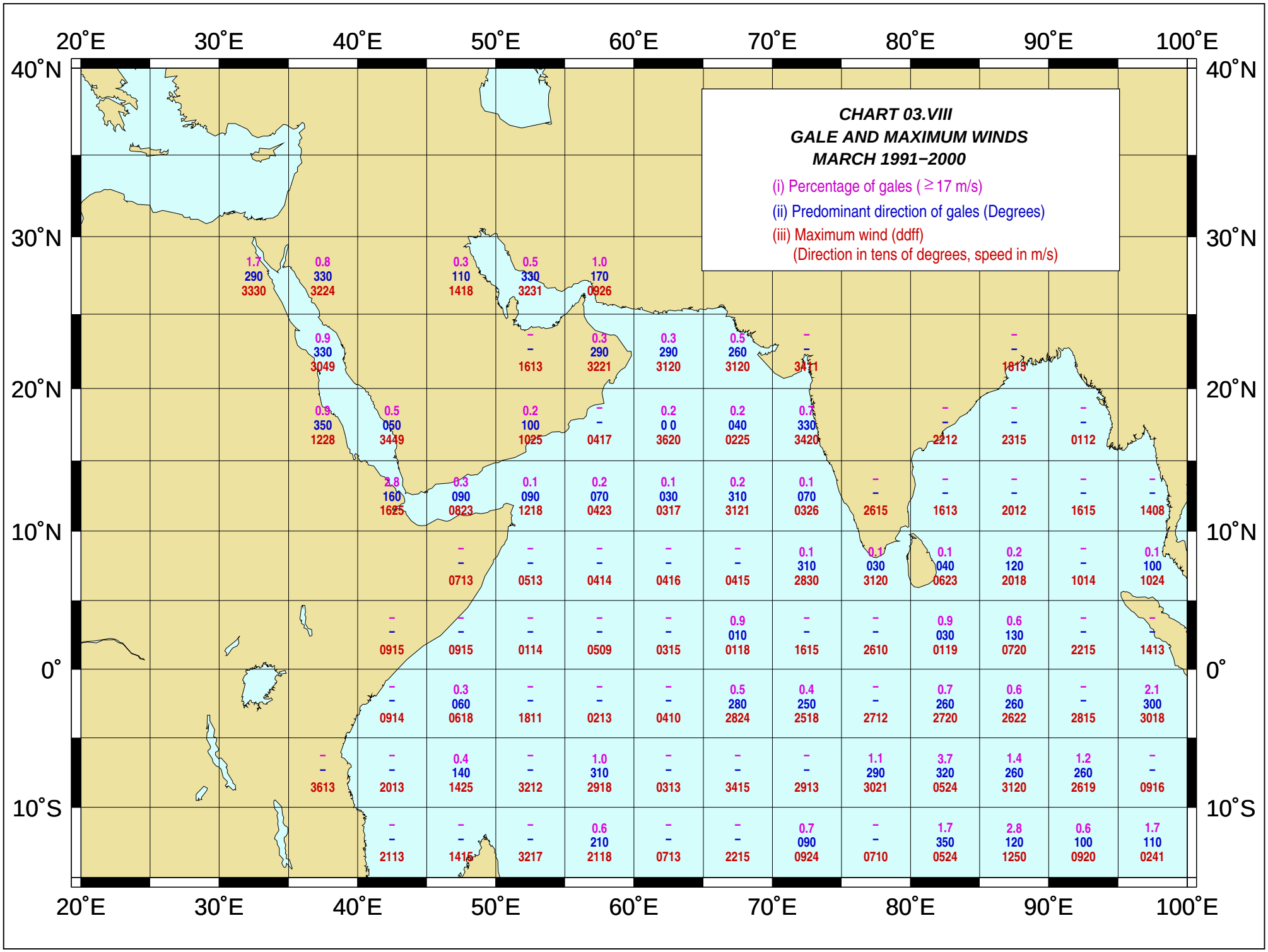


CHART 03.VIII
GALE AND MAXIMUM WINDS
MARCH 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.7 290 3330
0.8 330 3224
0.3 110 1418
0.5 330 3231
1.0 170 0926
0.9 330 3049
– – 1613
0.3 290 3221
0.3 290 3120
0.5 260 3120
– – 3411
– – 1815
0.9 350 1228
0.5 050 3449
0.2 100 1025
– – 0417
0.2 0 0 3620
0.2 040 0225
0.2 330 3420
– – 2212
– – 2315
– – 0112
2.8 160 1625
0.3 090 0823
0.1 090 1218
0.2 070 0423
0.1 030 0317
0.2 310 3121
0.1 070 0326
– – 2615
– – 1613
– – 2012
– – 1615
– – 1408
– – 0713
– – 0513
– – 0414
– – 0416
– – 0415
0.1 310 2830
0.1 030 3120
0.1 040 0623
0.2 120 2018
– – 1014
0.1 100 1024
– – 0915
– – 0915
– – 0114
– – 0509
– – 0315
0.9 010 0118
– – 1615
– – 2610
0.9 030 0119
0.6 130 0720
– – 2215
– – 1413
– – 0914
0.3 060 0618
– – 1811
– – 0213
– – 0410
0.5 280 2824
0.4 250 2518
– – 2712
0.7 260 2720
0.6 260 2622
– – 2815
2.1 300 3018
– – 3613
– – 2013
0.4 140 1425
– – 3212
1.0 310 2918
– – 0313
– – 3415
– – 2913
1.1 290 3021
3.7 320 0524
1.4 260 3120
1.2 260 2619
– – 0916
– – 2113
– – 1415
– – 3217
0.6 210 2118
– – 0713
– – 2215
0.7 090 0924
– – 0710
1.7 350 0524
2.8 120 1250
0.6 100 0920
1.7 110 0241

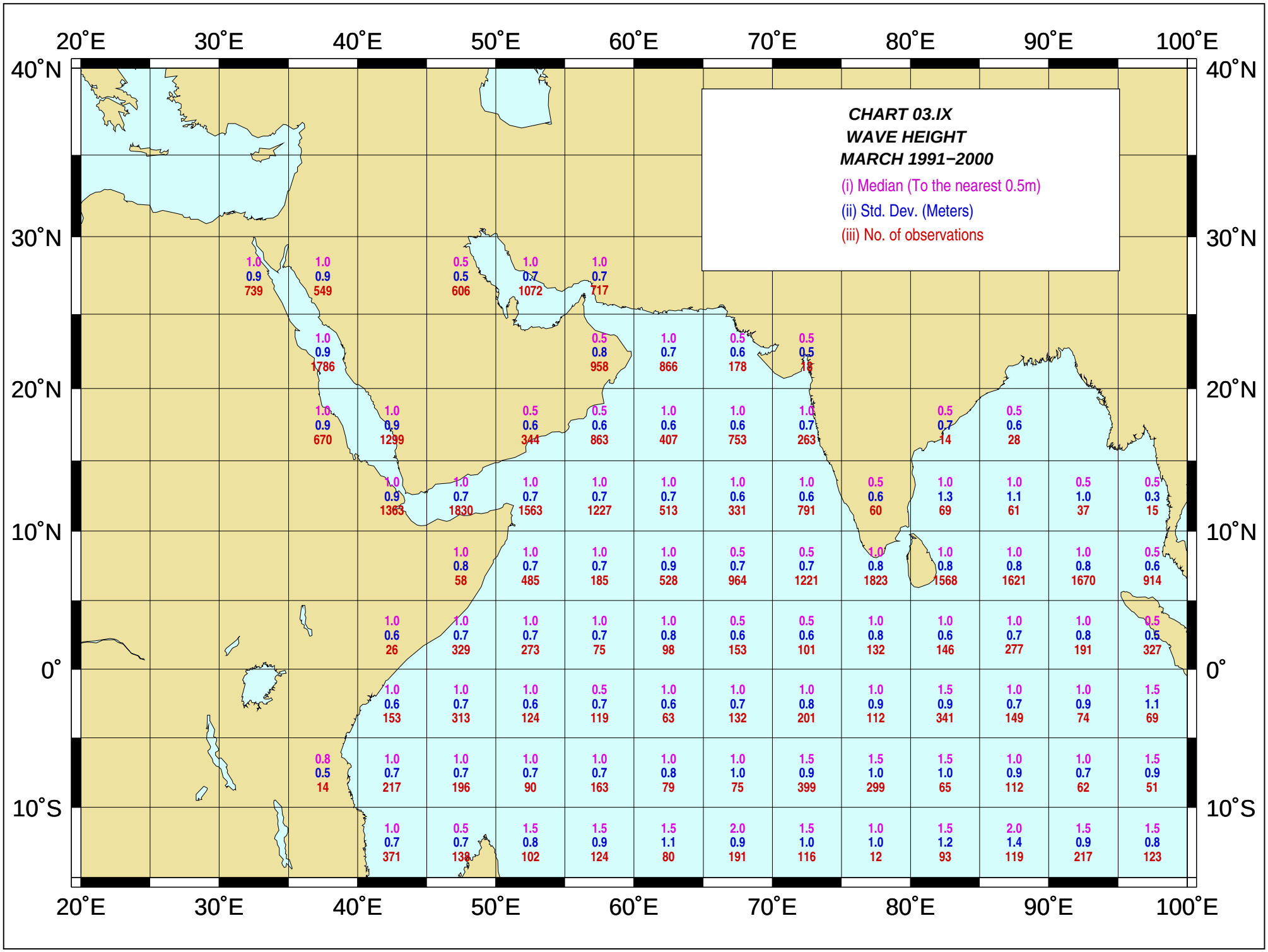


CHART 03.IX
WAVE HEIGHT
MARCH 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.9 739
1.0 0.9 549
0.5 0.5 606
1.0 0.7 1072
1.0 0.7 717
1.0 0.9 1786
0.5 0.8 958
1.0 0.7 866
0.5 0.6 178
0.5 0.5 16
1.0 0.9 670
1.0 0.9 1299
0.5 0.6 344
0.5 0.6 863
1.0 0.6 407
1.0 0.6 753
1.0 0.7 263
0.5 0.7 14
0.5 0.6 28
1.0 0.9 1363
1.0 0.7 1830
1.0 0.7 1563
1.0 0.7 1227
1.0 0.7 513
1.0 0.6 331
1.0 0.6 791
0.5 0.6 60
1.0 1.3 69
1.0 1.1 61
0.5 1.0 37
0.5 0.3 15
1.0 0.8 58
1.0 0.7 485
1.0 0.7 185
1.0 0.9 528
0.5 0.7 964
0.5 0.7 1221
1.0 0.8 1823
1.0 0.8 1568
1.0 0.8 1621
1.0 0.8 1670
0.5 0.6 914
1.0 0.6 26
1.0 0.7 329
1.0 0.7 273
1.0 0.7 75
1.0 0.8 98
0.5 0.6 153
0.5 0.6 101
1.0 0.8 132
1.0 0.6 146
1.0 0.7 277
1.0 0.8 191
0.5 0.5 327
1.0 0.6 153
1.0 0.7 313
1.0 0.6 124
0.5 0.7 119
1.0 0.6 63
1.0 0.7 132
1.0 0.8 201
1.0 0.9 112
1.5 0.9 341
1.0 0.7 149
1.0 0.9 74
1.5 1.1 69
0.8 0.5 14
1.0 0.7 217
1.0 0.7 196
1.0 0.7 90
1.0 0.7 163
1.0 0.8 79
1.0 1.0 75
1.5 0.9 399
1.5 1.0 299
1.5 1.0 65
1.0 0.9 112
1.0 0.7 62
1.5 0.9 51
1.0 0.7 371
0.5 0.7 138
1.5 0.8 102
1.5 0.9 124
1.5 1.1 80
2.0 0.9 191
1.5 1.0 116
1.0 1.0 12
1.5 1.2 93
2.0 1.4 119
1.5 0.9 217
1.5 0.8 123

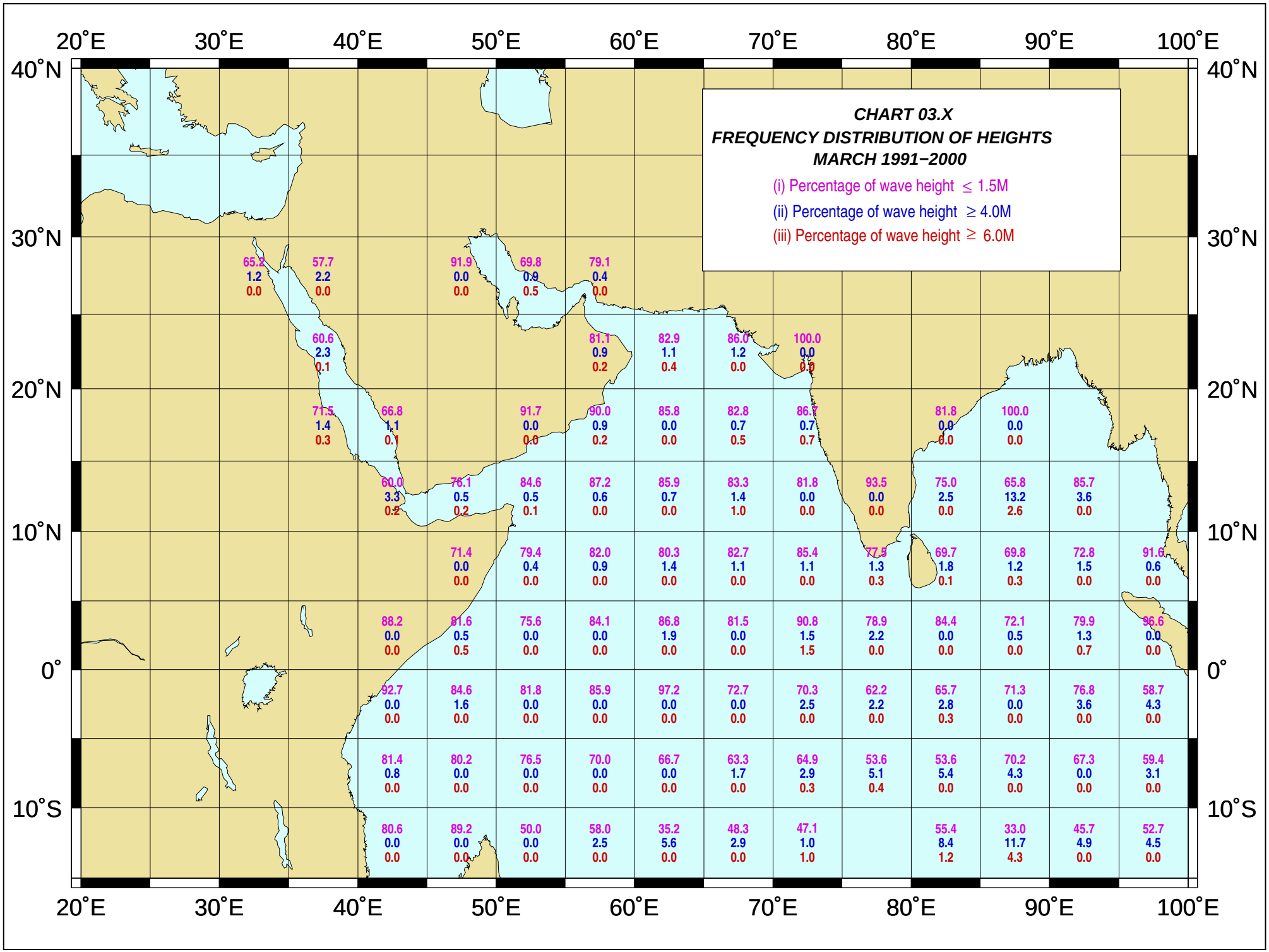


CHART 03.X
FREQUENCY DISTRIBUTION OF HEIGHTS
MARCH 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
65.2 1.2 0.0
57.7 2.2 0.0
91.9 0.0 0.0
69.8 0.9 0.5
79.1 0.4 0.0
60.6 2.3 0.1
81.1 0.9 0.2
82.9 1.1 0.4
86.0 1.2 0.0
100.0 0.0 0.0
71.5 1.4 0.3
66.8 1.1 0.1
91.7 0.0 0.0
90.0 0.9 0.2
85.8 0.0 0.0
82.8 0.7 0.5
86.7 0.7 0.7
81.8 0.0 0.0
100.0 0.0 0.0
60.0 3.3 0.2
76.1 0.5 0.2
84.6 0.5 0.1
87.2 0.6 0.0
85.9 0.7 0.0
83.3 1.4 1.0
81.8 0.0 0.0
93.5 0.0 0.0
75.0 2.5 0.0
65.8 13.2 2.6
85.7 3.6 0.0
71.4 0.0 0.0
79.4 0.4 0.0
82.0 0.9 0.0
80.3 1.4 0.0
82.7 1.1 0.0
85.4 1.1 0.0
77.5 1.3 0.3
69.7 1.8 0.1
69.8 1.2 0.3
72.8 1.5 0.0
91.6 0.6 0.0
88.2 0.0 0.0
81.6 0.5 0.5
75.6 0.0 0.0
84.1 0.0 0.0
86.8 1.9 0.0
81.5 0.0 0.0
90.8 1.5 1.5
78.9 2.2 0.0
84.4 0.0 0.0
72.1 0.5 0.0
79.9 1.3 0.7
96.6 0.0 0.0
92.7 0.0 0.0
84.6 1.6 0.0
81.8 0.0 0.0
85.9 0.0 0.0
97.2 0.0 0.0
72.7 0.0 0.0
70.3 2.5 0.0
62.2 2.2 0.0
65.7 2.8 0.3
71.3 0.0 0.0
76.8 3.6 0.0
58.7 4.3 0.0
81.4 0.8 0.0
80.2 0.0 0.0
76.5 0.0 0.0
70.0 0.0 0.0
66.7 0.0 0.0
63.3 1.7 0.0
64.9 2.9 0.3
53.6 5.1 0.4
53.6 5.4 0.0
70.2 4.3 0.0
67.3 0.0 0.0
59.4 3.1 0.0
80.6 0.0 0.0
89.2 0.0 0.0
50.0 0.0 0.0
58.0 2.5 0.0
35.2 5.6 0.0
48.3 2.9 0.0
47.1 1.0 1.0
55.4 8.4 1.2
33.0 11.7 4.3
45.7 4.9 0.0
52.7 4.5 0.0

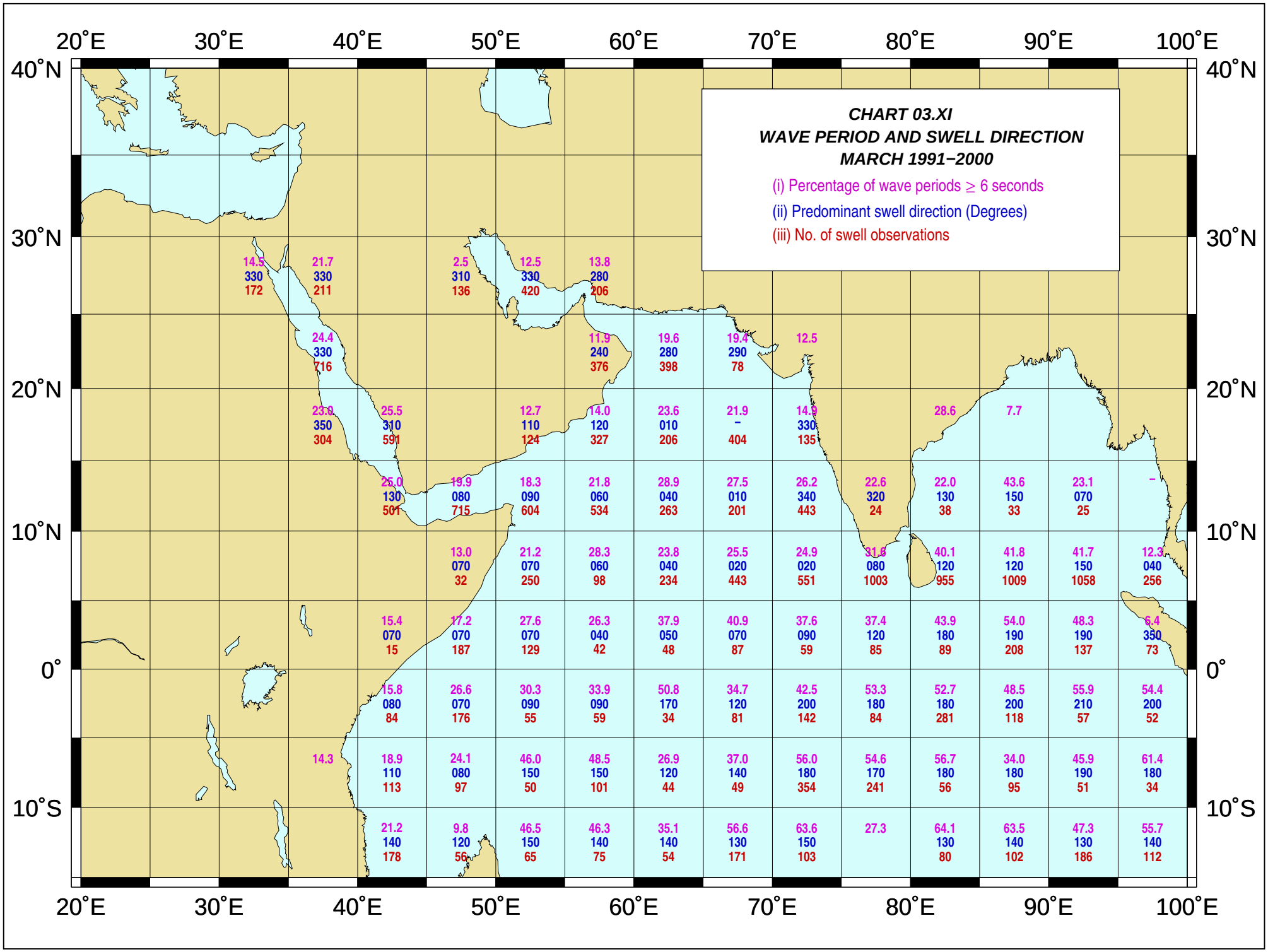


CHART 03.XI
WAVE PERIOD AND SWELL DIRECTION
MARCH 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
14.5 330 172
21.7 330 211
2.5 310 136
12.5 330 420
13.8 280 206
24.4 330 716
11.9 240 376
19.6 280 398
19.4 290 78
12.5
23.0 350 304
25.5 310 591
12.7 110 124
14.0 120 327
23.6 010 206
21.9 – 404
14.9 330 135
28.6
7.7
25.0 130 501
19.9 080 715
18.3 090 604
21.8 060 534
28.9 040 263
27.5 010 201
26.2 340 443
22.6 320 24
22.0 130 38
43.6 150 33
23.1 070 25
–
13.0 070 32
21.2 070 250
28.3 060 98
23.8 040 234
25.5 020 443
24.9 020 551
31.6 080 1003
40.1 120 955
41.8 120 1009
41.7 150 1058
12.3 040 256
15.4 070 15
17.2 070 187
27.6 070 129
26.3 040 42
37.9 050 48
40.9 070 87
37.6 090 59
37.4 120 85
43.9 180 89
54.0 190 208
48.3 190 137
6.4 350 73
15.8 080 84
26.6 070 176
30.3 090 55
33.9 090 59
50.8 170 34
34.7 120 81
42.5 200 142
53.3 180 84
52.7 180 281
48.5 200 118
55.9 210 57
54.4 200 52
14.3
18.9 110 113
24.1 080 97
46.0 150 50
48.5 150 101
26.9 120 44
37.0 140 49
56.0 180 354
54.6 170 241
56.7 180 56
34.0 180 95
45.9 190 51
61.4 180 34
21.2 140 178
9.8 120 56
46.5 150 65
46.3 140 75
35.1 140 54
56.6 130 171
63.6 150 103
27.3
64.1 130 80
63.5 140 102
47.3 130 186
55.7 140 112

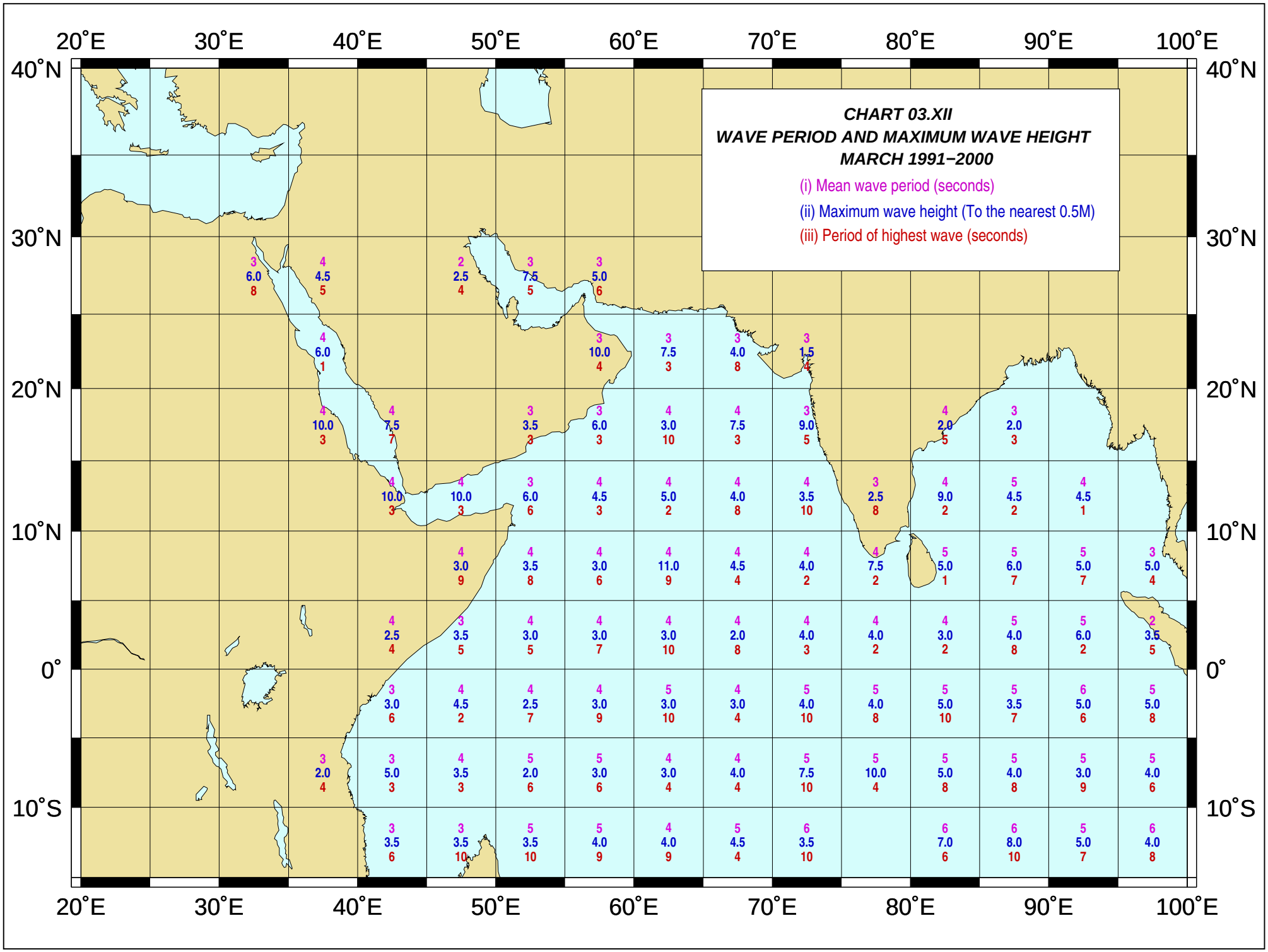


CHART 03.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
MARCH 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
3 6.0 8
4 4.5 5
2 2.5 4
3 7.5 5
3 5.0 6
4 6.0 1
3 10.0 4
3 7.5 3
3 4.0 8
3 1.5 4
4 10.0 3
4 7.5 7
3 3.5 3
3 6.0 3
4 3.0 10
4 7.5 3
3 9.0 5
4 2.0 5
3 2.0 3
4 10.0 3
4 10.0 3
3 6.0 6
4 4.5 3
4 5.0 2
4 4.0 8
4 3.5 10
3 2.5 8
4 9.0 2
5 4.5 2
4 4.5 1
4 3.0 9
4 3.5 8
4 3.0 6
4 11.0 9
4 4.5 4
4 4.0 2
4 7.5 2
5 5.0 1
5 6.0 7
5 5.0 7
3 5.0 4
4 2.5 4
3 3.5 5
4 3.0 5
4 3.0 7
4 3.0 10
4 2.0 8
4 4.0 3
4 4.0 2
4 3.0 2
5 4.0 8
5 6.0 2
2 3.5 5
3 3.0 6
4 4.5 2
4 2.5 7
4 3.0 9
5 3.0 10
4 3.0 4
5 4.0 10
5 4.0 8
5 5.0 10
5 3.5 7
6 5.0 6
5 5.0 8
3 2.0 4
3 5.0 3
4 3.5 3
5 2.0 6
5 3.0 6
4 3.0 4
4 4.0 4
5 7.5 10
5 10.0 4
5 5.0 8
5 4.0 8
5 3.0 9
5 4.0 6
3 3.5 6
3 3.5 10
5 3.5 10
5 4.0 9
4 4.0 9
5 4.5 4
6 3.5 10
6 7.0 6
6 8.0 10
5 5.0 7
6 4.0 8

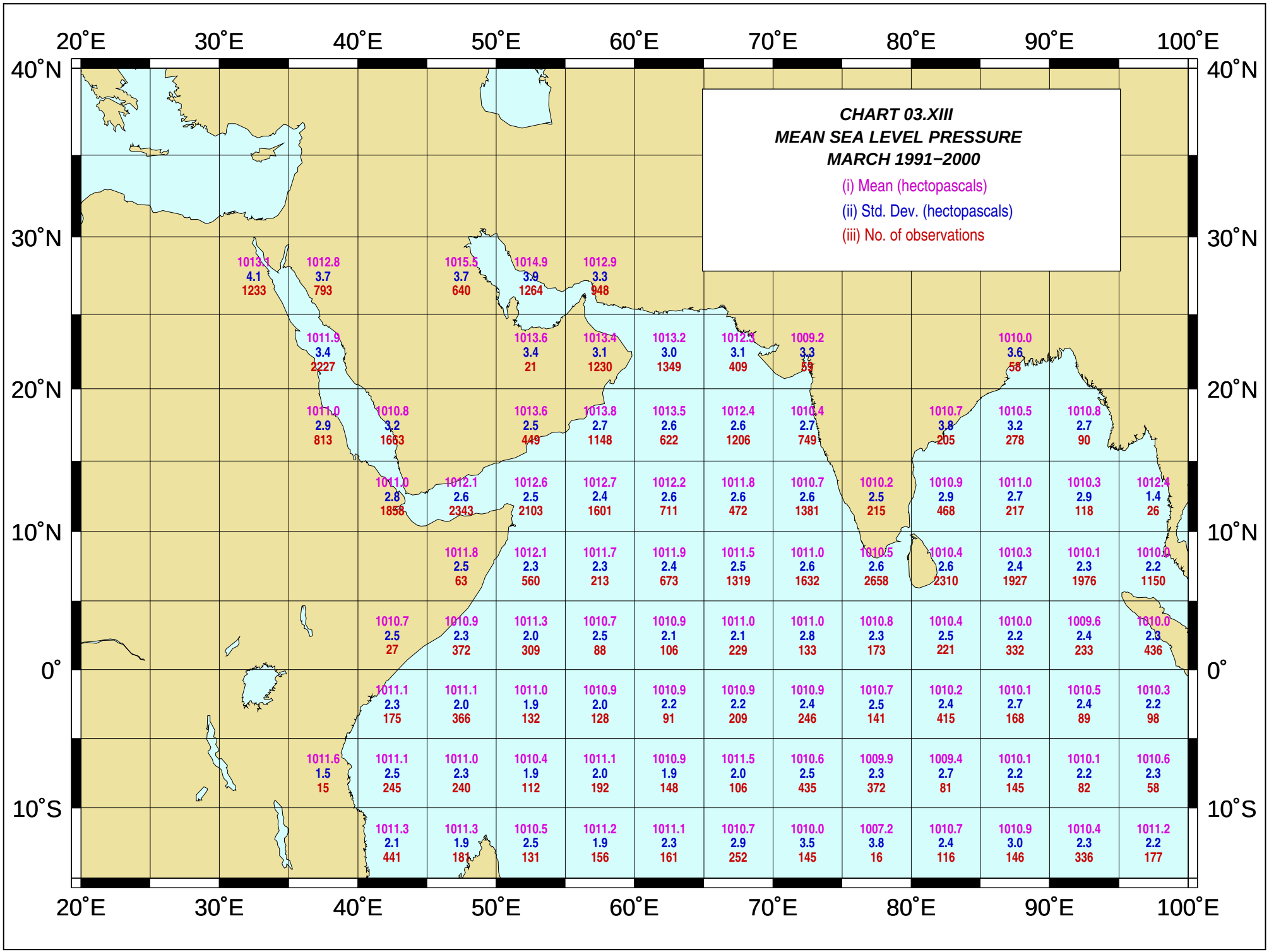


CHART 03.XIII
MEAN SEA LEVEL PRESSURE
MARCH 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1013.1 4.1 1233
1012.8 3.7 793
1015.5 3.7 640
1014.9 3.9 1264
1012.9 3.3 948
1011.9 3.4 2227
1013.6 3.4 21
1013.4 3.1 1230
1013.2 3.0 1349
1012.8 3.1 409
1009.2 3.3 59
1010.0 3.6 58
1011.0 2.9 813
1010.8 3.2 1663
1013.6 2.5 449
1013.8 2.7 1148
1013.5 2.6 622
1012.4 2.6 1206
1010.4 2.7 749
1010.7 3.8 205
1010.5 3.2 278
1010.8 2.7 90
1011.0 2.8 1858
1012.1 2.6 2343
1012.6 2.5 2103
1012.7 2.4 1601
1012.2 2.6 711
1011.8 2.6 472
1010.7 2.6 1381
1010.2 2.5 215
1010.9 2.9 468
1011.0 2.7 217
1010.3 2.9 118
1012.4 1.4 26
1011.8 2.5 63
1012.1 2.3 560
1011.7 2.3 213
1011.9 2.4 673
1011.5 2.5 1319
1011.0 2.6 1632
1010.5 2.6 2658
1010.4 2.6 2310
1010.3 2.4 1927
1010.1 2.3 1976
1010.0 2.2 1150
1010.7 2.5 27
1010.9 2.3 372
1011.3 2.0 309
1010.7 2.5 88
1010.9 2.1 106
1011.0 2.1 229
1011.0 2.8 133
1010.8 2.3 173
1010.4 2.5 221
1010.0 2.2 332
1009.6 2.4 233
1010.0 2.3 436
1011.1 2.3 175
1011.1 2.0 366
1011.0 1.9 132
1010.9 2.0 128
1010.9 2.2 91
1010.9 2.2 209
1010.9 2.4 246
1010.7 2.5 141
1010.2 2.4 415
1010.1 2.7 168
1010.5 2.4 89
1010.3 2.2 98
1011.6 1.5 15
1011.1 2.5 245
1011.0 2.3 240
1010.4 1.9 112
1011.1 2.0 192
1010.9 1.9 148
1011.5 2.0 106
1010.6 2.5 435
1009.9 2.3 372
1009.4 2.7 81
1010.1 2.2 145
1010.1 2.2 82
1010.6 2.3 58
1011.3 2.1 441
1011.3 1.9 181
1010.5 2.5 131
1011.2 1.9 156
1011.1 2.3 161
1010.7 2.9 252
1010.0 3.5 145
1007.2 3.8 16
1010.7 2.4 116
1010.9 3.0 146
1010.4 2.3 336
1011.2 2.2 177

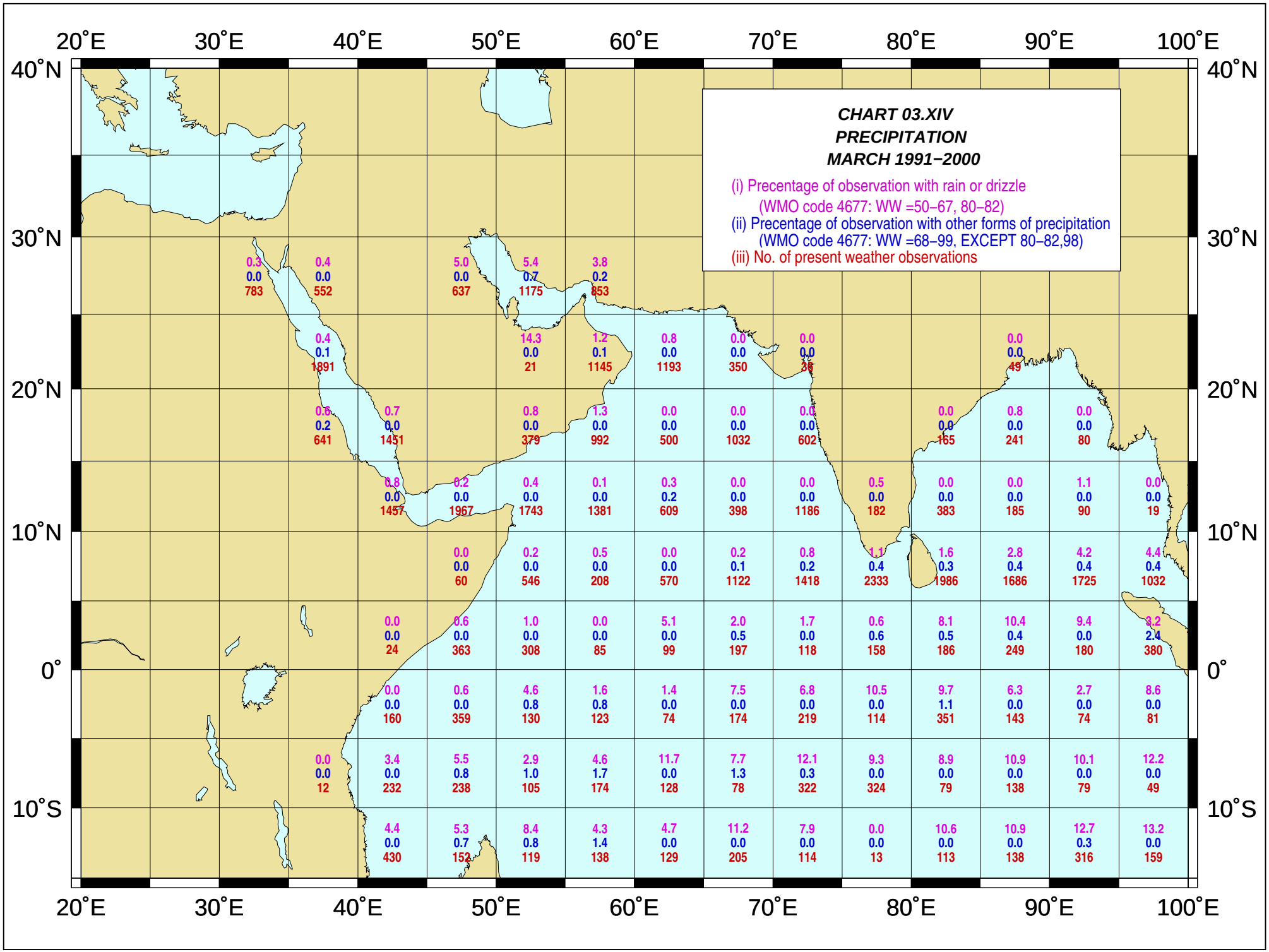


CHART 03.XIV
PRECIPITATION
MARCH 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.3 0.0 783
0.4 0.0 552
5.0 0.0 637
5.4 0.7 1175
3.8 0.2 853
0.4 0.1 1891
14.3 0.0 21
1.2 0.1 1145
0.8 0.0 1193
0.0 0.0 350
0.0 0.0 36
0.0 0.0 49
0.6 0.2 641
0.7 0.0 1451
0.8 0.0 379
1.3 0.0 992
0.0 0.0 500
0.0 0.0 1032
0.0 0.0 602
0.0 0.0 165
0.8 0.0 241
0.0 0.0 80
0.8 0.0 1457
0.2 0.0 1967
0.4 0.0 1743
0.1 0.0 1381
0.3 0.2 609
0.0 0.0 398
0.0 0.0 1186
0.5 0.0 182
0.0 0.0 383
0.0 0.0 185
1.1 0.0 90
0.0 0.0 19
0.0 0.0 60
0.2 0.0 546
0.5 0.0 208
0.0 0.0 570
0.2 0.1 1122
0.8 0.2 1418
1.1 0.4 2333
1.6 0.3 1986
2.8 0.4 1686
4.2 0.4 1725
4.4 0.4 1032
0.0 0.0 24
0.6 0.0 363
1.0 0.0 308
0.0 0.0 85
5.1 0.0 99
2.0 0.5 197
1.7 0.0 118
0.6 0.6 158
8.1 0.5 186
10.4 0.4 249
9.4 0.0 180
3.2 2.4 380
0.0 0.0 160
0.6 0.0 359
4.6 0.8 130
1.6 0.8 123
1.4 0.0 74
7.5 0.0 174
6.8 0.0 219
10.5 0.0 114
9.7 1.1 351
6.3 0.0 143
2.7 0.0 74
8.6 0.0 81
0.0 0.0 12
3.4 0.0 232
5.5 0.8 238
2.9 1.0 105
4.6 1.7 174
11.7 0.0 128
7.7 1.3 78
12.1 0.3 322
9.3 0.0 324
8.9 0.0 79
10.9 0.0 138
10.1 0.0 79
12.2 0.0 49
4.4 0.0 430
5.3 0.7 152
8.4 0.8 119
4.3 1.4 138
4.7 0.0 129
11.2 0.0 205
7.9 0.0 114
0.0 0.0 13
10.6 0.0 113
10.9 0.0 138
12.7 0.3 316
13.2 0.0 159

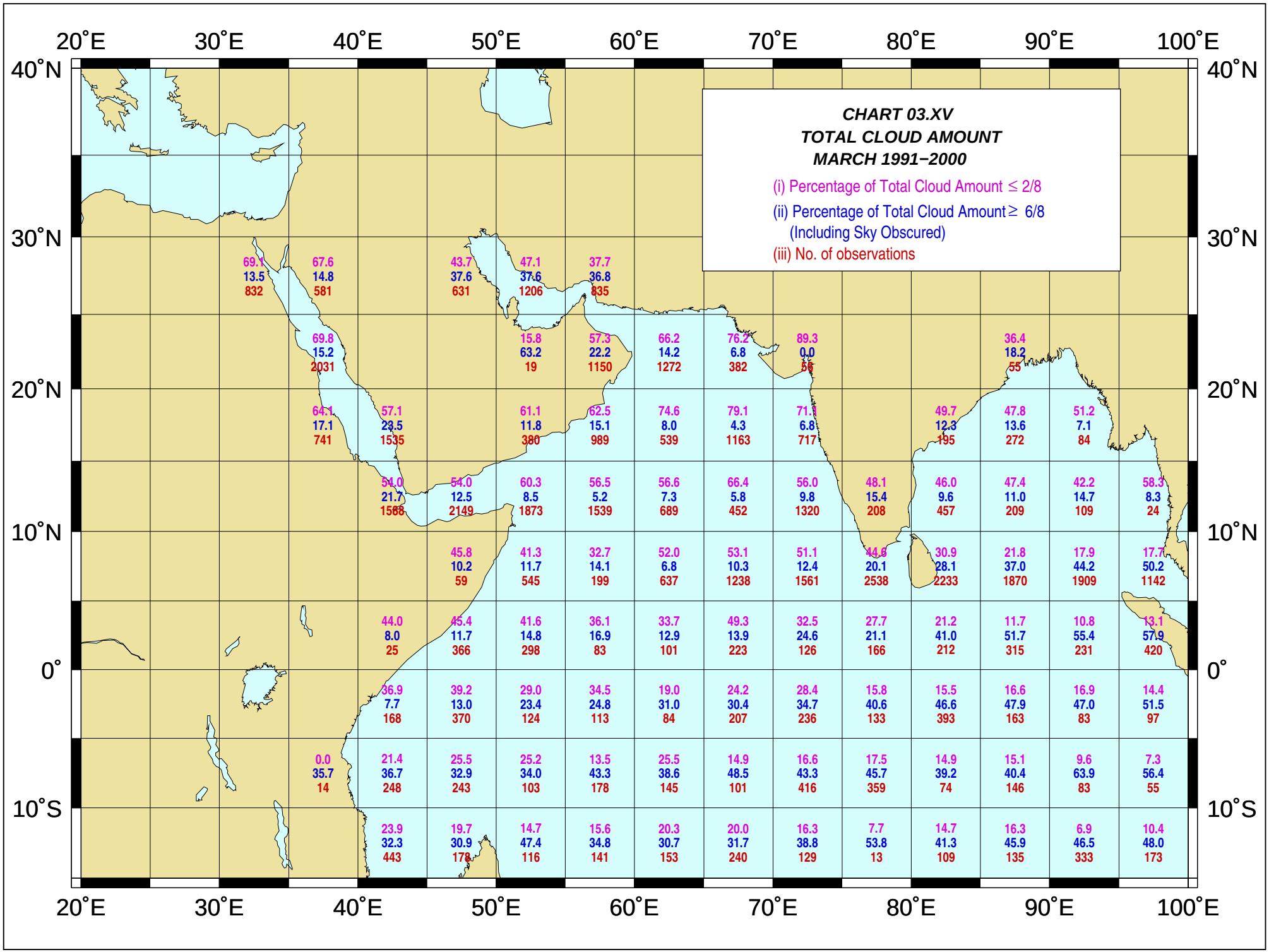


CHART 03.XV
TOTAL CLOUD AMOUNT
MARCH 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
69.1 13.5 832
67.6 14.8 581
43.7 37.6 631
47.1 37.6 1206
37.7 36.8 835
69.8 15.2 2031
15.8 63.2 19
57.3 22.2 1150
66.2 14.2 1272
76.2 6.8 382
89.3 0.0 55
36.4 18.2 55
64.1 17.1 741
57.1 23.5 1535
61.1 11.8 380
62.5 15.1 989
74.6 8.0 539
79.1 4.3 1163
71.1 6.8 717
49.7 12.3 195
47.8 13.6 272
51.2 7.1 84
51.0 21.7 1568
54.0 12.5 2149
60.3 8.5 1873
56.5 5.2 1539
56.6 7.3 689
66.4 5.8 452
56.0 9.8 1320
48.1 15.4 208
46.0 9.6 457
47.4 11.0 209
42.2 14.7 109
58.3 8.3 24
45.8 10.2 59
41.3 11.7 545
32.7 14.1 199
52.0 6.8 637
53.1 10.3 1238
51.1 12.4 1561
44.6 20.1 2538
30.9 28.1 2233
21.8 37.0 1870
17.9 44.2 1909
17.7 50.2 1142
44.0 8.0 25
45.4 11.7 366
41.6 14.8 298
36.1 16.9 83
33.7 12.9 101
49.3 13.9 223
32.5 24.6 126
27.7 21.1 166
21.2 41.0 212
11.7 51.7 315
10.8 55.4 231
13.1 57.9 420
36.9 7.7 168
39.2 13.0 370
29.0 23.4 124
34.5 24.8 113
19.0 31.0 84
24.2 30.4 207
28.4 34.7 236
15.8 40.6 133
15.5 46.6 393
16.6 47.9 163
16.9 47.0 83
14.4 51.5 97
0.0 35.7 14
21.4 36.7 248
25.5 32.9 243
25.2 34.0 103
13.5 43.3 178
25.5 38.6 145
14.9 48.5 101
16.6 43.3 416
17.5 45.7 359
14.9 39.2 74
15.1 40.4 146
9.6 63.9 83
7.3 56.4 55
23.9 32.3 443
19.7 30.9 178
14.7 47.4 116
15.6 34.8 141
20.3 30.7 153
20.0 31.7 240
16.3 38.8 129
7.7 53.8 13
14.7 41.3 109
16.3 45.9 135
6.9 46.5 333
10.4 48.0 173

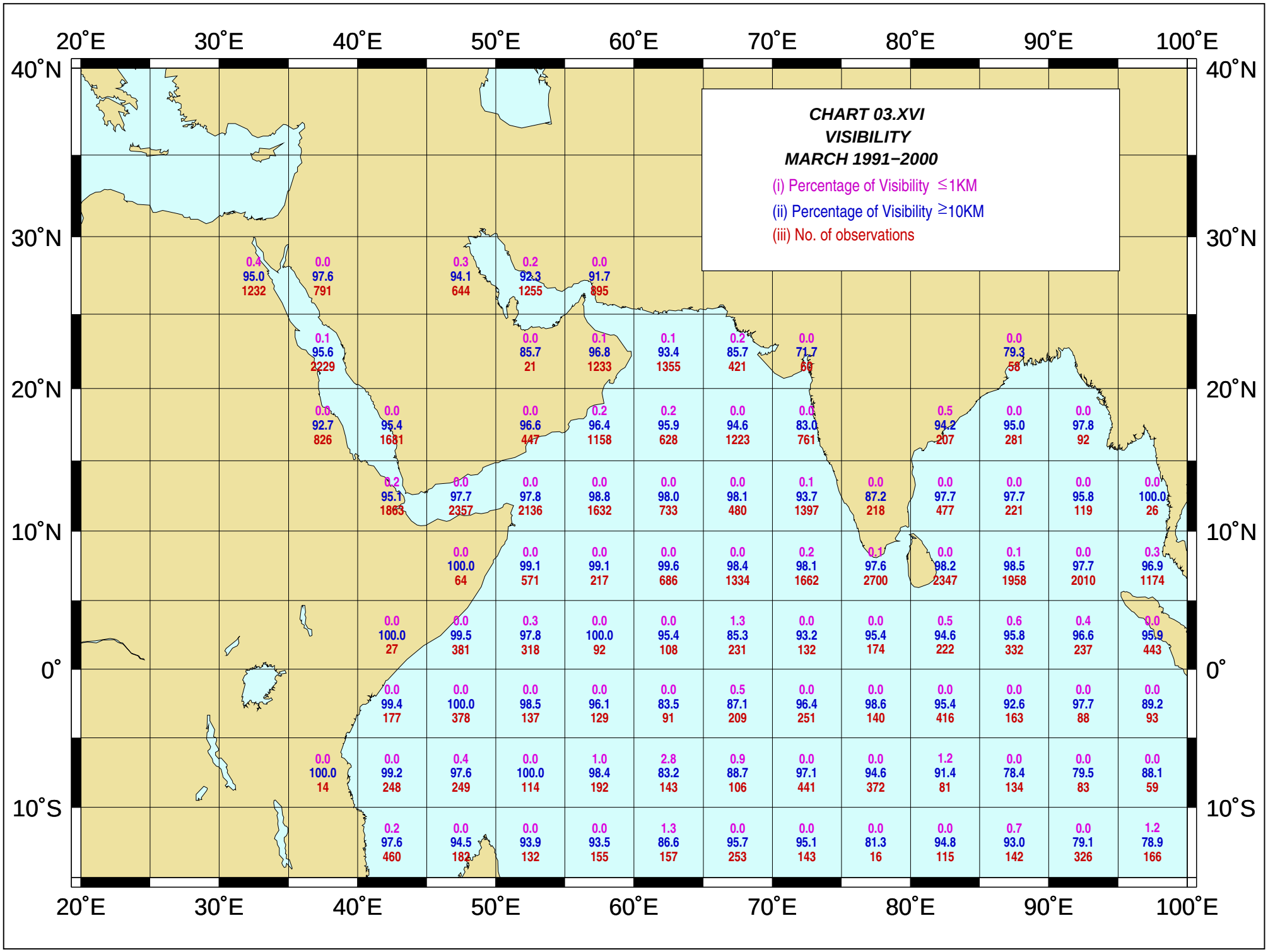


CHART 03.XVI
VISIBILITY
MARCH 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.4 95.0 1232
0.0 97.6 791
0.3 94.1 644
0.2 92.3 1255
0.0 91.7 895
0.1 95.6 2229
0.0 85.7 21
0.1 96.8 1233
0.1 93.4 1355
0.2 85.7 421
0.0 71.7 66
0.0 79.3 58
0.0 92.7 826
0.0 95.4 1681
0.0 96.6 447
0.2 96.4 1158
0.2 95.9 628
0.0 94.6 1223
0.0 83.0 761
0.5 94.2 207
0.0 95.0 281
0.0 97.8 92
0.2 95.1 1863
0.0 97.7 2357
0.0 97.8 2136
0.0 98.8 1632
0.0 98.0 733
0.0 98.1 480
0.1 93.7 1397
0.0 87.2 218
0.0 97.7 477
0.0 97.7 221
0.0 95.8 119
0.0 100.0 26
0.0 100.0 64
0.0 99.1 571
0.0 99.1 217
0.0 99.6 686
0.0 98.4 1334
0.2 98.1 1662
0.1 97.6 2700
0.0 98.2 2347
0.1 98.5 1958
0.0 97.7 2010
0.3 96.9 1174
0.0 100.0 27
0.0 99.5 381
0.3 97.8 318
0.0 100.0 92
0.0 95.4 108
1.3 85.3 231
0.0 93.2 132
0.0 95.4 174
0.5 94.6 222
0.6 95.8 332
0.4 96.6 237
0.0 95.9 443
0.0 99.4 177
0.0 100.0 378
0.0 98.5 137
0.0 96.1 129
0.0 83.5 91
0.5 87.1 209
0.0 96.4 251
0.0 98.6 140
0.0 95.4 416
0.0 92.6 163
0.0 97.7 88
0.0 89.2 93
0.0 100.0 14
0.0 99.2 248
0.4 97.6 249
0.0 100.0 114
1.0 98.4 192
2.8 83.2 143
0.9 88.7 106
0.0 97.1 441
0.0 94.6 372
1.2 91.4 81
0.0 78.4 134
0.0 79.5 83
0.0 88.1 59
0.2 97.6 460
0.0 94.5 182
0.0 93.9 132
0.0 93.5 155
1.3 86.6 157
0.0 95.7 253
0.0 95.1 143
0.0 81.3 16
0.0 94.8 115
0.7 93.0 142
0.0 79.1 326
1.2 78.9 166

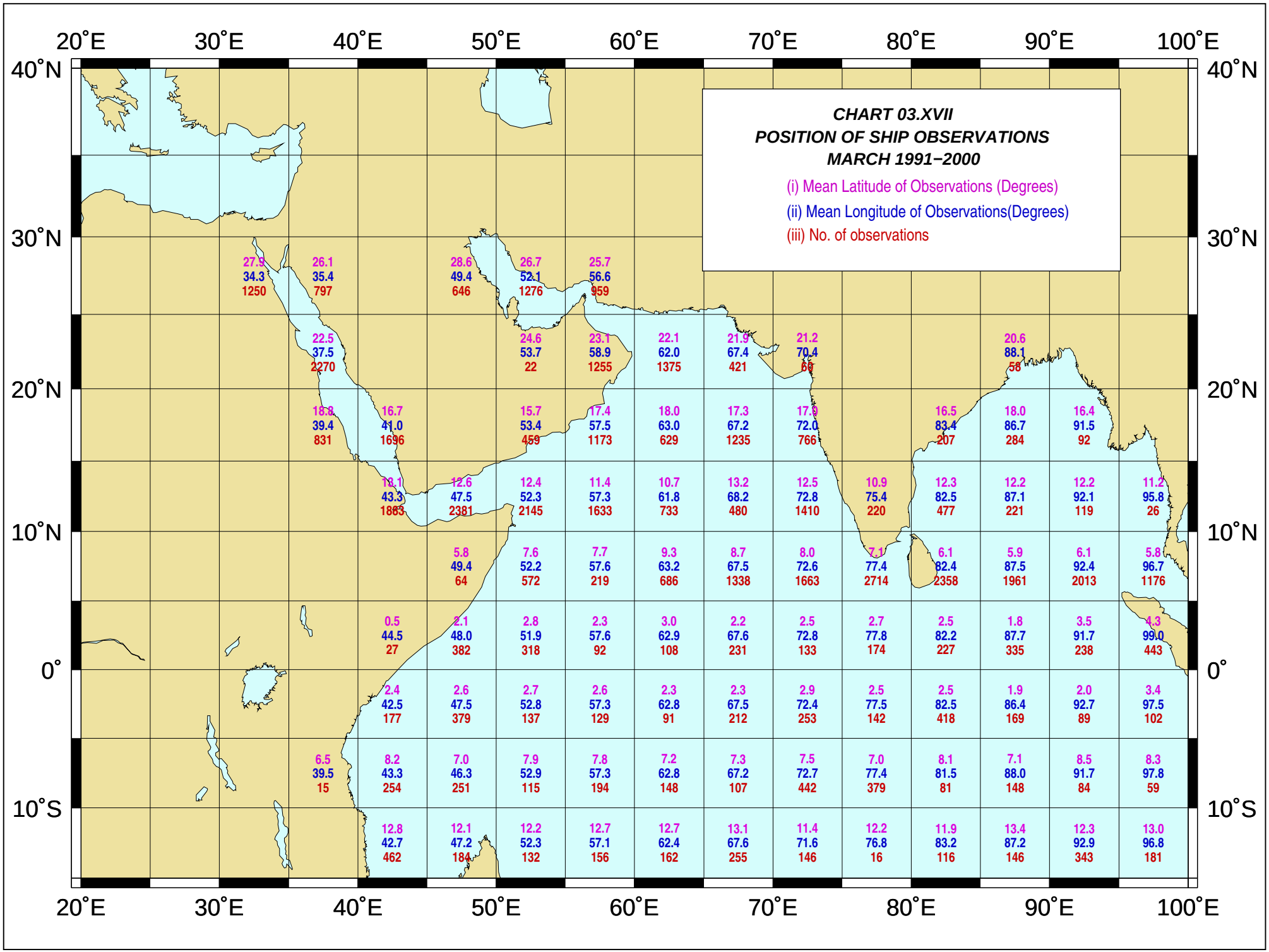


CHART 03.XVII
POSITION OF SHIP OBSERVATIONS
MARCH 1991−2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.9 34.3 1250
26.1 35.4 797
28.6 49.4 646
26.7 52.1 1276
25.7 56.6 959
22.5 37.5 2270
24.6 53.7 22
23.1 58.9 1255
22.1 62.0 1375
21.9 67.4 421
21.2 70.4 66
20.6 88.1 58
18.8 39.4 831
16.7 41.0 1696
15.7 53.4 459
17.4 57.5 1173
18.0 63.0 629
17.3 67.2 1235
17.9 72.0 766
16.5 83.4 207
18.0 86.7 284
16.4 91.5 92
10.1 43.3 1863
12.6 47.5 2381
12.4 52.3 2145
11.4 57.3 1633
10.7 61.8 733
13.2 68.2 480
12.5 72.8 1410
10.9 75.4 220
12.3 82.5 477
12.2 87.1 221
12.2 92.1 119
11.2 95.8 26
5.8 49.4 64
7.6 52.2 572
7.7 57.6 219
9.3 63.2 686
8.7 67.5 1338
8.0 72.6 1663
7.1 77.4 2714
6.1 82.4 2358
5.9 87.5 1961
6.1 92.4 2013
5.8 96.7 1176
0.5 44.5 27
2.1 48.0 382
2.8 51.9 318
2.3 57.6 92
3.0 62.9 108
2.2 67.6 231
2.5 72.8 133
2.7 77.8 174
2.5 82.2 227
1.8 87.7 335
3.5 91.7 238
4.3 99.0 443
2.4 42.5 177
2.6 47.5 379
2.7 52.8 137
2.6 57.3 129
2.3 62.8 91
2.3 67.5 212
2.9 72.4 253
2.5 77.5 142
2.5 82.5 418
1.9 86.4 169
2.0 92.7 89
3.4 97.5 102
6.5 39.5 15
8.2 43.3 254
7.0 46.3 251
7.9 52.9 115
7.8 57.3 194
7.2 62.8 148
7.3 67.2 107
7.5 72.7 442
7.0 77.4 379
8.1 81.5 81
7.1 88.0 148
8.5 91.7 84
8.3 97.8 59
12.8 42.7 462
12.1 47.2 184
12.2 52.3 132
12.7 57.1 156
12.7 62.4 162
13.1 67.6 255
11.4 71.6 146
12.2 76.8 16
11.9 83.2 116
13.4 87.2 146
12.3 92.9 343
13.0 96.8 181

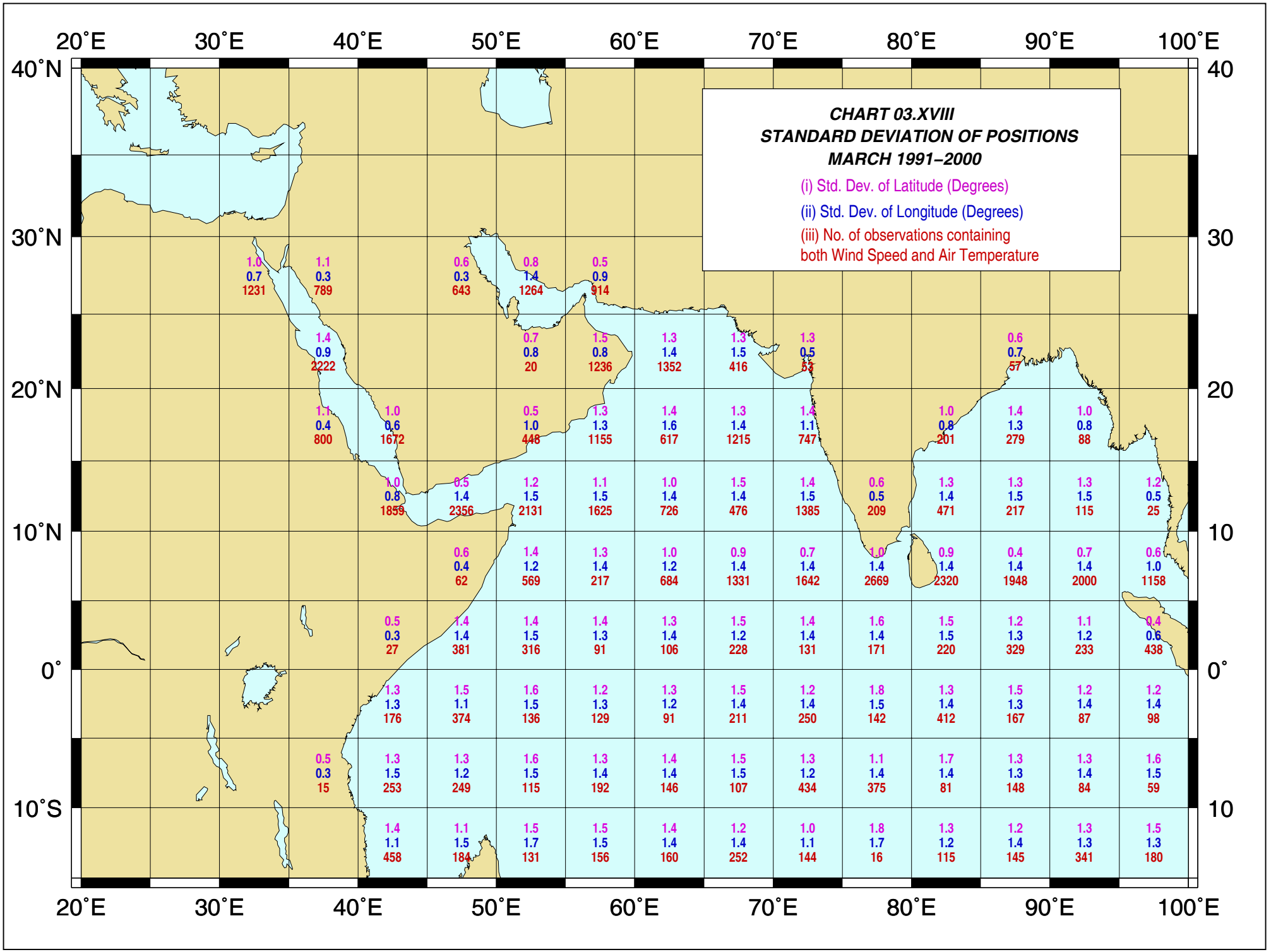
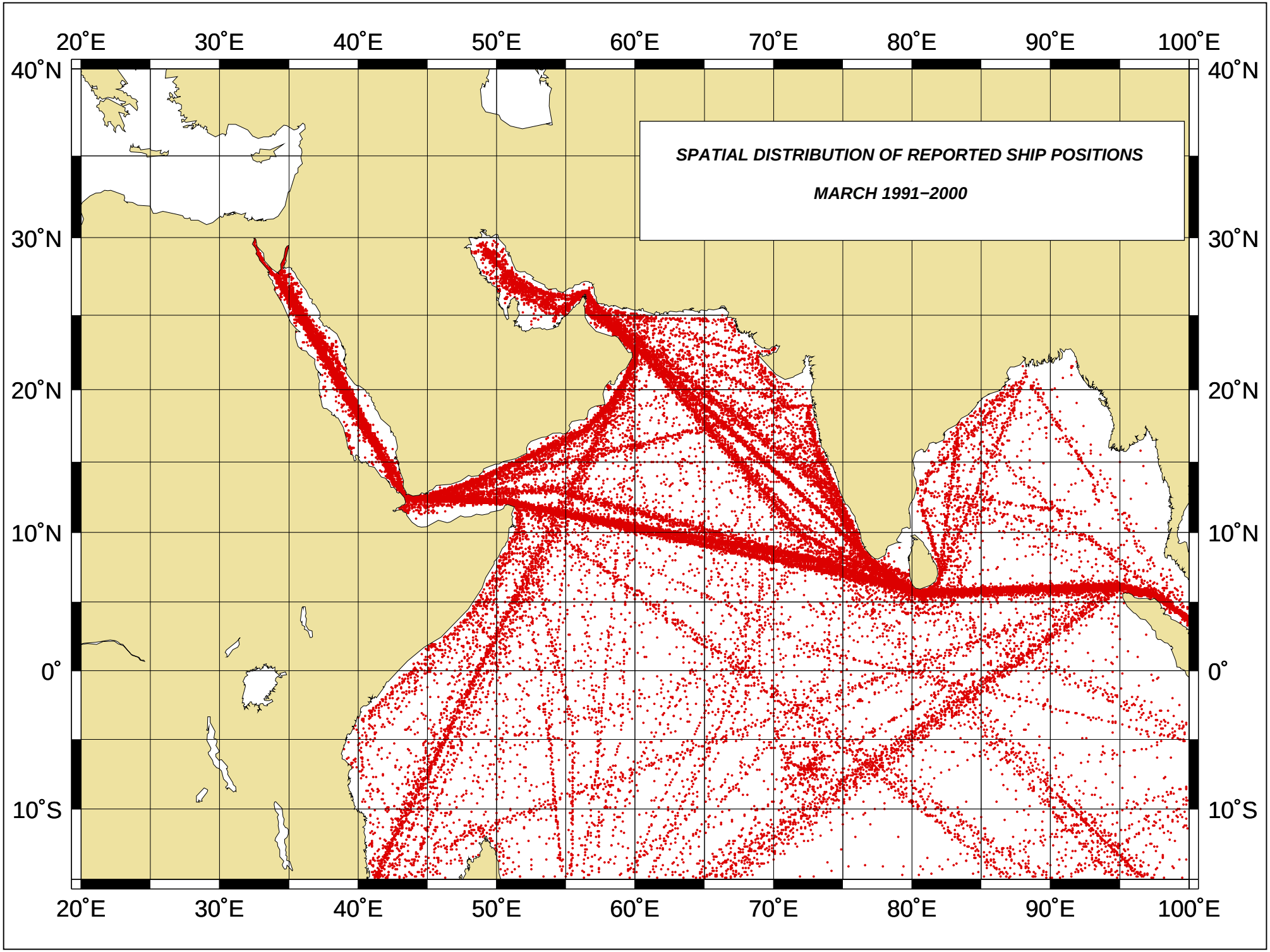
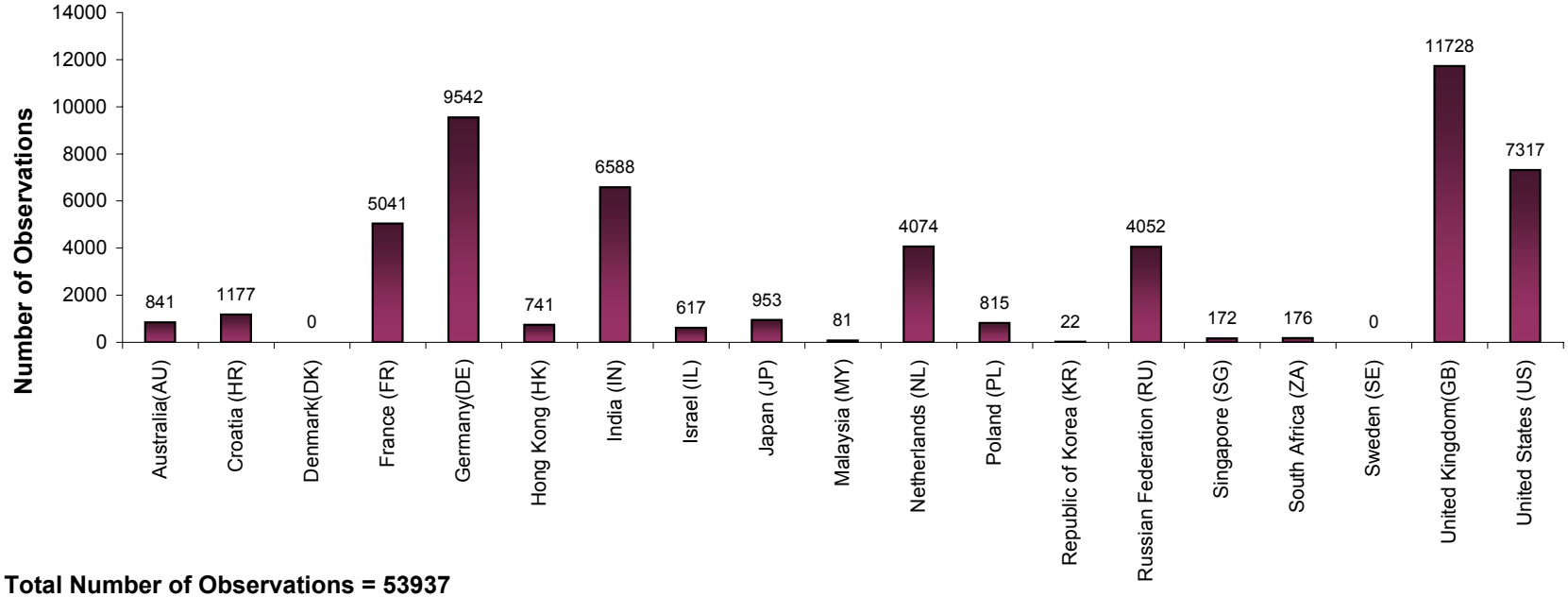


CHART 03.XVIII
STANDARD DEVIATION OF POSITIONS
MARCH 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.7 1231
1.1 0.3 789
0.6 0.3 643
0.8 1.4 1264
0.5 0.9 914
1.4 0.9 2222
0.7 0.8 20
1.5 0.8 1236
1.3 1.4 1352
1.3 1.5 416
1.3 0.5 53
0.6 0.7 57
1.1 0.4 800
1.0 0.6 1672
0.5 1.0 448
1.3 1.3 1155
1.4 1.6 617
1.3 1.4 1215
1.4 1.1 747
1.0 0.8 201
1.4 1.3 279
1.0 0.8 88
1.0 0.8 1859
0.5 1.4 2356
1.2 1.5 2131
1.1 1.5 1625
1.0 1.4 726
1.5 1.4 476
1.4 1.5 1385
0.6 0.5 209
1.3 1.4 471
1.3 1.5 217
1.3 1.5 115
1.2 0.5 25
0.6 0.4 62
1.4 1.2 569
1.3 1.4 217
1.0 1.2 684
0.9 1.4 1331
0.7 1.4 1642
1.0 1.4 2669
0.9 1.4 2320
0.4 1.4 1948
0.7 1.4 2000
0.6 1.0 1158
0.5 0.3 27
1.4 1.4 381
1.4 1.5 316
1.4 1.3 91
1.3 1.4 106
1.5 1.2 228
1.4 1.4 131
1.6 1.4 171
1.5 1.5 220
1.2 1.3 329
1.1 1.2 233
0.4 0.6 438
1.3 1.3 176
1.5 1.1 374
1.6 1.5 136
1.2 1.3 129
1.3 1.2 91
1.5 1.4 211
1.2 1.4 250
1.8 1.5 142
1.3 1.4 412
1.5 1.3 167
1.2 1.4 87
1.2 1.4 98
0.5 0.3 15
1.3 1.5 253
1.3 1.2 249
1.6 1.5 115
1.3 1.4 192
1.4 1.4 146
1.5 1.5 107
1.3 1.2 434
1.1 1.4 375
1.7 1.4 81
1.3 1.3 148
1.3 1.4 84
1.6 1.5 59
1.4 1.1 458
1.1 1.5 184
1.5 1.7 131
1.5 1.5 156
1.4 1.4 160
1.2 1.4 252
1.0 1.1 144
1.8 1.7 16
1.3 1.2 115
1.2 1.4 145
1.3 1.3 341
1.5 1.3 180


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
MARCH 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

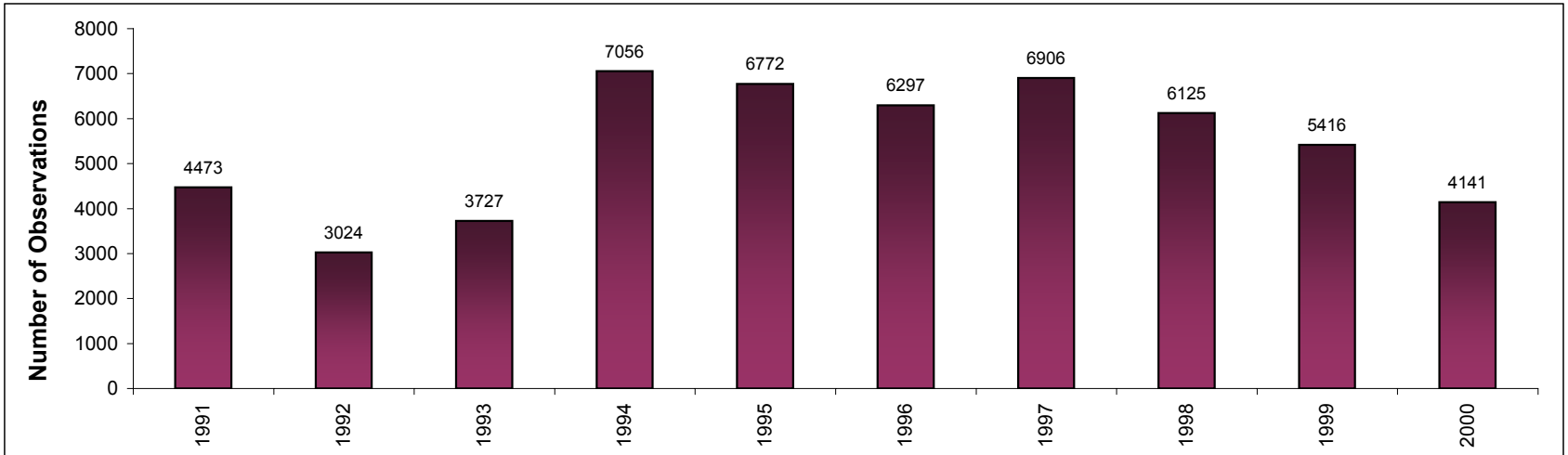
MARCH : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 53937

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 53937

Marine Climatological Summary Charts 1991-2000

CHARTS OF APRIL 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

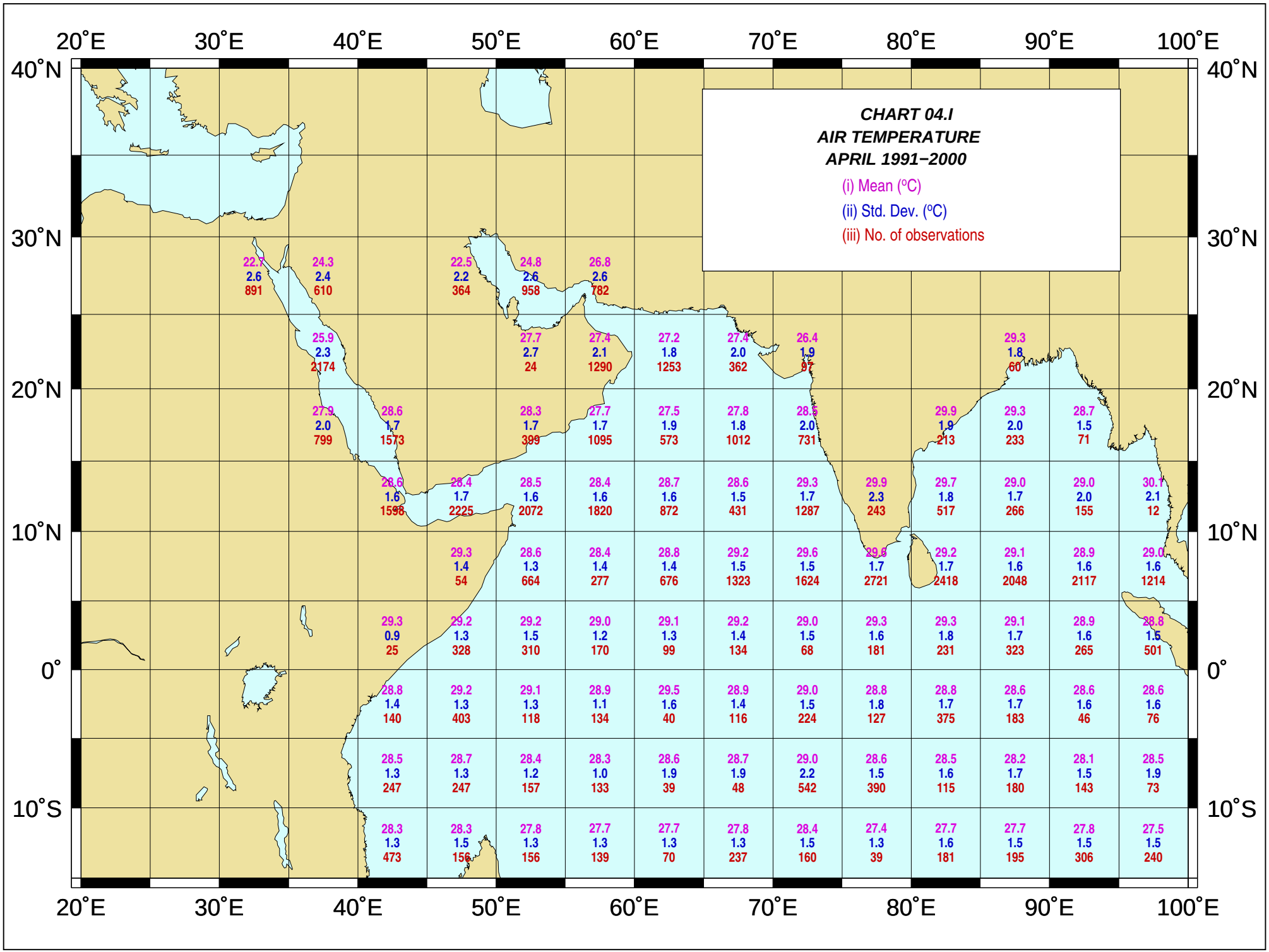


CHART 04.I
AIR TEMPERATURE
APRIL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
22.7 2.6 891
24.3 2.4 610
22.5 2.2 364
24.8 2.6 958
26.8 2.6 782
25.9 2.3 2174
27.7 2.7 24
27.4 2.1 1290
27.2 1.8 1253
27.4 2.0 362
26.4 1.9 97
29.3 1.8 60
27.9 2.0 799
28.6 1.7 1573
28.3 1.7 399
27.7 1.7 1095
27.5 1.9 573
27.8 1.8 1012
28.3 2.0 731
29.9 1.9 213
29.3 2.0 233
28.7 1.5 71
28.6 1.6 1598
28.4 1.7 2225
28.5 1.6 2072
28.4 1.6 1820
28.7 1.6 872
28.6 1.5 431
29.3 1.7 1287
29.9 2.3 243
29.7 1.8 517
29.0 1.7 266
29.0 2.0 155
30.7 2.1 12
29.3 1.4 54
28.6 1.3 664
28.4 1.4 277
28.8 1.4 676
29.2 1.5 1323
29.6 1.5 1624
29.6 1.7 2721
29.2 1.7 2418
29.1 1.6 2048
28.9 1.6 2117
29.0 1.6 1214
29.3 0.9 25
29.2 1.3 328
29.2 1.5 310
29.0 1.2 170
29.1 1.3 99
29.2 1.4 134
29.0 1.5 68
29.3 1.6 181
29.3 1.8 231
29.1 1.7 323
28.9 1.6 265
28.8 1.5 501
28.8 1.4 140
29.2 1.3 403
29.1 1.3 118
28.9 1.1 134
29.5 1.6 40
28.9 1.4 116
29.0 1.5 224
28.8 1.8 127
28.8 1.7 375
28.6 1.7 183
28.6 1.6 46
28.6 1.6 76
28.5 1.3 247
28.7 1.3 247
28.4 1.2 157
28.3 1.0 133
28.6 1.9 39
28.7 1.9 48
29.0 2.2 542
28.6 1.5 390
28.5 1.6 115
28.2 1.7 180
28.1 1.5 143
28.5 1.9 73
28.3 1.3 473
28.3 1.5 156
27.8 1.3 156
27.7 1.3 139
27.7 1.3 70
27.8 1.3 237
28.4 1.5 160
27.4 1.3 39
27.7 1.6 181
27.7 1.5 195
27.8 1.5 306
27.5 1.5 240

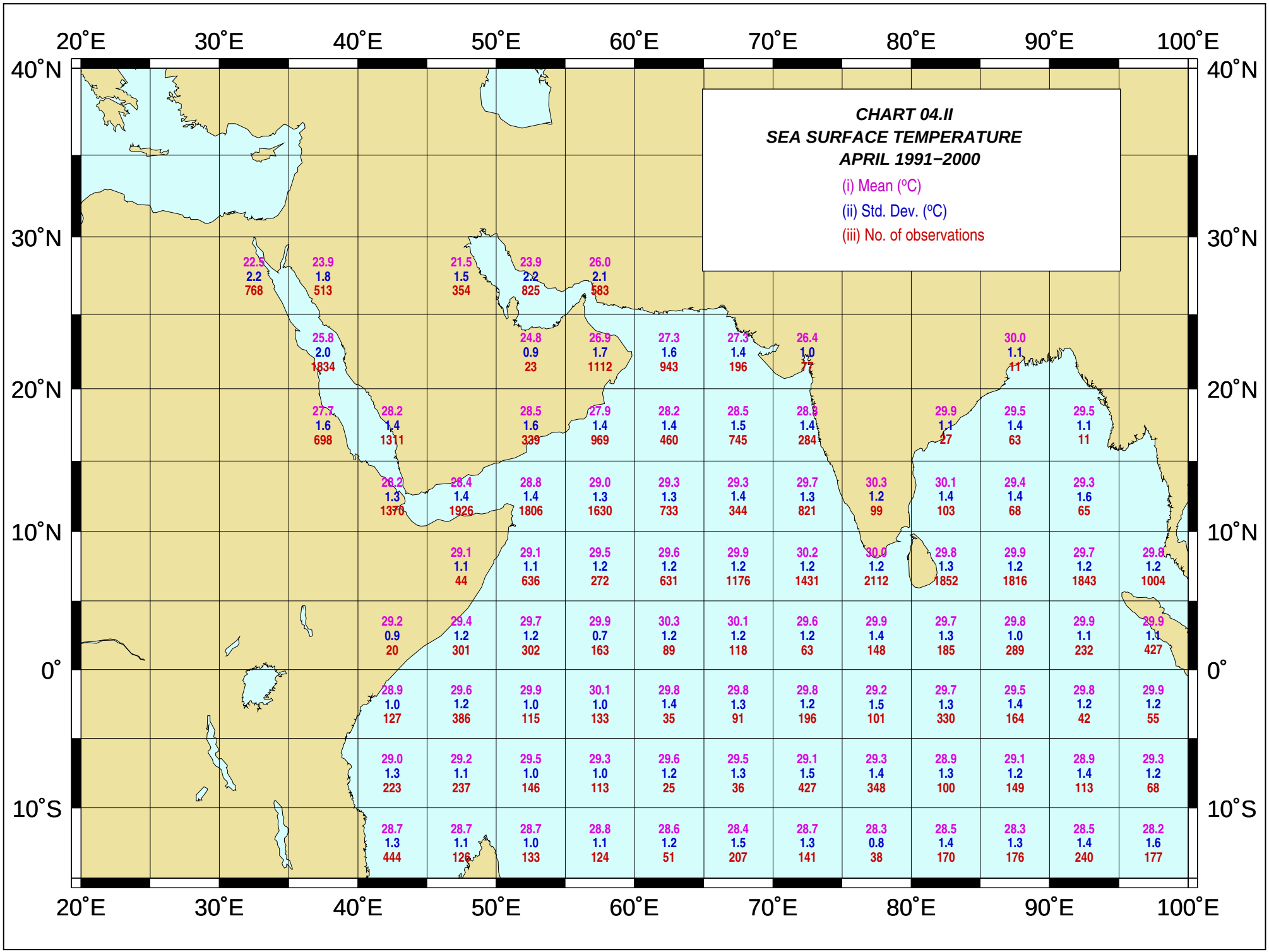


CHART 04.II
SEA SURFACE TEMPERATURE
APRIL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
22.5 2.2 768
23.9 1.8 513
21.5 1.5 354
23.9 2.2 825
26.0 2.1 583
25.8 2.0 1834
24.8 0.9 23
26.9 1.7 1112
27.3 1.6 943
27.3 1.4 196
26.4 1.0 77
30.0 1.1 11
27.7 1.6 698
28.2 1.4 1311
28.5 1.6 339
27.9 1.4 969
28.2 1.4 460
28.5 1.5 745
28.3 1.4 284
29.9 1.1 27
29.5 1.4 63
29.5 1.1 11
28.2 1.3 1370
28.4 1.4 1926
28.8 1.4 1806
29.0 1.3 1630
29.3 1.3 733
29.3 1.4 344
29.7 1.3 821
30.3 1.2 99
30.1 1.4 103
29.4 1.4 68
29.3 1.6 65
29.1 1.1 44
29.1 1.1 636
29.5 1.2 272
29.6 1.2 631
29.9 1.2 1176
30.2 1.2 1431
30.0 1.2 2112
29.8 1.3 1852
29.9 1.2 1816
29.7 1.2 1843
29.8 1.2 1004
29.2 0.9 20
29.4 1.2 301
29.7 1.2 302
29.9 0.7 163
30.3 1.2 89
30.1 1.2 118
29.6 1.2 63
29.9 1.4 148
29.7 1.3 185
29.8 1.0 289
29.9 1.1 232
29.9 1.1 427
28.9 1.0 127
29.6 1.2 386
29.9 1.0 115
30.1 1.0 133
29.8 1.4 35
29.8 1.3 91
29.8 1.2 196
29.2 1.5 101
29.7 1.3 330
29.5 1.4 164
29.8 1.2 42
29.9 1.2 55
29.0 1.3 223
29.2 1.1 237
29.5 1.0 146
29.3 1.0 113
29.6 1.2 25
29.5 1.3 36
29.1 1.5 427
29.3 1.4 348
28.9 1.3 100
29.1 1.2 149
28.9 1.4 113
29.3 1.2 68
28.7 1.3 444
28.7 1.1 126
28.7 1.0 133
28.8 1.1 124
28.6 1.2 51
28.4 1.5 207
28.7 1.3 141
28.3 0.8 38
28.5 1.4 170
28.3 1.3 176
28.5 1.4 240
28.2 1.6 177

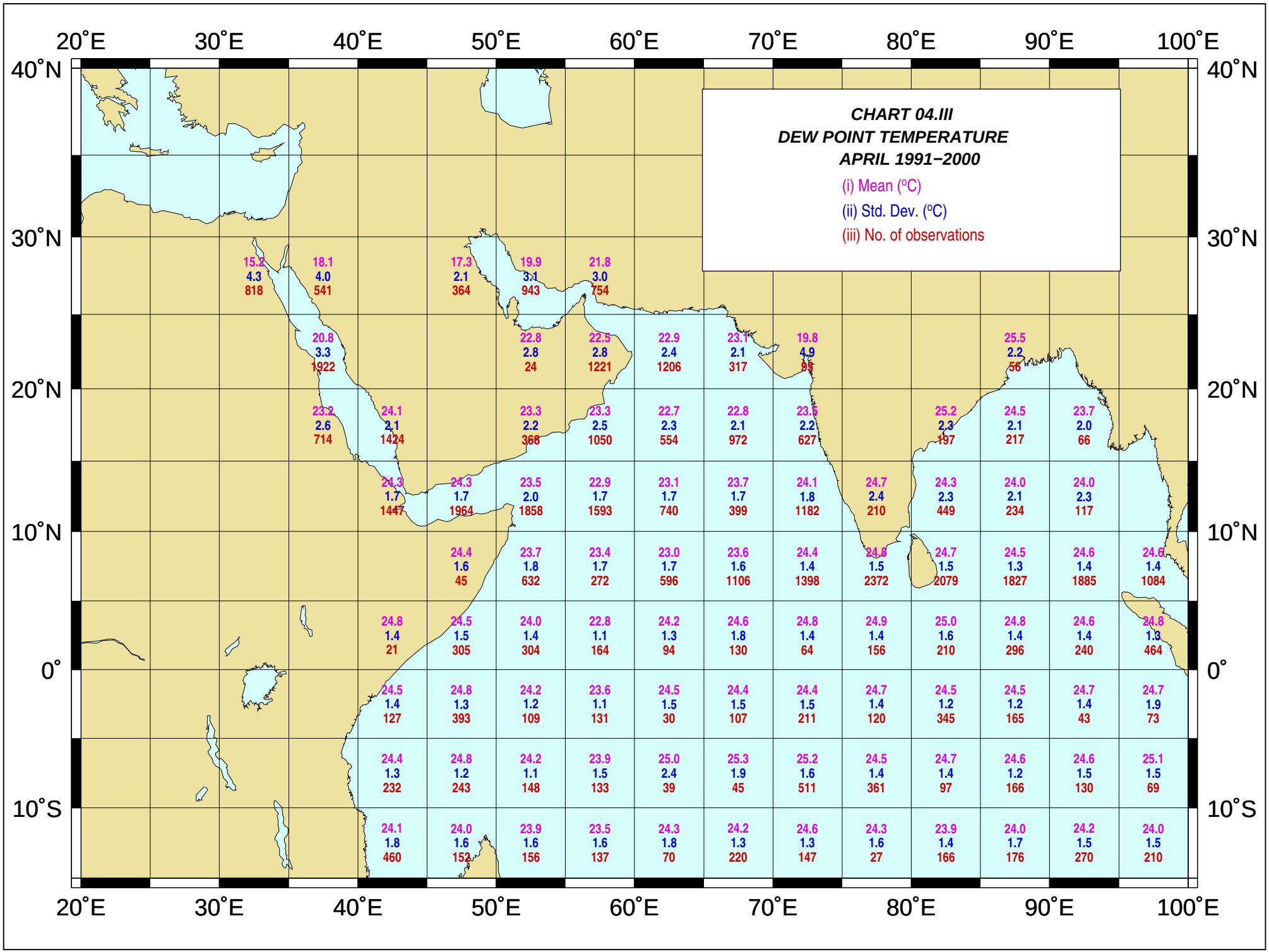


CHART 04.III
DEW POINT TEMPERATURE
APRIL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
15.2 4.3 818
18.1 4.0 541
17.3 2.1 364
19.9 3.1 943
21.8 3.0 754
20.8 3.3 1922
22.8 2.8 24
22.5 2.8 1221
22.9 2.4 1206
23.1 2.1 317
19.8 4.9 95
25.5 2.2 56
23.2 2.6 714
24.1 2.1 1424
23.3 2.2 368
23.3 2.5 1050
22.7 2.3 554
22.8 2.1 972
23.3 2.2 627
25.2 2.3 197
24.5 2.1 217
23.7 2.0 66
21.3 1.7 1447
24.3 1.7 1964
23.5 2.0 1858
22.9 1.7 1593
23.1 1.7 740
23.7 1.7 399
24.1 1.8 1182
24.7 2.4 210
24.3 2.3 449
24.0 2.1 234
24.0 2.3 117
24.4 1.6 45
23.7 1.8 632
23.4 1.7 272
23.0 1.7 596
23.6 1.6 1106
24.4 1.4 1398
24.9 1.5 2372
24.7 1.5 2079
24.5 1.3 1827
24.6 1.4 1885
24.6 1.4 1084
24.8 1.4 21
24.5 1.5 305
24.0 1.4 304
22.8 1.1 164
24.2 1.3 94
24.6 1.8 130
24.8 1.4 64
24.9 1.4 156
25.0 1.6 210
24.8 1.4 296
24.6 1.4 240
24.8 1.3 464
24.5 1.4 127
24.8 1.3 393
24.2 1.2 109
23.6 1.1 131
24.5 1.5 30
24.4 1.5 107
24.4 1.5 211
24.7 1.4 120
24.5 1.2 345
24.5 1.2 165
24.7 1.4 43
24.7 1.9 73
24.4 1.3 232
24.8 1.2 243
24.2 1.1 148
23.9 1.5 133
25.0 2.4 39
25.3 1.9 45
25.2 1.6 511
24.5 1.4 361
24.7 1.4 97
24.6 1.2 166
24.6 1.5 130
25.1 1.5 69
24.1 1.8 460
24.0 1.6 152
23.9 1.6 156
23.5 1.6 137
24.3 1.8 70
24.2 1.3 220
24.6 1.3 147
24.3 1.6 27
23.9 1.4 166
24.0 1.7 176
24.2 1.5 270
24.0 1.5 210

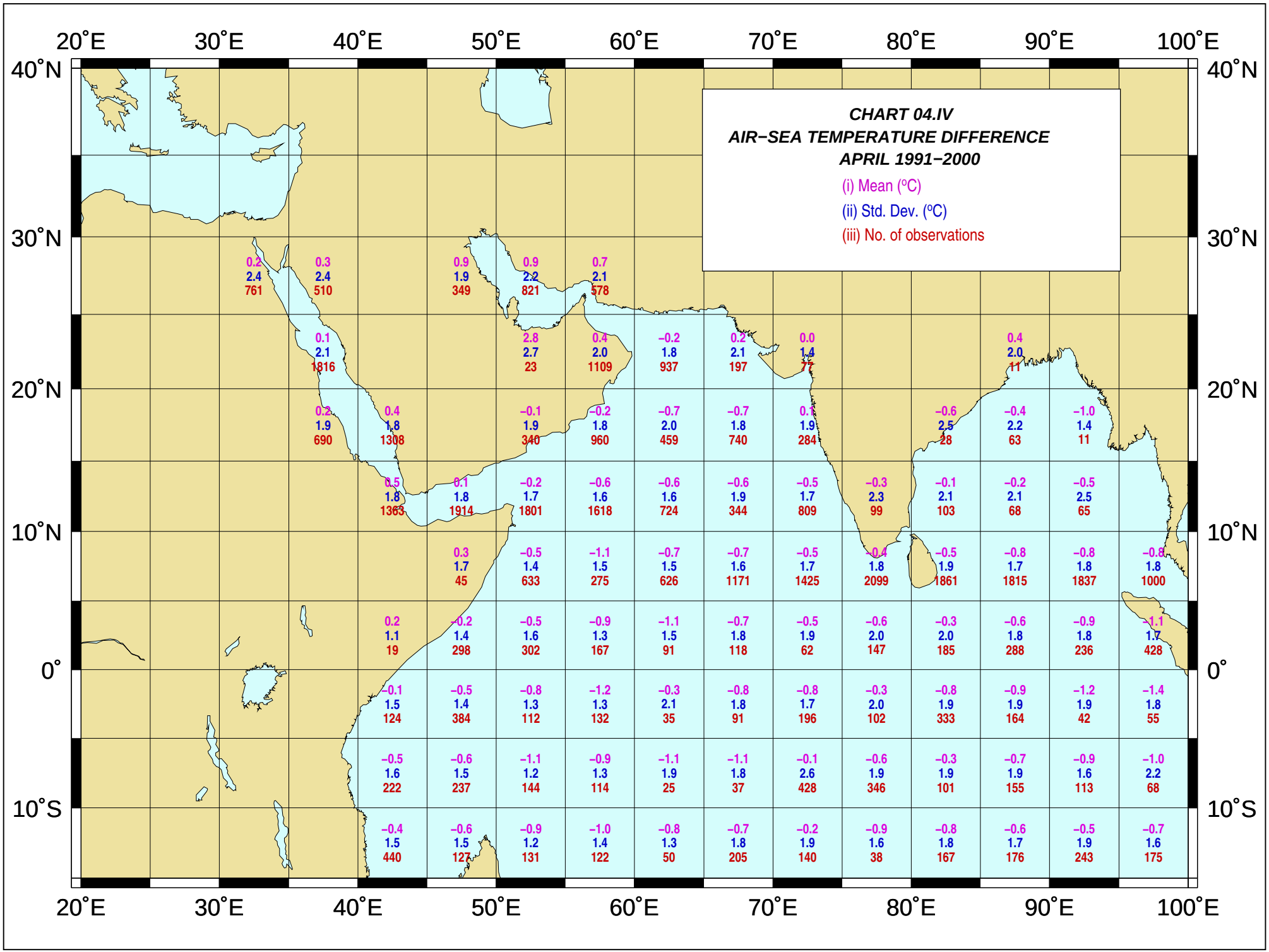


CHART 04.IV
AIR–SEA TEMPERATURE DIFFERENCE
APRIL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.2 2.4 761
0.3 2.4 510
0.9 1.9 349
0.9 2.2 821
0.7 2.1 578
0.1 2.1 1816
2.8 2.7 23
0.4 2.0 1109
–0.2 1.8 937
0.2 2.1 197
0.0 1.4 77
0.4 2.0 11
0.2 1.9 690
0.4 1.8 1308
–0.1 1.9 340
–0.2 1.8 960
–0.7 2.0 459
–0.7 1.8 740
0.1 1.9 284
–0.6 2.5 28
–0.4 2.2 63
–1.0 1.4 11
0.5 1.8 1363
0.1 1.8 1914
–0.2 1.7 1801
–0.6 1.6 1618
–0.6 1.6 724
–0.6 1.9 344
–0.5 1.7 809
–0.3 2.3 99
–0.1 2.1 103
–0.2 2.1 68
–0.5 2.5 65
0.3 1.7 45
–0.5 1.4 633
–1.1 1.5 275
–0.7 1.5 626
–0.7 1.6 1171
–0.5 1.7 1425
–0.4 1.8 2099
–0.5 1.9 1861
–0.8 1.7 1815
–0.8 1.8 1837
–0.8 1.8 1000
0.2 1.1 19
–0.2 1.4 298
–0.5 1.6 302
–0.9 1.3 167
–1.1 1.5 91
–0.7 1.8 118
–0.5 1.9 62
–0.6 2.0 147
–0.3 2.0 185
–0.6 1.8 288
–0.9 1.8 236
–1.1 1.7 428
–0.1 1.5 124
–0.5 1.4 384
–0.8 1.3 112
–1.2 1.3 132
–0.3 2.1 35
–0.8 1.8 91
–0.8 1.7 196
–0.3 2.0 102
–0.8 1.9 333
–0.9 1.9 164
–1.2 1.9 42
–1.4 1.8 55
–0.5 1.6 222
–0.6 1.5 237
–1.1 1.2 144
–0.9 1.3 114
–1.1 1.9 25
–1.1 1.8 37
–0.1 2.6 428
–0.6 1.9 346
–0.3 1.9 101
–0.7 1.9 155
–0.9 1.6 113
–1.0 2.2 68
–0.4 1.5 440
–0.6 1.5 127
–0.9 1.2 131
–1.0 1.4 122
–0.8 1.3 50
–0.7 1.8 205
–0.2 1.9 140
–0.9 1.6 38
–0.8 1.8 167
–0.6 1.7 176
–0.5 1.9 243
–0.7 1.6 175

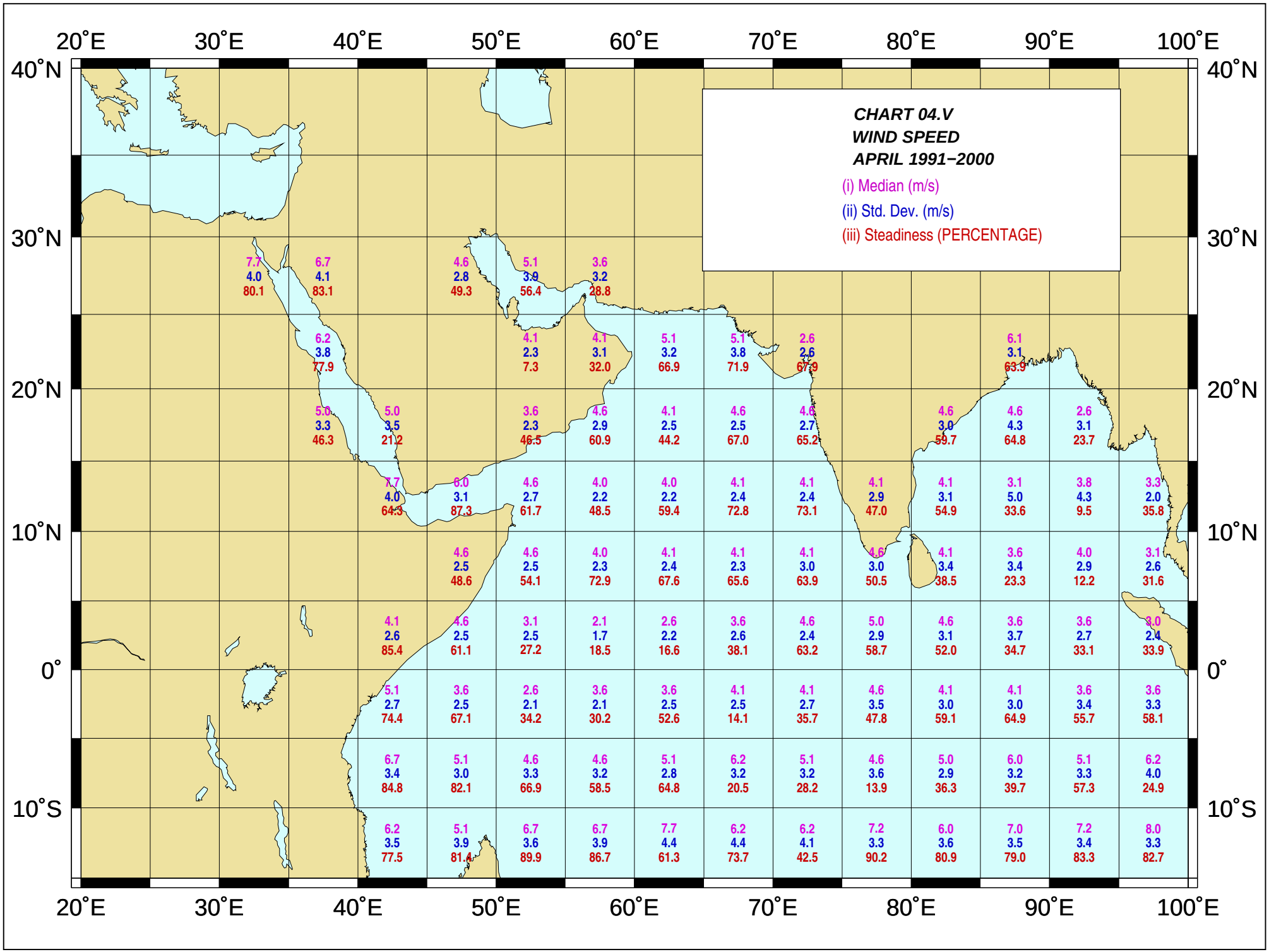


CHART 04.V
WIND SPEED
APRIL 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 4.0 80.1
6.7 4.1 83.1
4.6 2.8 49.3
5.1 3.9 56.4
3.6 3.2 28.8
6.2 3.8 77.9
4.1 2.3 7.3
4.1 3.1 32.0
5.1 3.2 66.9
5.1 3.8 71.9
2.6 2.6 67.9
6.1 3.1 63.9
5.0 3.3 46.3
5.0 3.5 21.2
3.6 2.3 46.5
4.6 2.9 60.9
4.1 2.5 44.2
4.6 2.5 67.0
4.6 2.7 65.2
4.6 3.0 59.7
4.6 4.3 64.8
2.6 3.1 23.7
7.7 4.0 64.3
6.0 3.1 87.3
4.6 2.7 61.7
4.0 2.2 48.5
4.0 2.2 59.4
4.1 2.4 72.8
4.1 2.4 73.1
4.1 2.9 47.0
4.1 3.1 54.9
3.1 5.0 33.6
3.8 4.3 9.5
3.3 2.0 35.8
4.6 2.5 48.6
4.6 2.5 54.1
4.0 2.3 72.9
4.1 2.4 67.6
4.1 2.3 65.6
4.1 3.0 63.9
4.6 3.0 50.5
4.1 3.4 38.5
3.6 3.4 23.3
4.0 2.9 12.2
3.1 2.6 31.6
4.1 2.6 85.4
4.6 2.5 61.1
3.1 2.5 27.2
2.1 1.7 18.5
2.6 2.2 16.6
3.6 2.6 38.1
4.6 2.4 63.2
5.0 2.9 58.7
4.6 3.1 52.0
3.6 3.7 34.7
3.6 2.7 33.1
3.0 2.4 33.9
5.1 2.7 74.4
3.6 2.5 67.1
2.6 2.1 34.2
3.6 2.1 30.2
3.6 2.5 52.6
4.1 2.5 14.1
4.1 2.7 35.7
4.6 3.5 47.8
4.1 3.0 59.1
4.1 3.0 64.9
3.6 3.4 55.7
3.6 3.3 58.1
6.7 3.4 84.8
5.1 3.0 82.1
4.6 3.3 66.9
4.6 3.2 58.5
5.1 2.8 64.8
6.2 3.2 20.5
5.1 3.2 28.2
4.6 3.6 13.9
5.0 2.9 36.3
6.0 3.2 39.7
5.1 3.3 57.3
6.2 4.0 24.9
6.2 3.5 77.5
5.1 3.9 81.4
6.7 3.6 89.9
6.7 3.9 86.7
7.7 4.4 61.3
6.2 4.4 73.7
6.2 4.1 42.5
7.2 3.3 90.2
6.0 3.6 80.9
7.0 3.5 79.0
7.2 3.4 83.3
8.0 3.3 82.7

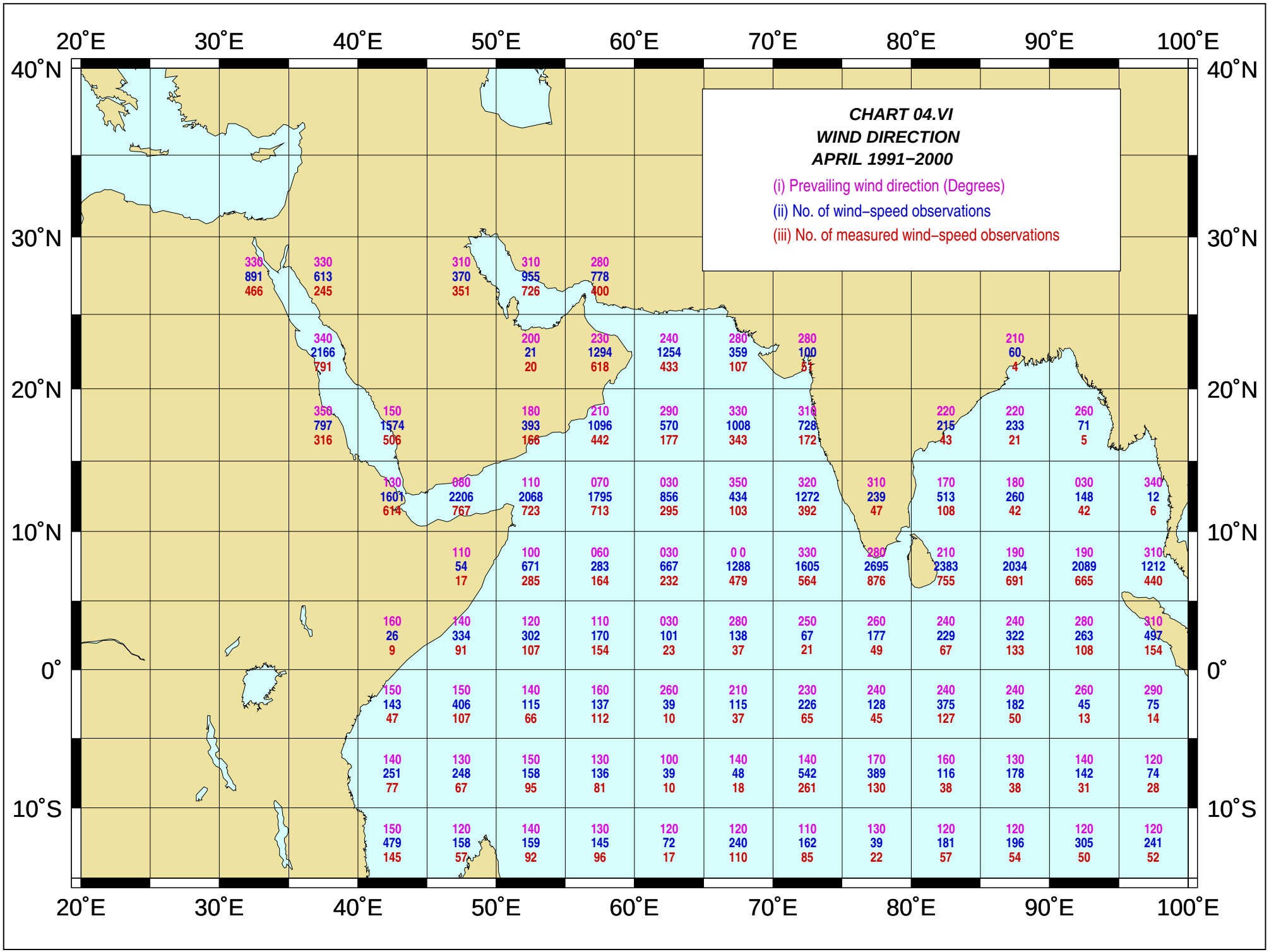


CHART 04.VI
WIND DIRECTION
APRIL 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
330 891 466
330 613 245
310 370 351
310 955 726
280 778 400
340 2166 791
200 21 20
230 1294 618
240 1254 433
280 359 107
280 100 51
210 60 4
350 797 316
150 1574 506
180 393 166
210 1096 442
290 570 177
330 1008 343
310 728 172
220 215 43
220 233 21
260 71 5
130 1601 614
080 2206 767
110 2068 723
070 1795 713
030 856 295
350 434 103
320 1272 392
310 239 47
170 513 108
180 260 42
030 148 42
340 12 6
110 54 17
100 671 285
060 283 164
030 667 232
0 0 1288 479
330 1605 564
280 2695 876
210 2383 755
190 2034 691
190 2089 665
310 1212 440
160 26 9
140 334 91
120 302 107
110 170 154
030 101 23
280 138 37
250 67 21
260 177 49
240 229 67
240 322 133
280 263 108
310 497 154
150 143 47
150 406 107
140 115 66
160 137 112
260 39 10
210 115 37
230 226 65
240 128 45
240 375 127
240 182 50
260 45 13
290 75 14
140 251 77
130 248 67
150 158 95
130 136 81
100 39 10
140 48 18
140 542 261
170 389 130
160 116 38
130 178 38
140 142 31
120 74 28
150 479 145
120 158 57
140 159 92
130 145 96
120 72 17
120 240 110
110 162 85
130 39 22
120 181 57
120 196 54
120 305 50
120 241 52

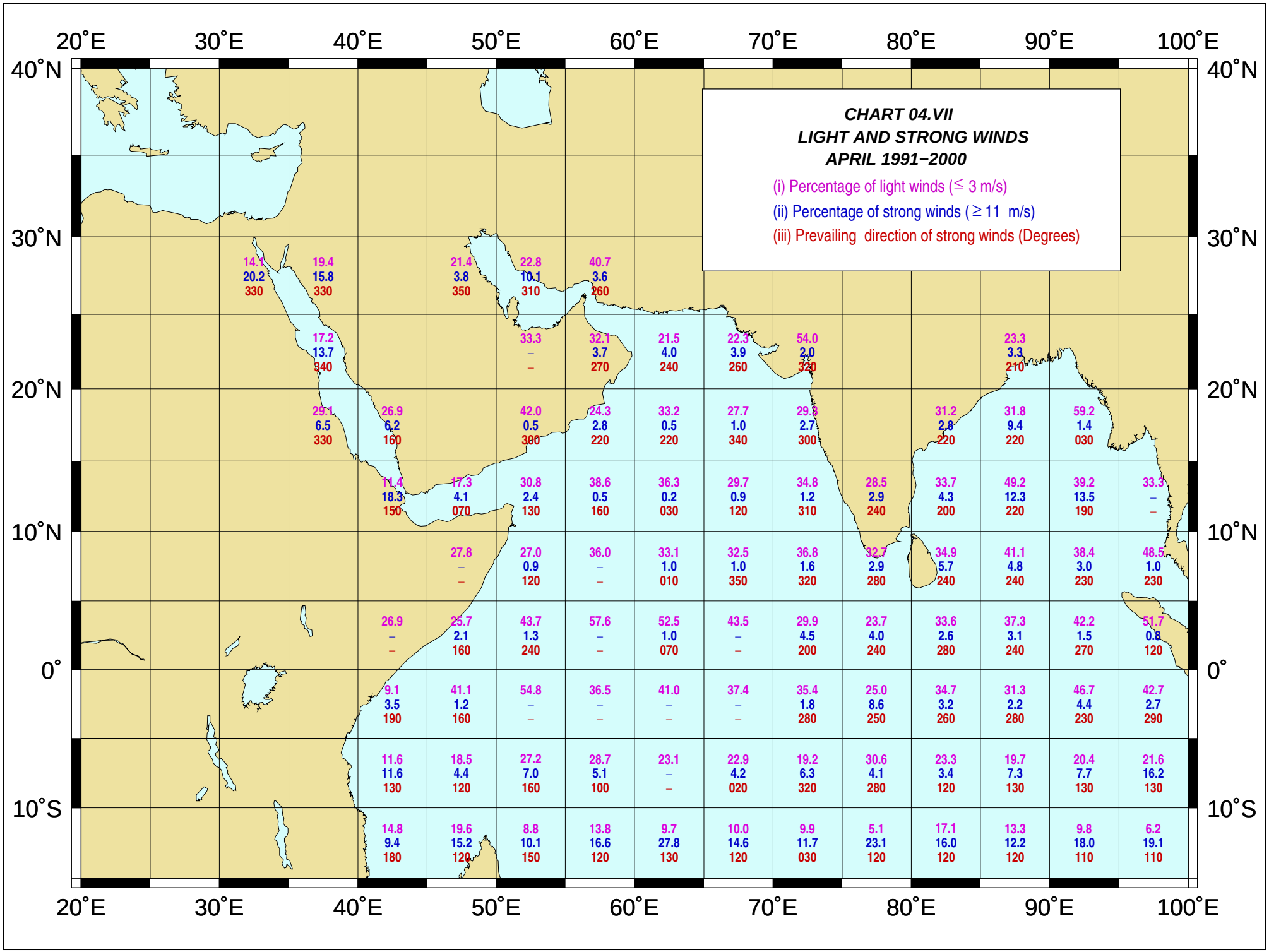


CHART 04.VII
LIGHT AND STRONG WINDS
APRIL 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
14.1 20.2 330
19.4 15.8 330
21.4 3.8 350
22.8 10.1 310
40.7 3.6 260
17.2 13.7 340
33.3 – –
32.1 3.7 270
21.5 4.0 240
22.3 3.9 260
54.0 2.0 320
23.3 3.3 210
29.1 6.5 330
26.9 6.2 160
42.0 0.5 300
24.3 2.8 220
33.2 0.5 220
27.7 1.0 340
29.3 2.7 300
31.2 2.8 220
31.8 9.4 220
59.2 1.4 030
11.4 18.3 150
17.3 4.1 070
30.8 2.4 130
38.6 0.5 160
36.3 0.2 030
29.7 0.9 120
34.8 1.2 310
28.5 2.9 240
33.7 4.3 200
49.2 12.3 220
39.2 13.5 190
33.3 – –
27.8 – –
27.0 0.9 120
36.0 – –
33.1 1.0 010
32.5 1.0 350
36.8 1.6 320
32.7 2.9 280
34.9 5.7 240
41.1 4.8 240
38.4 3.0 230
48.5 1.0 230
26.9 – –
25.7 2.1 160
43.7 1.3 240
57.6 – –
52.5 1.0 070
43.5 – –
29.9 4.5 200
23.7 4.0 240
33.6 2.6 280
37.3 3.1 240
42.2 1.5 270
51.7 0.8 120
9.1 3.5 190
41.1 1.2 160
54.8 – –
36.5 – –
41.0 – –
37.4 – –
35.4 1.8 280
25.0 8.6 250
34.7 3.2 260
31.3 2.2 280
46.7 4.4 230
42.7 2.7 290
11.6 11.6 130
18.5 4.4 120
27.2 7.0 160
28.7 5.1 100
23.1 – –
22.9 4.2 020
19.2 6.3 320
30.6 4.1 280
23.3 3.4 120
19.7 7.3 130
20.4 7.7 130
21.6 16.2 130
14.8 9.4 180
19.6 15.2 120
8.8 10.1 150
13.8 16.6 120
9.7 27.8 130
10.0 14.6 120
9.9 11.7 030
5.1 23.1 120
17.1 16.0 120
13.3 12.2 120
9.8 18.0 110
6.2 19.1 110

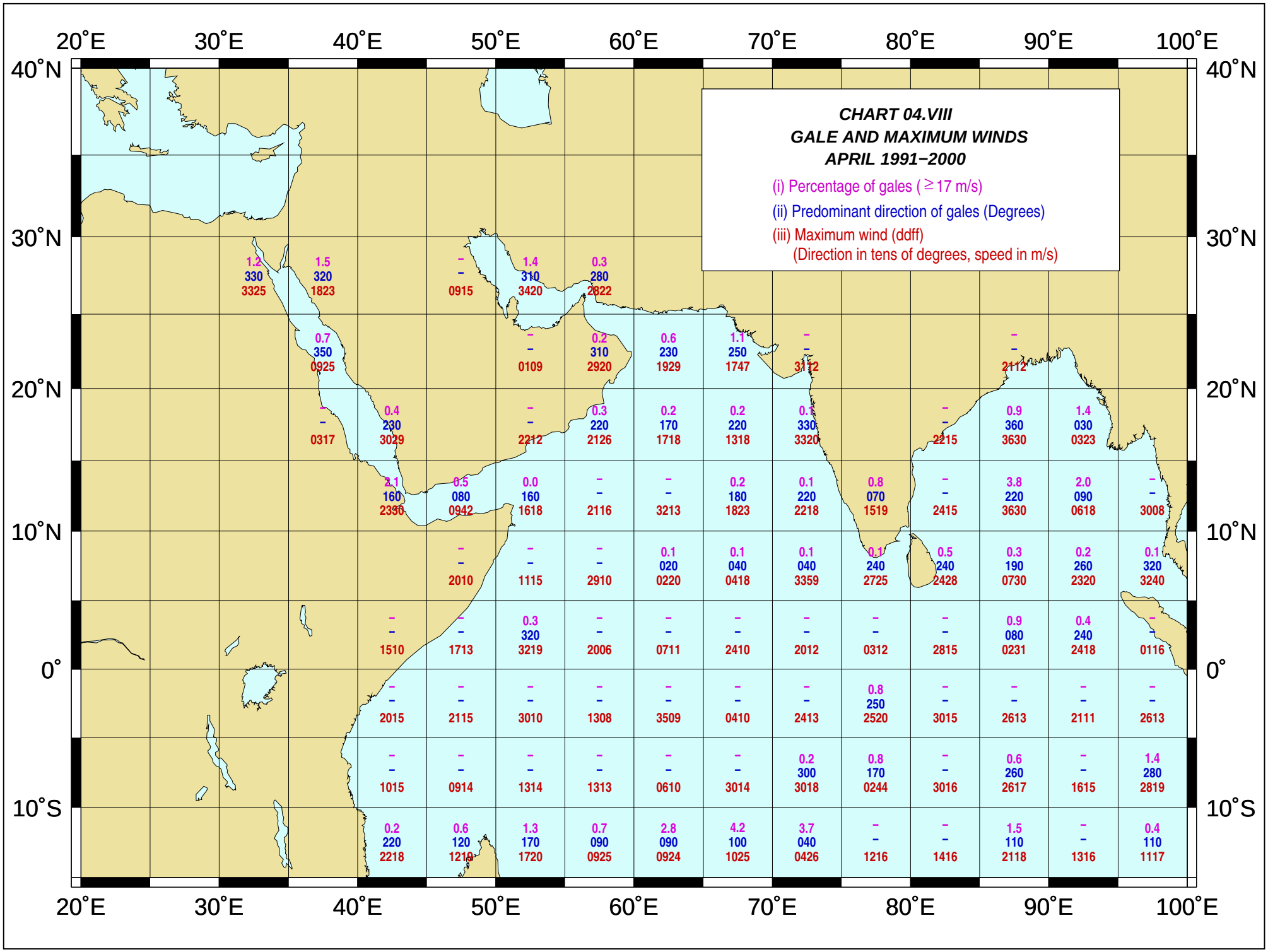


CHART 04.VIII
GALE AND MAXIMUM WINDS
APRIL 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.2 330 3325
1.5 320 1823
– – 0915
1.4 310 3420
0.3 280 2822
0.7 350 0925
– – 0109
0.2 310 2920
0.6 230 1929
1.1 250 1747
– – 3112
– – 2112
– – 0317
0.4 230 3029
– – 2212
0.3 220 2126
0.2 170 1718
0.2 220 1318
0.1 330 3320
– – 2215
0.9 360 3630
1.4 030 0323
2.1 160 2356
0.5 080 0942
0.0 160 1618
– – 2116
– – 3213
0.2 180 1823
0.1 220 2218
0.8 070 1519
– – 2415
3.8 220 3630
2.0 090 0618
– – 3008
– – 2010
– – 1115
– – 2910
0.1 020 0220
0.1 040 0418
0.1 040 3359
0.1 240 2725
0.5 240 2428
0.3 190 0730
0.2 260 2320
0.1 320 3240
– – 1510
– – 1713
0.3 320 3219
– – 2006
– – 0711
– – 2410
– – 2012
– – 0312
– – 2815
0.9 080 0231
0.4 240 2418
– – 0116
– – 2015
– – 2115
– – 3010
– – 1308
– – 3509
– – 0410
– – 2413
0.8 250 2520
– – 3015
– – 2613
– – 2111
– – 2613
– – 1015
– – 0914
– – 1314
– – 1313
– – 0610
– – 3014
0.2 300 3018
0.8 170 0244
– – 3016
0.6 260 2617
– – 1615
1.4 280 2819
0.2 220 2218
0.6 120 1210
1.3 170 1720
0.7 090 0925
2.8 090 0924
4.2 100 1025
3.7 040 0426
– – 1216
– – 1416
1.5 110 2118
– – 1316
0.4 110 1117

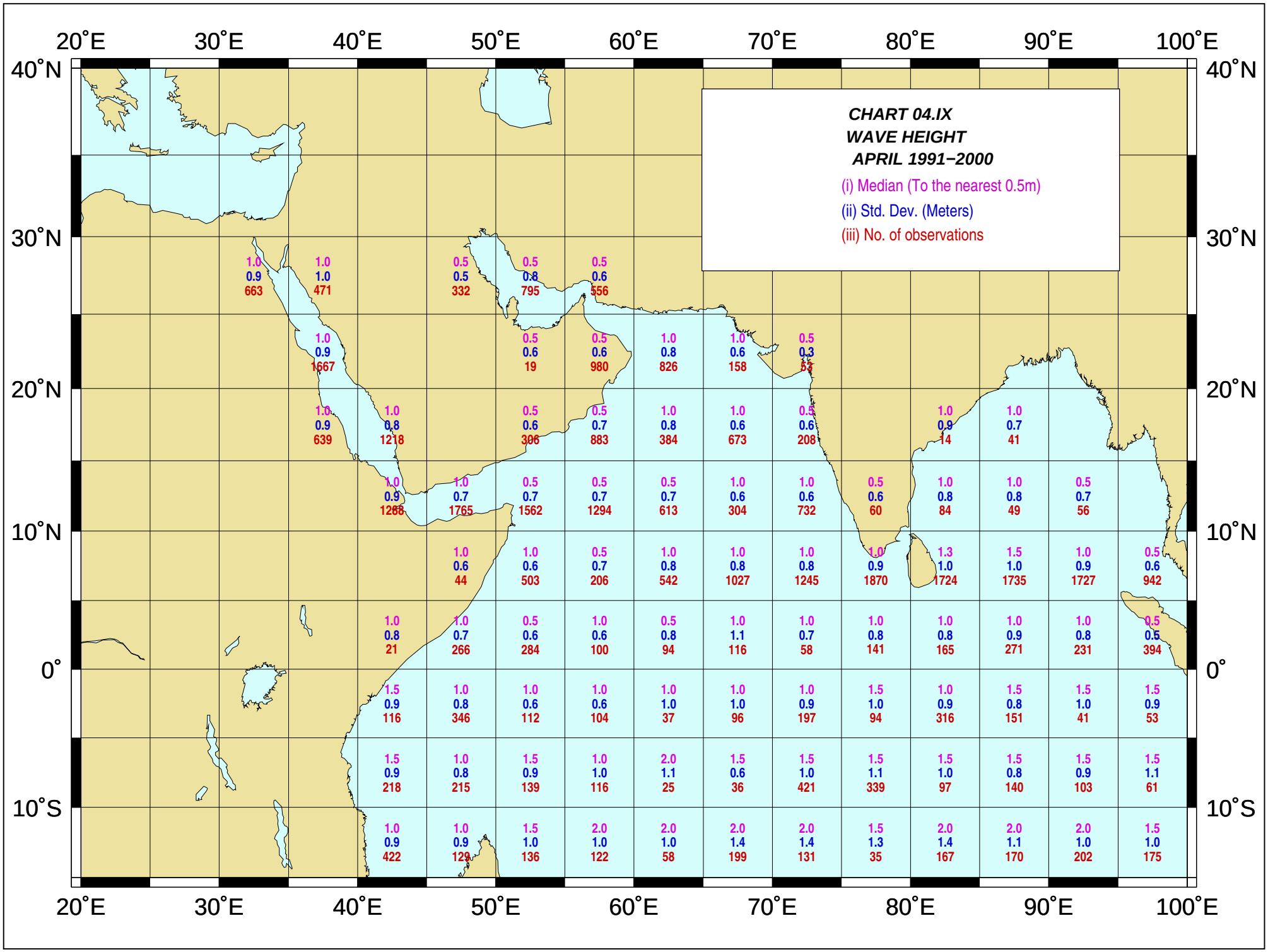


CHART 04.IX
WAVE HEIGHT
APRIL 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.9 663
1.0 1.0 471
0.5 0.5 332
0.5 0.8 795
0.5 0.6 556
1.0 0.9 1667
0.5 0.6 19
0.5 0.6 980
1.0 0.8 826
1.0 0.6 158
0.5 0.3
1.0 0.9 639
1.0 0.8 1218
0.5 0.6 306
0.5 0.7 883
1.0 0.8 384
1.0 0.6 673
0.5 0.6 208
1.0 0.9 14
1.0 0.7 41
1.0 0.9 1266
1.0 0.7 1765
0.5 0.7 1562
0.5 0.7 1294
0.5 0.7 613
1.0 0.6 304
1.0 0.6 732
0.5 0.6 60
1.0 0.8 84
1.0 0.8 49
0.5 0.7 56
1.0 0.6 44
1.0 0.6 503
0.5 0.7 206
1.0 0.8 542
1.0 0.8 1027
1.0 0.8 1245
1.0 0.9 1870
1.3 1.0 1724
1.5 1.0 1735
1.0 0.9 1727
0.5 0.6 942
1.0 0.8 21
1.0 0.7 266
0.5 0.6 284
1.0 0.6 100
0.5 0.8 94
1.0 1.1 116
1.0 0.7 58
1.0 0.8 141
1.0 0.8 165
1.0 0.9 271
1.0 0.8 231
0.5 0.5 394
1.5 0.9 116
1.0 0.8 346
1.0 0.6 112
1.0 0.6 104
1.0 1.0 37
1.0 1.0 96
1.0 0.9 197
1.5 1.0 94
1.0 0.9 316
1.5 0.8 151
1.5 1.0 41
1.5 0.9 53
1.5 0.9 218
1.0 0.8 215
1.5 0.9 139
1.0 1.0 116
2.0 1.1 25
1.5 0.6 36
1.5 1.0 421
1.5 1.1 339
1.5 1.0 97
1.5 0.8 140
1.5 0.9 103
1.5 1.1 61
1.0 0.9 422
1.0 0.9 129
1.5 1.0 136
2.0 1.0 122
2.0 1.0 58
2.0 1.4 199
2.0 1.4 131
1.5 1.3 35
2.0 1.4 167
2.0 1.1 170
2.0 1.0 202
1.5 1.0 175

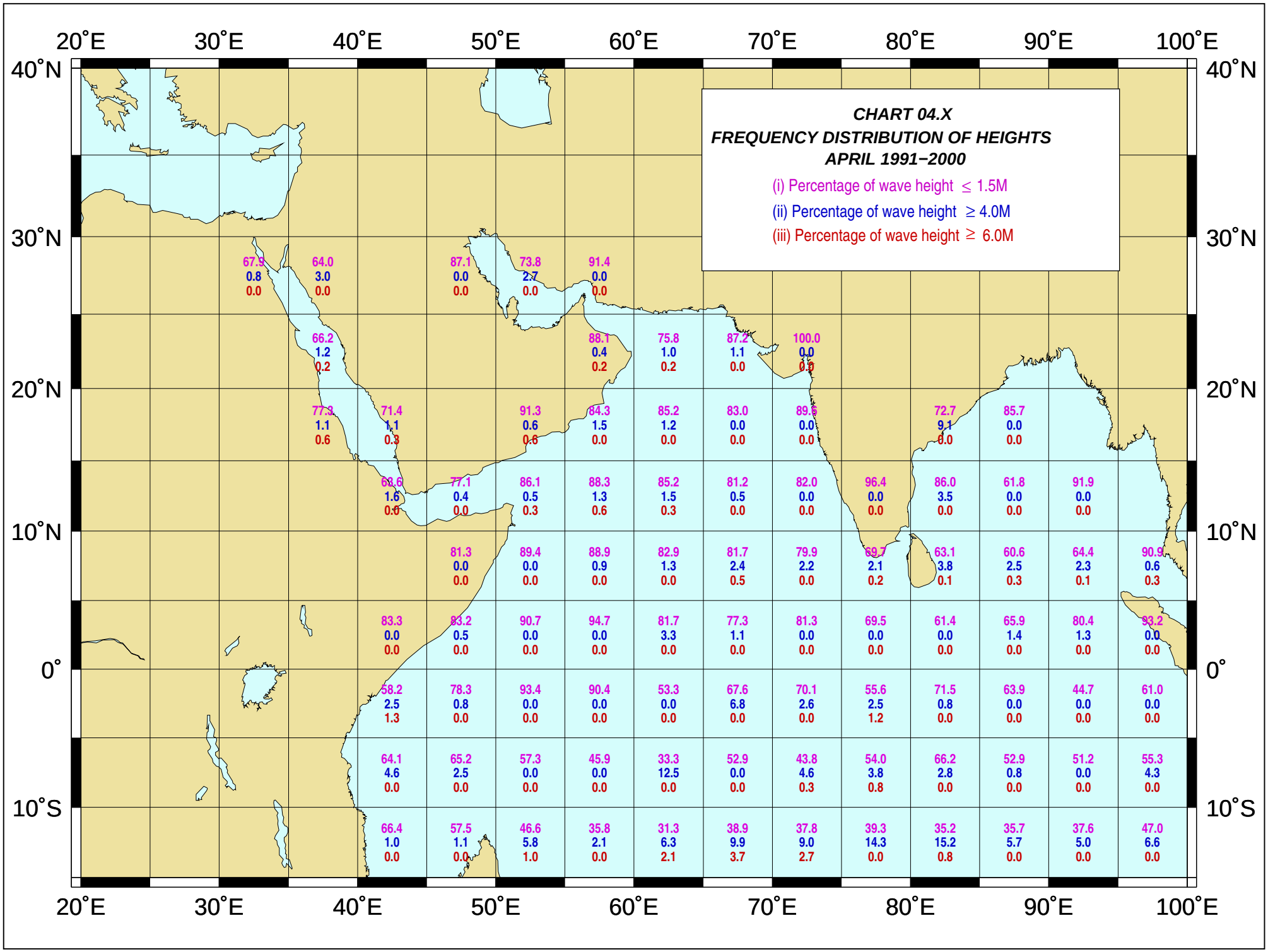


CHART 04.X
FREQUENCY DISTRIBUTION OF HEIGHTS
APRIL 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
67.9 0.8 0.0
64.0 3.0 0.0
87.1 0.0 0.0
73.8 2.7 0.0
91.4 0.0 0.0
66.2 1.2 0.2
88.1 0.4 0.2
75.8 1.0 0.2
87.2 1.1 0.0
100.0 0.0 0.0
77.3 1.1 0.6
71.4 1.1 0.3
91.3 0.6 0.6
84.3 1.5 0.0
85.2 1.2 0.0
83.0 0.0 0.0
89.6 0.0 0.0
72.7 9.1 0.0
85.7 0.0 0.0
60.6 1.6 0.6
77.1 0.4 0.0
86.1 0.5 0.3
88.3 1.3 0.6
85.2 1.5 0.3
81.2 0.5 0.0
82.0 0.0 0.0
96.4 0.0 0.0
86.0 3.5 0.0
61.8 0.0 0.0
91.9 0.0 0.0
81.3 0.0 0.0
89.4 0.0 0.0
88.9 0.9 0.0
82.9 1.3 0.0
81.7 2.4 0.5
79.9 2.2 0.0
69.7 2.1 0.2
63.1 3.8 0.1
60.6 2.5 0.3
64.4 2.3 0.1
90.9 0.6 0.3
83.3 0.0 0.0
83.2 0.5 0.0
90.7 0.0 0.0
94.7 0.0 0.0
81.7 3.3 0.0
77.3 1.1 0.0
81.3 0.0 0.0
69.5 0.0 0.0
61.4 0.0 0.0
65.9 1.4 0.0
80.4 1.3 0.0
93.2 0.0 0.0
58.2 2.5 1.3
78.3 0.8 0.0
93.4 0.0 0.0
90.4 0.0 0.0
53.3 0.0 0.0
67.6 6.8 0.0
70.1 2.6 0.0
55.6 2.5 1.2
71.5 0.8 0.0
63.9 0.0 0.0
44.7 0.0 0.0
61.0 0.0 0.0
64.1 4.6 0.0
65.2 2.5 0.0
57.3 0.0 0.0
45.9 0.0 0.0
33.3 12.5 0.0
52.9 0.0 0.0
43.8 4.6 0.3
54.0 3.8 0.8
66.2 2.8 0.0
52.9 0.8 0.0
51.2 0.0 0.0
55.3 4.3 0.0
66.4 1.0 0.0
57.5 1.1 0.0
46.6 5.8 1.0
35.8 2.1 0.0
31.3 6.3 2.1
38.9 9.9 3.7
37.8 9.0 2.7
39.3 14.3 0.0
35.2 15.2 0.8
35.7 5.7 0.0
37.6 5.0 0.0
47.0 6.6 0.0

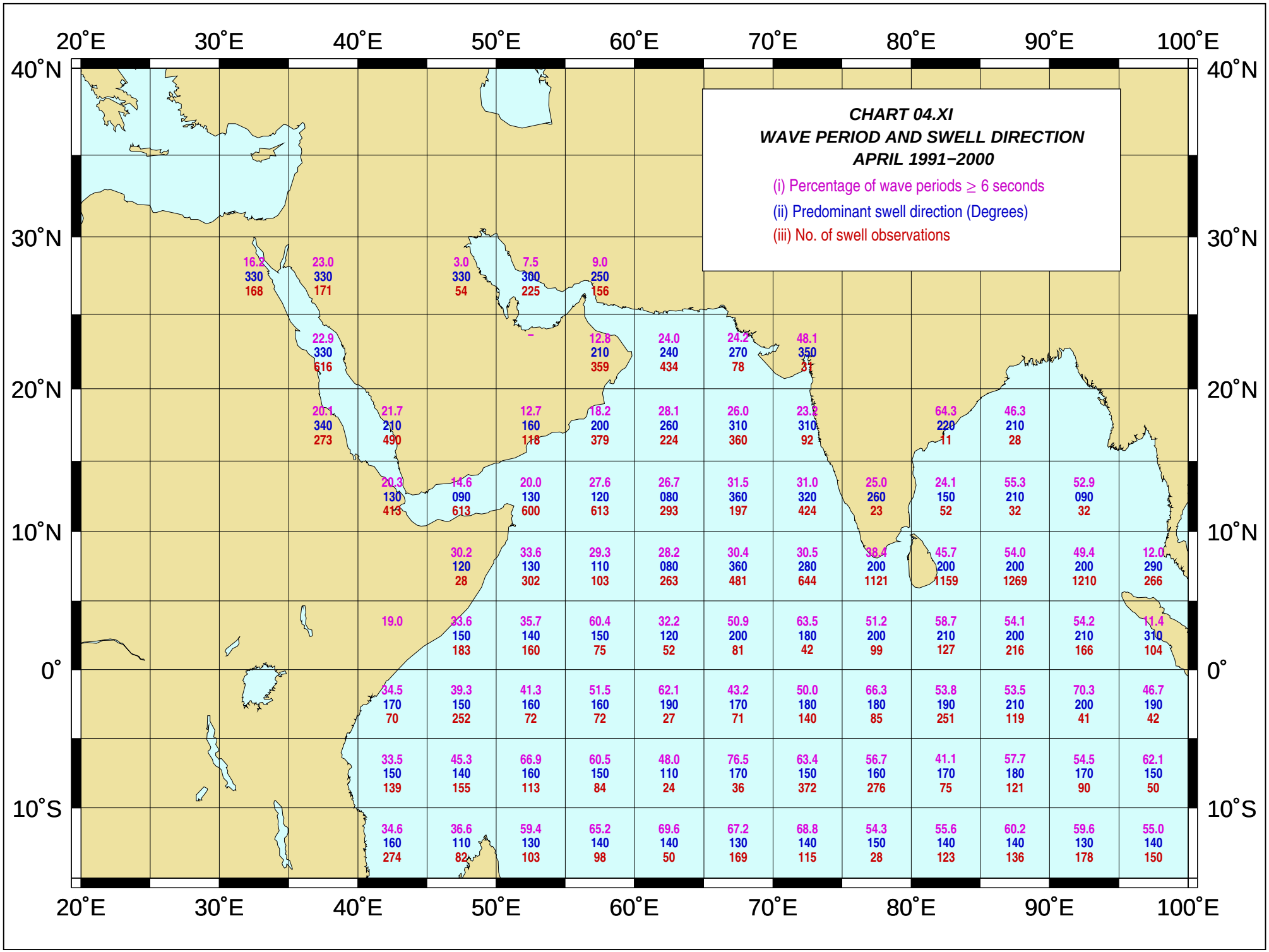


CHART 04.XI
WAVE PERIOD AND SWELL DIRECTION
APRIL 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
16.2 330 168
23.0 330 171
3.0 330 54
7.5 300 225
9.0 250 156
22.9 330 616
12.8 210 359
24.0 240 434
24.2 270 78
48.1 350 31
20.1 340 273
21.7 210 490
12.7 160 118
18.2 200 379
28.1 260 224
26.0 310 360
23.2 310 92
64.3 220 11
46.3 210 28
20.3 130 413
14.6 090 613
20.0 130 600
27.6 120 613
26.7 080 293
31.5 360 197
31.0 320 424
25.0 260 23
24.1 150 52
55.3 210 32
52.9 090 32
30.2 120 28
33.6 130 302
29.3 110 103
28.2 080 263
30.4 360 481
30.5 280 644
38.4 200 1121
45.7 200 1159
54.0 200 1269
49.4 200 1210
12.0 290 266
19.0
33.6 150 183
35.7 140 160
60.4 150 75
32.2 120 52
50.9 200 81
63.5 180 42
51.2 200 99
58.7 210 127
54.1 200 216
54.2 210 166
11.4 310 104
34.5 170 70
39.3 150 252
41.3 160 72
51.5 160 72
62.1 190 27
43.2 170 71
50.0 180 140
66.3 180 85
53.8 190 251
53.5 210 119
70.3 200 41
46.7 190 42
33.5 150 139
45.3 140 155
66.9 160 113
60.5 150 84
48.0 110 24
76.5 170 36
63.4 150 372
56.7 160 276
41.1 170 75
57.7 180 121
54.5 170 90
62.1 150 50
34.6 160 274
36.6 110 82
59.4 130 103
65.2 140 98
69.6 140 50
67.2 130 169
68.8 140 115
54.3 150 28
55.6 140 123
60.2 140 136
59.6 130 178
55.0 140 150

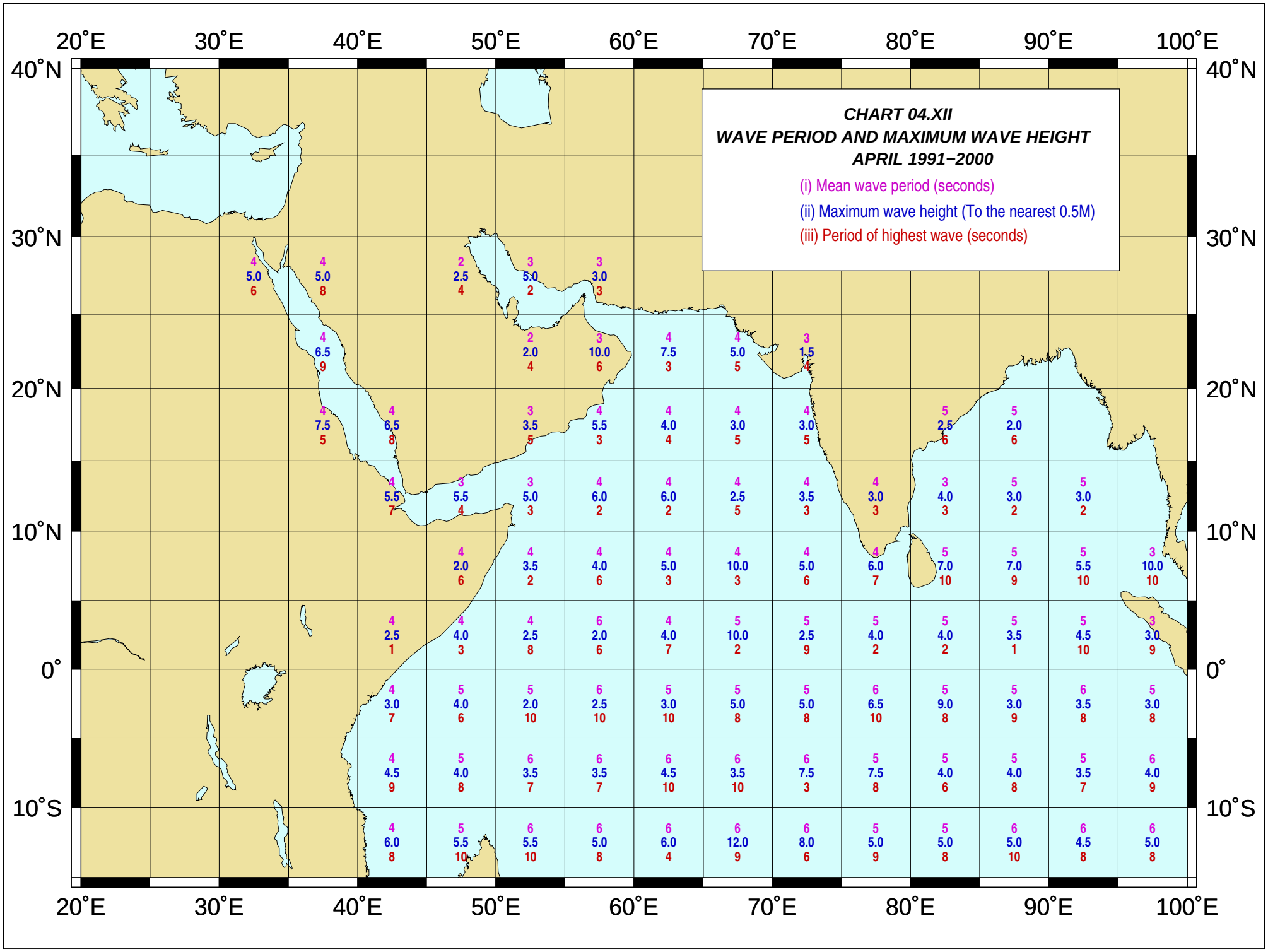


CHART 04.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
APRIL 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
4 5.0 6
4 5.0 8
2 2.5 4
3 5.0 2
3 3.0 3
4 6.5 9
2 2.0 4
3 10.0 6
4 7.5 3
4 5.0 5
3 1.5 4
4 7.5 5
4 6.5 8
3 3.5 5
4 5.5 3
4 4.0 4
4 3.0 5
4 3.0 5
5 2.5 6
5 2.0 6
4 5.5 7
3 5.5 4
3 5.0 3
4 6.0 2
4 6.0 2
4 2.5 5
4 3.5 3
4 3.0 3
3 4.0 3
5 3.0 2
5 3.0 2
4 2.0 6
4 3.5 2
4 4.0 6
4 5.0 3
4 10.0 3
4 5.0 6
4 6.0 7
5 7.0 10
5 7.0 9
5 5.5 10
3 10.0 10
4 2.5 1
4 4.0 3
4 2.5 8
6 2.0 6
4 4.0 7
5 10.0 2
5 2.5 9
5 4.0 2
5 4.0 2
5 3.5 1
5 4.5 10
3 3.0 9
4 3.0 7
5 4.0 6
5 2.0 10
6 2.5 10
5 3.0 10
5 5.0 8
5 5.0 8
6 6.5 10
5 9.0 8
5 3.0 9
6 3.5 8
5 3.0 8
4 4.5 9
5 4.0 8
6 3.5 7
6 3.5 7
6 4.5 10
6 3.5 10
6 7.5 3
5 7.5 8
5 4.0 6
5 4.0 8
5 3.5 7
6 4.0 9
4 6.0 8
5 5.5 10
6 5.5 10
6 5.0 8
6 6.0 4
6 12.0 9
6 8.0 6
5 5.0 9
5 5.0 8
6 5.0 10
6 4.5 8
6 5.0 8

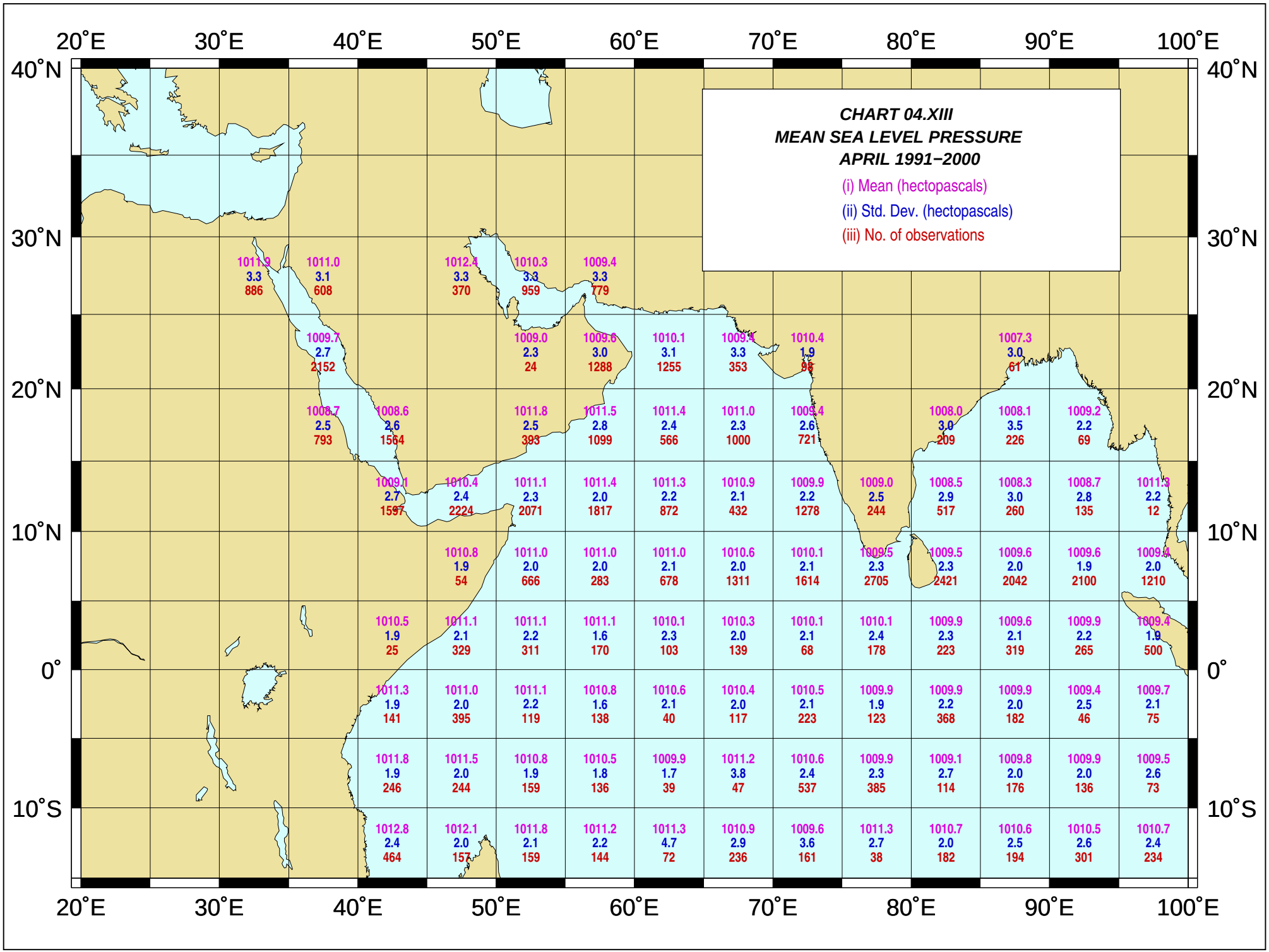


CHART 04.XIII
MEAN SEA LEVEL PRESSURE
APRIL 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1011.9 3.3 886
1011.0 3.1 608
1012.4 3.3 370
1010.3 3.3 959
1009.4 3.3 779
1009.7 2.7 2152
1009.0 2.3 24
1009.6 3.0 1288
1010.1 3.1 1255
1009.4 3.3 353
1010.4 1.9 96
1007.3 3.0 61
1008.7 2.5 793
1008.6 2.6 1564
1011.8 2.5 393
1011.5 2.8 1099
1011.4 2.4 566
1011.0 2.3 1000
1009.4 2.6 721
1008.0 3.0 209
1008.1 3.5 226
1009.2 2.2 69
1009.1 2.7 1597
1010.4 2.4 2224
1011.1 2.3 2071
1011.4 2.0 1817
1011.3 2.2 872
1010.9 2.1 432
1009.9 2.2 1278
1009.0 2.5 244
1008.5 2.9 517
1008.3 3.0 260
1008.7 2.8 135
1011.3 2.2 12
1010.8 1.9 54
1011.0 2.0 666
1011.0 2.0 283
1011.0 2.1 678
1010.6 2.0 1311
1010.1 2.1 1614
1009.5 2.3 2705
1009.5 2.3 2421
1009.6 2.0 2042
1009.6 1.9 2100
1009.4 2.0 1210
1010.5 1.9 25
1011.1 2.1 329
1011.1 2.2 311
1011.1 1.6 170
1010.1 2.3 103
1010.3 2.0 139
1010.1 2.1 68
1010.1 2.4 178
1009.9 2.3 223
1009.6 2.1 319
1009.9 2.2 265
1009.4 1.9 500
1011.3 1.9 141
1011.0 2.0 395
1011.1 2.2 119
1010.8 1.6 138
1010.6 2.1 40
1010.4 2.0 117
1010.5 2.1 223
1009.9 1.9 123
1009.9 2.2 368
1009.9 2.0 182
1009.4 2.5 46
1009.7 2.1 75
1011.8 1.9 246
1011.5 2.0 244
1010.8 1.9 159
1010.5 1.8 136
1009.9 1.7 39
1011.2 3.8 47
1010.6 2.4 537
1009.9 2.3 385
1009.1 2.7 114
1009.8 2.0 176
1009.9 2.0 136
1009.5 2.6 73
1012.8 2.4 464
1012.1 2.0 157
1011.8 2.1 159
1011.2 2.2 144
1011.3 4.7 72
1010.9 2.9 236
1009.6 3.6 161
1011.3 2.7 38
1010.7 2.0 182
1010.6 2.5 194
1010.5 2.6 301
1010.7 2.4 234

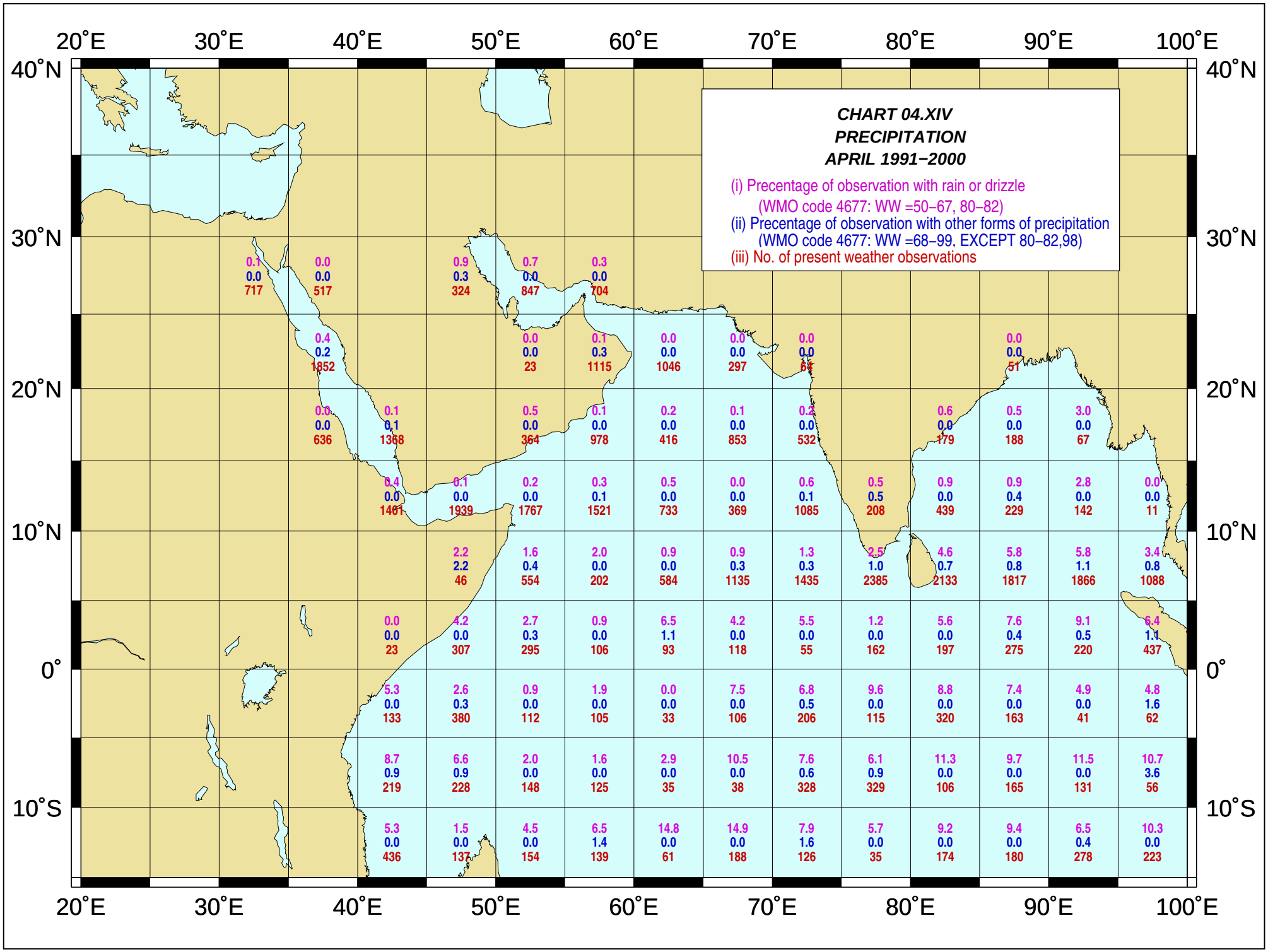


CHART 04.XIV
PRECIPITATION
APRIL 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 0.0 717
0.0 0.0 517
0.9 0.3 324
0.7 0.0 847
0.3 0.0 704
0.4 0.2 1852
0.0 0.0 23
0.1 0.3 1115
0.0 0.0 1046
0.0 0.0 297
0.0 0.0 64
0.0 0.0 51
0.0 0.0 636
0.1 0.1 1368
0.5 0.0 364
0.1 0.0 978
0.2 0.0 416
0.1 0.0 853
0.2 0.0 532
0.6 0.0 179
0.5 0.0 188
3.0 0.0 67
0.4 0.0 1401
0.1 0.0 1939
0.2 0.0 1767
0.3 0.1 1521
0.5 0.0 733
0.0 0.0 369
0.6 0.1 1085
0.5 0.5 208
0.9 0.0 439
0.9 0.4 229
2.8 0.0 142
0.0 0.0 11
2.2 2.2 46
1.6 0.4 554
2.0 0.0 202
0.9 0.0 584
0.9 0.3 1135
1.3 0.3 1435
2.5 1.0 2385
4.6 0.7 2133
5.8 0.8 1817
5.8 1.1 1866
3.4 0.8 1088
0.0 0.0 23
4.2 0.0 307
2.7 0.3 295
0.9 0.0 106
6.5 1.1 93
4.2 0.0 118
5.5 0.0 55
1.2 0.0 162
5.6 0.0 197
7.6 0.4 275
9.1 0.5 220
6.4 1.1 437
5.3 0.0 133
2.6 0.3 380
0.9 0.0 112
1.9 0.0 105
0.0 0.0 33
7.5 0.0 106
6.8 0.5 206
9.6 0.0 115
8.8 0.0 320
7.4 0.0 163
4.9 0.0 41
4.8 1.6 62
8.7 0.9 219
6.6 0.9 228
2.0 0.0 148
1.6 0.0 125
2.9 0.0 35
10.5 0.0 38
7.6 0.6 328
6.1 0.9 329
11.3 0.0 106
9.7 0.0 165
11.5 0.0 131
10.7 3.6 56
5.3 0.0 436
1.5 0.0 137
4.5 0.0 154
6.5 1.4 139
14.8 0.0 61
14.9 0.0 188
7.9 1.6 126
5.7 0.0 35
9.2 0.0 174
9.4 0.0 180
6.5 0.4 278
10.3 0.0 223

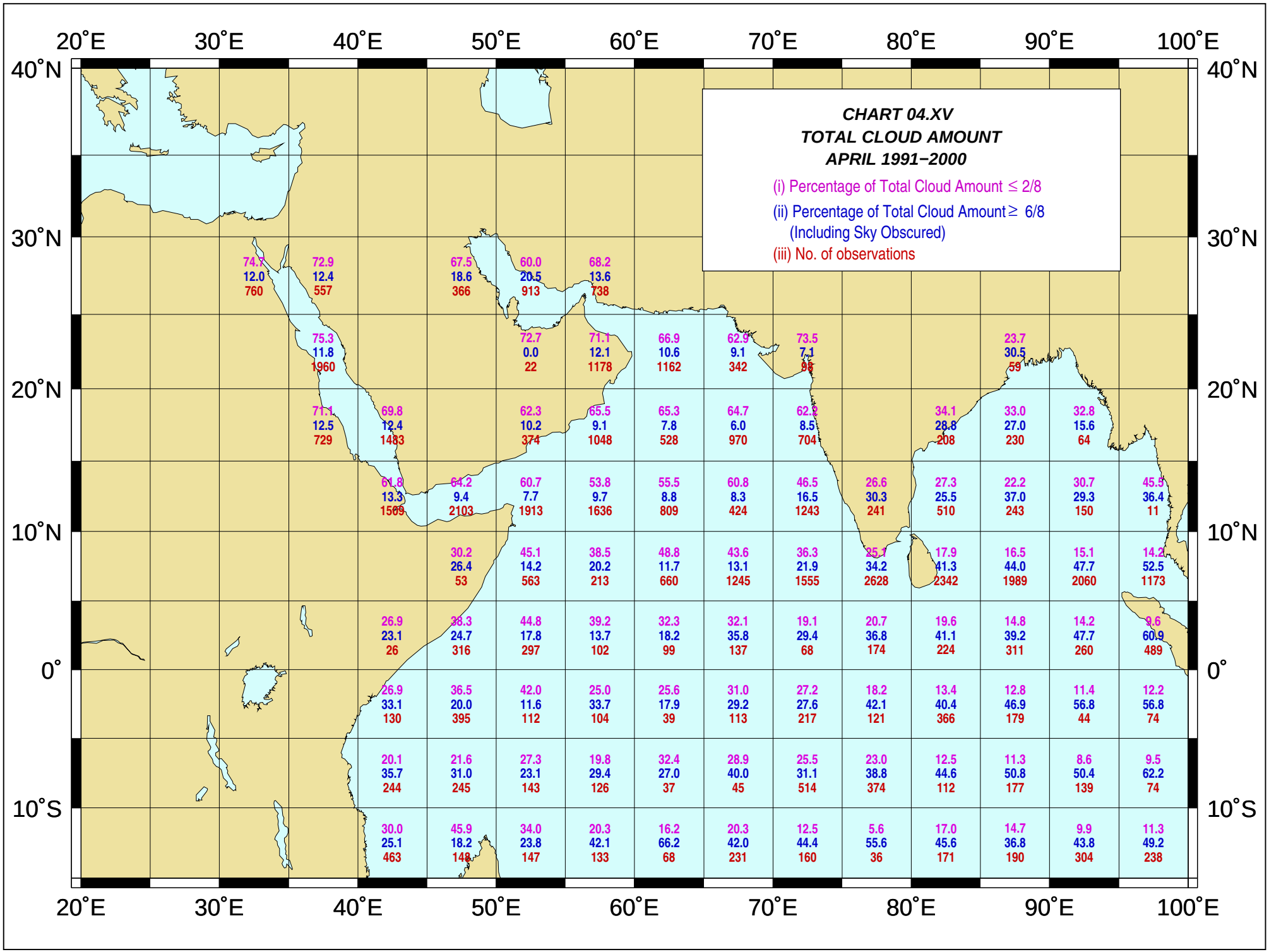


CHART 04.XV
TOTAL CLOUD AMOUNT
APRIL 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
74.7 12.0 760
72.9 12.4 557
67.5 18.6 366
60.0 20.5 913
68.2 13.6 738
75.3 11.8 1960
72.7 0.0 22
71.1 12.1 1178
66.9 10.6 1162
62.9 9.1 342
73.5 7.1 96
23.7 30.5 59
71.1 12.5 729
69.8 12.4 1483
62.3 10.2 374
65.5 9.1 1048
65.3 7.8 528
64.7 6.0 970
62.2 8.5 704
34.1 28.8 208
33.0 27.0 230
32.8 15.6 64
61.8 13.3 1509
64.2 9.4 2103
60.7 7.7 1913
53.8 9.7 1636
55.5 8.8 809
60.8 8.3 424
46.5 16.5 1243
26.6 30.3 241
27.3 25.5 510
22.2 37.0 243
30.7 29.3 150
45.5 36.4 11
30.2 26.4 53
45.1 14.2 563
38.5 20.2 213
48.8 11.7 660
43.6 13.1 1245
36.3 21.9 1555
25.1 34.2 2628
17.9 41.3 2342
16.5 44.0 1989
15.1 47.7 2060
14.2 52.5 1173
26.9 23.1 26
38.3 24.7 316
44.8 17.8 297
39.2 13.7 102
32.3 18.2 99
32.1 35.8 137
19.1 29.4 68
20.7 36.8 174
19.6 41.1 224
14.8 39.2 311
14.2 47.7 260
9.6 60.9 489
26.9 33.1 130
36.5 20.0 395
42.0 11.6 112
25.0 33.7 104
25.6 17.9 39
31.0 29.2 113
27.2 27.6 217
18.2 42.1 121
13.4 40.4 366
12.8 46.9 179
11.4 56.8 44
12.2 56.8 74
20.1 35.7 244
21.6 31.0 245
27.3 23.1 143
19.8 29.4 126
32.4 27.0 37
28.9 40.0 45
25.5 31.1 514
23.0 38.8 374
12.5 44.6 112
11.3 50.8 177
8.6 50.4 139
9.5 62.2 74
30.0 25.1 463
45.9 18.2 148
34.0 23.8 147
20.3 42.1 133
16.2 66.2 68
20.3 42.0 231
12.5 44.4 160
5.6 55.6 36
17.0 45.6 171
14.7 36.8 190
9.9 43.8 304
11.3 49.2 238

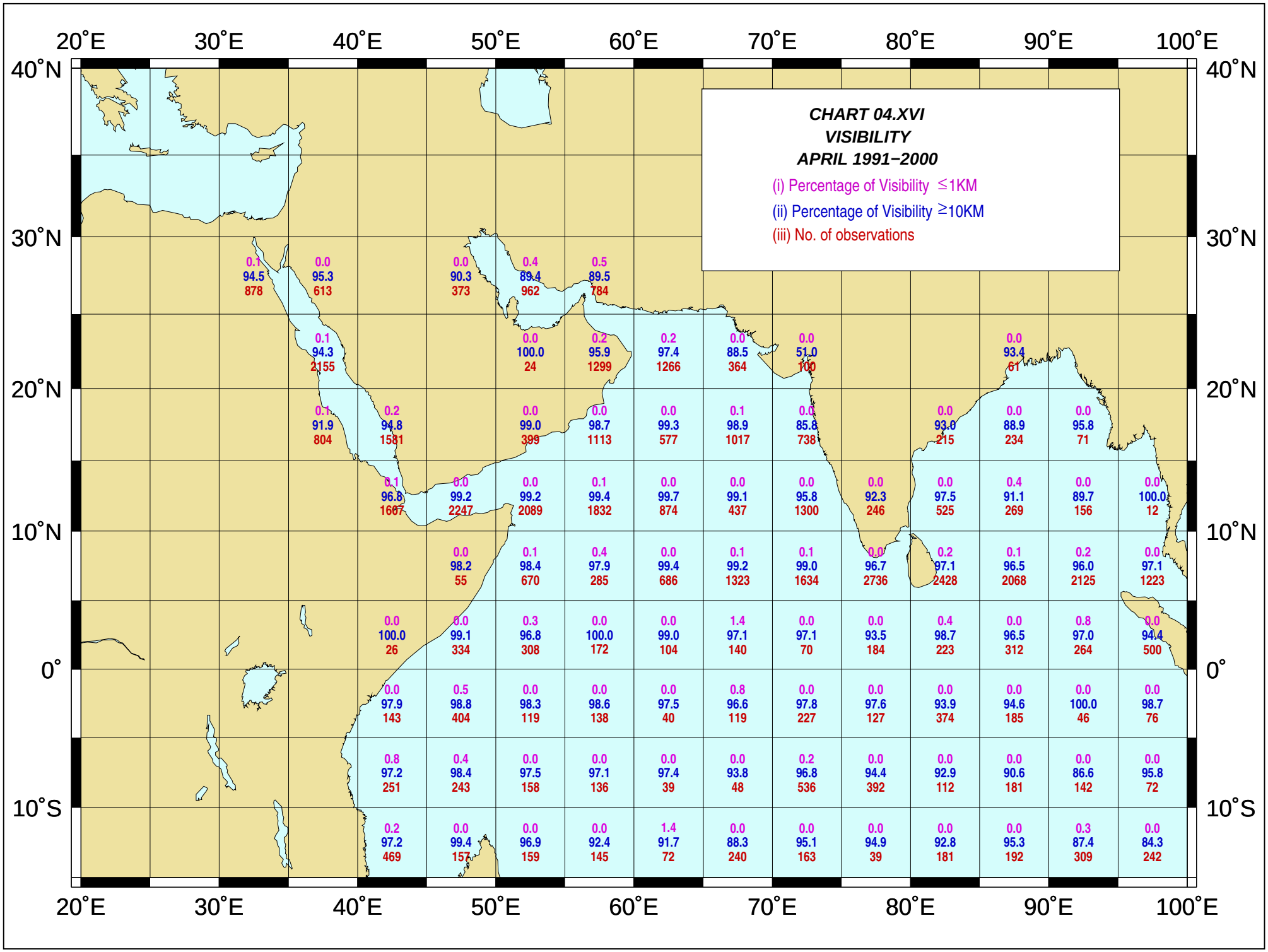


CHART 04.XVI
VISIBILITY
APRIL 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 94.5 878
0.0 95.3 613
0.0 90.3 373
0.4 89.4 962
0.5 89.5 784
0.1 94.3 2155
0.0 100.0 24
0.2 95.9 1299
0.2 97.4 1266
0.0 88.5 364
0.0 51.0 100
0.0 93.4 61
0.1 91.9 804
0.2 94.8 1581
0.0 99.0 399
0.0 98.7 1113
0.0 99.3 577
0.1 98.9 1017
0.0 85.8 738
0.0 93.0 215
0.0 88.9 234
0.0 95.8 71
0.1 96.8 1667
0.0 99.2 2247
0.0 99.2 2089
0.1 99.4 1832
0.0 99.7 874
0.0 99.1 437
0.0 95.8 1300
0.0 92.3 246
0.0 97.5 525
0.4 91.1 269
0.0 89.7 156
0.0 100.0 12
0.0 98.2 55
0.1 98.4 670
0.4 97.9 285
0.0 99.4 686
0.1 99.2 1323
0.1 99.0 1634
0.0 96.7 2736
0.2 97.1 2428
0.1 96.5 2068
0.2 96.0 2125
0.0 97.1 1223
0.0 100.0 26
0.0 99.1 334
0.3 96.8 308
0.0 100.0 172
0.0 99.0 104
1.4 97.1 140
0.0 97.1 70
0.0 93.5 184
0.4 98.7 223
0.0 96.5 312
0.8 97.0 264
0.0 94.4 500
0.0 97.9 143
0.5 98.8 404
0.0 98.3 119
0.0 98.6 138
0.0 97.5 40
0.8 96.6 119
0.0 97.8 227
0.0 97.6 127
0.0 93.9 374
0.0 94.6 185
0.0 100.0 46
0.0 98.7 76
0.8 97.2 251
0.4 98.4 243
0.0 97.5 158
0.0 97.1 136
0.0 97.4 39
0.0 93.8 48
0.2 96.8 536
0.0 94.4 392
0.0 92.9 112
0.0 90.6 181
0.0 86.6 142
0.0 95.8 72
0.2 97.2 469
0.0 99.4 157
0.0 96.9 159
0.0 92.4 145
1.4 91.7 72
0.0 88.3 240
0.0 95.1 163
0.0 94.9 39
0.0 92.8 181
0.0 95.3 192
0.3 87.4 309
0.0 84.3 242

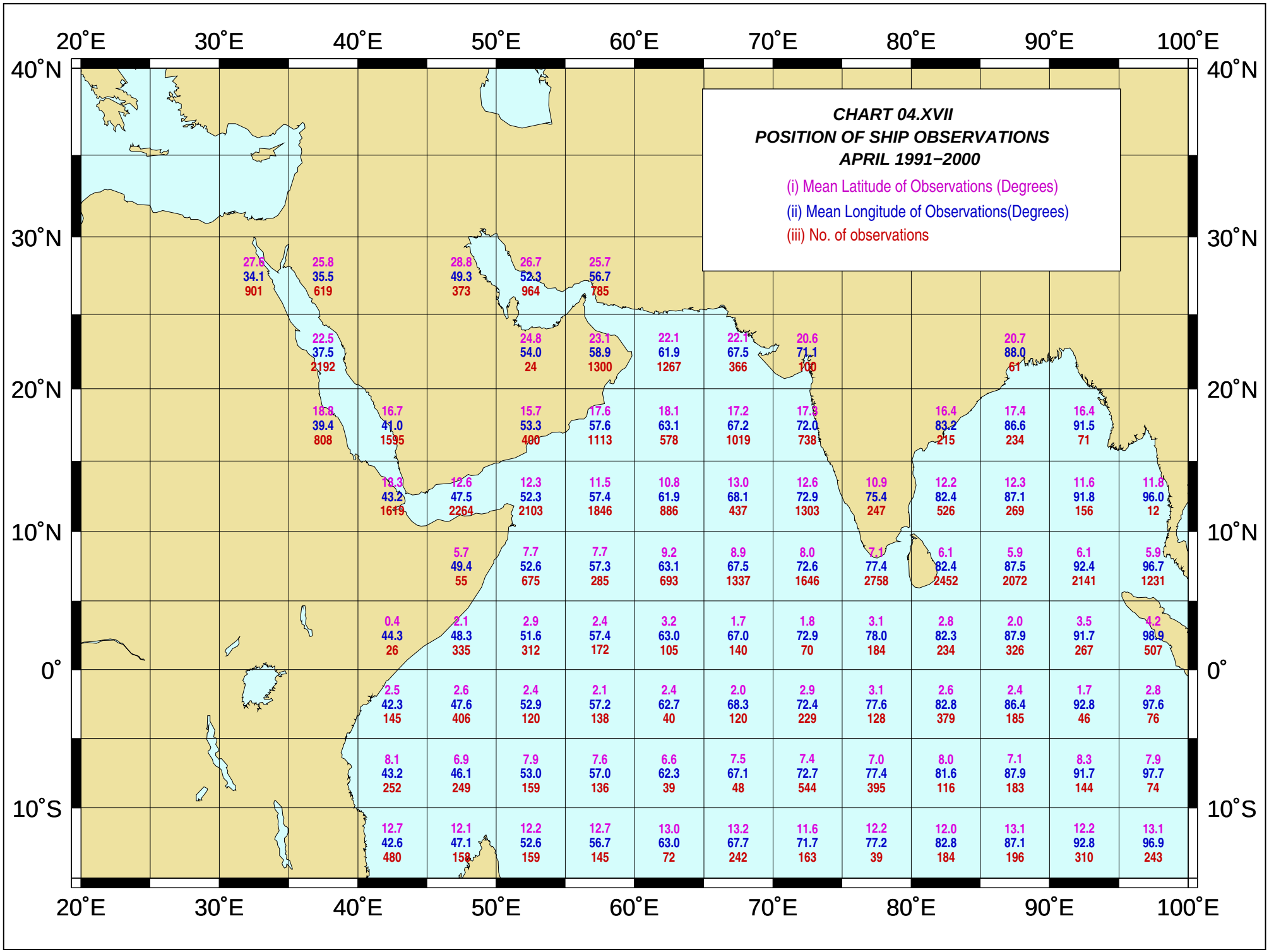


CHART 04.XVII
POSITION OF SHIP OBSERVATIONS
APRIL 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.6 34.1 901
25.8 35.5 619
28.8 49.3 373
26.7 52.3 964
25.7 56.7 785
22.5 37.5 2192
24.8 54.0 24
23.1 58.9 1300
22.1 61.9 1267
22.1 67.5 366
20.6 71.1 100
20.7 88.0 61
18.8 39.4 808
16.7 41.0 1595
15.7 53.3 400
17.6 57.6 1113
18.1 63.1 578
17.2 67.2 1019
17.9 72.0 738
16.4 83.2 215
17.4 86.6 234
16.4 91.5 71
10.3 43.2 1619
12.6 47.5 2264
12.3 52.3 2103
11.5 57.4 1846
10.8 61.9 886
13.0 68.1 437
12.6 72.9 1303
10.9 75.4 247
12.2 82.4 526
12.3 87.1 269
11.6 91.8 156
11.8 96.0 12
5.7 49.4 55
7.7 52.6 675
7.7 57.3 285
9.2 63.1 693
8.9 67.5 1337
8.0 72.6 1646
7.1 77.4 2758
6.1 82.4 2452
5.9 87.5 2072
6.1 92.4 2141
5.9 96.7 1231
0.4 44.3 26
2.1 48.3 335
2.9 51.6 312
2.4 57.4 172
3.2 63.0 105
1.7 67.0 140
1.8 72.9 70
3.1 78.0 184
2.8 82.3 234
2.0 87.9 326
3.5 91.7 267
4.2 98.9 507
2.5 42.3 145
2.6 47.6 406
2.4 52.9 120
2.1 57.2 138
2.4 62.7 40
2.0 68.3 120
2.9 72.4 229
3.1 77.6 128
2.6 82.8 379
2.4 86.4 185
1.7 92.8 46
2.8 97.6 76
8.1 43.2 252
6.9 46.1 249
7.9 53.0 159
7.6 57.0 136
6.6 62.3 39
7.5 67.1 48
7.4 72.7 544
7.0 77.4 395
8.0 81.6 116
7.1 87.9 183
8.3 91.7 144
7.9 97.7 74
12.7 42.6 480
12.1 47.1 158
12.2 52.6 159
12.7 56.7 145
13.0 63.0 72
13.2 67.7 242
11.6 71.7 163
12.2 77.2 39
12.0 82.8 184
13.1 87.1 196
12.2 92.8 310
13.1 96.9 243

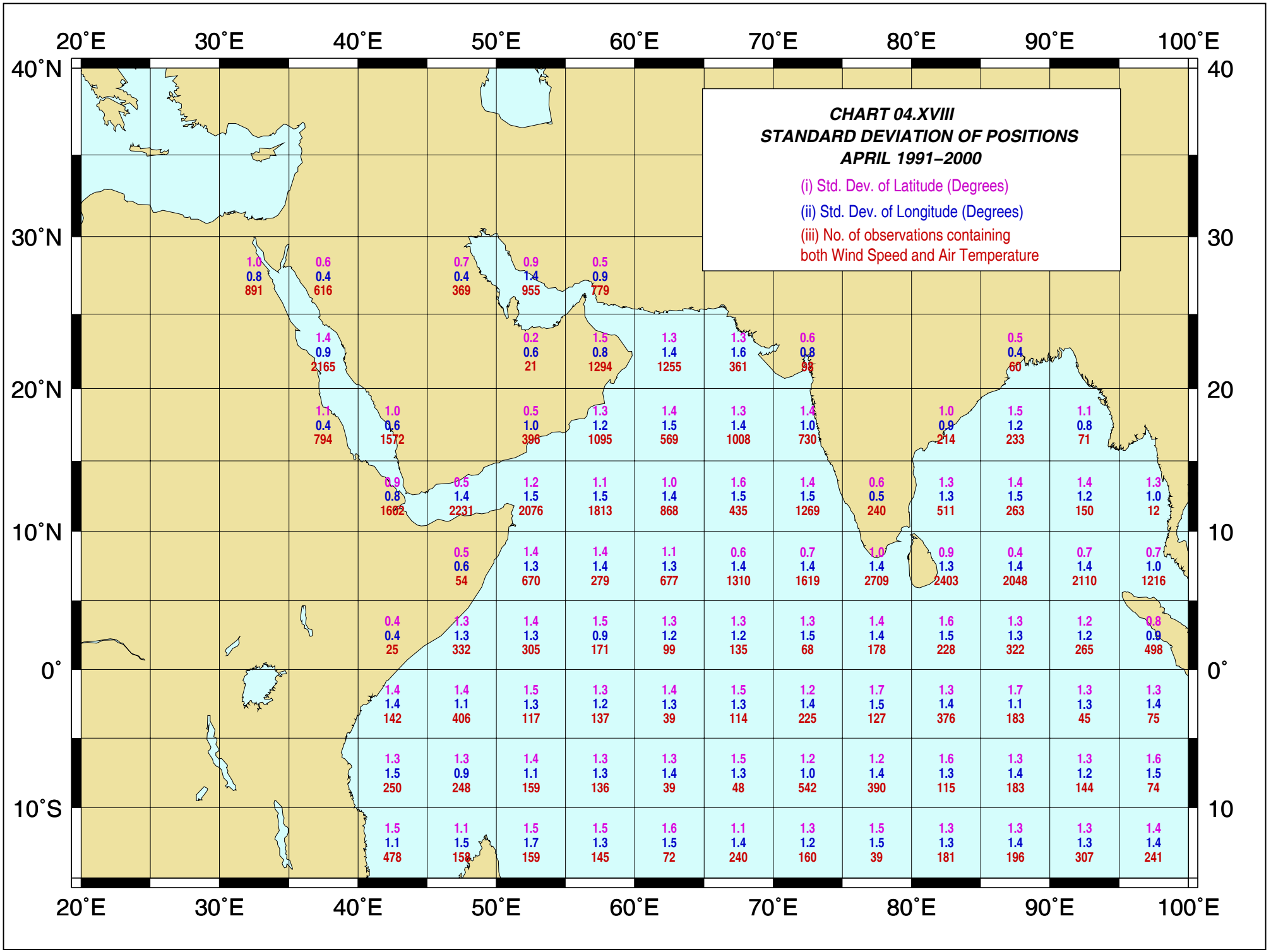
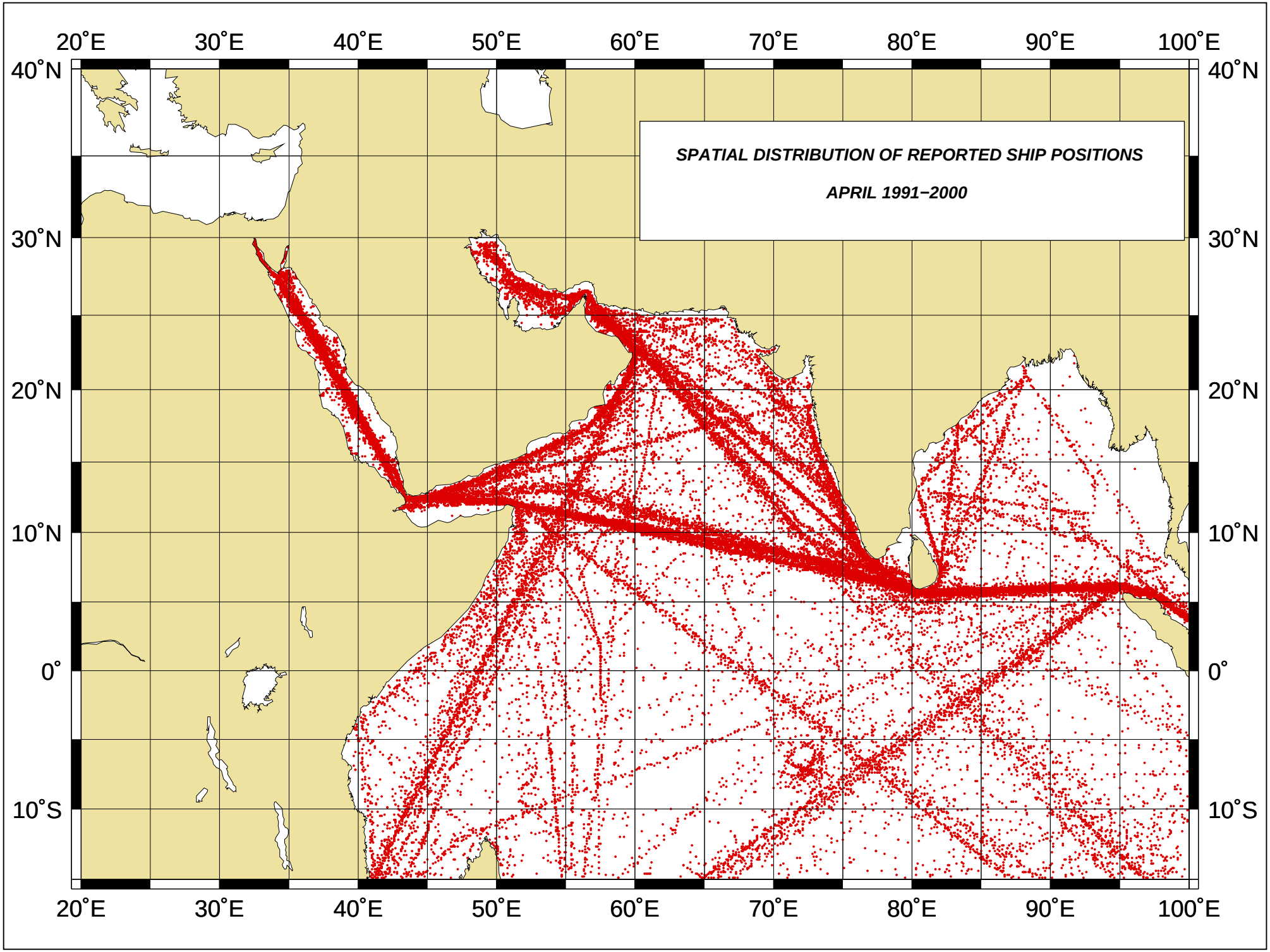
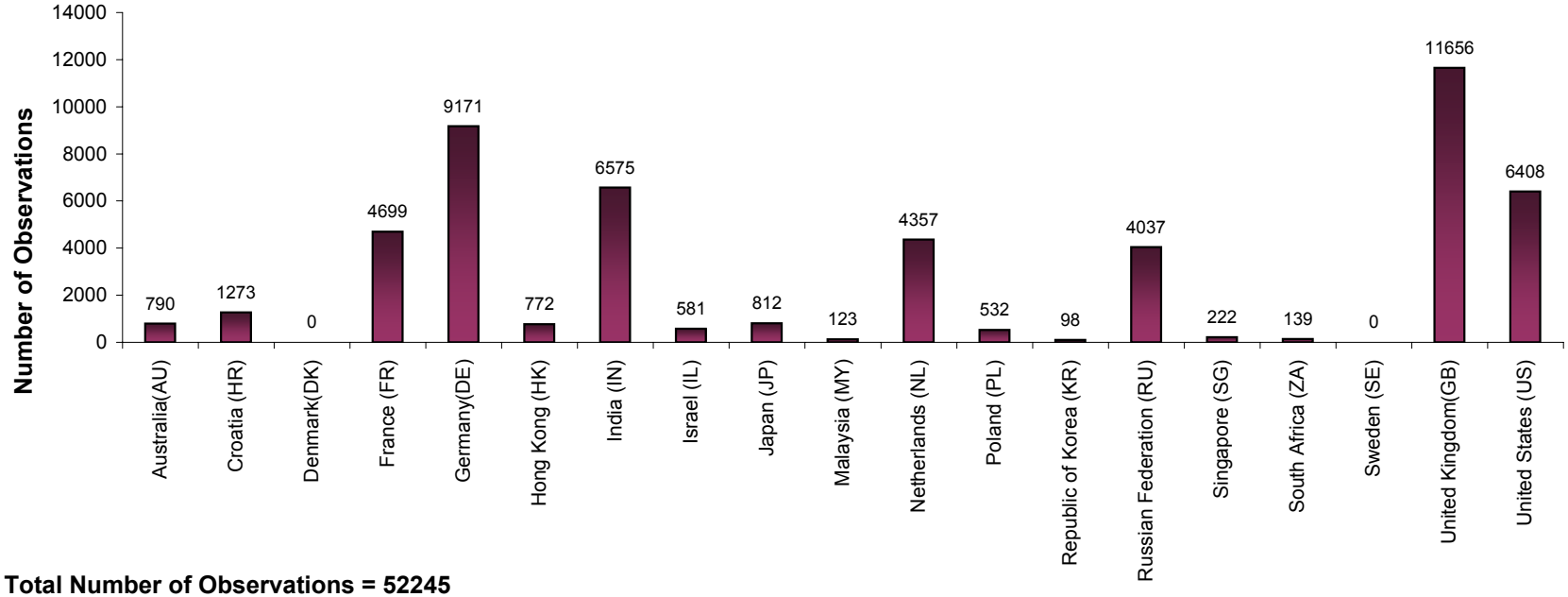


CHART 04.XVIII
STANDARD DEVIATION OF POSITIONS
APRIL 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.8 891
0.6 0.4 616
0.7 0.4 369
0.9 1.4 955
0.5 0.9 779
1.4 0.9 2165
0.2 0.6 21
1.5 0.8 1294
1.3 1.4 1255
1.3 1.6 361
0.6 0.8 98
0.5 0.4 60
1.1 0.4 794
1.0 0.6 1572
0.5 1.0 396
1.3 1.2 1095
1.4 1.5 569
1.3 1.4 1008
1.4 1.0 730
1.0 0.9 214
1.5 1.2 233
1.1 0.8 71
0.9 0.8 1662
0.5 1.4 2231
1.2 1.5 2076
1.1 1.5 1813
1.0 1.4 868
1.6 1.5 435
1.4 1.5 1269
0.6 0.5 240
1.3 1.3 511
1.4 1.5 263
1.4 1.2 150
1.3 1.0 12
0.5 0.6 54
1.4 1.3 670
1.4 1.4 279
1.1 1.3 677
0.6 1.4 1310
0.7 1.4 1619
1.0 1.4 2709
0.9 1.3 2403
0.4 1.4 2048
0.7 1.4 2110
0.7 1.0 1216
0.4 0.4 25
1.3 1.3 332
1.4 1.3 305
1.5 0.9 171
1.3 1.2 99
1.3 1.2 135
1.3 1.5 68
1.4 1.4 178
1.6 1.5 228
1.3 1.3 322
1.2 1.2 265
0.8 0.9 498
1.4 1.4 142
1.4 1.1 406
1.5 1.3 117
1.3 1.2 137
1.4 1.3 39
1.5 1.3 114
1.2 1.4 225
1.7 1.5 127
1.3 1.4 376
1.7 1.1 183
1.3 1.3 45
1.3 1.4 75
1.3 1.5 250
1.3 0.9 248
1.4 1.1 159
1.3 1.3 136
1.3 1.4 39
1.5 1.3 48
1.2 1.0 542
1.2 1.4 390
1.6 1.3 115
1.3 1.4 183
1.3 1.2 144
1.6 1.5 74
1.5 1.1 478
1.1 1.5 158
1.5 1.7 159
1.5 1.3 145
1.6 1.5 72
1.1 1.4 240
1.3 1.2 160
1.5 1.5 39
1.3 1.3 181
1.3 1.4 196
1.3 1.3 307
1.4 1.4 241


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
APRIL 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

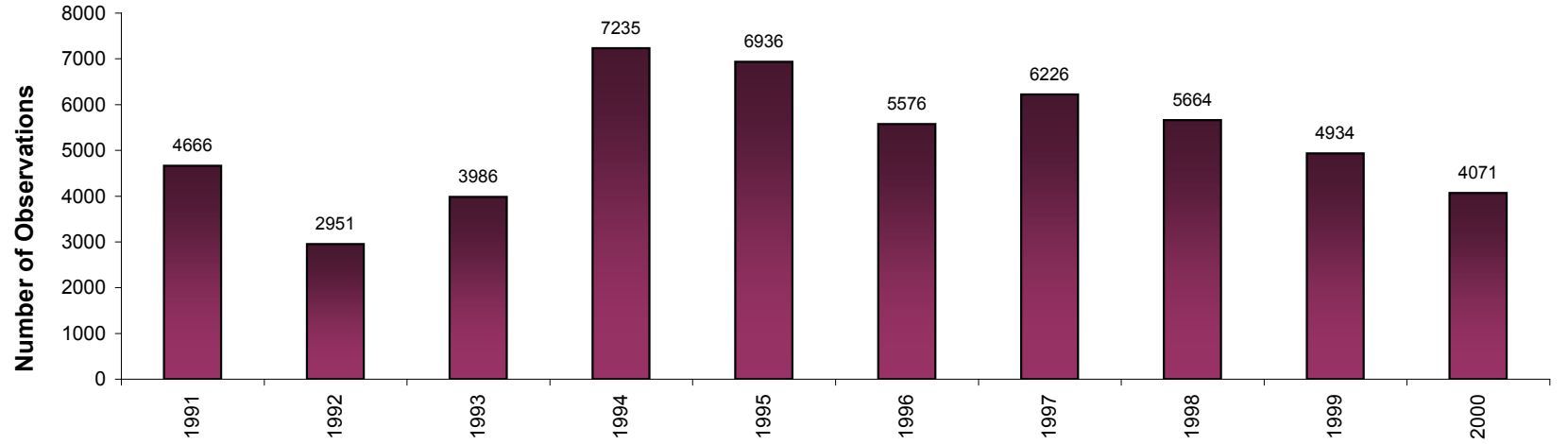
APRIL : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52245

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52245

Marine Climatological Summary Charts 1991-2000

CHARTS OF MAY 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

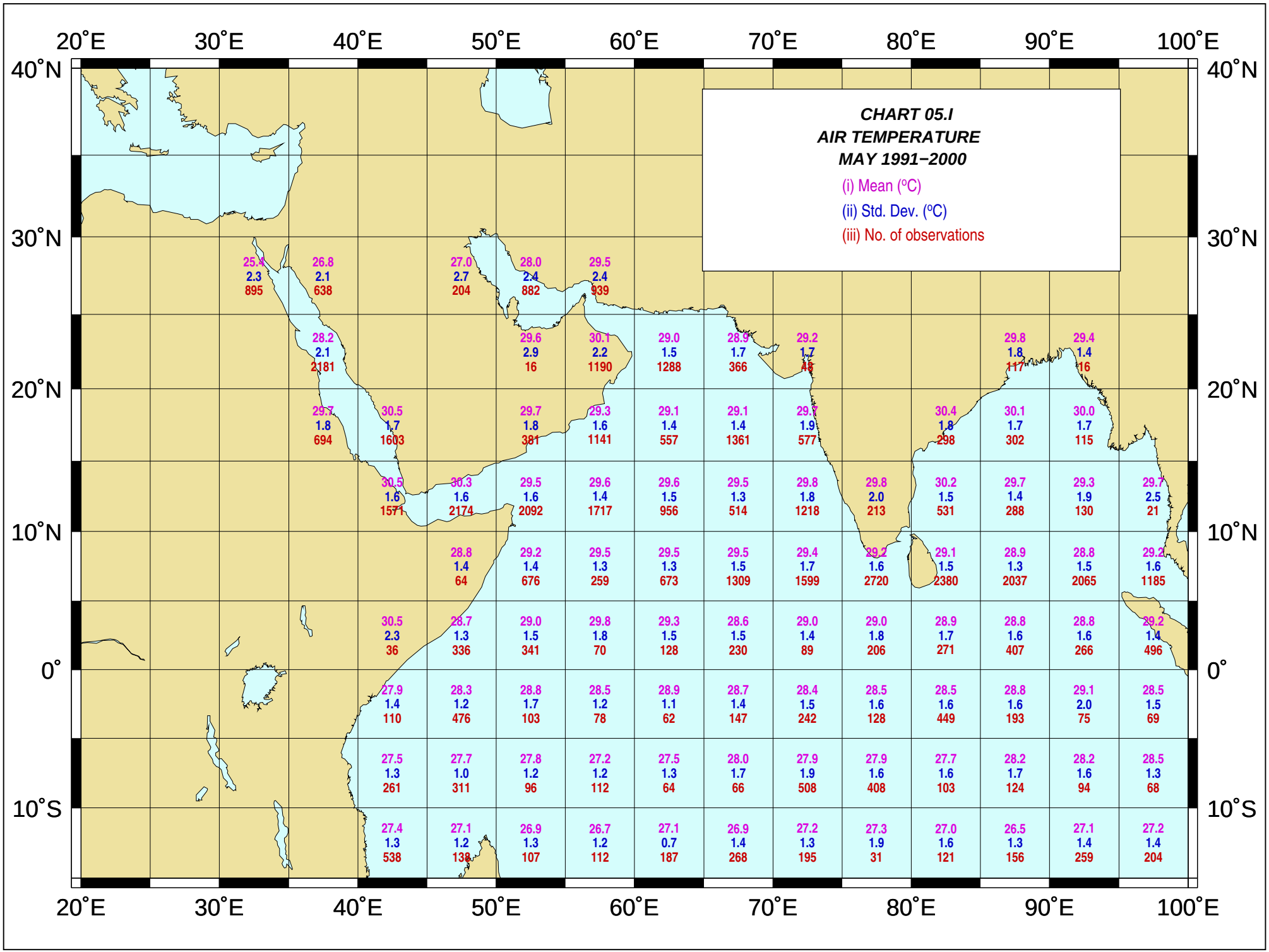


CHART 05.I
AIR TEMPERATURE
MAY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
25.4 2.3 895
26.8 2.1 638
27.0 2.7 204
28.0 2.4 882
29.5 2.4 939
28.2 2.1 2181
29.6 2.9 16
30.1 2.2 1190
29.0 1.5 1288
28.9 1.7 366
29.2 1.7 45
29.8 1.8 117
29.4 1.4 16
29.7 1.8 694
30.5 1.7 1603
29.7 1.8 381
29.3 1.6 1141
29.1 1.4 557
29.1 1.4 1361
29.7 1.9 577
30.4 1.8 298
30.1 1.7 302
30.0 1.7 115
30.5 1.6 1571
30.3 1.6 2174
29.5 1.6 2092
29.6 1.4 1717
29.6 1.5 956
29.5 1.3 514
29.8 1.8 1218
29.8 2.0 213
30.2 1.5 531
29.7 1.4 288
29.3 1.9 130
29.7 2.5 21
28.8 1.4 64
29.2 1.4 676
29.5 1.3 259
29.5 1.3 673
29.5 1.5 1309
29.4 1.7 1599
29.2 1.6 2720
29.1 1.5 2380
28.9 1.3 2037
28.8 1.5 2065
29.2 1.6 1185
30.5 2.3 36
28.7 1.3 336
29.0 1.5 341
29.8 1.8 70
29.3 1.5 128
28.6 1.5 230
29.0 1.4 89
29.0 1.8 206
28.9 1.7 271
28.8 1.6 407
28.8 1.6 266
29.2 1.4 496
27.9 1.4 110
28.3 1.2 476
28.8 1.7 103
28.5 1.2 78
28.9 1.1 62
28.7 1.4 147
28.4 1.5 242
28.5 1.6 128
28.5 1.6 449
28.8 1.6 193
29.1 2.0 75
28.5 1.5 69
27.5 1.3 261
27.7 1.0 311
27.8 1.2 96
27.2 1.2 112
27.5 1.3 64
28.0 1.7 66
27.9 1.9 508
27.9 1.6 408
27.7 1.6 103
28.2 1.7 124
28.2 1.6 94
28.5 1.3 68
27.4 1.3 538
27.1 1.2 138
26.9 1.3 107
26.7 1.2 112
27.1 0.7 187
26.9 1.4 268
27.2 1.3 195
27.3 1.9 31
27.0 1.6 121
26.5 1.3 156
27.1 1.4 259
27.2 1.4 204

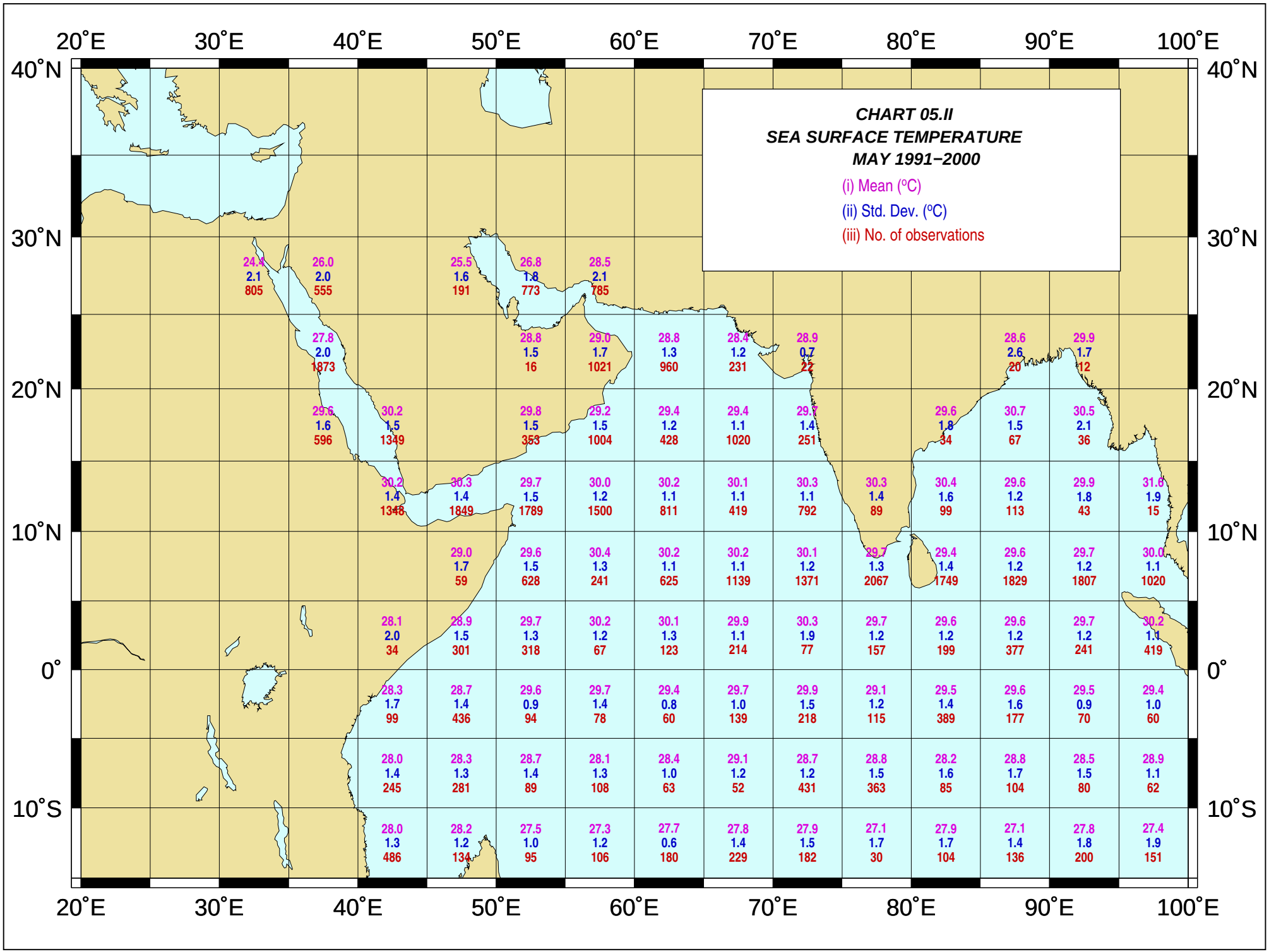


CHART 05.II
SEA SURFACE TEMPERATURE
MAY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
24.4 2.1 805
26.0 2.0 555
25.5 1.6 191
26.8 1.8 773
28.5 2.1 785
27.8 2.0 1873
28.8 1.5 16
29.0 1.7 1021
28.8 1.3 960
28.4 1.2 231
28.9 0.7 22
28.6 2.6 20
29.9 1.7 12
29.6 1.6 596
30.2 1.5 1349
29.8 1.5 353
29.2 1.5 1004
29.4 1.2 428
29.4 1.1 1020
29.7 1.4 251
29.6 1.8 34
30.7 1.5 67
30.5 2.1 36
30.2 1.4 1348
30.3 1.4 1849
29.7 1.5 1789
30.0 1.2 1500
30.2 1.1 811
30.1 1.1 419
30.3 1.1 792
30.3 1.4 89
30.4 1.6 99
29.6 1.2 113
29.9 1.8 43
31.6 1.9 15
29.0 1.7 59
29.6 1.5 628
30.4 1.3 241
30.2 1.1 625
30.2 1.1 1139
30.1 1.2 1371
29.7 1.3 2067
29.4 1.4 1749
29.6 1.2 1829
29.7 1.2 1807
30.0 1.1 1020
28.1 2.0 34
28.9 1.5 301
29.7 1.3 318
30.2 1.2 67
30.1 1.3 123
29.9 1.1 214
30.3 1.9 77
29.7 1.2 157
29.6 1.2 199
29.6 1.2 377
29.7 1.2 241
30.2 1.1 419
28.3 1.7 99
28.7 1.4 436
29.6 0.9 94
29.7 1.4 78
29.4 0.8 60
29.7 1.0 139
29.9 1.5 218
29.1 1.2 115
29.5 1.4 389
29.6 1.6 177
29.5 0.9 70
29.4 1.0 60
28.0 1.4 245
28.3 1.3 281
28.7 1.4 89
28.1 1.3 108
28.4 1.0 63
29.1 1.2 52
28.7 1.2 431
28.8 1.5 363
28.2 1.6 85
28.8 1.7 104
28.5 1.5 80
28.9 1.1 62
28.0 1.3 486
28.2 1.2 134
27.5 1.0 95
27.3 1.2 106
27.7 0.6 180
27.8 1.4 229
27.9 1.5 182
27.1 1.7 30
27.9 1.7 104
27.1 1.4 136
27.8 1.8 200
27.4 1.9 151

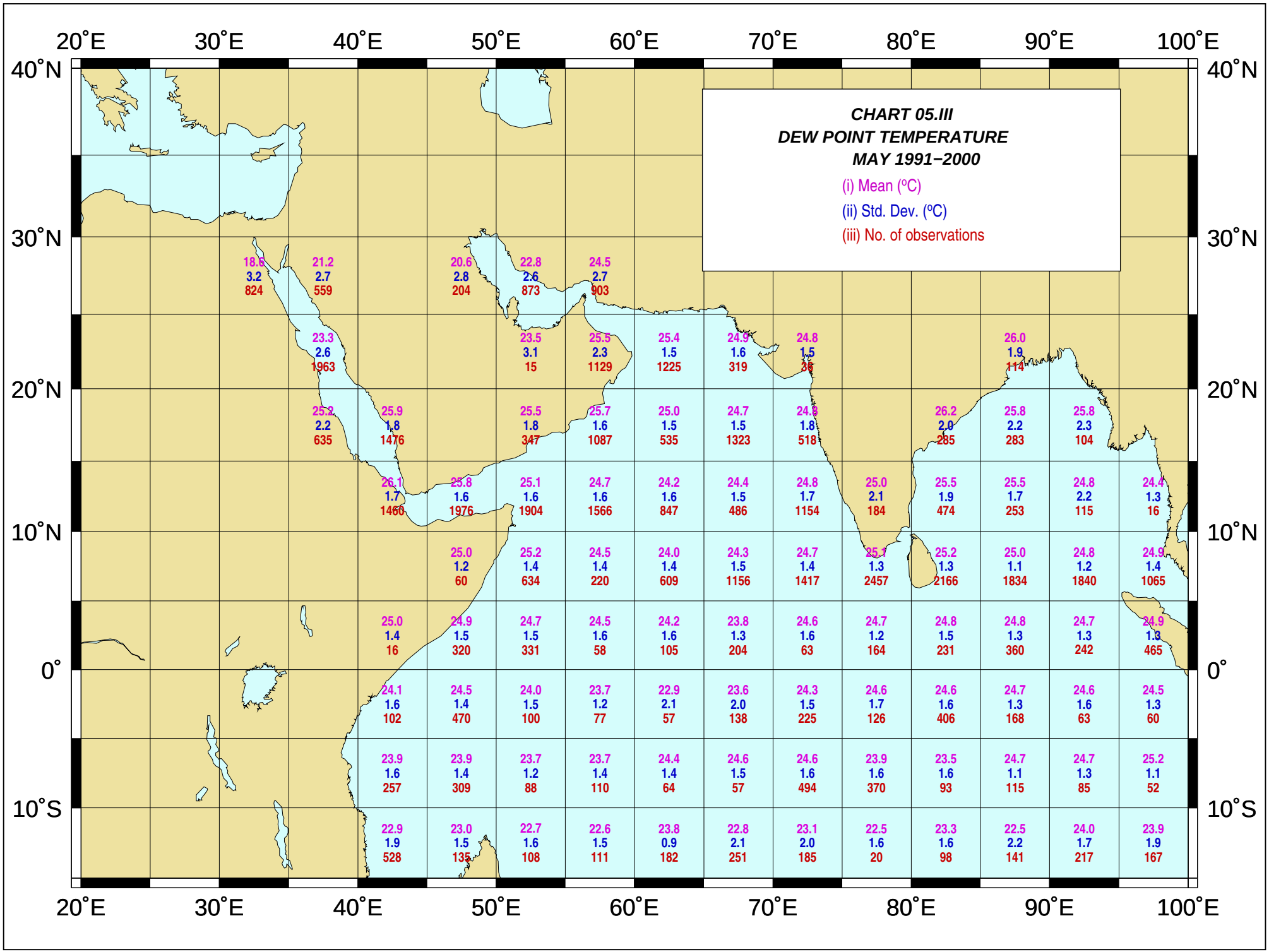


CHART 05.III
DEW POINT TEMPERATURE
MAY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
18.6 3.2 824
21.2 2.7 559
20.6 2.8 204
22.8 2.6 873
24.5 2.7 903
23.3 2.6 1963
23.5 3.1 15
25.5 2.3 1129
25.4 1.5 1225
24.9 1.6 319
24.8 1.5 36
26.0 1.9 114
25.2 2.2 635
25.9 1.8 1476
25.5 1.8 347
25.7 1.6 1087
25.0 1.5 535
24.7 1.5 1323
24.8 1.8 518
26.2 2.0 285
25.8 2.2 283
25.8 2.3 104
26.1 1.7 1460
25.8 1.6 1976
25.1 1.6 1904
24.7 1.6 1566
24.2 1.6 847
24.4 1.5 486
24.8 1.7 1154
25.0 2.1 184
25.5 1.9 474
25.5 1.7 253
24.8 2.2 115
24.4 1.3 16
25.0 1.2 60
25.2 1.4 634
24.5 1.4 220
24.0 1.4 609
24.3 1.5 1156
24.7 1.4 1417
25.1 1.3 2457
25.2 1.3 2166
25.0 1.1 1834
24.8 1.2 1840
24.9 1.4 1065
25.0 1.4 16
24.9 1.5 320
24.7 1.5 331
24.5 1.6 58
24.2 1.6 105
23.8 1.3 204
24.6 1.6 63
24.7 1.2 164
24.8 1.5 231
24.8 1.3 360
24.7 1.3 242
24.9 1.3 465
24.1 1.6 102
24.5 1.4 470
24.0 1.5 100
23.7 1.2 77
22.9 2.1 57
23.6 2.0 138
24.3 1.5 225
24.6 1.7 126
24.6 1.6 406
24.7 1.3 168
24.6 1.6 63
24.5 1.3 60
23.9 1.6 257
23.9 1.4 309
23.7 1.2 88
23.7 1.4 110
24.4 1.4 64
24.6 1.5 57
24.6 1.6 494
23.9 1.6 370
23.5 1.6 93
24.7 1.1 115
24.7 1.3 85
25.2 1.1 52
22.9 1.9 528
23.0 1.5 135
22.7 1.6 108
22.6 1.5 111
23.8 0.9 182
22.8 2.1 251
23.1 2.0 185
22.5 1.6 20
23.3 1.6 98
22.5 2.2 141
24.0 1.7 217
23.9 1.9 167

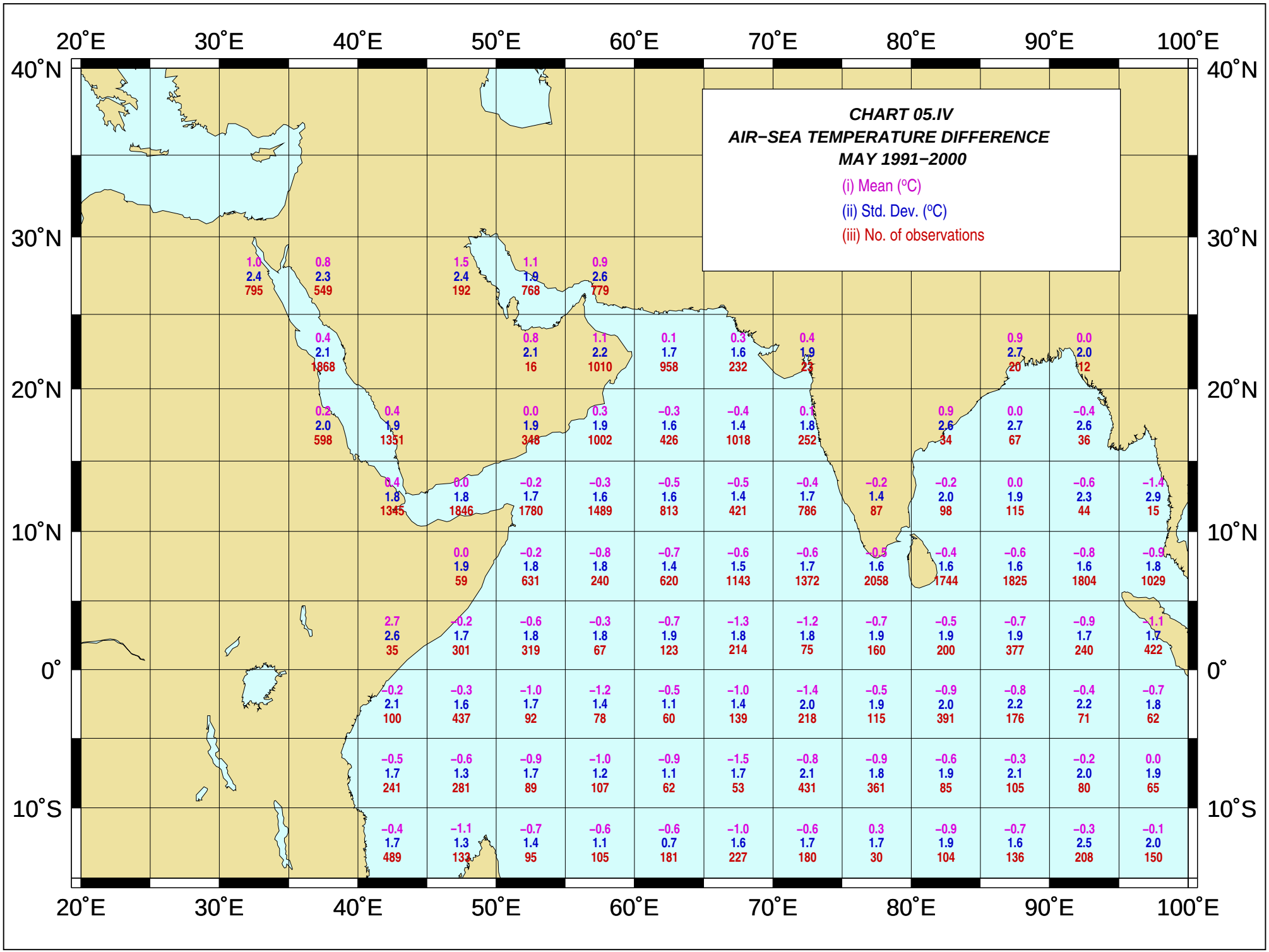


CHART 05.IV
AIR–SEA TEMPERATURE DIFFERENCE
MAY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 2.4 795
0.8 2.3 549
1.5 2.4 192
1.1 1.9 768
0.9 2.6 779
0.4 2.1 1868
0.8 2.1 16
1.1 2.2 1010
0.1 1.7 958
0.3 1.6 232
0.4 1.9 23
0.9 2.7 20
0.0 2.0 12
0.2 2.0 598
0.4 1.9 1351
0.0 1.9 348
0.3 1.9 1002
−0.3 1.6 426
−0.4 1.4 1018
0.1 1.8 252
0.9 2.6 34
0.0 2.7 67
−0.4 2.6 36
0.4 1.8 1345
0.0 1.8 1846
−0.2 1.7 1780
−0.3 1.6 1489
−0.5 1.6 813
−0.5 1.4 421
−0.4 1.7 786
−0.2 1.4 87
−0.2 2.0 98
0.0 1.9 115
−0.6 2.3 44
−1.4 2.9 15
0.0 1.9 59
−0.2 1.8 631
−0.8 1.8 240
−0.7 1.4 620
−0.6 1.5 1143
−0.6 1.7 1372
−0.5 1.6 2058
−0.4 1.6 1744
−0.6 1.6 1825
−0.8 1.6 1804
−0.9 1.8 1029
2.7 2.6 35
−0.2 1.7 301
−0.6 1.8 319
−0.3 1.8 67
−0.7 1.9 123
−1.3 1.8 214
−1.2 1.8 75
−0.7 1.9 160
−0.5 1.9 200
−0.7 1.9 377
−0.9 1.7 240
−1.1 1.7 422
−0.2 2.1 100
−0.3 1.6 437
−1.0 1.7 92
−1.2 1.4 78
−0.5 1.1 60
−1.0 1.4 139
−1.4 2.0 218
−0.5 1.9 115
−0.9 2.0 391
−0.8 2.2 176
−0.4 2.2 71
−0.7 1.8 62
−0.5 1.7 241
−0.6 1.3 281
−0.9 1.7 89
−1.0 1.2 107
−0.9 1.1 62
−1.5 1.7 53
−0.8 2.1 431
−0.9 1.8 361
−0.6 1.9 85
−0.3 2.1 105
−0.2 2.0 80
0.0 1.9 65
−0.4 1.7 489
−1.1 1.3 133
−0.7 1.4 95
−0.6 1.1 105
−0.6 0.7 181
−1.0 1.6 227
−0.6 1.7 180
0.3 1.7 30
−0.9 1.9 104
−0.7 1.6 136
−0.3 2.5 208
−0.1 2.0 150

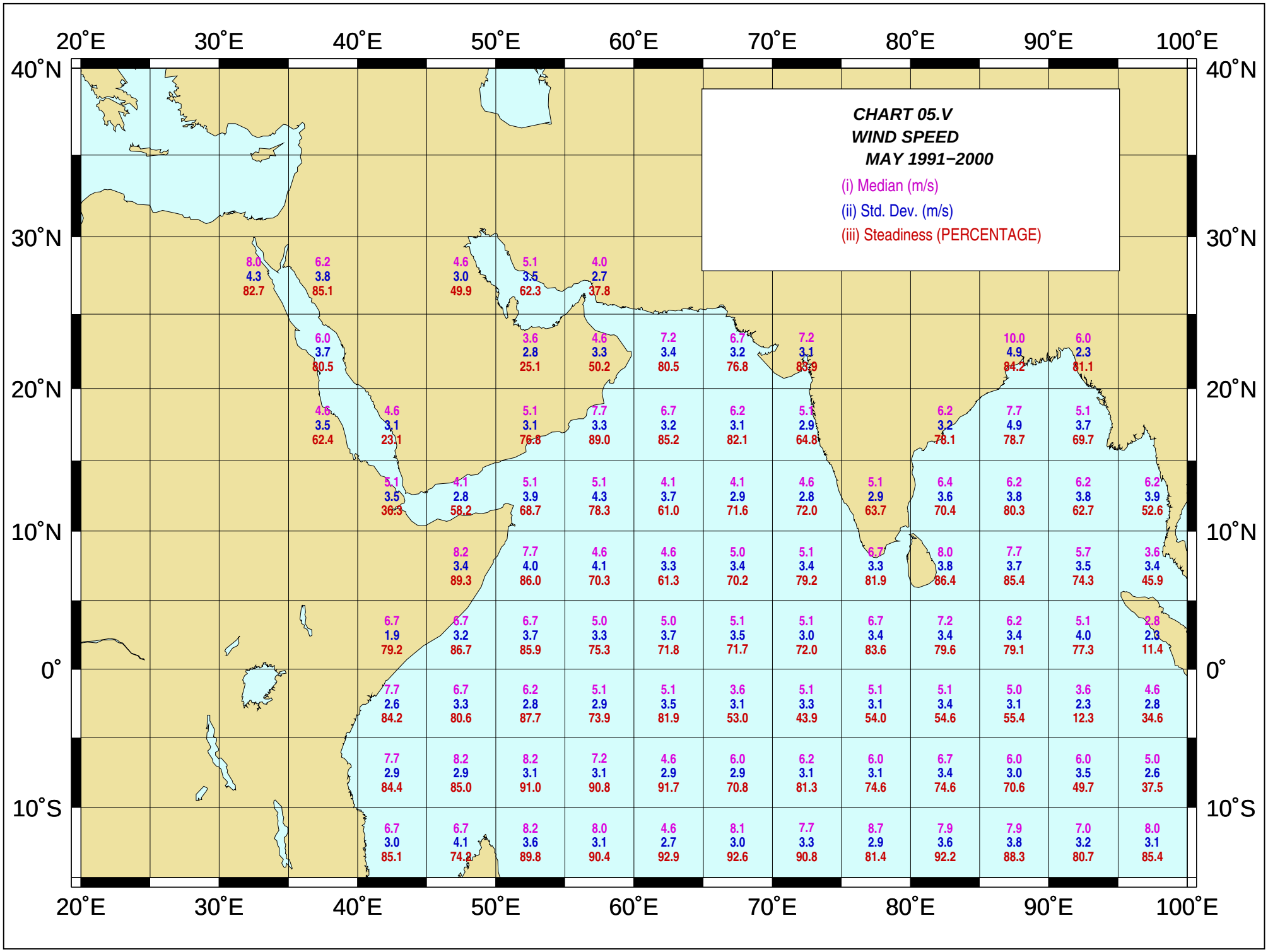


CHART 05.V
WIND SPEED
MAY 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
8.0 4.3 82.7
6.2 3.8 85.1
4.6 3.0 49.9
5.1 3.5 62.3
4.0 2.7 37.8
6.0 3.7 80.5
3.6 2.8 25.1
4.6 3.3 50.2
7.2 3.4 80.5
6.7 3.2 76.8
7.2 3.1 83.9
10.0 4.9 84.2
6.0 2.3 81.1
4.6 3.5 62.4
4.6 3.1 23.1
5.1 3.1 76.8
7.7 3.3 89.0
6.7 3.2 85.2
6.2 3.1 82.1
5.1 2.9 64.8
6.2 3.2 78.1
7.7 4.9 78.7
5.1 3.7 69.7
5.1 3.5 36.3
4.1 2.8 58.2
5.1 3.9 68.7
5.1 4.3 78.3
4.1 3.7 61.0
4.1 2.9 71.6
4.6 2.8 72.0
5.1 2.9 63.7
6.4 3.6 70.4
6.2 3.8 80.3
6.2 3.8 62.7
6.2 3.9 52.6
8.2 3.4 89.3
7.7 4.0 86.0
4.6 4.1 70.3
4.6 3.3 61.3
5.0 3.4 70.2
5.1 3.4 79.2
6.7 3.3 81.9
8.0 3.8 86.4
7.7 3.7 85.4
5.7 3.5 74.3
3.6 3.4 45.9
6.7 1.9 79.2
6.7 3.2 86.7
6.7 3.7 85.9
5.0 3.3 75.3
5.0 3.7 71.8
5.1 3.5 71.7
5.1 3.0 72.0
6.7 3.4 83.6
7.2 3.4 79.6
6.2 3.4 79.1
5.1 4.0 77.3
2.8 2.3 11.4
7.7 2.6 84.2
6.7 3.3 80.6
6.2 2.8 87.7
5.1 2.9 73.9
5.1 3.5 81.9
3.6 3.1 53.0
5.1 3.3 43.9
5.1 3.1 54.0
5.1 3.4 54.6
5.0 3.1 55.4
3.6 2.3 12.3
4.6 2.8 34.6
7.7 2.9 84.4
8.2 2.9 85.0
8.2 3.1 91.0
7.2 3.1 90.8
4.6 2.9 91.7
6.0 2.9 70.8
6.2 3.1 81.3
6.0 3.1 74.6
6.7 3.4 74.6
6.0 3.0 70.6
6.0 3.5 49.7
5.0 2.6 37.5
6.7 3.0 85.1
6.7 4.1 74.2
8.2 3.6 89.8
8.0 3.1 90.4
4.6 2.7 92.9
8.1 3.0 92.6
7.7 3.3 90.8
8.7 2.9 81.4
7.9 3.6 92.2
7.9 3.8 88.3
7.0 3.2 80.7
8.0 3.1 85.4

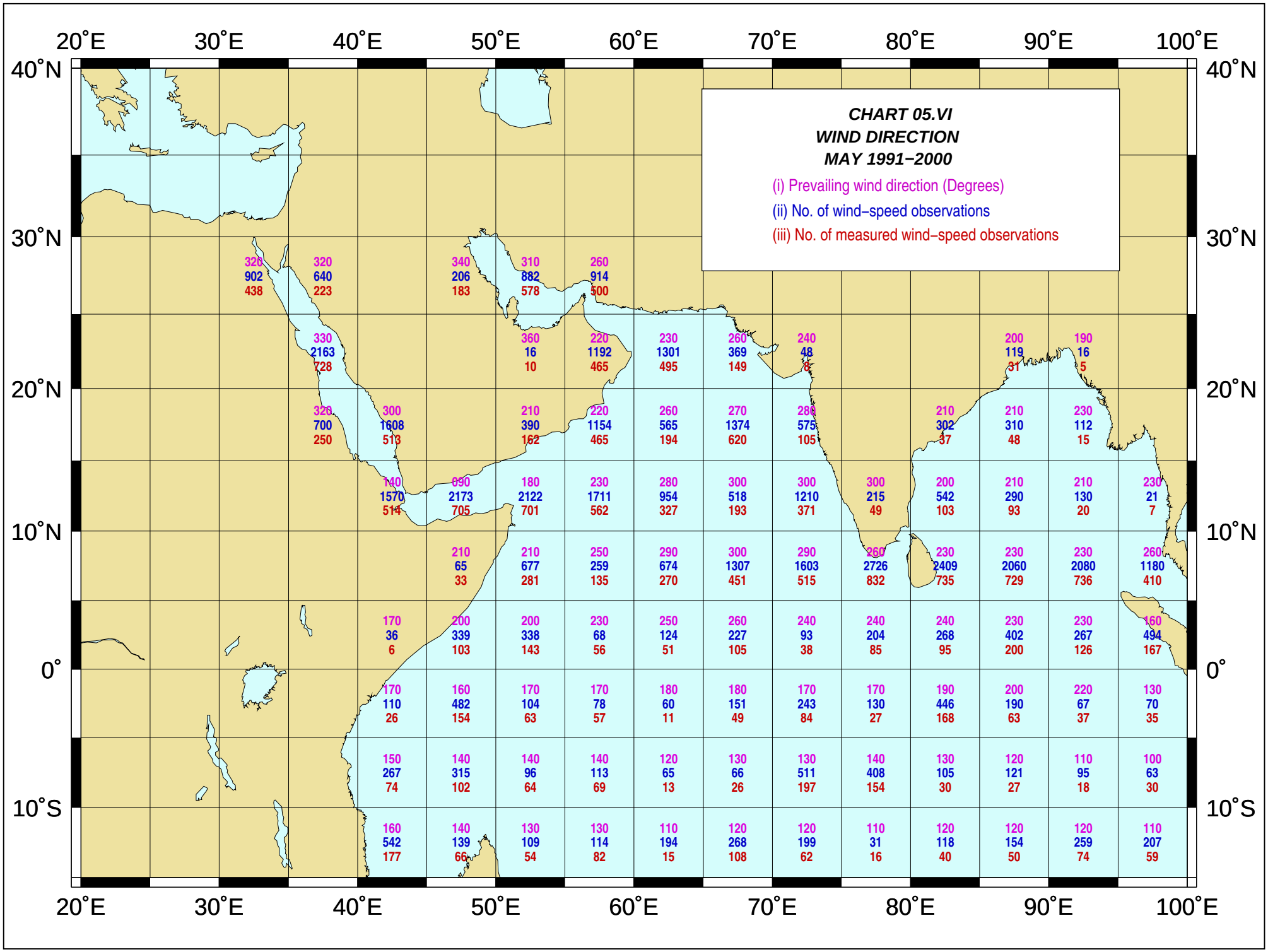


CHART 05.VI
WIND DIRECTION
MAY 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
320 902 438
320 640 223
340 206 183
310 882 578
260 914 500
330 2163 728
360 16 10
220 1192 465
230 1301 495
260 369 149
240 48 8
200 119 31
190 16 5
320 700 250
300 1608 513
210 390 162
220 1154 465
260 565 194
270 1374 620
280 575 105
210 302 37
210 310 48
230 112 15
140 1570 514
090 2173 705
180 2122 701
230 1711 562
280 954 327
300 518 193
300 1210 371
300 215 49
200 542 103
210 290 93
210 130 20
230 21 7
210 65 33
210 677 281
250 259 135
290 674 270
300 1307 451
290 1603 515
260 2726 832
230 2409 735
230 2060 729
230 2080 736
260 1180 410
170 36 6
200 339 103
200 338 143
230 68 56
250 124 51
260 227 105
240 93 38
240 204 85
240 268 95
230 402 200
230 267 126
160 494 167
170 110 26
160 482 154
170 104 63
170 78 57
180 60 11
180 151 49
170 243 84
170 130 27
190 446 168
200 190 63
220 67 37
130 70 35
150 267 74
140 315 102
140 96 64
140 113 69
120 65 13
130 66 26
130 511 197
140 408 154
130 105 30
120 121 27
110 95 18
100 63 30
160 542 177
140 139 66
130 109 54
130 114 82
110 194 15
120 268 108
120 199 62
110 31 16
120 118 40
120 154 50
120 259 74
110 207 59

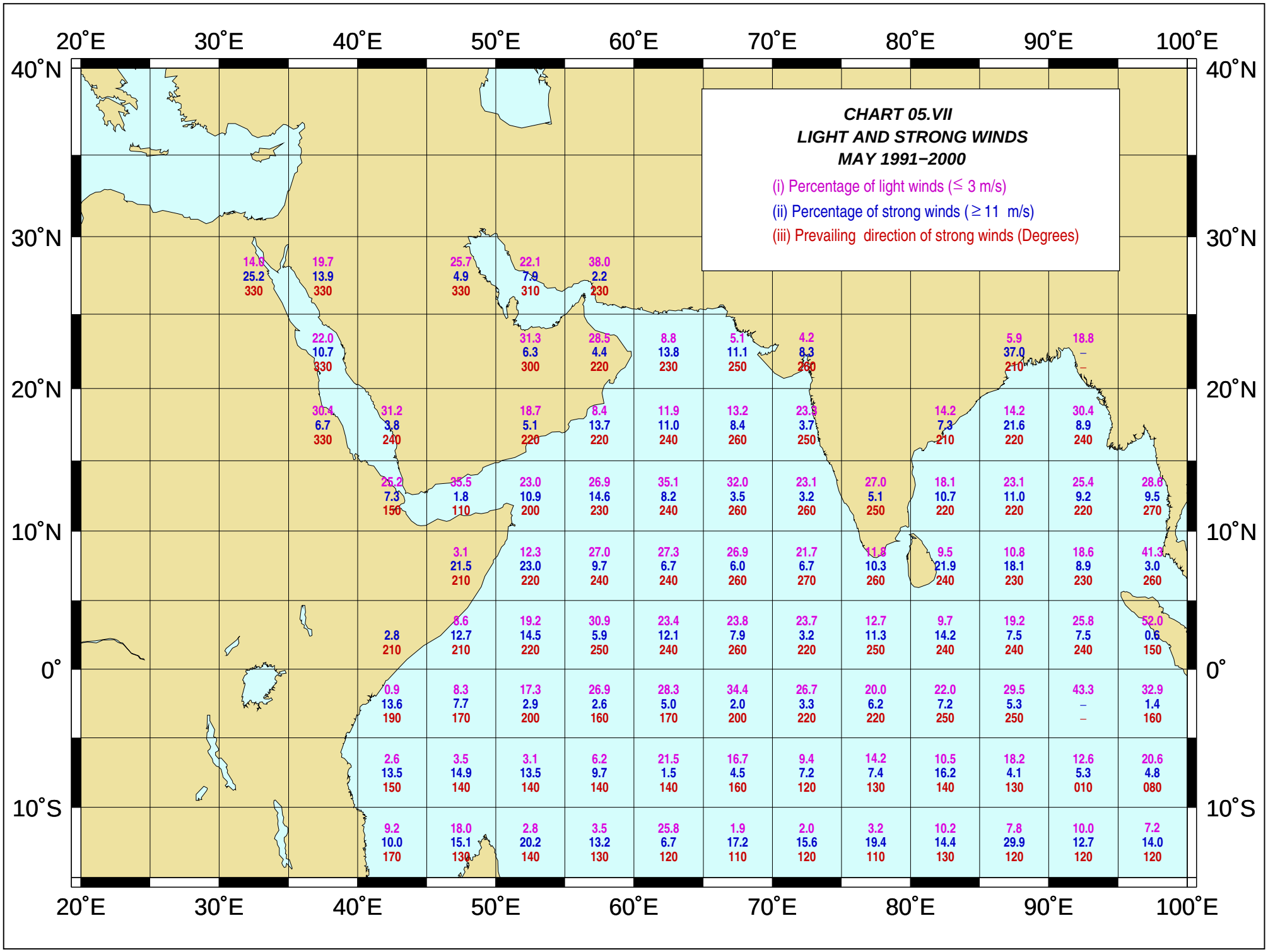


CHART 05.VII
LIGHT AND STRONG WINDS
MAY 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
14.8 25.2 330
19.7 13.9 330
25.7 4.9 330
22.1 7.9 310
38.0 2.2 230
22.0 10.7 330
31.3 6.3 300
28.5 4.4 220
8.8 13.8 230
5.1 11.1 250
4.2 8.3 260
5.9 37.0 210
18.8 – –
30.4 6.7 330
31.2 3.8 240
18.7 5.1 220
8.4 13.7 220
11.9 11.0 240
13.2 8.4 260
23.9 3.7 250
14.2 7.3 210
14.2 21.6 220
30.4 8.9 240
25.2 7.3 150
35.5 1.8 110
23.0 10.9 200
26.9 14.6 230
35.1 8.2 240
32.0 3.5 260
23.1 3.2 260
27.0 5.1 250
18.1 10.7 220
23.1 11.0 220
25.4 9.2 220
28.6 9.5 270
3.1 21.5 210
12.3 23.0 220
27.0 9.7 240
27.3 6.7 240
26.9 6.0 260
21.7 6.7 270
11.9 10.3 260
9.5 21.9 240
10.8 18.1 230
18.6 8.9 230
41.3 3.0 260
2.8 210
8.6 12.7 210
19.2 14.5 220
30.9 5.9 250
23.4 12.1 240
23.8 7.9 260
23.7 3.2 220
12.7 11.3 250
9.7 14.2 240
19.2 7.5 240
25.8 7.5 240
52.0 0.6 150
0.9 13.6 190
8.3 7.7 170
17.3 2.9 200
26.9 2.6 160
28.3 5.0 170
34.4 2.0 200
26.7 3.3 220
20.0 6.2 220
22.0 7.2 250
29.5 5.3 250
43.3 – –
32.9 1.4 160
2.6 13.5 150
3.5 14.9 140
3.1 13.5 140
6.2 9.7 140
21.5 1.5 140
16.7 4.5 160
9.4 7.2 120
14.2 7.4 130
10.5 16.2 140
18.2 4.1 130
12.6 5.3 010
20.6 4.8 080
9.2 10.0 170
18.0 15.1 130
2.8 20.2 140
3.5 13.2 130
25.8 6.7 120
1.9 17.2 110
2.0 15.6 120
3.2 19.4 110
10.2 14.4 130
7.8 29.9 120
10.0 12.7 120
7.2 14.0 120

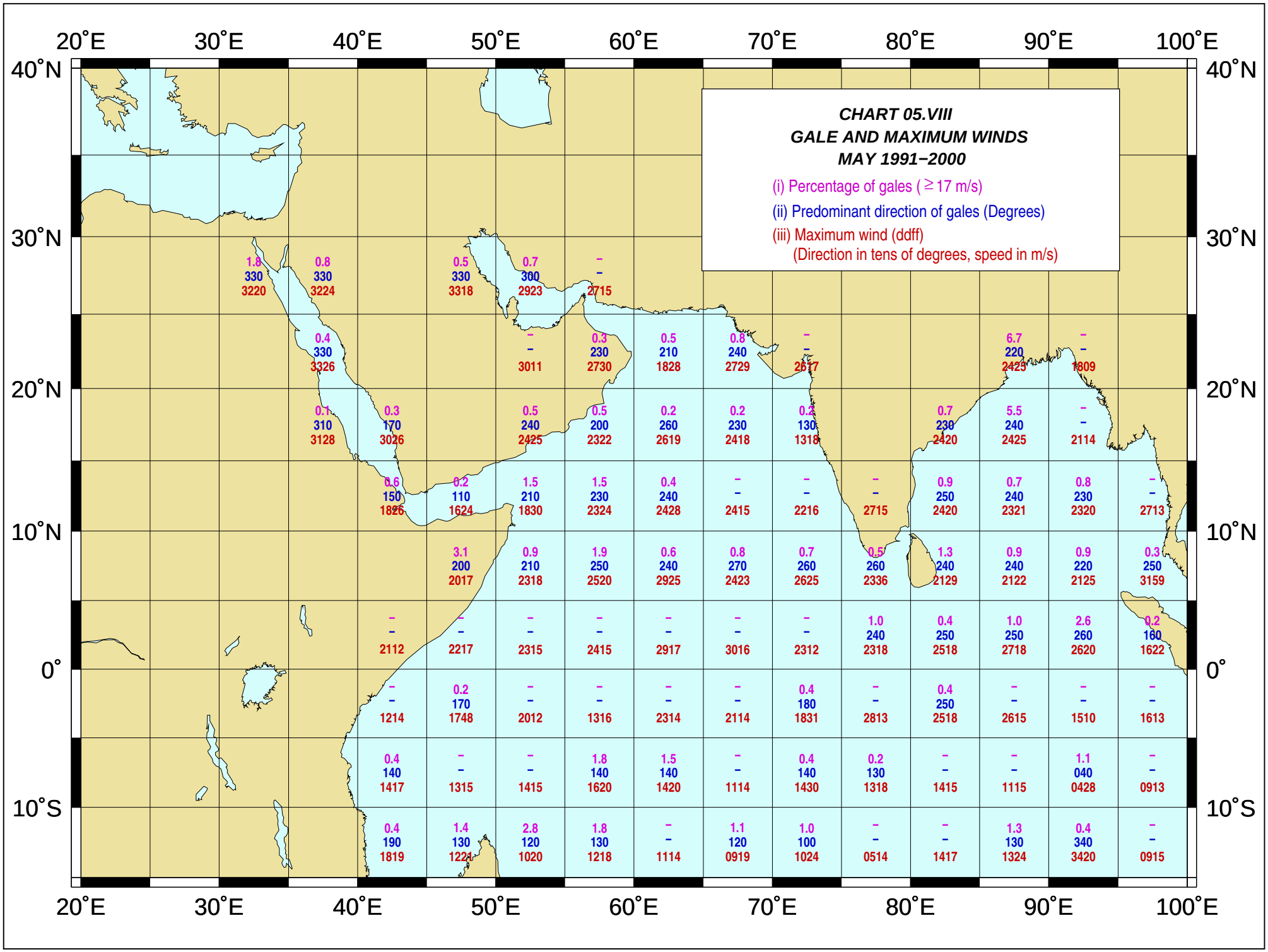


CHART 05.VIII
GALE AND MAXIMUM WINDS
MAY 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.8 330 3220
0.8 330 3224
0.5 330 3318
0.7 300 2923
– – 2715
0.4 330 3326
– – 3011
0.3 230 2730
0.5 210 1828
0.8 240 2729
– – 2617
6.7 220 2425
– – 1809
0.1 310 3128
0.3 170 3026
0.5 240 2425
0.5 200 2322
0.2 260 2619
0.2 230 2418
0.2 130 1318
0.7 230 2420
5.5 240 2425
– – 2114
0.6 150 1826
0.2 110 1624
1.5 210 1830
1.5 230 2324
0.4 240 2428
– – 2415
– – 2216
– – 2715
0.9 250 2420
0.7 240 2321
0.8 230 2320
– – 2713
3.1 200 2017
0.9 210 2318
1.9 250 2520
0.6 240 2925
0.8 270 2423
0.7 260 2625
0.5 260 2336
1.3 240 2129
0.9 240 2122
0.9 220 2125
0.3 250 3159
– – 2112
– – 2217
– – 2315
– – 2415
– – 2917
– – 3016
– – 2312
1.0 240 2318
0.4 250 2518
1.0 250 2718
2.6 260 2620
0.2 160 1622
– – 1214
0.2 170 1748
– – 2012
– – 1316
– – 2314
– – 2114
0.4 180 1831
– – 2813
0.4 250 2518
– – 2615
– – 1510
– – 1613
0.4 140 1417
– – 1315
– – 1415
1.8 140 1620
1.5 140 1420
– – 1114
0.4 140 1430
0.2 130 1318
– – 1415
– – 1115
1.1 040 0428
– – 0913
0.4 190 1819
1.4 130 1221
2.8 120 1020
1.8 130 1218
– – 1114
1.1 120 0919
1.0 100 1024
– – 0514
– – 1417
1.3 130 1324
0.4 340 3420
– – 0915

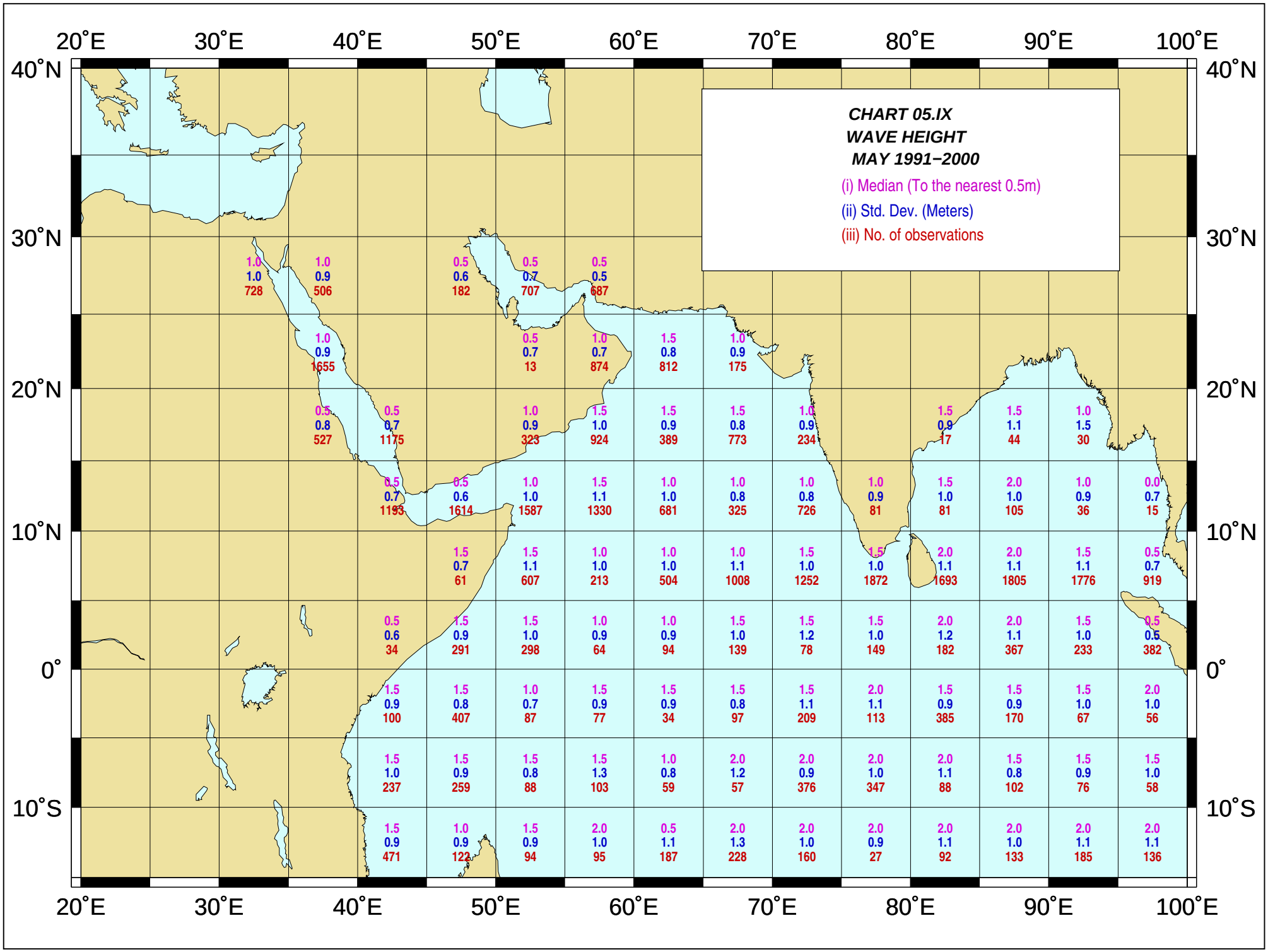


CHART 05.IX
WAVE HEIGHT
MAY 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 1.0 728
1.0 0.9 506
0.5 0.6 182
0.5 0.7 707
0.5 0.5 687
1.0 0.9 1655
0.5 0.7 13
1.0 0.7 874
1.5 0.8 812
1.0 0.9 175
0.5 0.8 527
0.5 0.7 1175
1.0 0.9 323
1.5 1.0 924
1.5 0.9 389
1.5 0.8 773
1.0 0.9 234
1.5 0.9 17
1.5 1.1 44
1.0 1.5 30
0.5 0.7 1193
0.5 0.6 1614
1.0 1.0 1587
1.5 1.1 1330
1.0 1.0 681
1.0 0.8 325
1.0 0.8 726
1.0 0.9 81
1.5 1.0 81
2.0 1.0 105
1.0 0.9 36
0.0 0.7 15
1.5 0.7 61
1.5 1.1 607
1.0 1.0 213
1.0 1.0 504
1.0 1.1 1008
1.5 1.0 1252
1.5 1.0 1872
2.0 1.1 1693
2.0 1.1 1805
1.5 1.1 1776
0.5 0.7 919
0.5 0.6 34
1.5 0.9 291
1.5 1.0 298
1.0 0.9 64
1.0 0.9 94
1.5 1.0 139
1.5 1.2 78
1.5 1.0 149
2.0 1.2 182
2.0 1.1 367
1.5 1.0 233
0.5 0.5 382
1.5 0.9 100
1.5 0.8 407
1.0 0.7 87
1.5 0.9 77
1.5 0.9 34
1.5 0.8 97
2.0 1.1 209
2.0 1.1 113
1.5 0.9 385
1.5 0.9 170
1.5 1.0 67
2.0 1.0 56
1.5 1.0 237
1.5 0.9 259
1.5 0.8 88
1.5 1.3 103
1.0 0.8 59
2.0 1.2 57
2.0 0.9 376
2.0 1.0 347
2.0 1.1 88
1.5 0.8 102
1.5 0.9 76
1.5 1.0 58
1.5 0.9 471
1.0 0.9 122
1.5 0.9 94
2.0 1.0 95
0.5 1.1 187
2.0 1.3 228
2.0 1.0 160
2.0 0.9 27
2.0 1.1 92
2.0 1.0 133
2.0 1.1 185
2.0 1.1 136

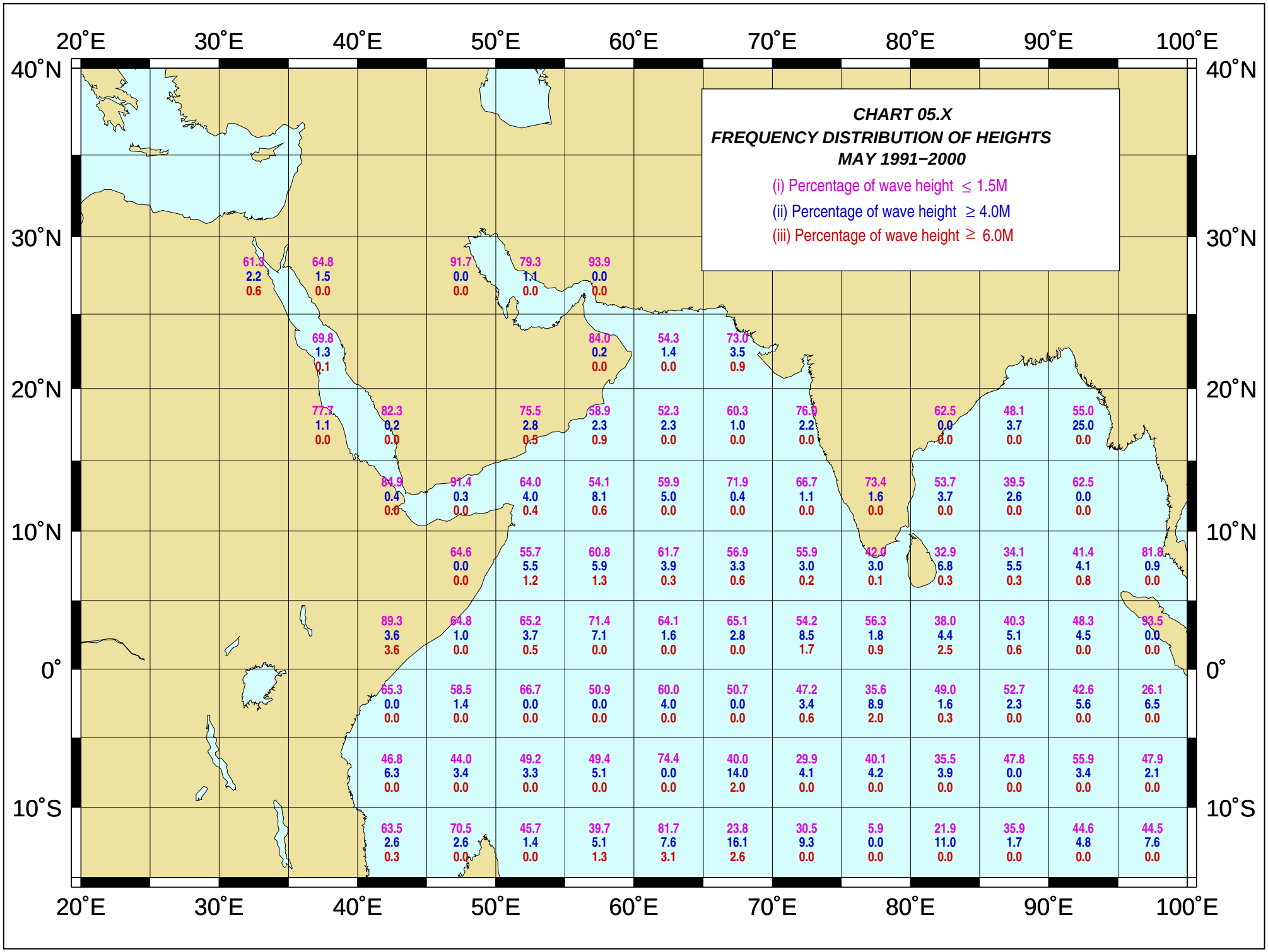


CHART 05.X
FREQUENCY DISTRIBUTION OF HEIGHTS
MAY 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
61.3 2.2 0.6
64.8 1.5 0.0
91.7 0.0 0.0
79.3 1.1 0.0
93.9 0.0 0.0
69.8 1.3 0.1
84.0 0.2 0.0
54.3 1.4 0.0
73.0 3.5 0.9
77.7 1.1 0.0
82.3 0.2 0.0
75.5 2.8 0.5
58.9 2.3 0.9
52.3 2.3 0.0
60.3 1.0 0.0
76.9 2.2 0.0
62.5 0.0 0.0
48.1 3.7 0.0
55.0 25.0 0.0
84.9 0.4 0.6
91.4 0.3 0.0
64.0 4.0 0.4
54.1 8.1 0.6
59.9 5.0 0.0
71.9 0.4 0.0
66.7 1.1 0.0
73.4 1.6 0.0
53.7 3.7 0.0
39.5 2.6 0.0
62.5 0.0 0.0
64.6 0.0 0.0
55.7 5.5 1.2
60.8 5.9 1.3
61.7 3.9 0.3
56.9 3.3 0.6
55.9 3.0 0.2
42.0 3.0 0.1
32.9 6.8 0.3
34.1 5.5 0.3
41.4 4.1 0.8
81.8 0.9 0.0
89.3 3.6 3.6
64.8 1.0 0.0
65.2 3.7 0.5
71.4 7.1 0.0
64.1 1.6 0.0
65.1 2.8 0.0
54.2 8.5 1.7
56.3 1.8 0.9
38.0 4.4 2.5
40.3 5.1 0.6
48.3 4.5 0.0
93.5 0.0 0.0
65.3 0.0 0.0
58.5 1.4 0.0
66.7 0.0 0.0
50.9 0.0 0.0
60.0 4.0 0.0
50.7 0.0 0.0
47.2 3.4 0.6
35.6 8.9 2.0
49.0 1.6 0.3
52.7 2.3 0.0
42.6 5.6 0.0
26.1 6.5 0.0
46.8 6.3 0.0
44.0 3.4 0.0
49.2 3.3 0.0
49.4 5.1 0.0
74.4 0.0 0.0
40.0 14.0 2.0
29.9 4.1 0.0
40.1 4.2 0.0
35.5 3.9 0.0
47.8 0.0 0.0
55.9 3.4 0.0
47.9 2.1 0.0
63.5 2.6 0.3
70.5 2.6 0.0
45.7 1.4 0.0
39.7 5.1 1.3
81.7 7.6 3.1
23.8 16.1 2.6
30.5 9.3 0.0
5.9 0.0 0.0
21.9 11.0 0.0
35.9 1.7 0.0
44.6 4.8 0.0
44.5 7.6 0.0

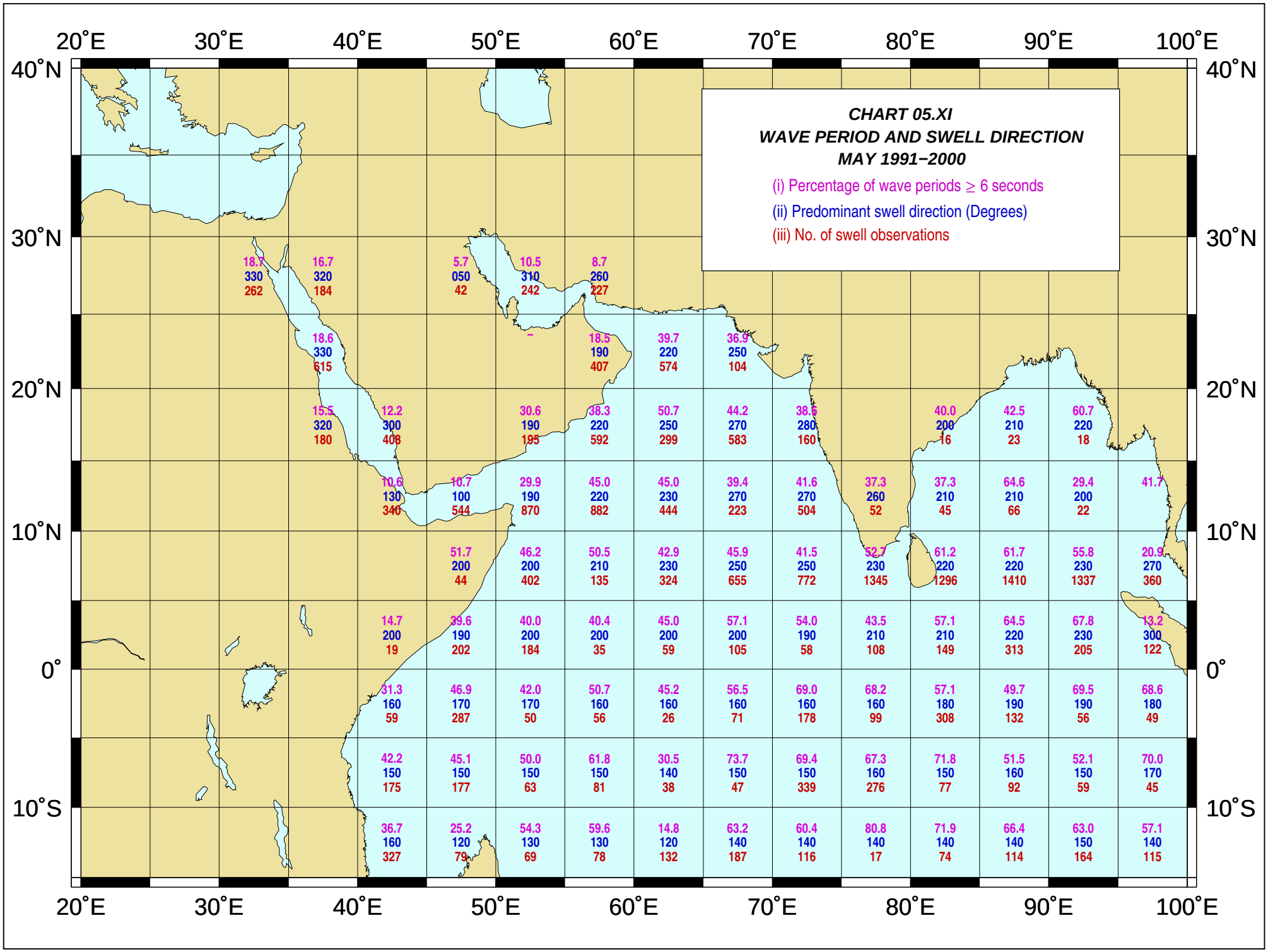


CHART 05.XI
WAVE PERIOD AND SWELL DIRECTION
MAY 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
18.7 330 262
16.7 320 184
5.7 050 42
10.5 310 242
8.7 260 227
18.6 330 615
18.5 190 407
39.7 220 574
36.9 250 104
15.5 320 180
12.2 300 408
30.6 190 195
38.3 220 592
50.7 250 299
44.2 270 583
38.8 280 160
40.0 200 16
42.5 210 23
60.7 220 18
10.6 130 340
10.7 100 544
29.9 190 870
45.0 220 882
45.0 230 444
39.4 270 223
41.6 270 504
37.3 260 52
37.3 210 45
64.6 210 66
29.4 200 22
41.7
51.7 200 44
46.2 200 402
50.5 210 135
42.9 230 324
45.9 250 655
41.5 250 772
52.7 230 1345
61.2 220 1296
61.7 220 1410
55.8 230 1337
20.9 270 360
14.7 200 19
39.6 190 202
40.0 200 184
40.4 200 35
45.0 200 59
57.1 200 105
54.0 190 58
43.5 210 108
57.1 210 149
64.5 220 313
67.8 230 205
13.2 300 122
31.3 160 59
46.9 170 287
42.0 170 50
50.7 160 56
45.2 160 26
56.5 160 71
69.0 160 178
68.2 160 99
57.1 180 308
49.7 190 132
69.5 190 56
68.6 180 49
42.2 150 175
45.1 150 177
50.0 150 63
61.8 150 81
30.5 140 38
73.7 150 47
69.4 150 339
67.3 160 276
71.8 150 77
51.5 160 92
52.1 150 59
70.0 170 45
36.7 160 327
25.2 120 79
54.3 130 69
59.6 130 78
14.8 120 132
63.2 140 187
60.4 140 116
80.8 140 17
71.9 140 74
66.4 140 114
63.0 150 164
57.1 140 115

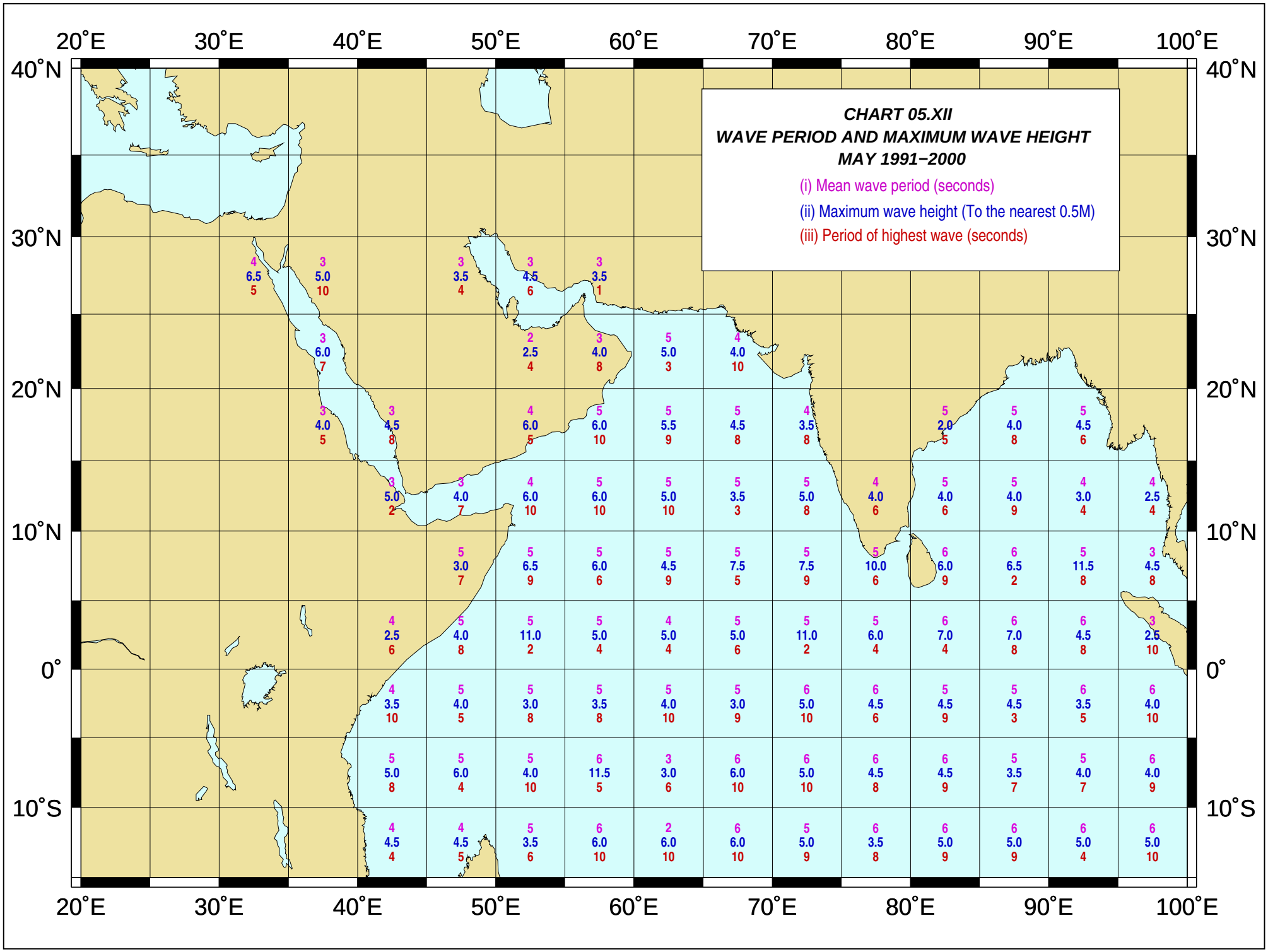


CHART 05.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
MAY 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
4 6.5 5
3 5.0 10
3 3.5 4
3 4.5 6
3 3.5 1
3 6.0 7
2 2.5 4
3 4.0 8
5 5.0 3
4 4.0 10
3 4.0 5
3 4.5 8
4 6.0 5
5 6.0 10
5 5.5 9
5 4.5 8
4 3.5 8
5 2.0 5
5 4.0 8
5 4.5 6
3 5.0 2
3 4.0 7
4 6.0 10
5 6.0 10
5 5.0 10
5 3.5 3
5 5.0 8
4 4.0 6
5 4.0 6
5 4.0 9
4 3.0 4
4 2.5 4
5 3.0 7
5 6.5 9
5 6.0 6
5 4.5 9
5 7.5 5
5 7.5 9
5 10.0 6
6 6.0 9
6 6.5 2
5 11.5 8
3 4.5 8
4 2.5 6
5 4.0 8
5 11.0 2
5 5.0 4
4 5.0 4
5 5.0 6
5 11.0 2
5 6.0 4
6 7.0 4
6 7.0 8
6 4.5 8
3 2.5 10
4 3.5 10
5 4.0 5
5 3.0 8
5 3.5 8
5 4.0 10
5 3.0 9
6 5.0 10
6 4.5 6
5 4.5 9
5 4.5 3
6 3.5 5
6 4.0 10
5 5.0 8
5 6.0 4
5 4.0 10
6 11.5 5
3 3.0 6
6 6.0 10
6 5.0 10
6 4.5 8
6 4.5 9
5 3.5 7
5 4.0 7
6 4.0 9
4 4.5 4
4 4.5 5
5 3.5 6
6 6.0 10
2 6.0 10
6 6.0 10
5 5.0 9
6 3.5 8
6 5.0 9
6 5.0 9
6 5.0 4
6 5.0 10

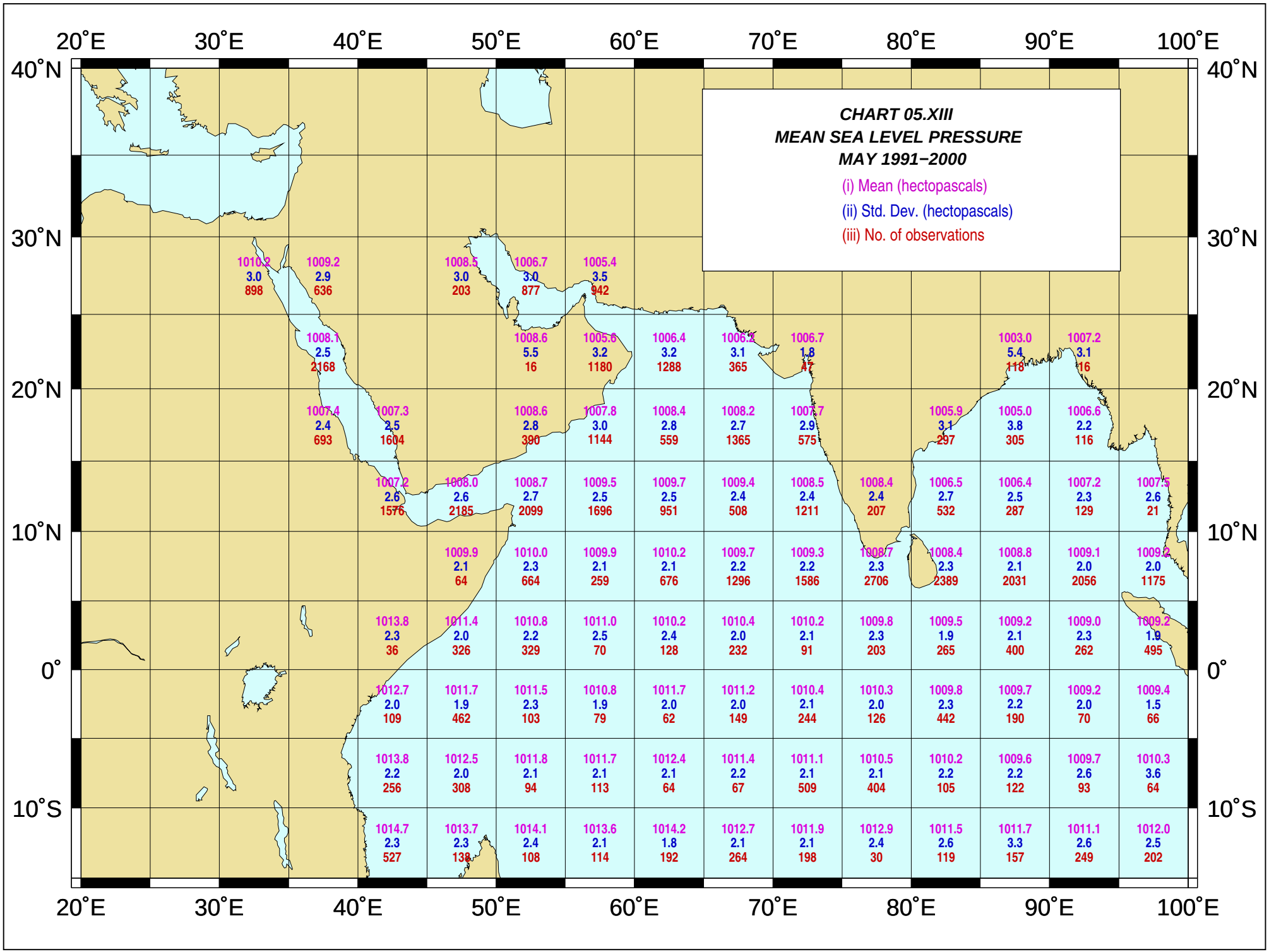


CHART 05.XIII
MEAN SEA LEVEL PRESSURE
MAY 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1010.2 3.0 898
1009.2 2.9 636
1008.5 3.0 203
1006.7 3.0 877
1005.4 3.5 942
1008.1 2.5 2168
1008.6 5.5 16
1005.6 3.2 1180
1006.4 3.2 1288
1006.2 3.1 365
1006.7 1.8 47
1003.0 5.4 118
1007.2 3.1 116
1007.4 2.4 693
1007.3 2.5 1604
1008.6 2.8 390
1007.8 3.0 1144
1008.4 2.8 559
1008.2 2.7 1365
1007.7 2.9 575
1005.9 3.1 297
1005.0 3.8 305
1006.6 2.2 116
1007.2 2.6 1576
1008.0 2.6 2185
1008.7 2.7 2099
1009.5 2.5 1696
1009.7 2.5 951
1009.4 2.4 508
1008.5 2.4 1211
1008.4 2.4 207
1006.5 2.7 532
1006.4 2.5 287
1007.2 2.3 129
1007.5 2.6 21
1009.9 2.1 64
1010.0 2.3 664
1009.9 2.1 259
1010.2 2.1 676
1009.7 2.2 1296
1009.3 2.2 1586
1008.7 2.3 2706
1008.4 2.3 2389
1008.8 2.1 2031
1009.1 2.0 2056
1009.2 2.0 1175
1013.8 2.3 36
1011.4 2.0 326
1010.8 2.2 329
1011.0 2.5 70
1010.2 2.4 128
1010.4 2.0 232
1010.2 2.1 91
1009.8 2.3 203
1009.5 1.9 265
1009.2 2.1 400
1009.0 2.3 262
1009.2 1.9 495
1012.7 2.0 109
1011.7 1.9 462
1011.5 2.3 103
1010.8 1.9 79
1011.7 2.0 62
1011.2 2.0 149
1010.4 2.1 244
1010.3 2.0 126
1009.8 2.3 442
1009.7 2.2 190
1009.2 2.0 70
1009.4 1.5 66
1013.8 2.2 256
1012.5 2.0 308
1011.8 2.1 94
1011.7 2.1 113
1012.4 2.1 64
1011.4 2.2 67
1011.1 2.1 509
1010.5 2.1 404
1010.2 2.2 105
1009.6 2.2 122
1009.7 2.6 93
1010.3 3.6 64
1014.7 2.3 527
1013.7 2.3 138
1014.1 2.4 108
1013.6 2.1 114
1014.2 1.8 192
1012.7 2.1 264
1011.9 2.1 198
1012.9 2.4 30
1011.5 2.6 119
1011.7 3.3 157
1011.1 2.6 249
1012.0 2.5 202

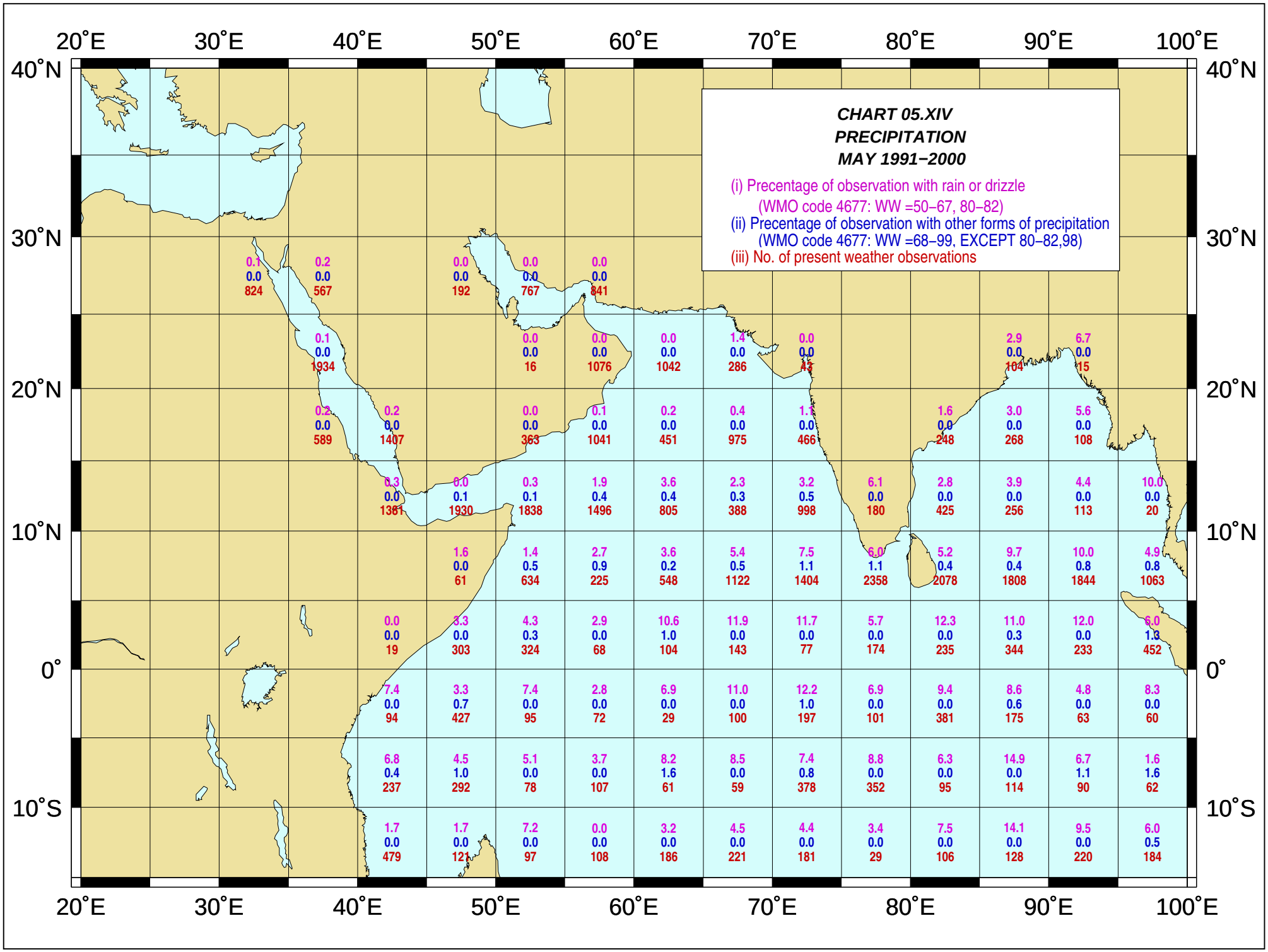


CHART 05.XIV
PRECIPITATION
MAY 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 0.0 824
0.2 0.0 567
0.0 0.0 192
0.0 0.0 767
0.0 0.0 841
0.1 0.0 1934
0.0 0.0 16
0.0 0.0 1076
0.0 0.0 1042
1.4 0.0 286
0.0 0.0 43
2.9 0.0 104
6.7 0.0 15
0.2 0.0 589
0.2 0.0 1407
0.0 0.0 363
0.1 0.0 1041
0.2 0.0 451
0.4 0.0 975
1.1 0.0 466
1.6 0.0 248
3.0 0.0 268
5.6 0.0 108
0.3 0.0 1361
0.0 0.1 1930
0.3 0.1 1838
1.9 0.4 1496
3.6 0.4 805
2.3 0.3 388
3.2 0.5 998
6.1 0.0 180
2.8 0.0 425
3.9 0.0 256
4.4 0.0 113
10.0 0.0 20
1.6 0.0 61
1.4 0.5 634
2.7 0.9 225
3.6 0.2 548
5.4 0.5 1122
7.5 1.1 1404
6.0 1.1 2358
5.2 0.4 2078
9.7 0.4 1808
10.0 0.8 1844
4.9 0.8 1063
0.0 0.0 19
3.3 0.0 303
4.3 0.3 324
2.9 0.0 68
10.6 1.0 104
11.9 0.0 143
11.7 0.0 77
5.7 0.0 174
12.3 0.0 235
11.0 0.3 344
12.0 0.0 233
6.0 1.3 452
7.4 0.0 94
3.3 0.7 427
7.4 0.0 95
2.8 0.0 72
6.9 0.0 29
11.0 0.0 100
12.2 1.0 197
6.9 0.0 101
9.4 0.0 381
8.6 0.6 175
4.8 0.0 63
8.3 0.0 60
6.8 0.4 237
4.5 1.0 292
5.1 0.0 78
3.7 0.0 107
8.2 1.6 61
8.5 0.0 59
7.4 0.8 378
8.8 0.0 352
6.3 0.0 95
14.9 0.0 114
6.7 1.1 90
1.6 1.6 62
1.7 0.0 479
1.7 0.0 121
7.2 0.0 97
0.0 0.0 108
3.2 0.0 186
4.5 0.0 221
4.4 0.0 181
3.4 0.0 29
7.5 0.0 106
14.1 0.0 128
9.5 0.0 220
6.0 0.5 184

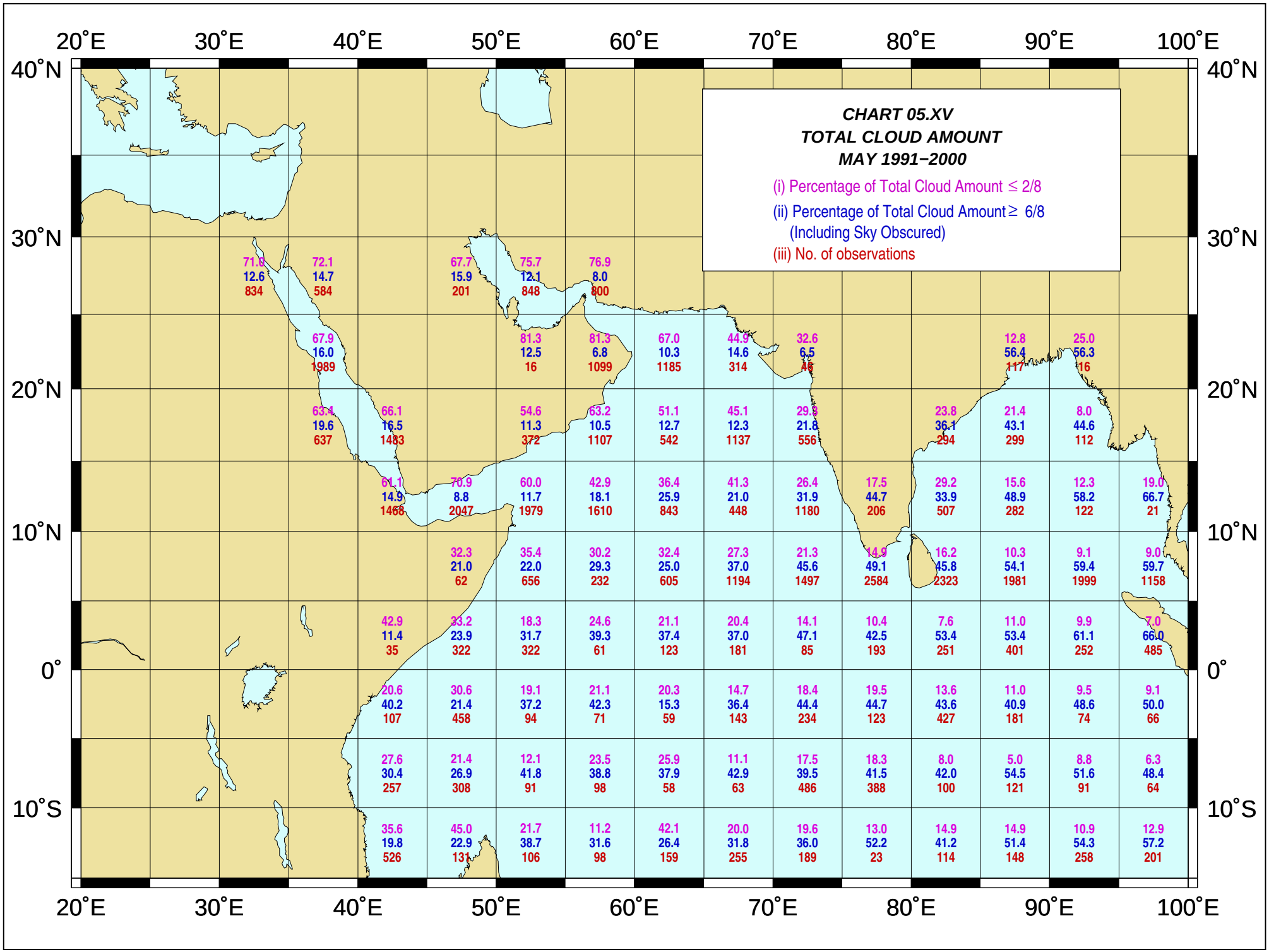


CHART 05.XV
TOTAL CLOUD AMOUNT
MAY 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
71.8 12.6 834
72.1 14.7 584
67.7 15.9 201
75.7 12.1 848
76.9 8.0 800
67.9 16.0 1989
81.3 12.5 16
81.3 6.8 1099
67.0 10.3 1185
44.9 14.6 314
32.6 6.5 46
12.8 56.4 117
25.0 56.3 16
63.4 19.6 637
66.1 16.5 1483
54.6 11.3 372
63.2 10.5 1107
51.1 12.7 542
45.1 12.3 1137
29.9 21.8 556
23.8 36.1 294
21.4 43.1 299
8.0 44.6 112
61.1 14.9 1468
70.9 8.8 2047
60.0 11.7 1979
42.9 18.1 1610
36.4 25.9 843
41.3 21.0 448
26.4 31.9 1180
17.5 44.7 206
29.2 33.9 507
15.6 48.9 282
12.3 58.2 122
19.0 66.7 21
32.3 21.0 62
35.4 22.0 656
30.2 29.3 232
32.4 25.0 605
27.3 37.0 1194
21.3 45.6 1497
14.9 49.1 2584
16.2 45.8 2323
10.3 54.1 1981
9.1 59.4 1999
9.0 59.7 1158
42.9 11.4 35
33.2 23.9 322
18.3 31.7 322
24.6 39.3 61
21.1 37.4 123
20.4 37.0 181
14.1 47.1 85
10.4 42.5 193
7.6 53.4 251
11.0 53.4 401
9.9 61.1 252
7.0 66.0 485
20.6 40.2 107
30.6 21.4 458
19.1 37.2 94
21.1 42.3 71
20.3 15.3 59
14.7 36.4 143
18.4 44.4 234
19.5 44.7 123
13.6 43.6 427
11.0 40.9 181
9.5 48.6 74
9.1 50.0 66
27.6 30.4 257
21.4 26.9 308
12.1 41.8 91
23.5 38.8 98
25.9 37.9 58
11.1 42.9 63
17.5 39.5 486
18.3 41.5 388
8.0 42.0 100
5.0 54.5 121
8.8 51.6 91
6.3 48.4 64
35.6 19.8 526
45.0 22.9 131
21.7 38.7 106
11.2 31.6 98
42.1 26.4 159
20.0 31.8 255
19.6 36.0 189
13.0 52.2 23
14.9 41.2 114
14.9 51.4 148
10.9 54.3 258
12.9 57.2 201

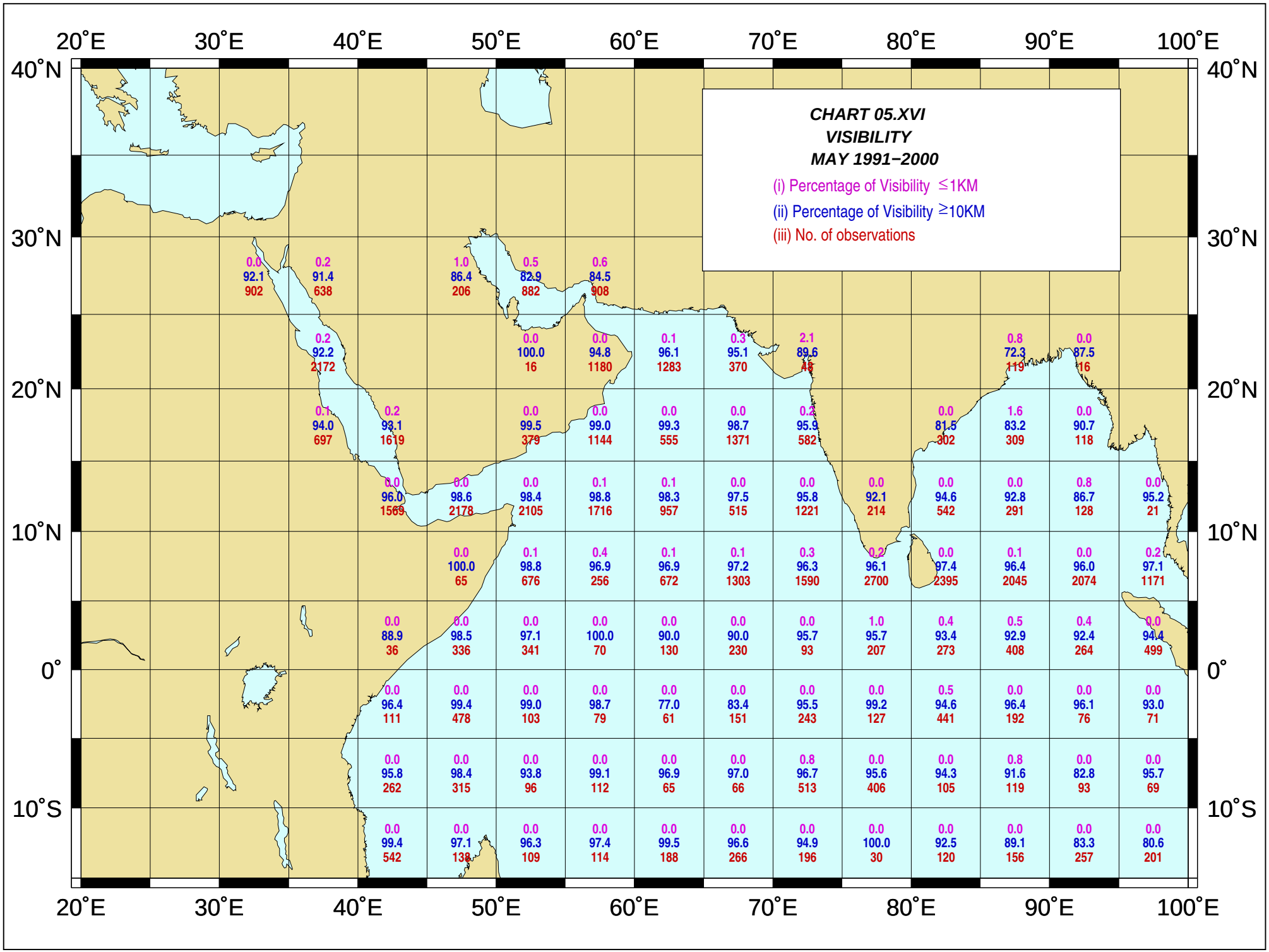


CHART 05.XVI
VISIBILITY
MAY 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.0 92.1 902
0.2 91.4 638
1.0 86.4 206
0.5 82.9 882
0.6 84.5 908
0.2 92.2 2172
0.0 100.0 16
0.0 94.8 1180
0.1 96.1 1283
0.3 95.1 370
2.1 89.6 45
0.8 72.3 119
0.0 87.5 16
0.1 94.0 697
0.2 93.1 1619
0.0 99.5 379
0.0 99.0 1144
0.0 99.3 555
0.0 98.7 1371
0.2 95.9 582
0.0 81.5 302
1.6 83.2 309
0.0 90.7 118
0.0 96.0 1569
0.0 98.6 2178
0.0 98.4 2105
0.1 98.8 1716
0.1 98.3 957
0.0 97.5 515
0.0 95.8 1221
0.0 92.1 214
0.0 94.6 542
0.0 92.8 291
0.8 86.7 128
0.0 95.2 21
0.0 100.0 65
0.1 98.8 676
0.4 96.9 256
0.1 96.9 672
0.1 97.2 1303
0.3 96.3 1590
0.2 96.1 2700
0.0 97.4 2395
0.1 96.4 2045
0.0 96.0 2074
0.2 97.1 1171
0.0 88.9 36
0.0 98.5 336
0.0 97.1 341
0.0 100.0 70
0.0 90.0 130
0.0 90.0 230
0.0 95.7 93
1.0 95.7 207
0.4 93.4 273
0.5 92.9 408
0.4 92.4 264
0.0 94.4 499
0.0 96.4 111
0.0 99.4 478
0.0 99.0 103
0.0 98.7 79
0.0 77.0 61
0.0 83.4 151
0.0 95.5 243
0.0 99.2 127
0.5 94.6 441
0.0 96.4 192
0.0 96.1 76
0.0 93.0 71
0.0 95.8 262
0.0 98.4 315
0.0 93.8 96
0.0 99.1 112
0.0 96.9 65
0.0 97.0 66
0.8 96.7 513
0.0 95.6 406
0.0 94.3 105
0.8 91.6 119
0.0 82.8 93
0.0 95.7 69
0.0 99.4 542
0.0 97.1 138
0.0 96.3 109
0.0 97.4 114
0.0 99.5 188
0.0 96.6 266
0.0 94.9 196
0.0 100.0 30
0.0 92.5 120
0.0 89.1 156
0.0 83.3 257
0.0 80.6 201

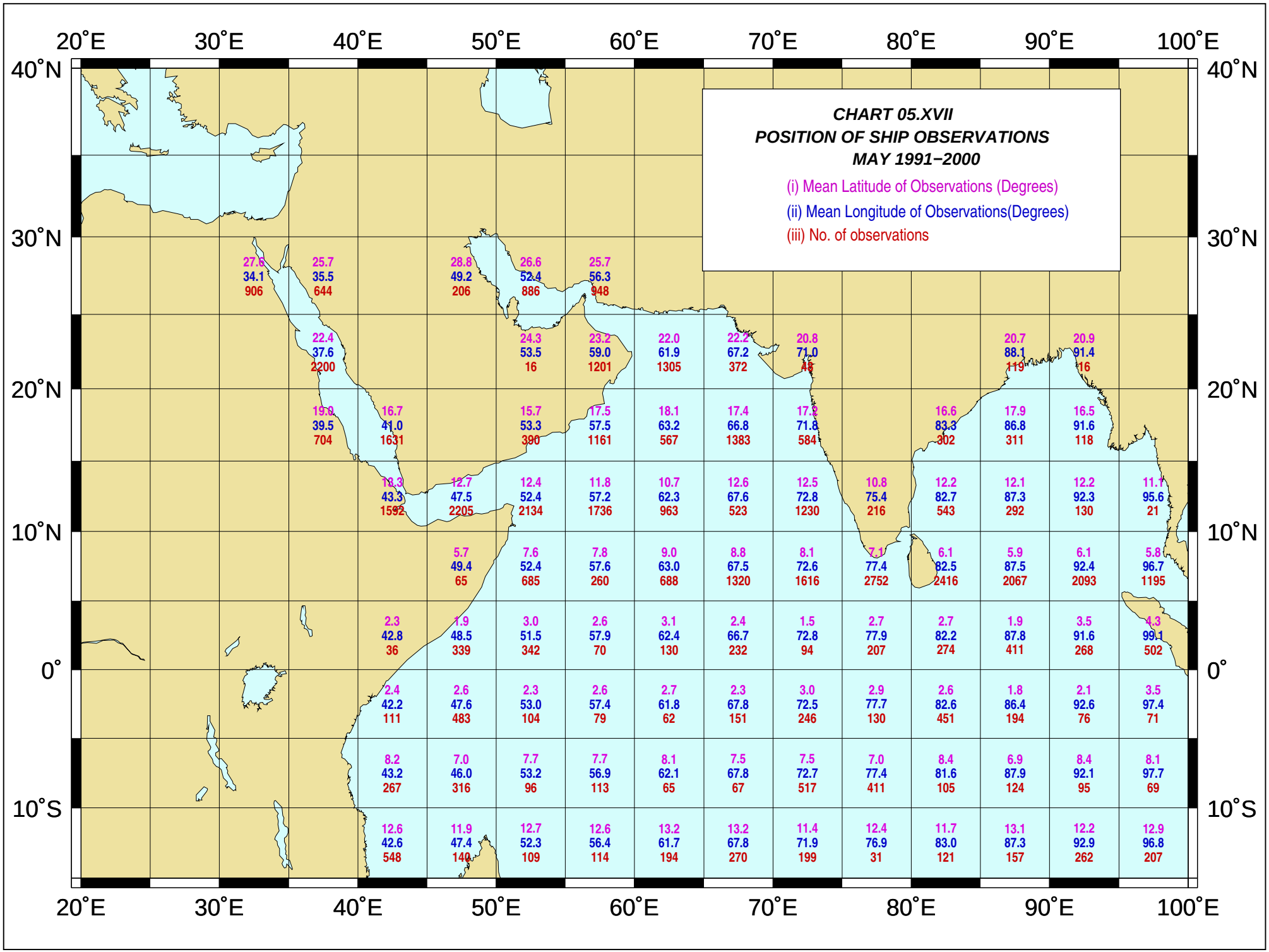


CHART 05.XVII
POSITION OF SHIP OBSERVATIONS
MAY 1991−2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.6 34.1 906
25.7 35.5 644
28.8 49.2 206
26.6 52.4 886
25.7 56.3 948
22.4 37.6 2200
24.3 53.5 16
23.2 59.0 1201
22.0 61.9 1305
22.2 67.2 372
20.8 71.0 45
20.7 88.1 119
20.9 91.4 16
19.0 39.5 704
16.7 41.0 1631
15.7 53.3 390
17.5 57.5 1161
18.1 63.2 567
17.4 66.8 1383
17.2 71.8 584
16.6 83.3 302
17.9 86.8 311
16.5 91.6 118
10.3 43.3 1592
12.7 47.5 2205
12.4 52.4 2134
11.8 57.2 1736
10.7 62.3 963
12.6 67.6 523
12.5 72.8 1230
10.8 75.4 216
12.2 82.7 543
12.1 87.3 292
12.2 92.3 130
11.7 95.6 21
5.7 49.4 65
7.6 52.4 685
7.8 57.6 260
9.0 63.0 688
8.8 67.5 1320
8.1 72.6 1616
7.1 77.4 2752
6.1 82.5 2416
5.9 87.5 2067
6.1 92.4 2093
5.8 96.7 1195
2.3 42.8 36
1.9 48.5 339
3.0 51.5 342
2.6 57.9 70
3.1 62.4 130
2.4 66.7 232
1.5 72.8 94
2.7 77.9 207
2.7 82.2 274
1.9 87.8 411
3.5 91.6 268
4.3 99.1 502
2.4 42.2 111
2.6 47.6 483
2.3 53.0 104
2.6 57.4 79
2.7 61.8 62
2.3 67.8 151
3.0 72.5 246
2.9 77.7 130
2.6 82.6 451
1.8 86.4 194
2.1 92.6 76
3.5 97.4 71
8.2 43.2 267
7.0 46.0 316
7.7 53.2 96
7.7 56.9 113
8.1 62.1 65
7.5 67.8 67
7.5 72.7 517
7.0 77.4 411
8.4 81.6 105
6.9 87.9 124
8.4 92.1 95
8.1 97.7 69
12.6 42.6 548
11.9 47.4 140
12.7 52.3 109
12.6 56.4 114
13.2 61.7 194
13.2 67.8 270
11.4 71.9 199
12.4 76.9 31
11.7 83.0 121
13.1 87.3 157
12.2 92.9 262
12.9 96.8 207

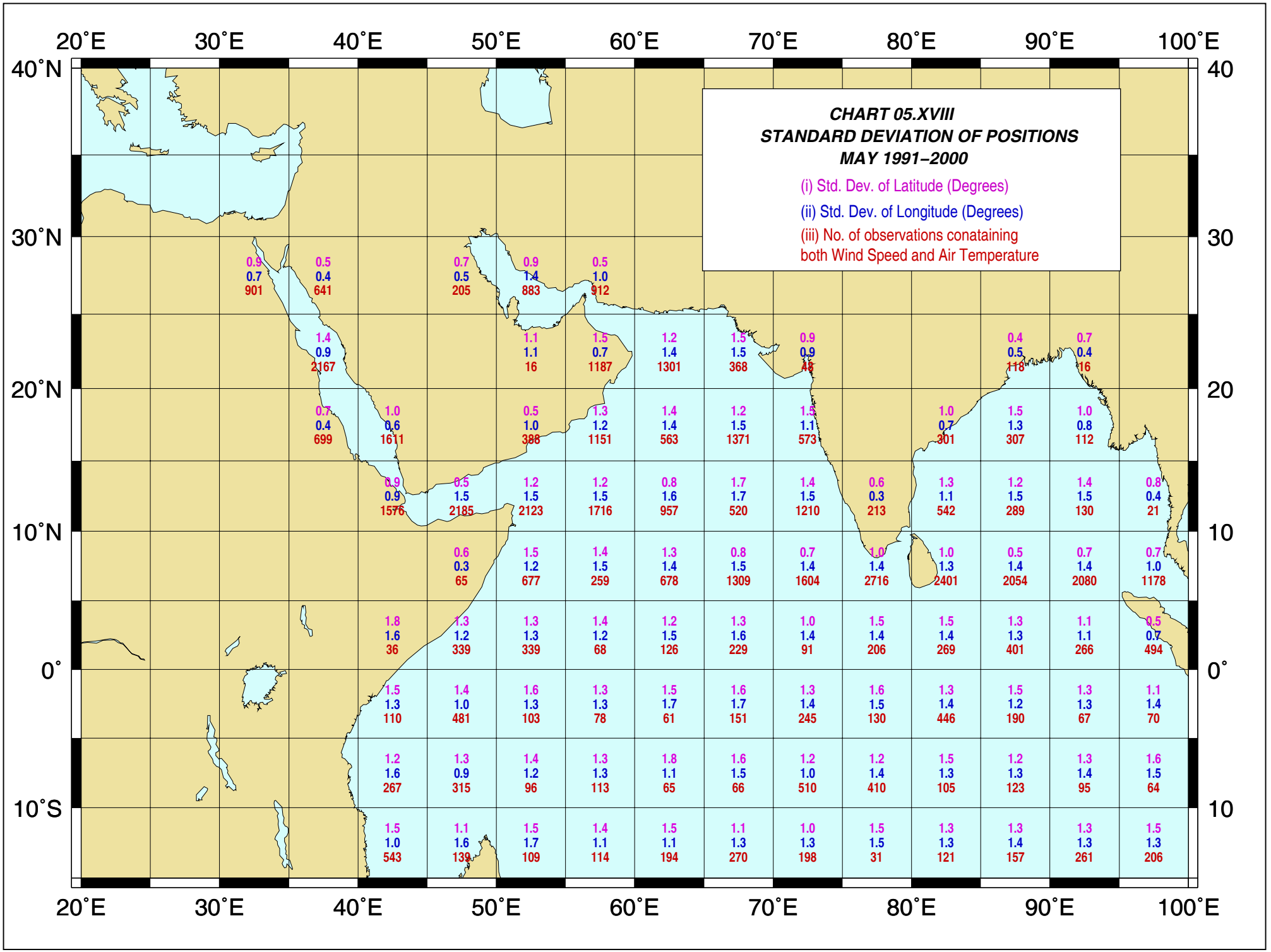
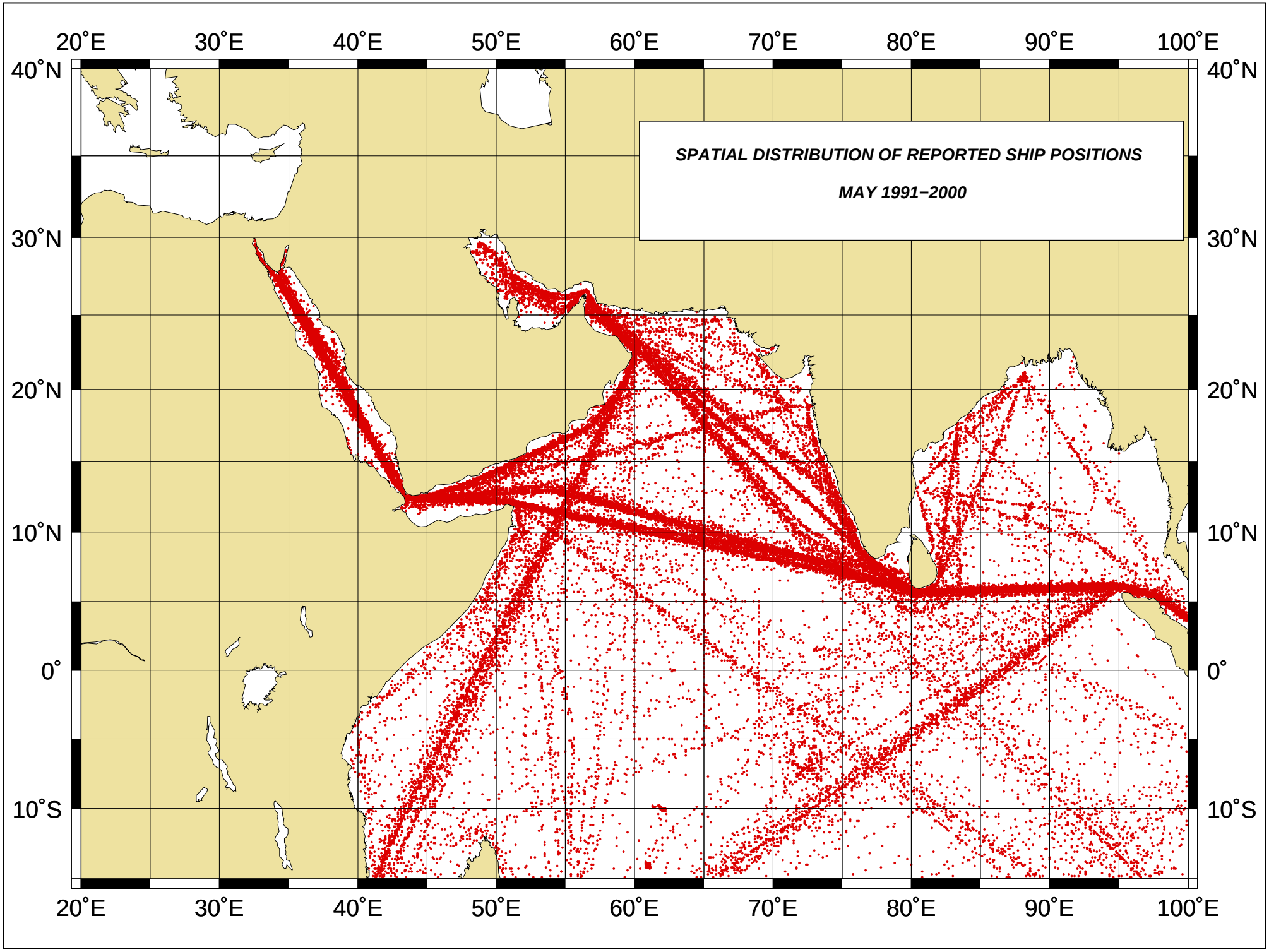
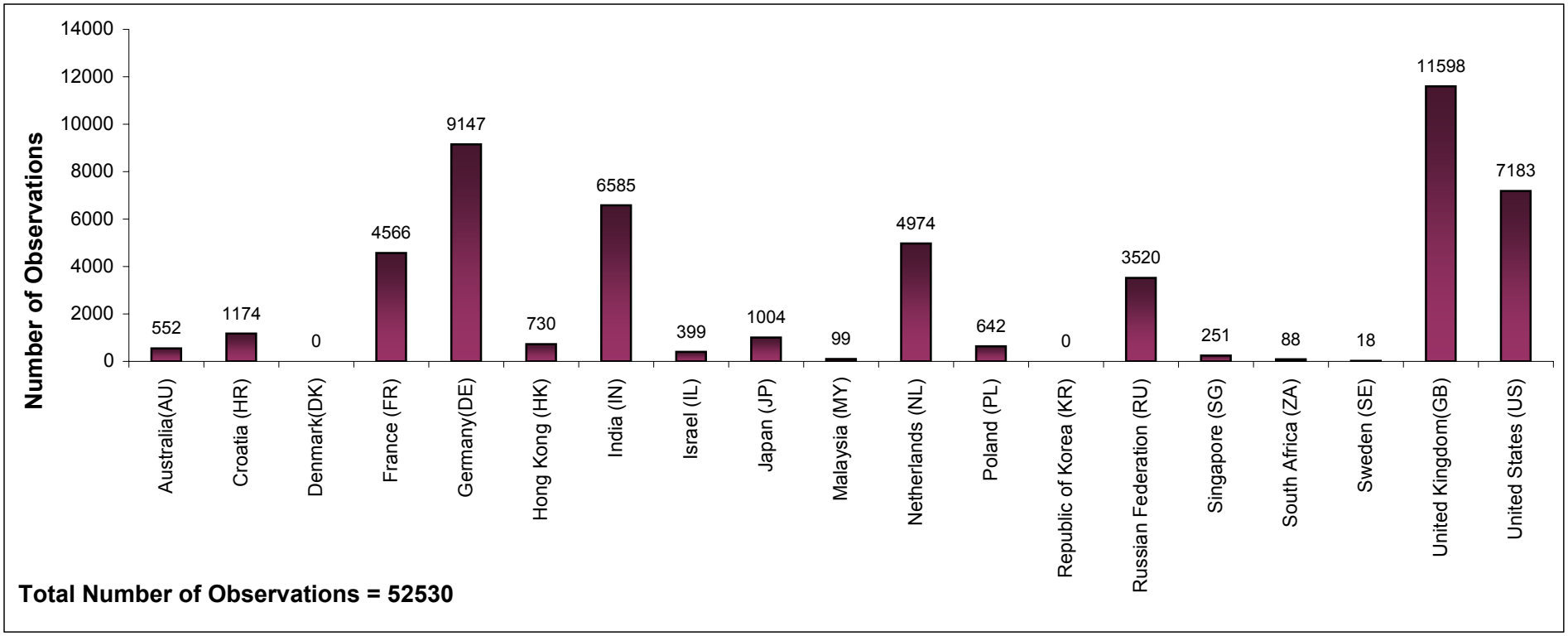


CHART 05.XVIII
STANDARD DEVIATION OF POSITIONS
MAY 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations conataining
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.9 0.7 901
0.5 0.4 641
0.7 0.5 205
0.9 1.4 883
0.5 1.0 912
1.4 0.9 2167
1.1 1.1 16
1.5 0.7 1187
1.2 1.4 1301
1.5 1.5 368
0.9 0.9 48
0.4 0.5 118
0.7 0.4 16
0.7 0.4 699
1.0 0.6 1611
0.5 1.0 388
1.3 1.2 1151
1.4 1.4 563
1.2 1.5 1371
1.5 1.1 573
1.0 0.7 301
1.5 1.3 307
1.0 0.8 112
0.9 0.9 1576
0.5 1.5 2185
1.2 1.5 2123
1.2 1.5 1716
0.8 1.6 957
1.7 1.7 520
1.4 1.5 1210
0.6 0.3 213
1.3 1.1 542
1.2 1.5 289
1.4 1.5 130
0.8 0.4 21
0.6 0.3 65
1.5 1.2 677
1.4 1.5 259
1.3 1.4 678
0.8 1.5 1309
0.7 1.4 1604
1.0 1.4 2716
1.0 1.3 2401
0.5 1.4 2054
0.7 1.4 2080
0.7 1.0 1178
1.8 1.6 36
1.3 1.2 339
1.3 1.3 339
1.4 1.2 68
1.2 1.5 126
1.3 1.6 229
1.0 1.4 91
1.5 1.4 206
1.5 1.4 269
1.3 1.3 401
1.1 1.1 266
0.5 0.7 494
1.5 1.3 110
1.4 1.0 481
1.6 1.3 103
1.3 1.3 78
1.5 1.7 61
1.6 1.7 151
1.3 1.4 245
1.6 1.5 130
1.3 1.4 446
1.5 1.2 190
1.3 1.3 67
1.1 1.4 70
1.2 1.6 267
1.3 0.9 315
1.4 1.2 96
1.3 1.3 113
1.8 1.1 65
1.6 1.5 66
1.2 1.0 510
1.2 1.4 410
1.5 1.3 105
1.2 1.3 123
1.3 1.4 95
1.6 1.5 64
1.5 1.0 543
1.1 1.6 139
1.5 1.7 109
1.4 1.1 114
1.5 1.1 194
1.1 1.3 270
1.0 1.3 198
1.5 1.5 31
1.3 1.3 121
1.3 1.4 157
1.3 1.3 261
1.5 1.3 206


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
MAY 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

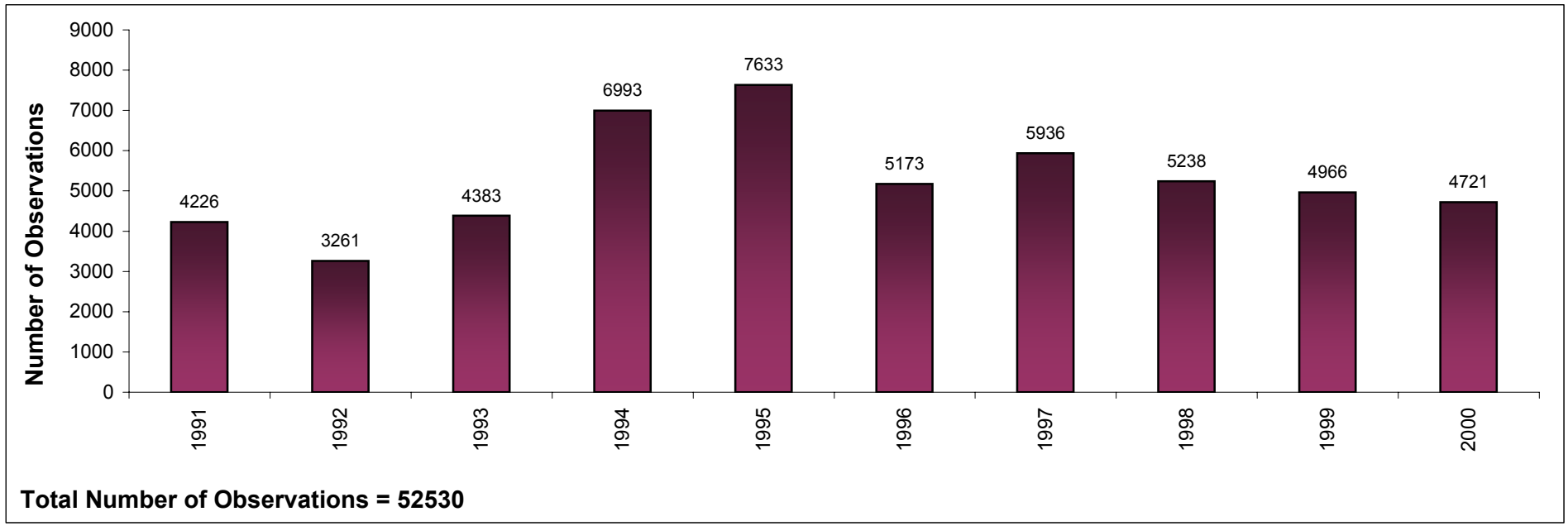
MAY : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52530

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52530

Marine Climatological Summary Charts 1991-2000

CHARTS OF JUNE 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

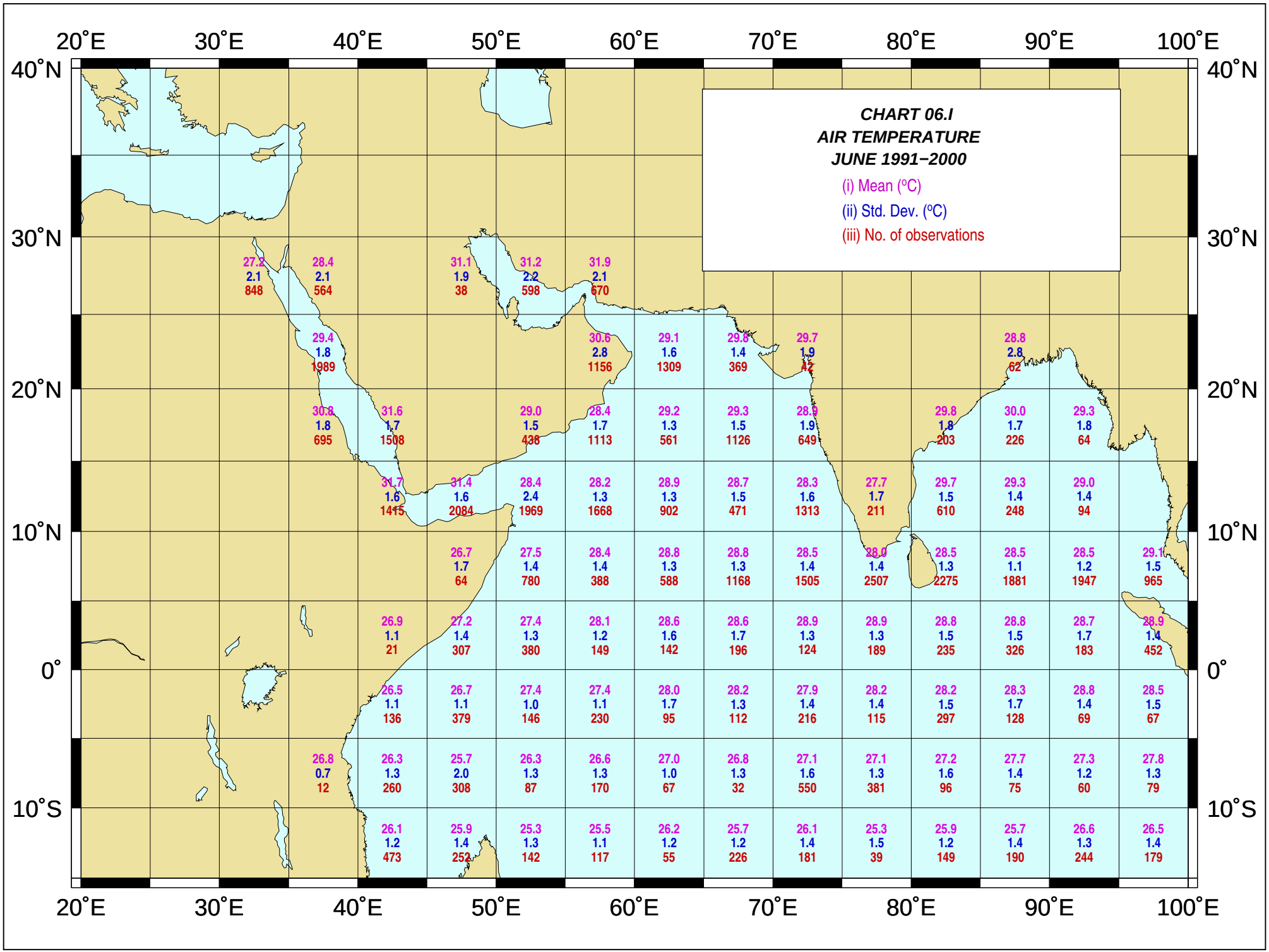


CHART 06.I
AIR TEMPERATURE
JUNE 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.2 2.1 848
28.4 2.1 564
31.1 1.9 38
31.2 2.2 598
31.9 2.1 670
29.4 1.8 1989
30.6 2.8 1156
29.1 1.6 1309
29.8 1.4 369
29.7 1.9 42
28.8 2.8 62
30.8 1.8 695
31.6 1.7 1508
29.0 1.5 438
28.4 1.7 1113
29.2 1.3 561
29.3 1.5 1126
28.9 1.9 649
29.8 1.8 203
30.0 1.7 226
29.3 1.8 64
31.7 1.6 1415
31.4 1.6 2084
28.4 2.4 1969
28.2 1.3 1668
28.9 1.3 902
28.7 1.5 471
28.3 1.6 1313
27.7 1.7 211
29.7 1.5 610
29.3 1.4 248
29.0 1.4 94
26.7 1.7 64
27.5 1.4 780
28.4 1.4 388
28.8 1.3 588
28.8 1.3 1168
28.5 1.4 1505
28.0 1.4 2507
28.5 1.3 2275
28.5 1.1 1881
28.5 1.2 1947
29.1 1.5 965
26.9 1.1 21
27.2 1.4 307
27.4 1.3 380
28.1 1.2 149
28.6 1.6 142
28.6 1.7 196
28.9 1.3 124
28.9 1.3 189
28.8 1.5 235
28.8 1.5 326
28.7 1.7 183
28.9 1.4 452
26.5 1.1 136
26.7 1.1 379
27.4 1.0 146
27.4 1.1 230
28.0 1.7 95
28.2 1.3 112
27.9 1.4 216
28.2 1.4 115
28.2 1.5 297
28.3 1.7 128
28.8 1.4 69
28.5 1.5 67
26.8 0.7 12
26.3 1.3 260
25.7 2.0 308
26.3 1.3 87
26.6 1.3 170
27.0 1.0 67
26.8 1.3 32
27.1 1.6 550
27.1 1.3 381
27.2 1.6 96
27.7 1.4 75
27.3 1.2 60
27.8 1.3 79
26.1 1.2 473
25.9 1.4 252
25.3 1.3 142
25.5 1.1 117
26.2 1.2 55
25.7 1.2 226
26.1 1.4 181
25.3 1.5 39
25.9 1.2 149
25.7 1.4 190
26.6 1.3 244
26.5 1.4 179

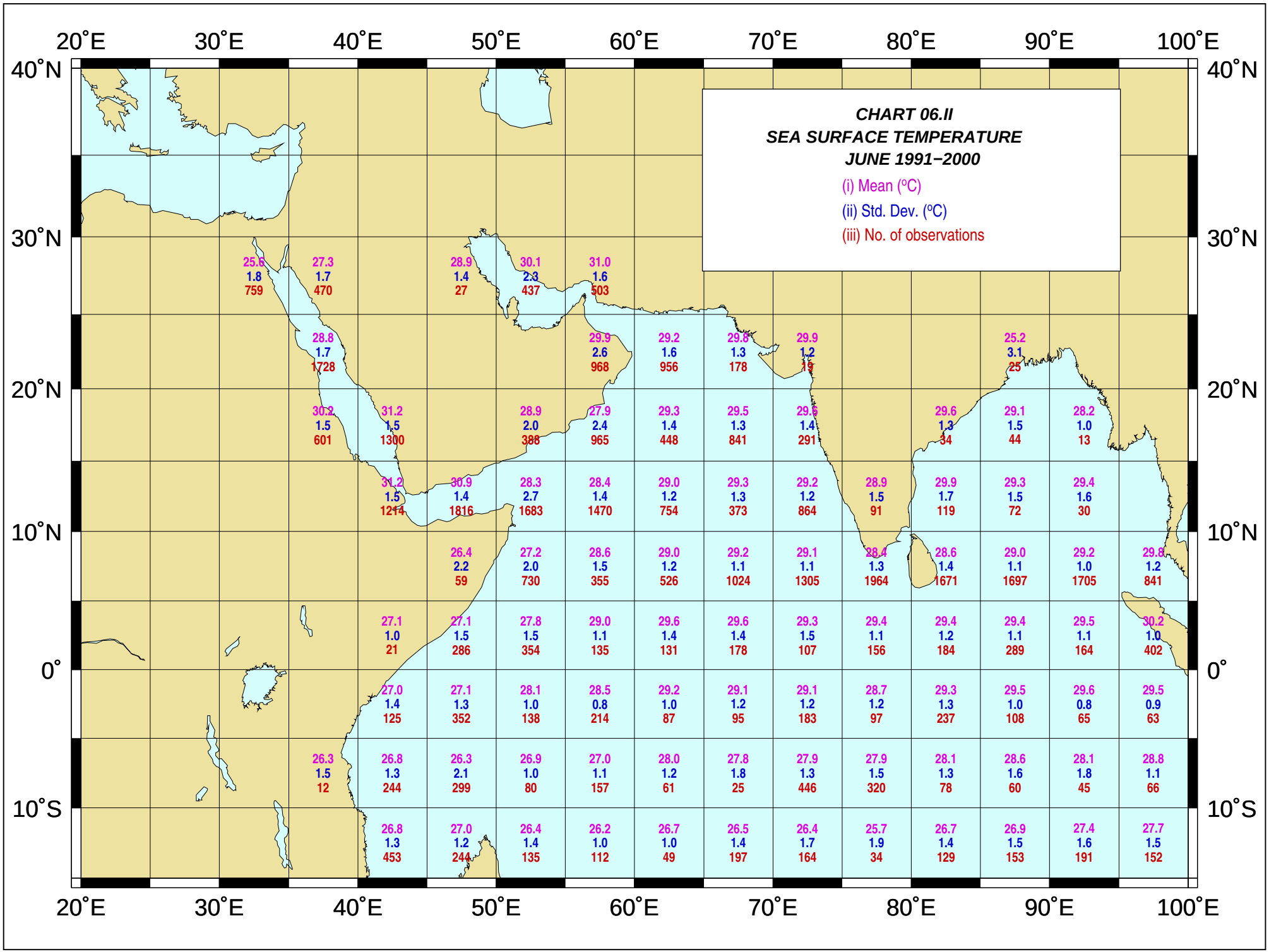


CHART 06.II
SEA SURFACE TEMPERATURE
JUNE 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
25.6 1.8 759
27.3 1.7 470
28.9 1.4 27
30.1 2.3 437
31.0 1.6 503
28.8 1.7 1728
29.9 2.6 968
29.2 1.6 956
29.8 1.3 178
29.9 1.2 19
25.2 3.1 25
30.2 1.5 601
31.2 1.5 1300
28.9 2.0 388
27.9 2.4 965
29.3 1.4 448
29.5 1.3 841
29.6 1.3 34
29.1 1.5 44
28.2 1.0 13
31.2 1.5 1214
30.9 1.4 1816
28.3 2.7 1683
28.4 1.4 1470
29.0 1.2 754
29.3 1.3 373
29.2 1.2 864
28.9 1.5 91
29.9 1.7 119
29.3 1.5 72
29.4 1.6 30
26.4 2.2 59
27.2 2.0 730
28.6 1.5 355
29.0 1.2 526
29.2 1.1 1024
29.1 1.1 1305
28.4 1.3 1964
28.6 1.4 1671
29.0 1.1 1697
29.2 1.0 1705
29.8 1.2 841
27.1 1.0 21
27.1 1.5 286
27.8 1.5 354
29.0 1.1 135
29.6 1.4 131
29.6 1.4 178
29.3 1.5 107
29.4 1.1 156
29.4 1.2 184
29.4 1.1 289
29.5 1.1 164
30.2 1.0 402
27.0 1.4 125
27.1 1.3 352
28.1 1.0 138
28.5 0.8 214
29.2 1.0 87
29.1 1.2 95
29.1 1.2 183
28.7 1.2 97
29.3 1.3 237
29.5 1.0 108
29.6 0.8 65
29.5 0.9 63
26.3 1.5 12
26.8 1.3 244
26.3 2.1 299
26.9 1.0 80
27.0 1.1 157
28.0 1.2 61
27.8 1.8 25
27.9 1.3 446
27.9 1.5 320
28.1 1.3 78
28.6 1.6 60
28.1 1.8 45
28.8 1.1 66
26.8 1.3 453
27.0 1.2 244
26.4 1.4 135
26.2 1.0 112
26.7 1.0 49
26.5 1.4 197
26.4 1.7 164
25.7 1.9 34
26.7 1.4 129
26.9 1.5 153
27.4 1.6 191
27.7 1.5 152

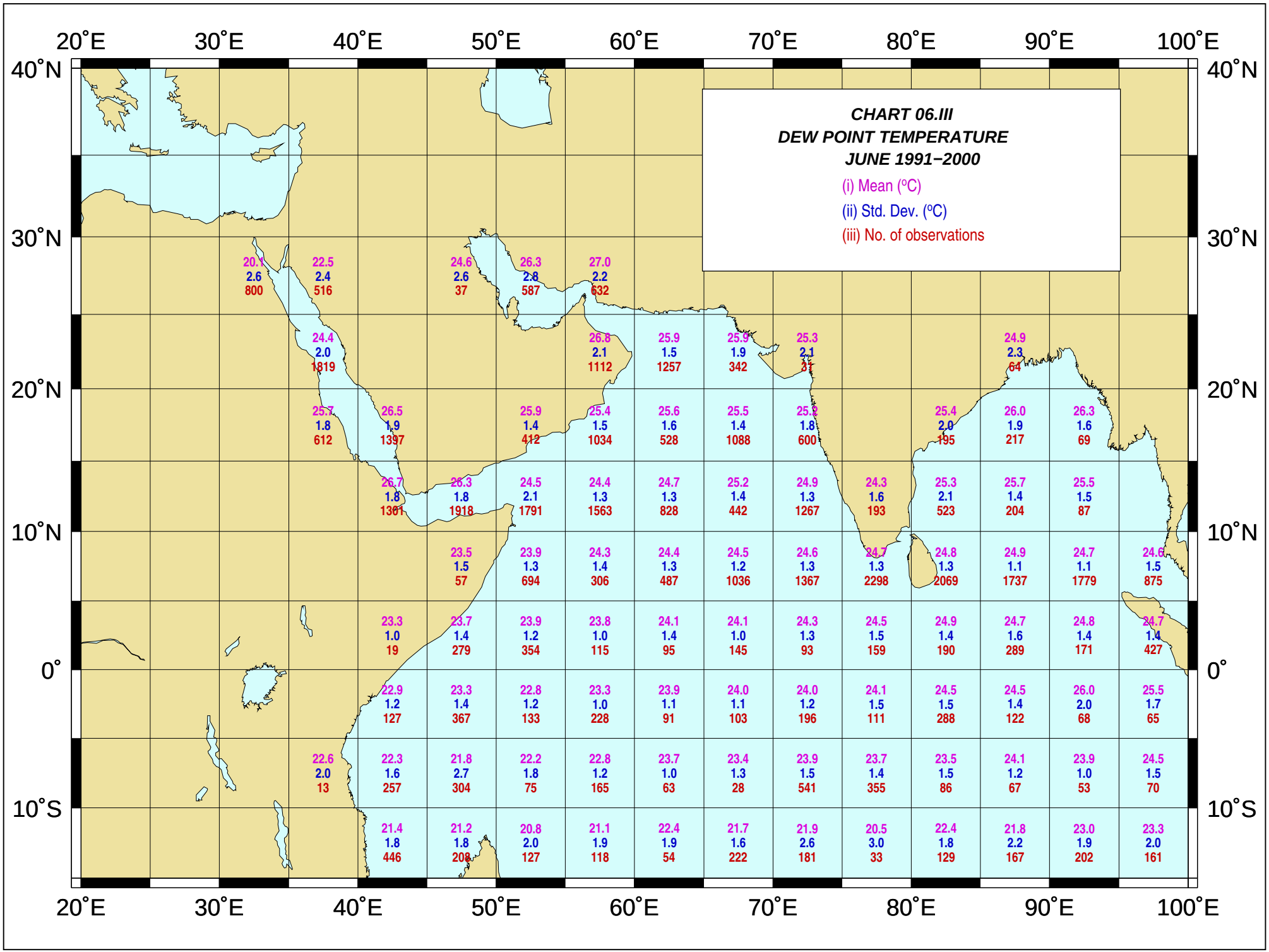


CHART 06.III
DEW POINT TEMPERATURE
JUNE 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
20.1 2.6 800
22.5 2.4 516
24.6 2.6 37
26.3 2.8 587
27.0 2.2 632
24.4 2.0 1819
26.8 2.1 1112
25.9 1.5 1257
25.9 1.9 342
25.3 2.1 31
24.9 2.3 64
25.7 1.8 612
26.5 1.9 1397
25.9 1.4 412
25.4 1.5 1034
25.6 1.6 528
25.5 1.4 1088
25.2 1.8 600
25.4 2.0 195
26.0 1.9 217
26.3 1.6 69
26.7 1.8 1301
26.3 1.8 1918
24.5 2.1 1791
24.4 1.3 1563
24.7 1.3 828
25.2 1.4 442
24.9 1.3 1267
24.3 1.6 193
25.3 2.1 523
25.7 1.4 204
25.5 1.5 87
23.5 1.5 57
23.9 1.3 694
24.3 1.4 306
24.4 1.3 487
24.5 1.2 1036
24.6 1.3 1367
24.7 1.3 2298
24.8 1.3 2069
24.9 1.1 1737
24.7 1.1 1779
24.6 1.5 875
23.3 1.0 19
23.7 1.4 279
23.9 1.2 354
23.8 1.0 115
24.1 1.4 95
24.1 1.0 145
24.3 1.3 93
24.5 1.5 159
24.9 1.4 190
24.7 1.6 289
24.8 1.4 171
24.7 1.4 427
22.9 1.2 127
23.3 1.4 367
22.8 1.2 133
23.3 1.0 228
23.9 1.1 91
24.0 1.1 103
24.0 1.2 196
24.1 1.5 111
24.5 1.5 288
24.5 1.4 122
26.0 2.0 68
25.5 1.7 65
22.6 2.0 13
22.3 1.6 257
21.8 2.7 304
22.2 1.8 75
22.8 1.2 165
23.7 1.0 63
23.4 1.3 28
23.9 1.5 541
23.7 1.4 355
23.5 1.5 86
24.1 1.2 67
23.9 1.0 53
24.5 1.5 70
21.4 1.8 446
21.2 1.8 208
20.8 2.0 127
21.1 1.9 118
22.4 1.9 54
21.7 1.6 222
21.9 2.6 181
20.5 3.0 33
22.4 1.8 129
21.8 2.2 167
23.0 1.9 202
23.3 2.0 161

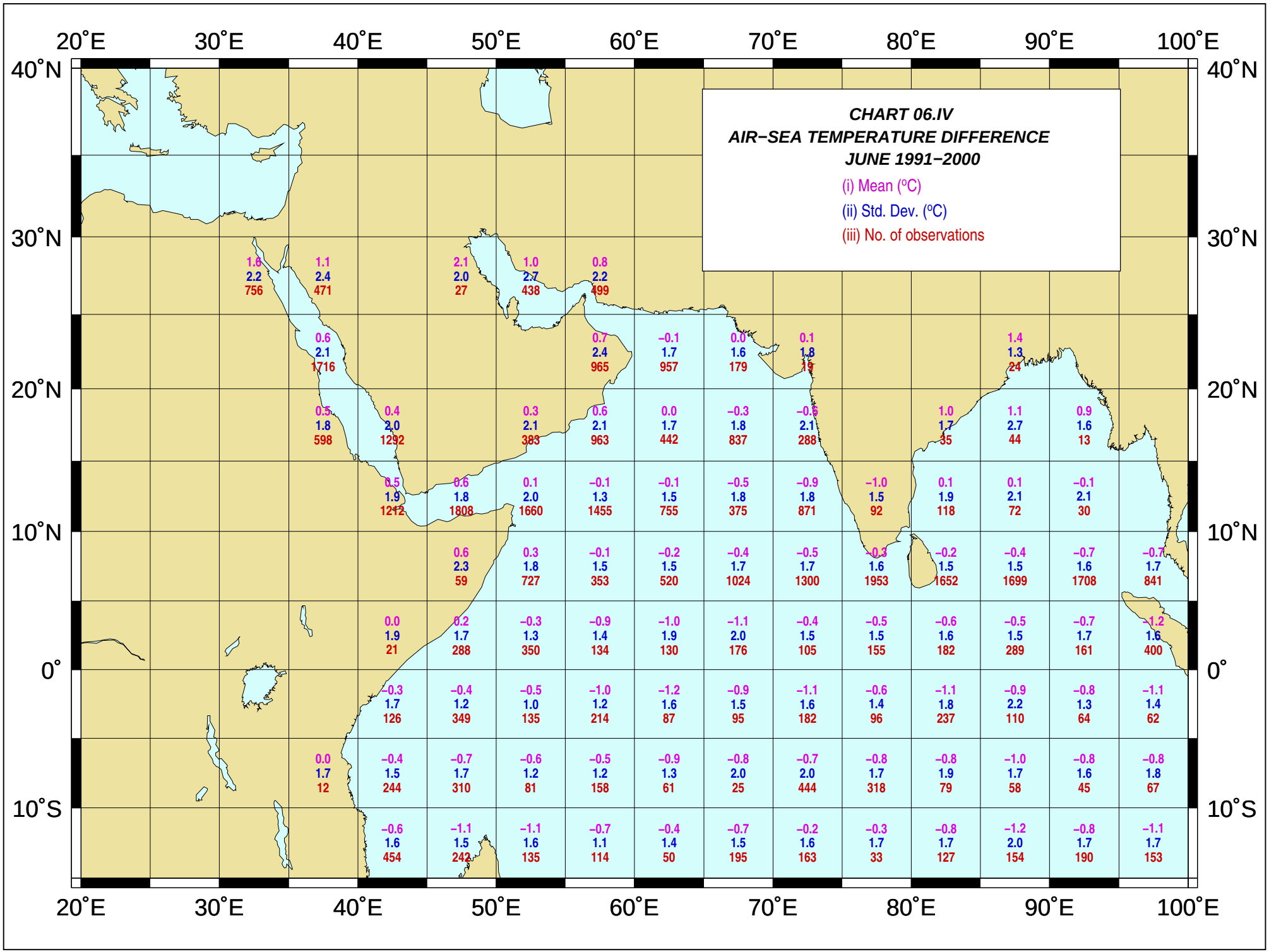


CHART 06.IV
AIR–SEA TEMPERATURE DIFFERENCE
JUNE 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.6 2.2 756
1.1 2.4 471
2.1 2.0 27
1.0 2.7 438
0.8 2.2 499
0.6 2.1 1716
0.7 2.4 965
−0.1 1.7 957
0.0 1.6 179
0.1 1.8 19
1.4 1.3 24
0.5 1.8 598
0.4 2.0 1292
0.3 2.1 383
0.6 2.1 963
0.0 1.7 442
−0.3 1.8 837
−0.6 2.1 288
1.0 1.7 35
1.1 2.7 44
0.9 1.6 13
0.5 1.9 1212
0.6 1.8 1808
0.1 2.0 1660
−0.1 1.3 1455
−0.1 1.5 755
−0.5 1.8 375
−0.9 1.8 871
−1.0 1.5 92
0.1 1.9 118
0.1 2.1 72
−0.1 2.1 30
0.6 2.3 59
0.3 1.8 727
−0.1 1.5 353
−0.2 1.5 520
−0.4 1.7 1024
−0.5 1.7 1300
−0.3 1.6 1953
−0.2 1.5 1652
−0.4 1.5 1699
−0.7 1.6 1708
−0.7 1.7 841
0.0 1.9 21
0.2 1.7 288
−0.3 1.3 350
−0.9 1.4 134
−1.0 1.9 130
−1.1 2.0 176
−0.4 1.5 105
−0.5 1.5 155
−0.6 1.6 182
−0.5 1.5 289
−0.7 1.7 161
−1.2 1.6 400
−0.3 1.7 126
−0.4 1.2 349
−0.5 1.0 135
−1.0 1.2 214
−1.2 1.6 87
−0.9 1.5 95
−1.1 1.6 182
−0.6 1.4 96
−1.1 1.8 237
−0.9 2.2 110
−0.8 1.3 64
−1.1 1.4 62
0.0 1.7 12
−0.4 1.5 244
−0.7 1.7 310
−0.6 1.2 81
−0.5 1.2 158
−0.9 1.3 61
−0.8 2.0 25
−0.7 2.0 444
−0.8 1.7 318
−0.8 1.9 79
−1.0 1.7 58
−0.8 1.6 45
−0.8 1.8 67
−0.6 1.6 454
−1.1 1.5 242
−1.1 1.6 135
−0.7 1.1 114
−0.4 1.4 50
−0.7 1.5 195
−0.2 1.6 163
−0.3 1.7 33
−0.8 1.7 127
−1.2 2.0 154
−0.8 1.7 190
−1.1 1.7 153

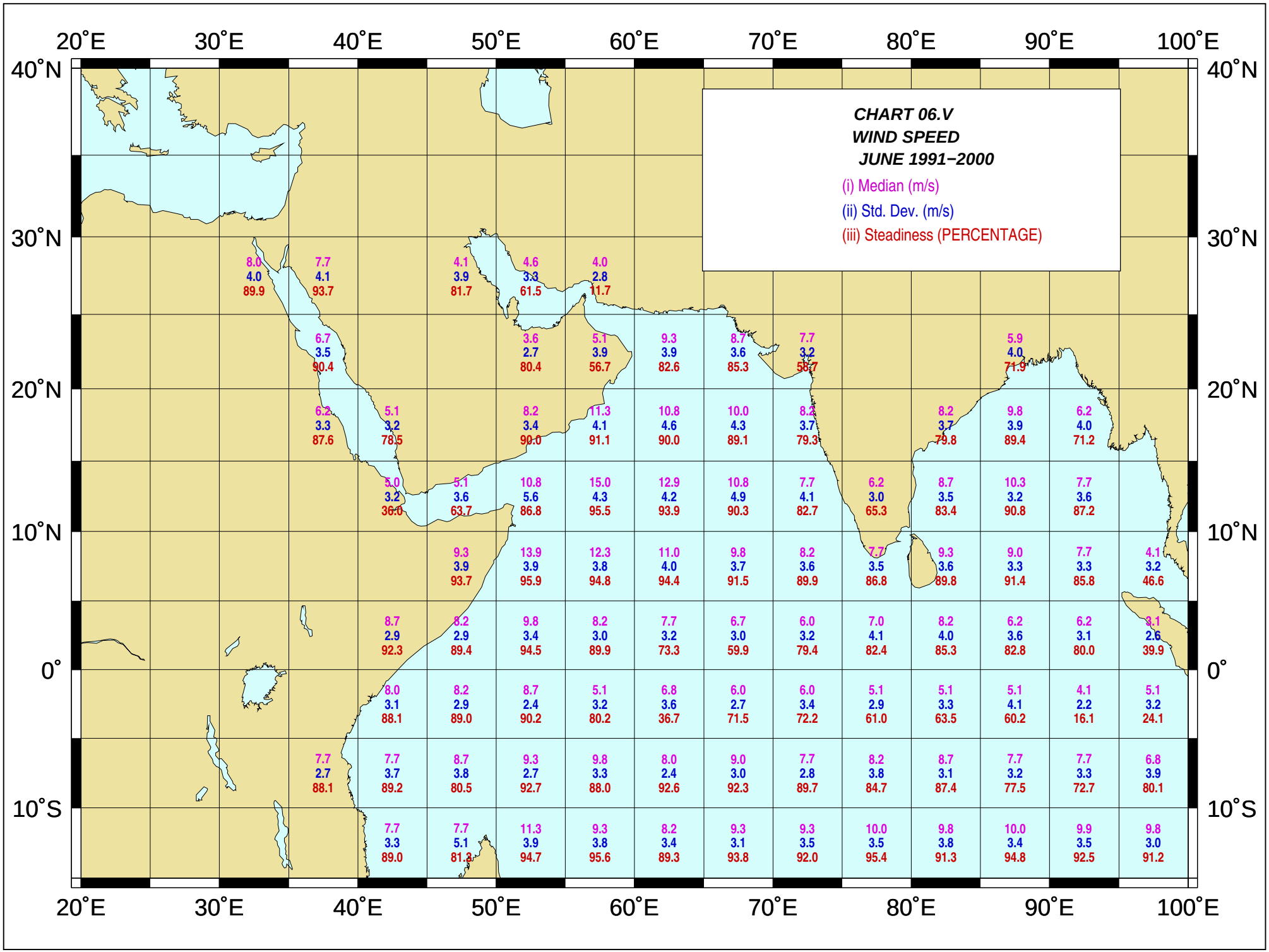


CHART 06.V
WIND SPEED
JUNE 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
8.0 4.0 89.9
7.7 4.1 93.7
4.1 3.9 81.7
4.6 3.3 61.5
4.0 2.8 11.7
6.7 3.5 90.4
3.6 2.7 80.4
5.1 3.9 56.7
9.3 3.9 82.6
8.7 3.6 85.3
7.7 3.2 58.7
5.9 4.0 71.9
6.2 3.3 87.6
5.1 3.2 78.5
8.2 3.4 90.0
11.3 4.1 91.1
10.8 4.6 90.0
10.0 4.3 89.1
8.2 3.7 79.3
8.2 3.7 79.8
9.8 3.9 89.4
6.2 4.0 71.2
5.0 3.2 36.0
5.1 3.6 63.7
10.8 5.6 86.8
15.0 4.3 95.5
12.9 4.2 93.9
10.8 4.9 90.3
7.7 4.1 82.7
6.2 3.0 65.3
8.7 3.5 83.4
10.3 3.2 90.8
7.7 3.6 87.2
9.3 3.9 93.7
13.9 3.9 95.9
12.3 3.8 94.8
11.0 4.0 94.4
9.8 3.7 91.5
8.2 3.6 89.9
7.7 3.5 86.8
9.3 3.6 89.8
9.0 3.3 91.4
7.7 3.3 85.8
4.1 3.2 46.6
8.7 2.9 92.3
8.2 2.9 89.4
9.8 3.4 94.5
8.2 3.0 89.9
7.7 3.2 73.3
6.7 3.0 59.9
6.0 3.2 79.4
7.0 4.1 82.4
8.2 4.0 85.3
6.2 3.6 82.8
6.2 3.1 80.0
3.1 2.6 39.9
8.0 3.1 88.1
8.2 2.9 89.0
8.7 2.4 90.2
5.1 3.2 80.2
6.8 3.6 36.7
6.0 2.7 71.5
6.0 3.4 72.2
5.1 2.9 61.0
5.1 3.3 63.5
5.1 4.1 60.2
4.1 2.2 16.1
5.1 3.2 24.1
7.7 2.7 88.1
7.7 3.7 89.2
8.7 3.8 80.5
9.3 2.7 92.7
9.8 3.3 88.0
8.0 2.4 92.6
9.0 3.0 92.3
7.7 2.8 89.7
8.2 3.8 84.7
8.7 3.1 87.4
7.7 3.2 77.5
7.7 3.3 72.7
6.8 3.9 80.1
7.7 3.3 89.0
7.7 5.1 81.3
11.3 3.9 94.7
9.3 3.8 95.6
8.2 3.4 89.3
9.3 3.1 93.8
9.3 3.5 92.0
10.0 3.5 95.4
9.8 3.8 91.3
10.0 3.4 94.8
9.9 3.5 92.5
9.8 3.0 91.2

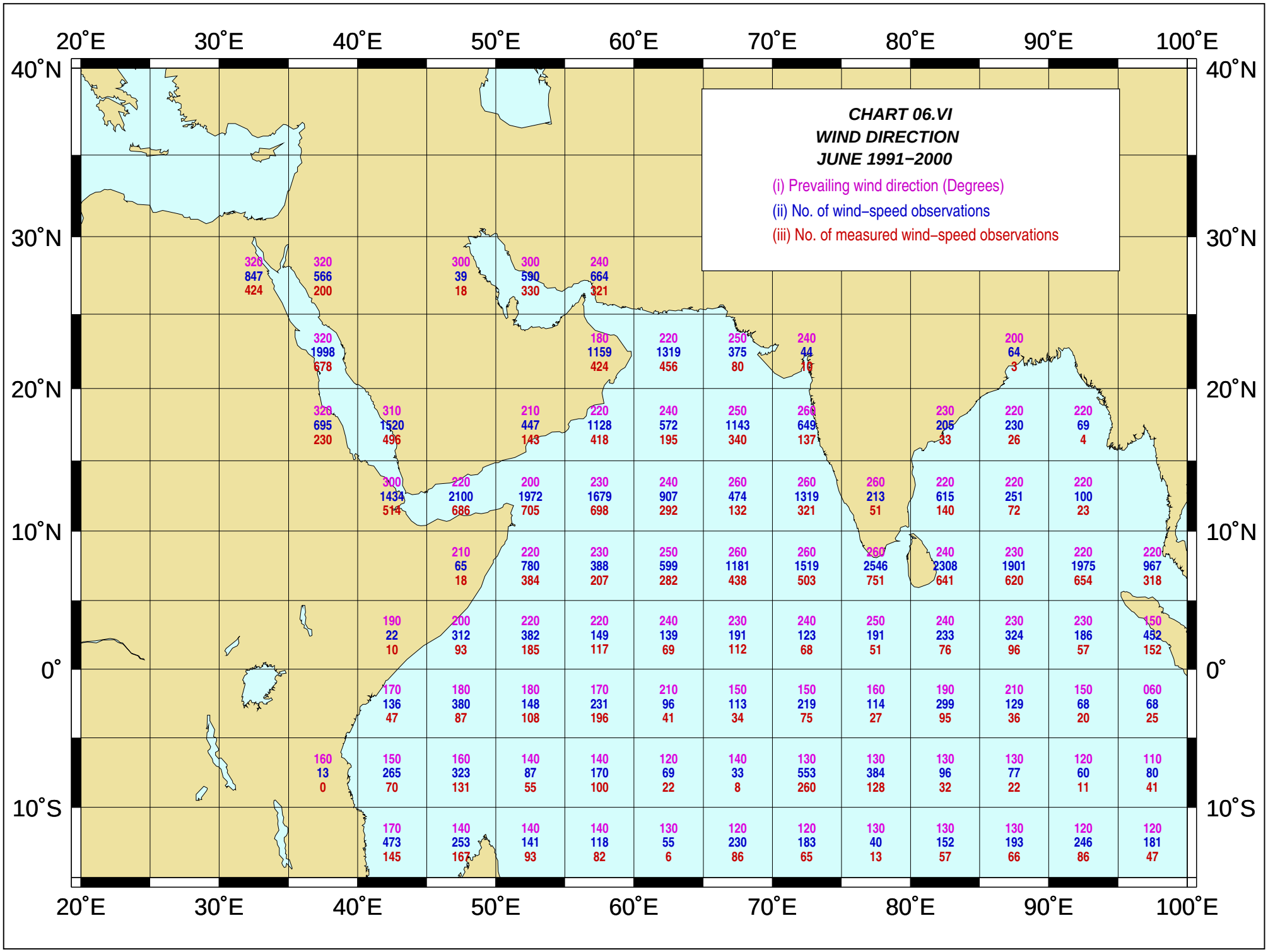


CHART 06.VI
WIND DIRECTION
JUNE 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
320 847 424
320 566 200
300 39 18
300 590 330
240 664 321
320 1998 678
180 1159 424
220 1319 456
250 375 80
240 44 10
200 64 3
320 695 230
310 1520 496
210 447 143
220 1128 418
240 572 195
250 1143 340
260 649 137
230 205 33
220 230 26
220 69 4
300 1434 514
220 2100 686
200 1972 705
230 1679 698
240 907 292
260 474 132
260 1319 321
260 213 51
220 615 140
220 251 72
220 100 23
210 65 18
220 780 384
230 388 207
250 599 282
260 1181 438
260 1519 503
260 2546 751
240 2308 641
230 1901 620
220 1975 654
220 967 318
190 22 10
200 312 93
220 382 185
220 149 117
240 139 69
230 191 112
240 123 68
250 191 51
240 233 76
230 324 96
230 186 57
150 432 152
170 136 47
180 380 87
180 148 108
170 231 196
210 96 41
150 113 34
150 219 75
160 114 27
190 299 95
210 129 36
150 68 20
060 68 25
160 13 0
150 265 70
160 323 131
140 87 55
140 170 100
120 69 22
140 33 8
130 553 260
130 384 128
130 96 32
130 77 22
120 60 11
110 80 41
170 473 145
140 253 167
140 141 93
140 118 82
130 55 6
120 230 86
120 183 65
130 40 13
130 152 57
130 193 66
120 246 86
120 181 47

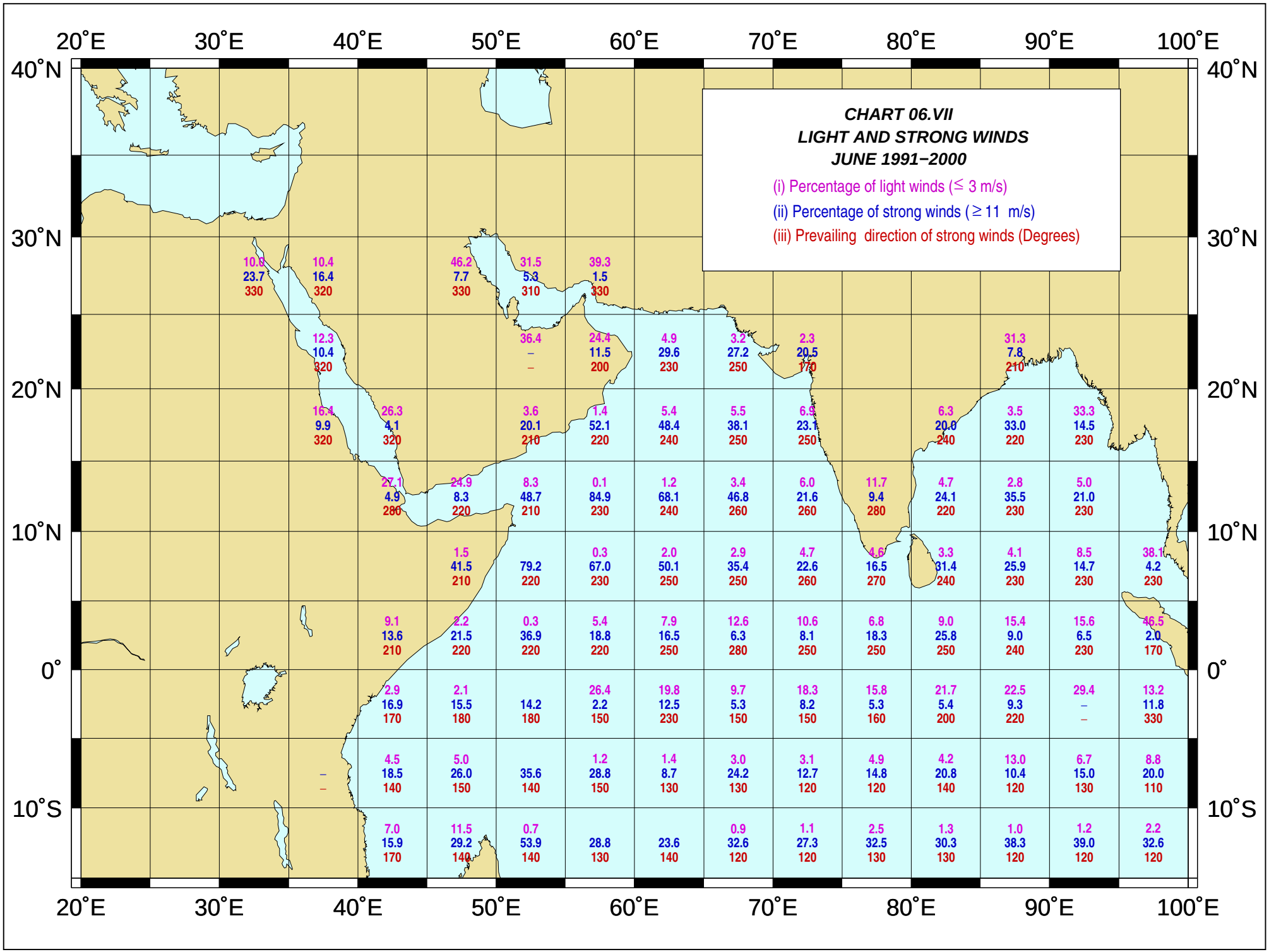


CHART 06.VII
LIGHT AND STRONG WINDS
JUNE 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
10.8 23.7 330
10.4 16.4 320
46.2 7.7 330
31.5 5.3 310
39.3 1.5 330
12.3 10.4 320
36.4 – –
24.4 11.5 200
4.9 29.6 230
3.2 27.2 250
2.3 20.5 170
31.3 7.8 210
16.4 9.9 320
26.3 4.1 320
3.6 20.1 210
1.4 52.1 220
5.4 48.4 240
5.5 38.1 250
6.9 23.1 250
6.3 20.0 240
3.5 33.0 220
33.3 14.5 230
27.1 4.9 280
24.9 8.3 220
8.3 48.7 210
0.1 84.9 230
1.2 68.1 240
3.4 46.8 260
6.0 21.6 260
11.7 9.4 280
4.7 24.1 220
2.8 35.5 230
5.0 21.0 230
1.5 41.5 210
79.2 220
0.3 67.0 230
2.0 50.1 250
2.9 35.4 250
4.7 22.6 260
4.6 16.5 270
3.3 31.4 240
4.1 25.9 230
8.5 14.7 230
38.1 4.2 230
9.1 13.6 210
2.2 21.5 220
0.3 36.9 220
5.4 18.8 220
7.9 16.5 250
12.6 6.3 280
10.6 8.1 250
6.8 18.3 250
9.0 25.8 250
15.4 9.0 240
15.6 6.5 230
46.5 2.0 170
2.9 16.9 170
2.1 15.5 180
14.2 180
26.4 2.2 150
19.8 12.5 230
9.7 5.3 150
18.3 8.2 150
15.8 5.3 160
21.7 5.4 200
22.5 9.3 220
29.4 – –
13.2 11.8 330
– –
4.5 18.5 140
5.0 26.0 150
35.6 140
1.2 28.8 150
1.4 8.7 130
3.0 24.2 130
3.1 12.7 120
4.9 14.8 120
4.2 20.8 140
13.0 10.4 120
6.7 15.0 130
8.8 20.0 110
7.0 15.9 170
11.5 29.2 140
0.7 53.9 140
28.8 130
23.6 140
0.9 32.6 120
1.1 27.3 120
2.5 32.5 130
1.3 30.3 130
1.0 38.3 120
1.2 39.0 120
2.2 32.6 120

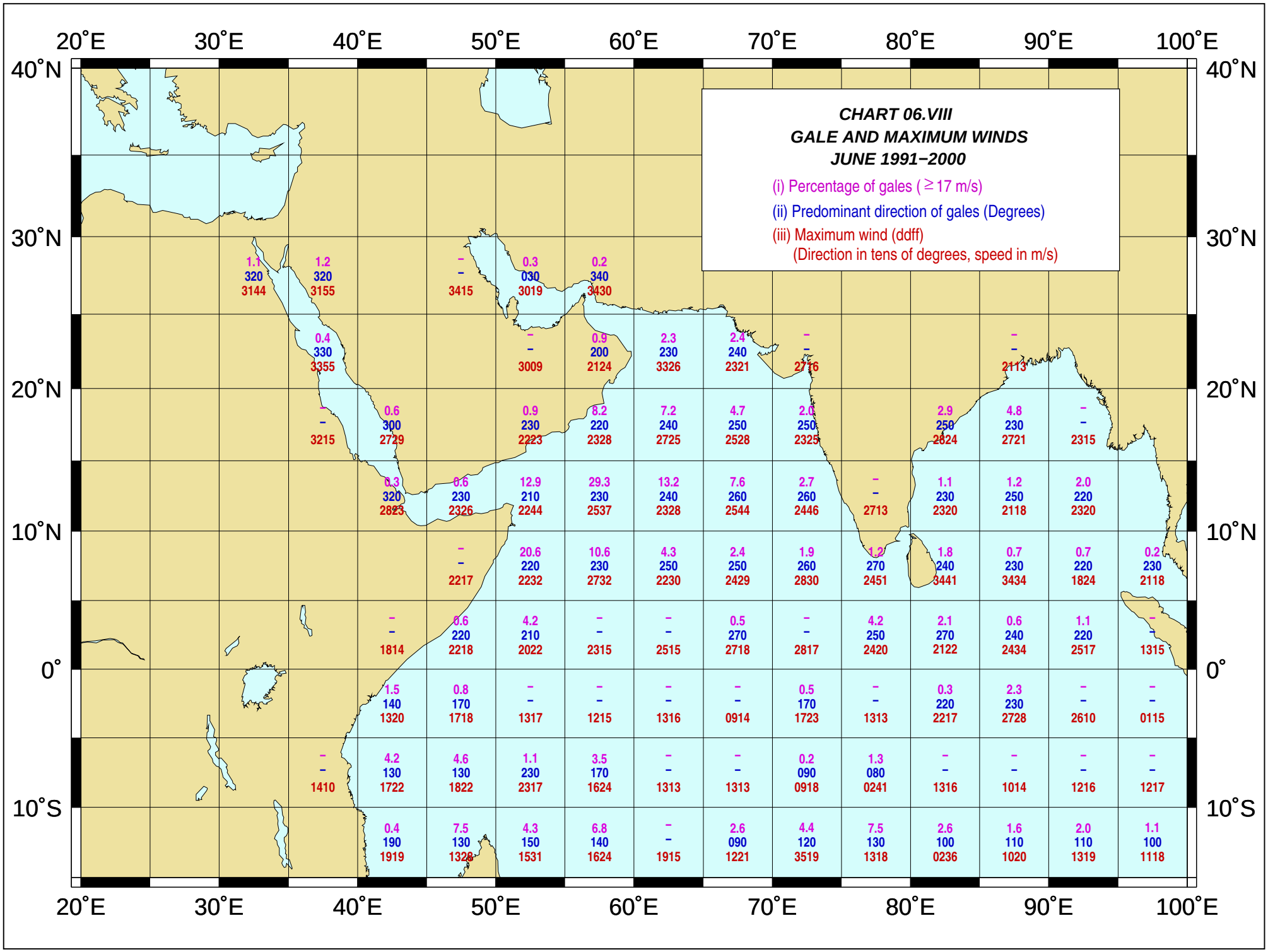


CHART 06.VIII
GALE AND MAXIMUM WINDS
JUNE 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.1 320 3144
1.2 320 3155
– – 3415
0.3 030 3019
0.2 340 3430
0.4 330 3355
– – 3009
0.9 200 2124
2.3 230 3326
2.4 240 2321
– – 2716
– – 2113
– – 3215
0.6 300 2729
0.9 230 2223
8.2 220 2328
7.2 240 2725
4.7 250 2528
2.0 250 2325
2.9 250 2824
4.8 230 2721
– – 2315
0.3 320 2823
0.6 230 2326
12.9 210 2244
29.3 230 2537
13.2 240 2328
7.6 260 2544
2.7 260 2446
– – 2713
1.1 230 2320
1.2 250 2118
2.0 220 2320
– – 2217
20.6 220 2232
10.6 230 2732
4.3 250 2230
2.4 250 2429
1.9 260 2830
1.2 270 2451
1.8 240 3441
0.7 230 3434
0.7 220 1824
0.2 230 2118
– – 1814
0.6 220 2218
4.2 210 2022
– – 2315
– – 2515
0.5 270 2718
– – 2817
4.2 250 2420
2.1 270 2122
0.6 240 2434
1.1 220 2517
– – 1315
1.5 140 1320
0.8 170 1718
– – 1317
– – 1215
– – 1316
– – 0914
0.5 170 1723
– – 1313
0.3 220 2217
2.3 230 2728
– – 2610
– – 0115
– – 1410
4.2 130 1722
4.6 130 1822
1.1 230 2317
3.5 170 1624
– – 1313
– – 1313
0.2 090 0918
1.3 080 0241
– – 1316
– – 1014
– – 1216
– – 1217
0.4 190 1919
7.5 130 1328
4.3 150 1531
6.8 140 1624
– – 1915
2.6 090 1221
4.4 120 3519
7.5 130 1318
2.6 100 0236
1.6 110 1020
2.0 110 1319
1.1 100 1118

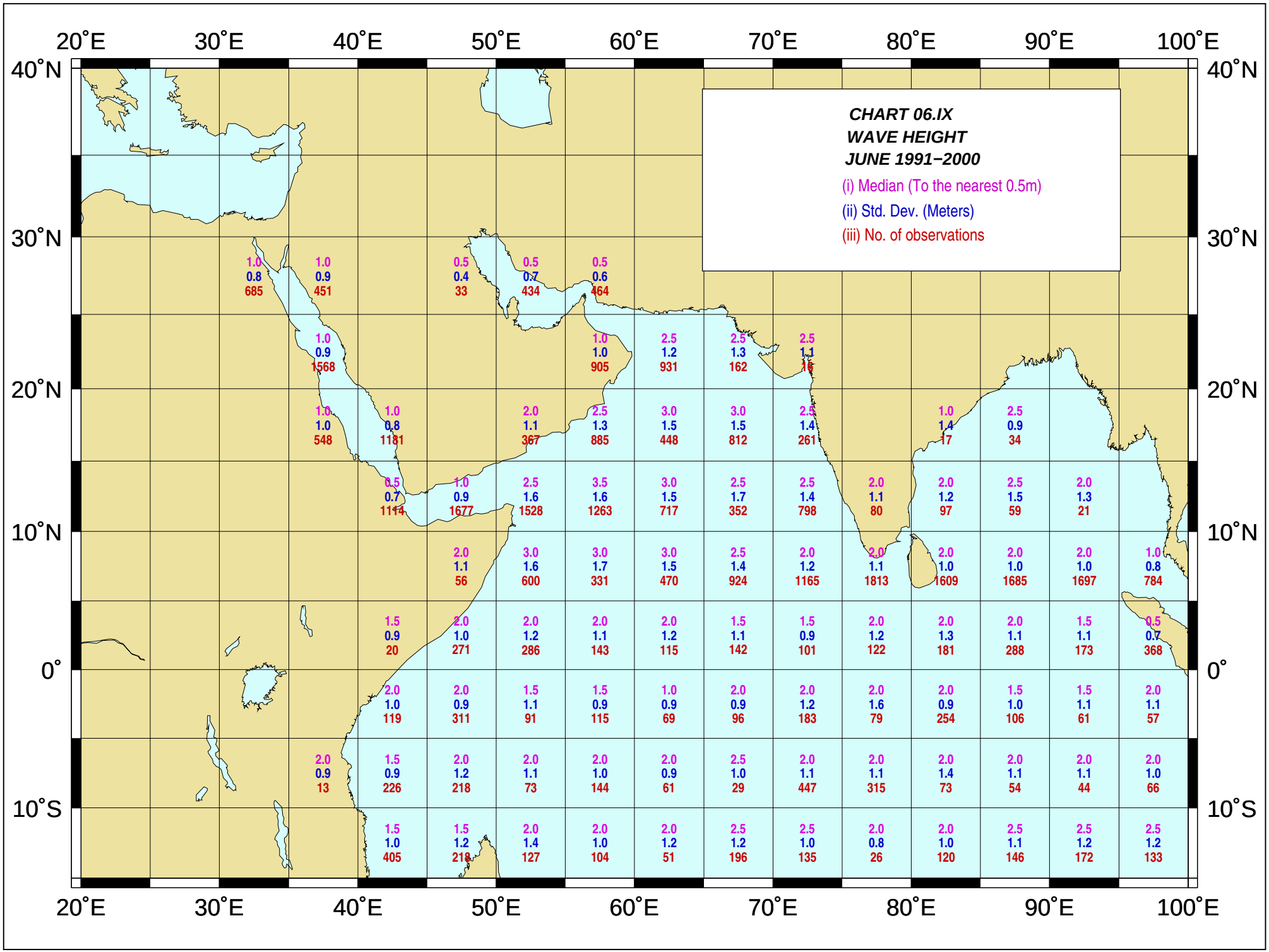


CHART 06.IX
WAVE HEIGHT
JUNE 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.8 685
1.0 0.9 451
0.5 0.4 33
0.5 0.7 434
0.5 0.6 464
1.0 0.9 1568
1.0 1.0 905
2.5 1.2 931
2.5 1.3 162
2.5 1.1 16
1.0 1.0 548
1.0 0.8 1181
2.0 1.1 367
2.5 1.3 885
3.0 1.5 448
3.0 1.5 812
2.5 1.4 261
1.0 1.4 17
2.5 0.9 34
0.5 0.7 1114
1.0 0.9 1677
2.5 1.6 1528
3.5 1.6 1263
3.0 1.5 717
2.5 1.7 352
2.5 1.4 798
2.0 1.1 80
2.0 1.2 97
2.5 1.5 59
2.0 1.3 21
2.0 1.1 56
3.0 1.6 600
3.0 1.7 331
3.0 1.5 470
2.5 1.4 924
2.0 1.2 1165
2.0 1.1 1813
2.0 1.0 1609
2.0 1.0 1685
2.0 1.0 1697
1.0 0.8 784
1.5 0.9 20
2.0 1.0 271
2.0 1.2 286
2.0 1.1 143
2.0 1.2 115
1.5 1.1 142
1.5 0.9 101
2.0 1.2 122
2.0 1.3 181
2.0 1.1 288
1.5 1.1 173
0.5 0.7 368
2.0 1.0 119
2.0 0.9 311
1.5 1.1 91
1.5 0.9 115
1.0 0.9 69
2.0 0.9 96
2.0 1.2 183
2.0 1.6 79
2.0 0.9 254
1.5 1.0 106
1.5 1.1 61
2.0 1.1 57
2.0 0.9 13
1.5 0.9 226
2.0 1.2 218
2.0 1.1 73
2.0 1.0 144
2.0 0.9 61
2.5 1.0 29
2.0 1.1 447
2.0 1.1 315
2.0 1.4 73
2.0 1.1 54
2.0 1.1 44
2.0 1.0 66
1.5 1.0 405
1.5 1.2 218
2.0 1.4 127
2.0 1.0 104
2.0 1.2 51
2.5 1.2 196
2.5 1.0 135
2.0 0.8 26
2.0 1.0 120
2.5 1.1 146
2.5 1.2 172
2.5 1.2 133

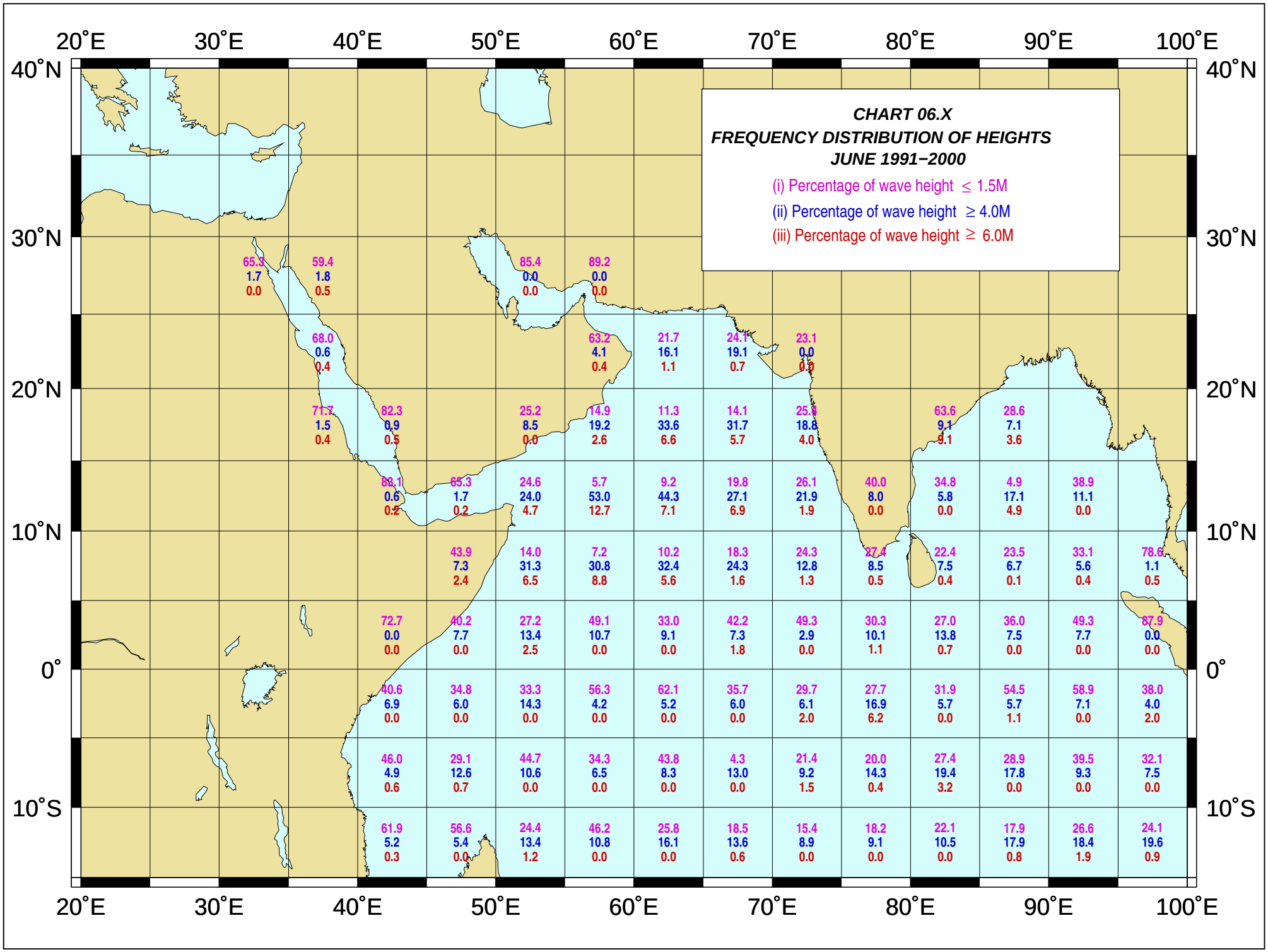


CHART 06.X
FREQUENCY DISTRIBUTION OF HEIGHTS
JUNE 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
65.3 1.7 0.0
59.4 1.8 0.5
85.4 0.0 0.0
89.2 0.0 0.0
68.0 0.6 0.4
63.2 4.1 0.4
21.7 16.1 1.1
24.1 19.1 0.7
23.1 0.0 0.0
71.7 1.5 0.4
82.3 0.9 0.5
25.2 8.5 0.0
14.9 19.2 2.6
11.3 33.6 6.6
14.1 31.7 5.7
25.3 18.8 4.0
63.6 9.1 9.1
28.6 7.1 3.6
80.1 0.6 0.2
65.3 1.7 0.2
24.6 24.0 4.7
5.7 53.0 12.7
9.2 44.3 7.1
19.8 27.1 6.9
26.1 21.9 1.9
40.0 8.0 0.0
34.8 5.8 0.0
4.9 17.1 4.9
38.9 11.1 0.0
43.9 7.3 2.4
14.0 31.3 6.5
7.2 30.8 8.8
10.2 32.4 5.6
18.3 24.3 1.6
24.3 12.8 1.3
27.4 8.5 0.5
22.4 7.5 0.4
23.5 6.7 0.1
33.1 5.6 0.4
78.6 1.1 0.5
72.7 0.0 0.0
40.2 7.7 0.0
27.2 13.4 2.5
49.1 10.7 0.0
33.0 9.1 0.0
42.2 7.3 1.8
49.3 2.9 0.0
30.3 10.1 1.1
27.0 13.8 0.7
36.0 7.5 0.0
49.3 7.7 0.0
87.9 0.0 0.0
40.6 6.9 0.0
34.8 6.0 0.0
33.3 14.3 0.0
56.3 4.2 0.0
62.1 5.2 0.0
35.7 6.0 0.0
29.7 6.1 2.0
27.7 16.9 6.2
31.9 5.7 0.0
54.5 5.7 1.1
58.9 7.1 0.0
38.0 4.0 2.0
46.0 4.9 0.6
29.1 12.6 0.7
44.7 10.6 0.0
34.3 6.5 0.0
43.8 8.3 0.0
4.3 13.0 0.0
21.4 9.2 1.5
20.0 14.3 0.4
27.4 19.4 3.2
28.9 17.8 0.0
39.5 9.3 0.0
32.1 7.5 0.0
61.9 5.2 0.3
56.6 5.4 0.0
24.4 13.4 1.2
46.2 10.8 0.0
25.8 16.1 0.0
18.5 13.6 0.6
15.4 8.9 0.0
18.2 9.1 0.0
22.1 10.5 0.0
17.9 17.9 0.8
26.6 18.4 1.9
24.1 19.6 0.9

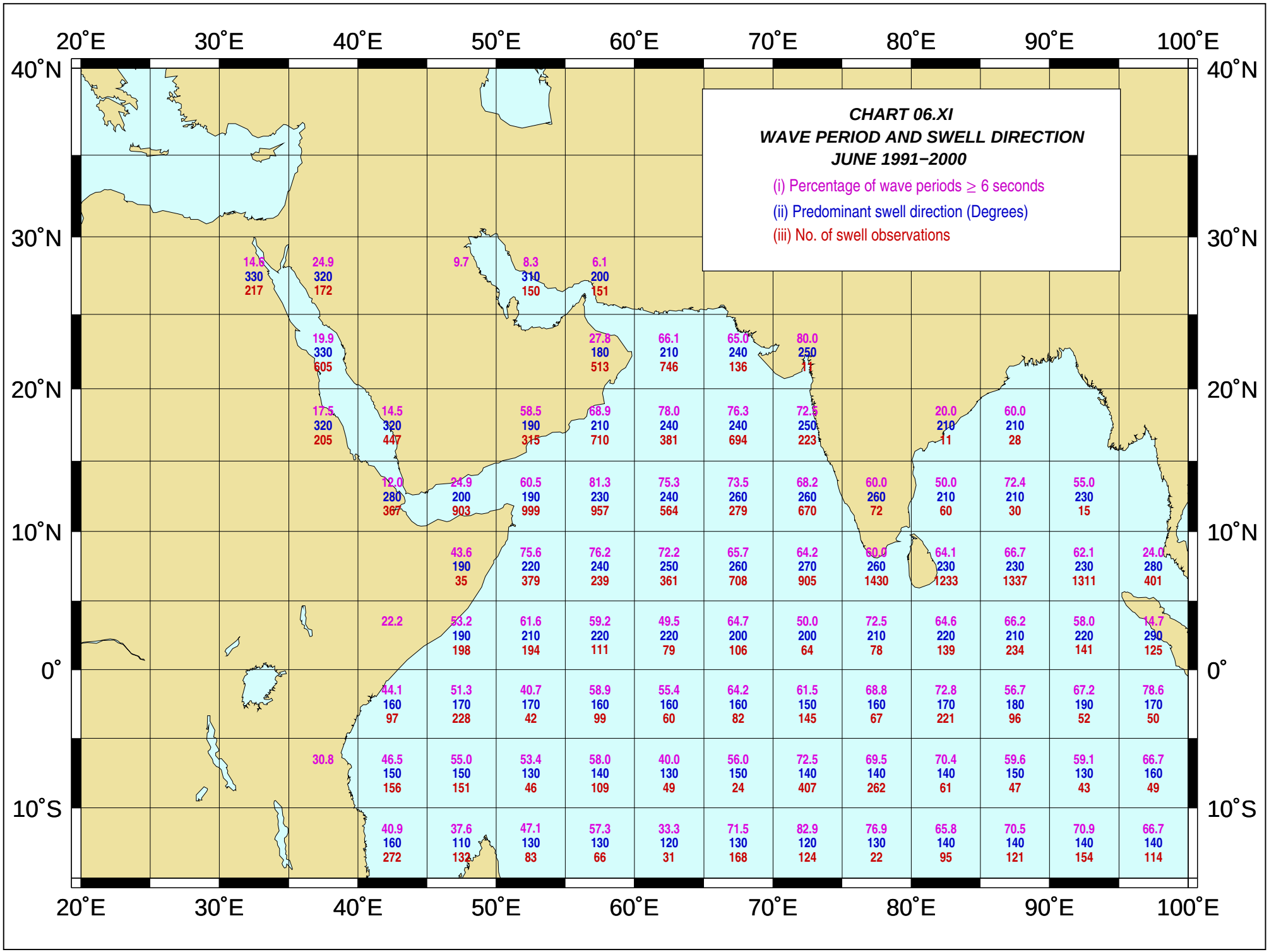


CHART 06.XI
WAVE PERIOD AND SWELL DIRECTION
JUNE 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
14.6 330 217
24.9 320 172
9.7
8.3 310 150
6.1 200 151
19.9 330 605
27.8 180 513
66.1 210 746
65.0 240 136
80.0 250
17.5 320 205
14.5 320 447
58.5 190 315
68.9 210 710
78.0 240 381
76.3 240 694
72.5 250 223
20.0 210 11
60.0 210 28
12.0 280 367
24.9 200 903
60.5 190 999
81.3 230 957
75.3 240 564
73.5 260 279
68.2 260 670
60.0 260 72
50.0 210 60
72.4 210 30
55.0 230 15
43.6 190 35
75.6 220 379
76.2 240 239
72.2 250 361
65.7 260 708
64.2 270 905
60.0 260 1430
64.1 230 1233
66.7 230 1337
62.1 230 1311
24.0 280 401
22.2
53.2 190 198
61.6 210 194
59.2 220 111
49.5 220 79
64.7 200 106
50.0 200 64
72.5 210 78
64.6 220 139
66.2 210 234
58.0 220 141
14.7 290 125
44.1 160 97
51.3 170 228
40.7 170 42
58.9 160 99
55.4 160 60
64.2 160 82
61.5 150 145
68.8 160 67
72.8 170 221
56.7 180 96
67.2 190 52
78.6 170 50
30.8
46.5 150 156
55.0 150 151
53.4 130 46
58.0 140 109
40.0 130 49
56.0 150 24
72.5 140 407
69.5 140 262
70.4 140 61
59.6 150 47
59.1 130 43
66.7 160 49
40.9 160 272
37.6 110 132
47.1 130 83
57.3 130 66
33.3 120 31
71.5 130 168
82.9 120 124
76.9 130 22
65.8 140 95
70.5 140 121
70.9 140 154
66.7 140 114

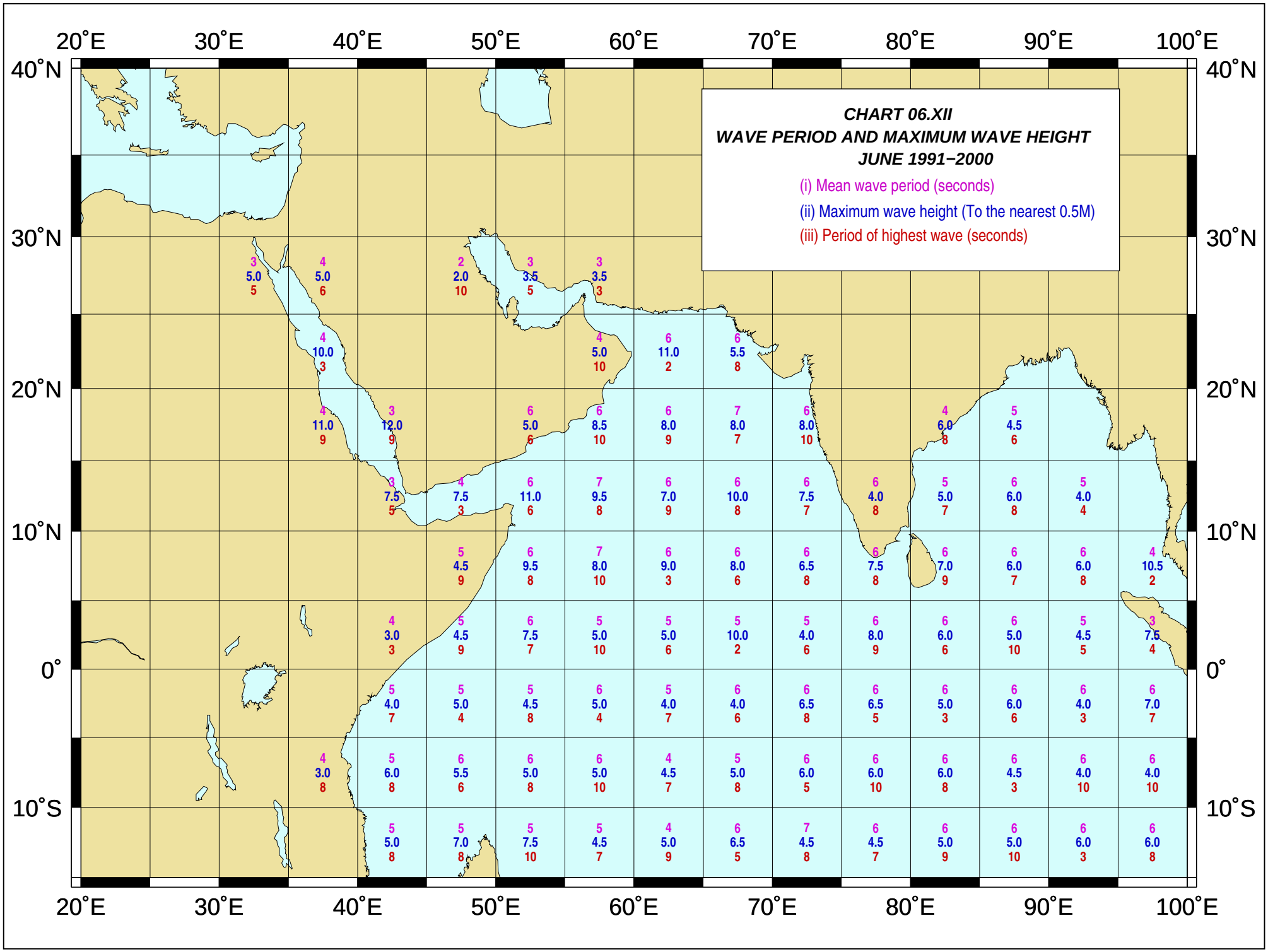


CHART 06.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
JUNE 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
3 5.0 5
4 5.0 6
2 2.0 10
3 3.5 5
3 3.5 3
4 10.0 3
4 5.0 10
6 11.0 2
6 5.5 8
4 11.0 9
3 12.0 9
6 5.0 6
6 8.5 10
6 8.0 9
7 8.0 7
6 8.0 10
4 6.0 8
5 4.5 6
3 7.5 5
4 7.5 3
6 11.0 6
7 9.5 8
6 7.0 9
6 10.0 8
6 7.5 7
6 4.0 8
5 5.0 7
6 6.0 8
5 4.0 4
5 4.5 9
6 9.5 8
7 8.0 10
6 9.0 3
6 8.0 6
6 6.5 8
6 7.5 8
6 7.0 9
6 6.0 7
6 6.0 8
4 10.5 2
4 3.0 3
5 4.5 9
6 7.5 7
5 5.0 10
5 5.0 6
5 10.0 2
5 4.0 6
6 8.0 9
6 6.0 6
6 5.0 10
5 4.5 5
3 7.5 4
5 4.0 7
5 5.0 4
5 4.5 8
6 5.0 4
5 4.0 7
6 4.0 6
6 6.5 8
6 6.5 5
6 5.0 3
6 6.0 6
6 4.0 3
6 7.0 7
4 3.0 8
5 6.0 8
6 5.5 6
6 5.0 8
6 5.0 10
4 4.5 7
5 5.0 8
6 6.0 5
6 6.0 10
6 6.0 8
6 4.5 3
6 4.0 10
6 4.0 10
5 5.0 8
5 7.0 8
5 7.5 10
5 4.5 7
4 5.0 9
6 6.5 5
7 4.5 8
6 4.5 7
6 5.0 9
6 5.0 10
6 6.0 3
6 6.0 8

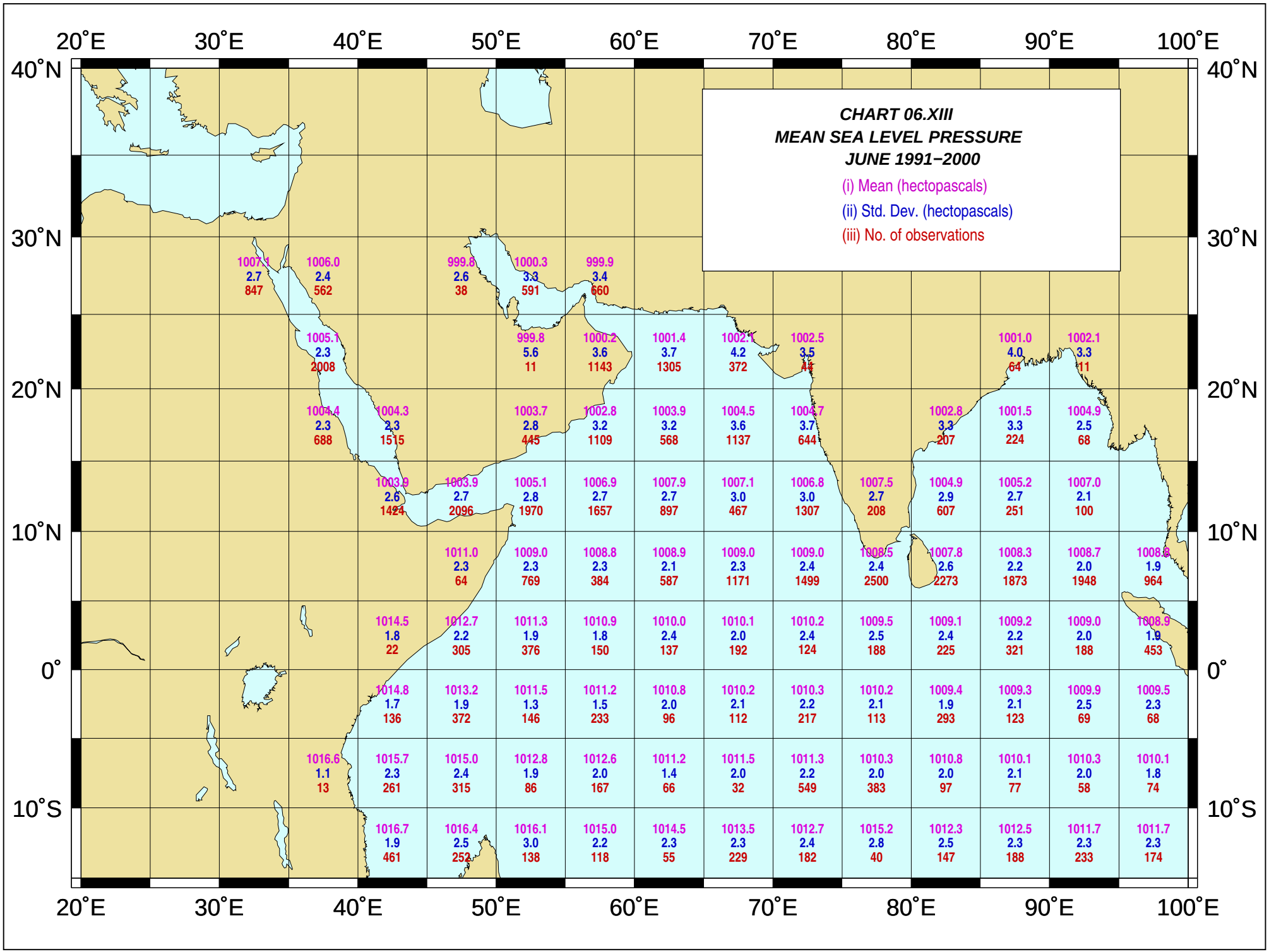


CHART 06.XIII
MEAN SEA LEVEL PRESSURE
JUNE 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1007.1 2.7 847
1006.0 2.4 562
999.8 2.6 38
1000.3 3.3 591
999.9 3.4 660
1005.1 2.3 2008
999.8 5.6 11
1000.2 3.6 1143
1001.4 3.7 1305
1002.1 4.2 372
1002.5 3.5 44
1001.0 4.0 64
1002.1 3.3 11
1004.4 2.3 688
1004.3 2.3 1515
1003.7 2.8 445
1002.8 3.2 1109
1003.9 3.2 568
1004.5 3.6 1137
1004.7 3.7 644
1002.8 3.3 207
1001.5 3.3 224
1004.9 2.5 68
1003.9 2.6 1424
1003.9 2.7 2096
1005.1 2.8 1970
1006.9 2.7 1657
1007.9 2.7 897
1007.1 3.0 467
1006.8 3.0 1307
1007.5 2.7 208
1004.9 2.9 607
1005.2 2.7 251
1007.0 2.1 100
1011.0 2.3 64
1009.0 2.3 769
1008.8 2.3 384
1008.9 2.1 587
1009.0 2.3 1171
1009.0 2.4 1499
1008.5 2.4 2500
1007.8 2.6 2273
1008.3 2.2 1873
1008.7 2.0 1948
1008.8 1.9 964
1014.5 1.8 22
1012.7 2.2 305
1011.3 1.9 376
1010.9 1.8 150
1010.0 2.4 137
1010.1 2.0 192
1010.2 2.4 124
1009.5 2.5 188
1009.1 2.4 225
1009.2 2.2 321
1009.0 2.0 188
1008.9 1.9 453
1014.8 1.7 136
1013.2 1.9 372
1011.5 1.3 146
1011.2 1.5 233
1010.8 2.0 96
1010.2 2.1 112
1010.3 2.2 217
1010.2 2.1 113
1009.4 1.9 293
1009.3 2.1 123
1009.9 2.5 69
1009.5 2.3 68
1016.6 1.1 13
1015.7 2.3 261
1015.0 2.4 315
1012.8 1.9 86
1012.6 2.0 167
1011.2 1.4 66
1011.5 2.0 32
1011.3 2.2 549
1010.3 2.0 383
1010.8 2.0 97
1010.1 2.1 77
1010.3 2.0 58
1010.1 1.8 74
1016.7 1.9 461
1016.4 2.5 252
1016.1 3.0 138
1015.0 2.2 118
1014.5 2.3 55
1013.5 2.3 229
1012.7 2.4 182
1015.2 2.8 40
1012.3 2.5 147
1012.5 2.3 188
1011.7 2.3 233
1011.7 2.3 174

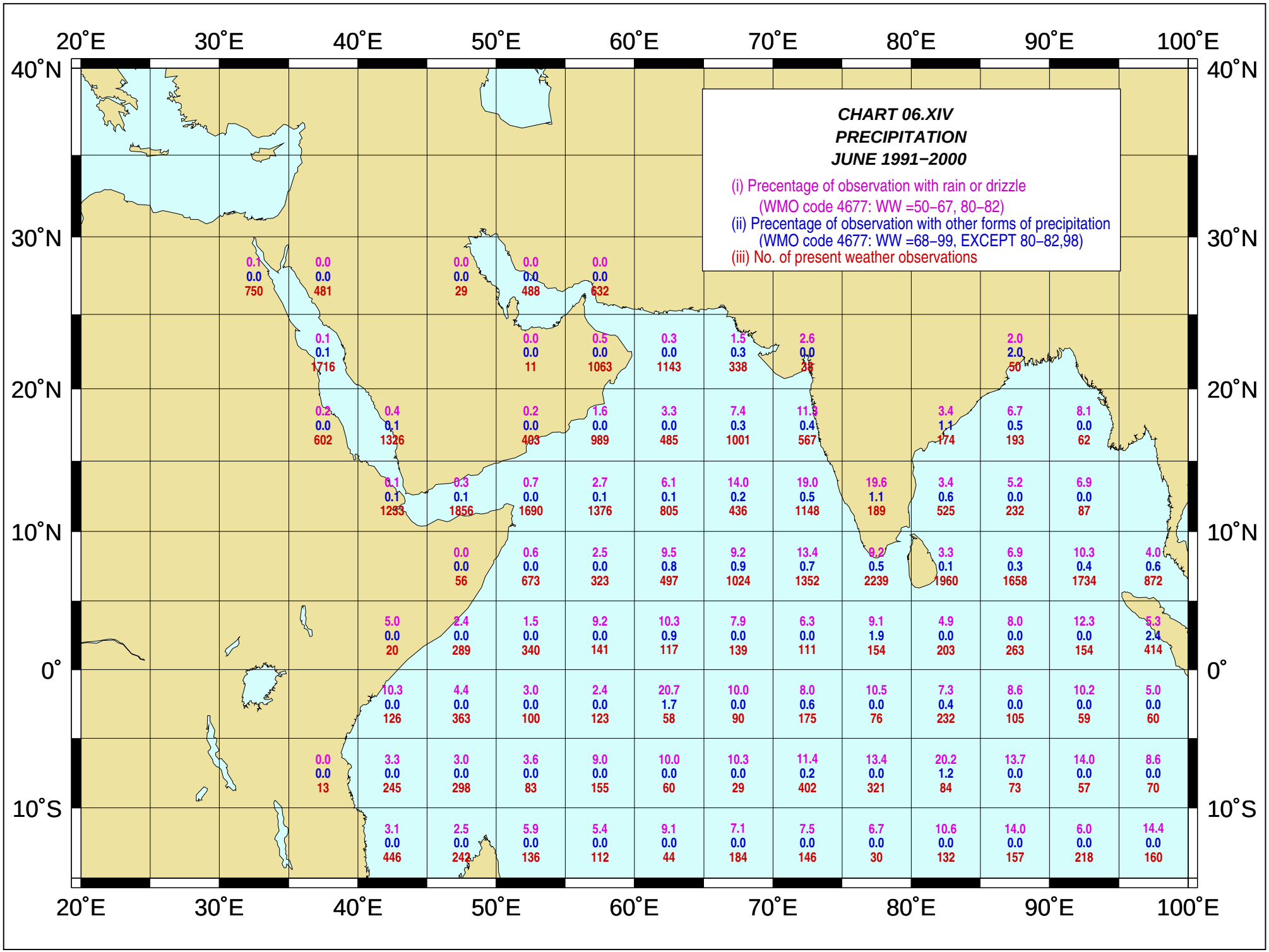


CHART 06.XIV
PRECIPITATION
JUNE 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 0.0 750
0.0 0.0 481
0.0 0.0 29
0.0 0.0 488
0.0 0.0 632
0.1 0.1 1716
0.0 0.0 11
0.5 0.0 1063
0.3 0.0 1143
1.5 0.3 338
2.6 0.0 36
2.0 2.0 50
0.2 0.0 602
0.4 0.1 1326
0.2 0.0 403
1.6 0.0 989
3.3 0.0 485
7.4 0.3 1001
11.9 0.4 567
3.4 1.1 174
6.7 0.5 193
8.1 0.0 62
0.1 0.1 1293
0.3 0.1 1856
0.7 0.0 1690
2.7 0.1 1376
6.1 0.1 805
14.0 0.2 436
19.0 0.5 1148
19.6 1.1 189
3.4 0.6 525
5.2 0.0 232
6.9 0.0 87
0.0 0.0 56
0.6 0.0 673
2.5 0.0 323
9.5 0.8 497
9.2 0.9 1024
13.4 0.7 1352
9.2 0.5 2239
3.3 0.1 1960
6.9 0.3 1658
10.3 0.4 1734
4.0 0.6 872
5.0 0.0 20
2.4 0.0 289
1.5 0.0 340
9.2 0.0 141
10.3 0.9 117
7.9 0.0 139
6.3 0.0 111
9.1 1.9 154
4.9 0.0 203
8.0 0.0 263
12.3 0.0 154
5.3 2.4 414
10.3 0.0 126
4.4 0.0 363
3.0 0.0 100
2.4 0.0 123
20.7 1.7 58
10.0 0.0 90
8.0 0.6 175
10.5 0.0 76
7.3 0.4 232
8.6 0.0 105
10.2 0.0 59
5.0 0.0 60
0.0 0.0 13
3.3 0.0 245
3.0 0.0 298
3.6 0.0 83
9.0 0.0 155
10.0 0.0 60
10.3 0.0 29
11.4 0.2 402
13.4 0.0 321
20.2 1.2 84
13.7 0.0 73
14.0 0.0 57
8.6 0.0 70
3.1 0.0 446
2.5 0.0 242
5.9 0.0 136
5.4 0.0 112
9.1 0.0 44
7.1 0.0 184
7.5 0.0 146
6.7 0.0 30
10.6 0.0 132
14.0 0.0 157
6.0 0.0 218
14.4 0.0 160

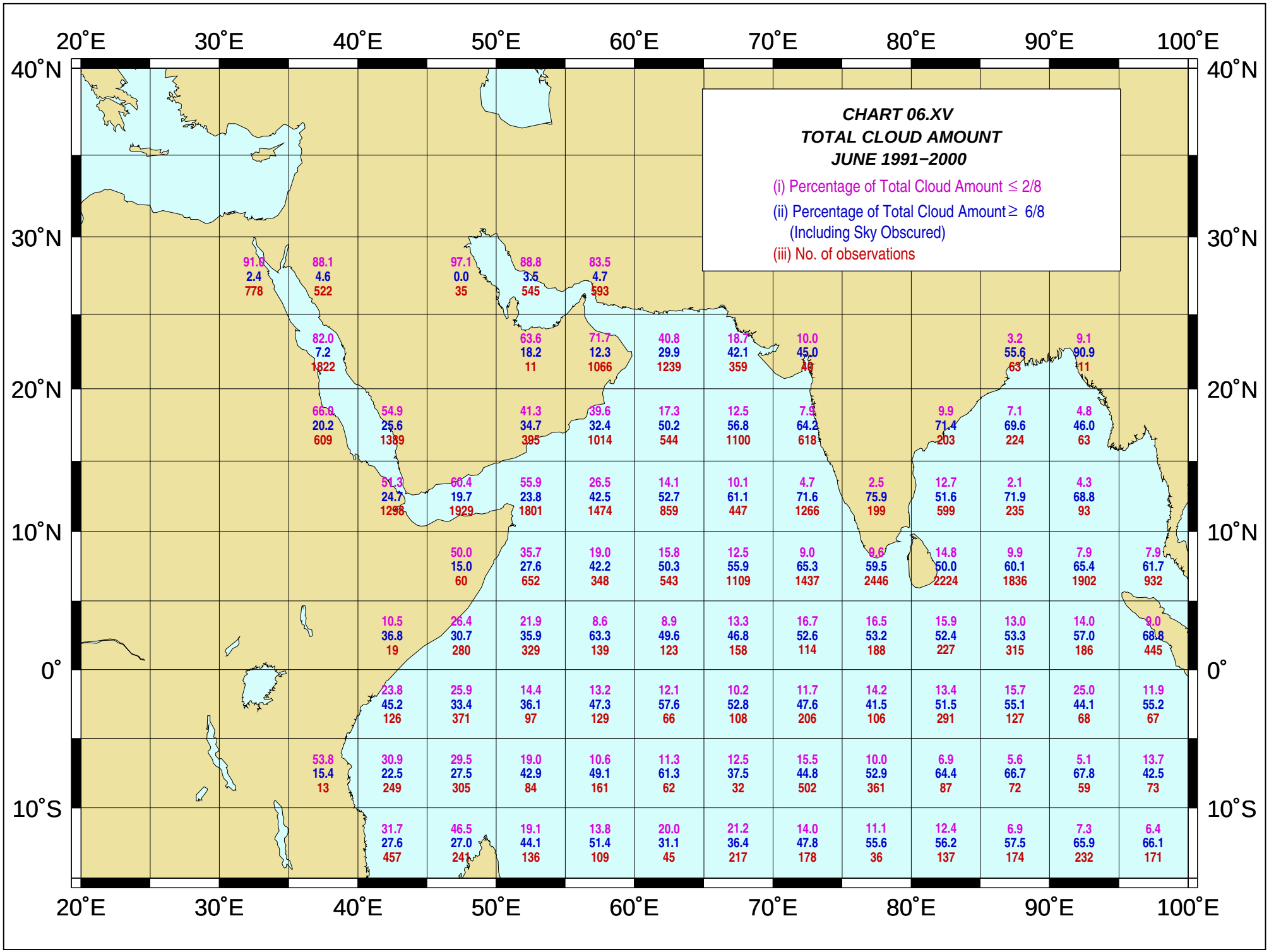


CHART 06.XV
TOTAL CLOUD AMOUNT
JUNE 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
91.8 2.4 778
88.1 4.6 522
97.1 0.0 35
88.8 3.5 545
83.5 4.7 593
82.0 7.2 1822
63.6 18.2 11
71.7 12.3 1066
40.8 29.9 1239
18.7 42.1 359
10.0 45.0 46
3.2 55.6 63
9.1 90.9 11
66.9 20.2 609
54.9 25.6 1389
41.3 34.7 395
39.6 32.4 1014
17.3 50.2 544
12.5 56.8 1100
7.9 64.2 618
9.9 71.4 203
7.1 69.6 224
4.8 46.0 63
51.3 24.7 1298
60.4 19.7 1929
55.9 23.8 1801
26.5 42.5 1474
14.1 52.7 859
10.1 61.1 447
4.7 71.6 1266
2.5 75.9 199
12.7 51.6 599
2.1 71.9 235
4.3 68.8 93
50.0 15.0 60
35.7 27.6 652
19.0 42.2 348
15.8 50.3 543
12.5 55.9 1109
9.0 65.3 1437
9.6 59.5 2446
14.8 50.0 2224
9.9 60.1 1836
7.9 65.4 1902
7.9 61.7 932
10.5 36.8 19
26.4 30.7 280
21.9 35.9 329
8.6 63.3 139
8.9 49.6 123
13.3 46.8 158
16.7 52.6 114
16.5 53.2 188
15.9 52.4 227
13.0 53.3 315
14.0 57.0 186
9.0 68.8 445
23.8 45.2 126
25.9 33.4 371
14.4 36.1 97
13.2 47.3 129
12.1 57.6 66
10.2 52.8 108
11.7 47.6 206
14.2 41.5 106
13.4 51.5 291
15.7 55.1 127
25.0 44.1 68
11.9 55.2 67
53.8 15.4 13
30.9 22.5 249
29.5 27.5 305
19.0 42.9 84
10.6 49.1 161
11.3 61.3 62
12.5 37.5 32
15.5 44.8 502
10.0 52.9 361
6.9 64.4 87
5.6 66.7 72
5.1 67.8 59
13.7 42.5 73
31.7 27.6 457
46.5 27.0 241
19.1 44.1 136
13.8 51.4 109
20.0 31.1 45
21.2 36.4 217
14.0 47.8 178
11.1 55.6 36
12.4 56.2 137
6.9 57.5 174
7.3 65.9 232
6.4 66.1 171

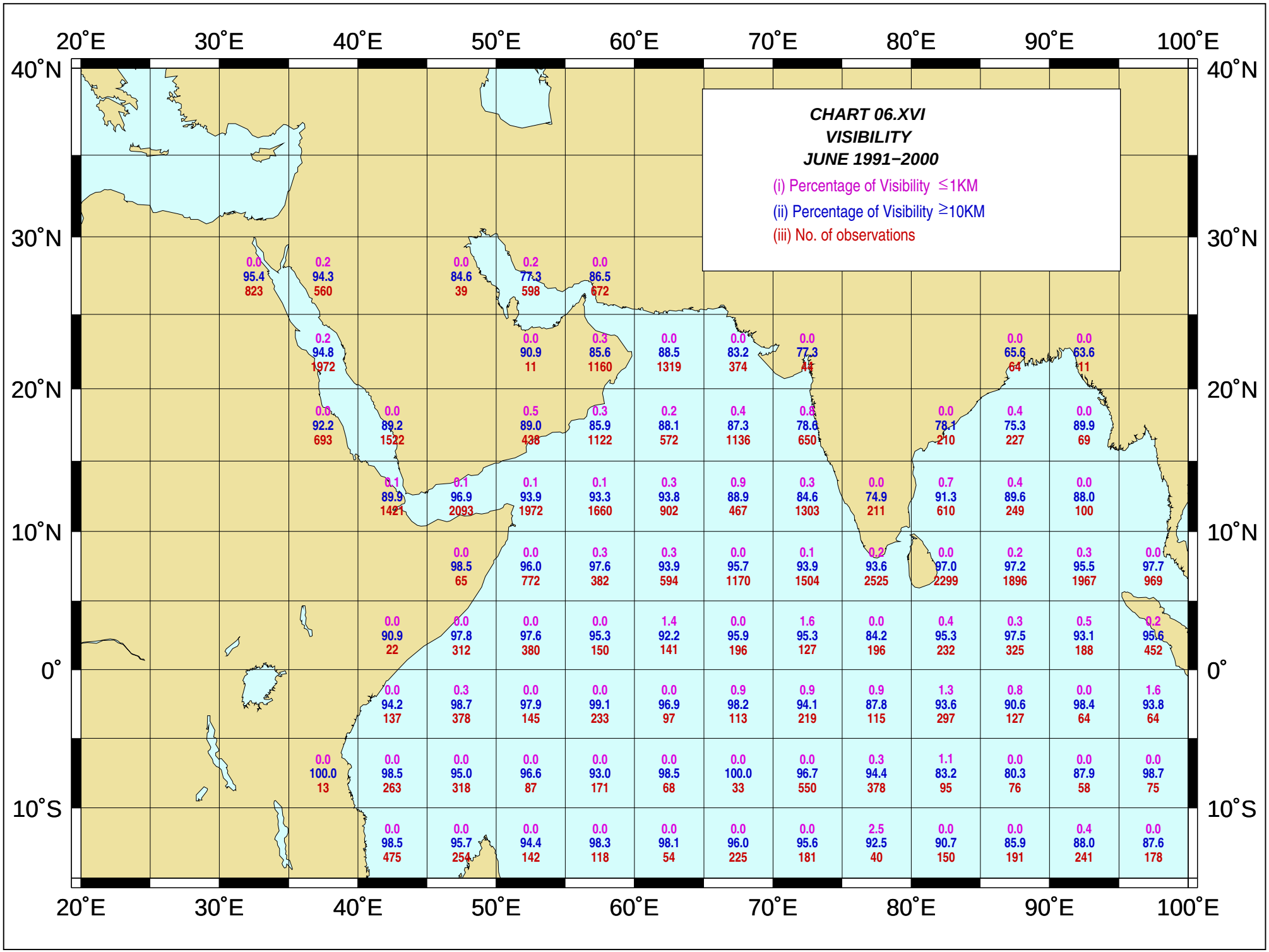


CHART 06.XVI
VISIBILITY
JUNE 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.0 95.4 823
0.2 94.3 560
0.0 84.6 39
0.2 77.3 598
0.0 86.5 672
0.2 94.8 1972
0.0 90.9 11
0.3 85.6 1160
0.0 88.5 1319
0.0 83.2 374
0.0 77.3 44
0.0 65.6 64
0.0 63.6 11
0.0 92.2 693
0.0 89.2 1522
0.5 89.0 438
0.3 85.9 1122
0.2 88.1 572
0.4 87.3 1136
0.0 78.6 650
0.0 78.1 210
0.4 75.3 227
0.0 89.9 69
0.1 89.9 1421
0.1 96.9 2093
0.1 93.9 1972
0.1 93.3 1660
0.3 93.8 902
0.9 88.9 467
0.3 84.6 1303
0.0 74.9 211
0.7 91.3 610
0.4 89.6 249
0.0 88.0 100
0.0 98.5 65
0.0 96.0 772
0.3 97.6 382
0.3 93.9 594
0.0 95.7 1170
0.1 93.9 1504
0.2 93.6 2525
0.0 97.0 2299
0.2 97.2 1896
0.3 95.5 1967
0.0 97.7 969
0.0 90.9 22
0.0 97.8 312
0.0 97.6 380
0.0 95.3 150
1.4 92.2 141
0.0 95.9 196
1.6 95.3 127
0.0 84.2 196
0.4 95.3 232
0.3 97.5 325
0.5 93.1 188
0.2 95.6 452
0.0 94.2 137
0.3 98.7 378
0.0 97.9 145
0.0 99.1 233
0.0 96.9 97
0.9 98.2 113
0.9 94.1 219
0.9 87.8 115
1.3 93.6 297
0.8 90.6 127
0.0 98.4 64
1.6 93.8 64
0.0 100.0 13
0.0 98.5 263
0.0 95.0 318
0.0 96.6 87
0.0 93.0 171
0.0 98.5 68
0.0 100.0 33
0.0 96.7 550
0.3 94.4 378
1.1 83.2 95
0.0 80.3 76
0.0 87.9 58
0.0 98.7 75
0.0 98.5 475
0.0 95.7 254
0.0 94.4 142
0.0 98.3 118
0.0 98.1 54
0.0 96.0 225
0.0 95.6 181
2.5 92.5 40
0.0 90.7 150
0.0 85.9 191
0.4 88.0 241
0.0 87.6 178

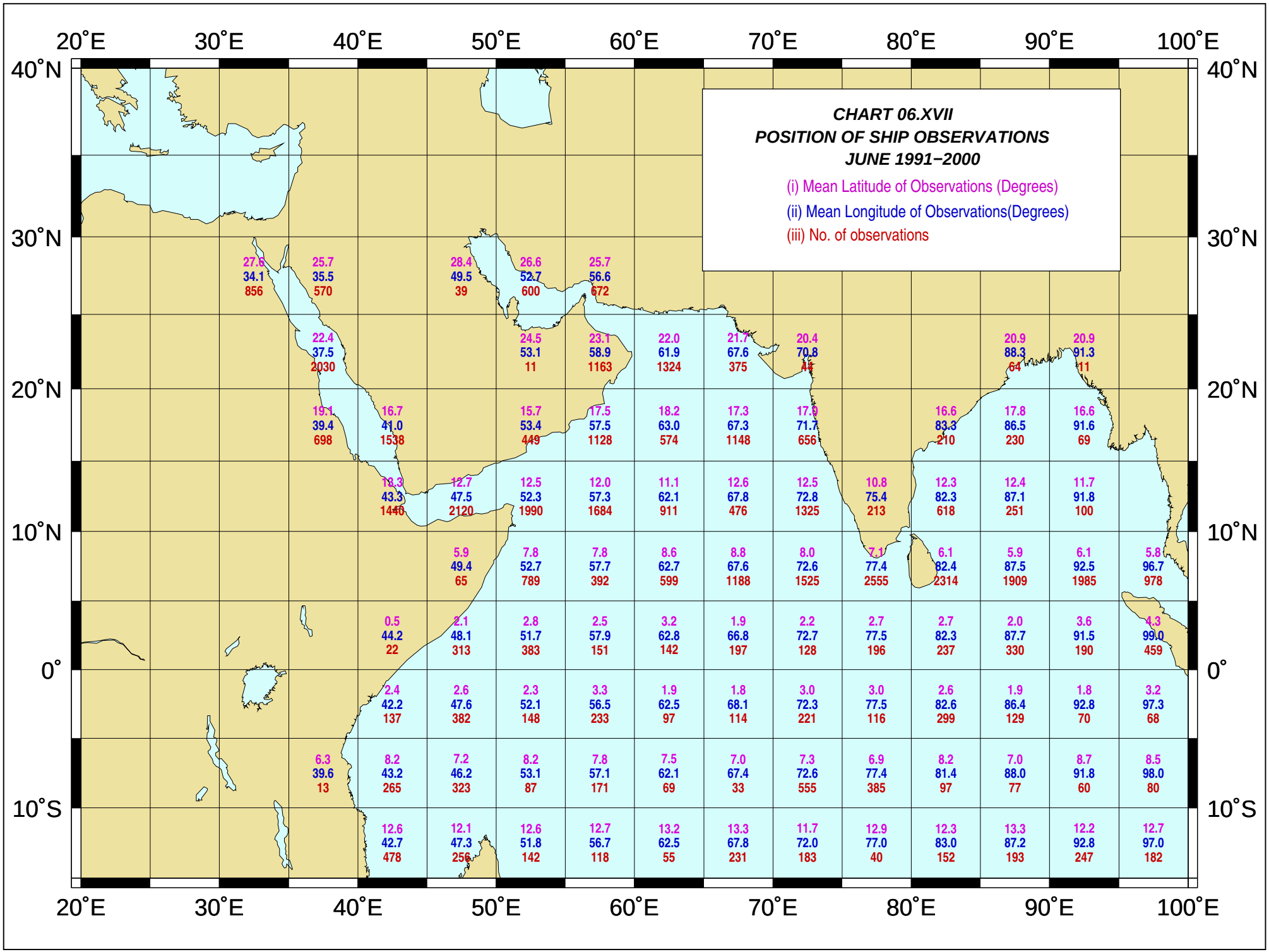


CHART 06.XVII
POSITION OF SHIP OBSERVATIONS
JUNE 1991−2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.6 34.1 856
25.7 35.5 570
28.4 49.5 39
26.6 52.7 600
25.7 56.6 672
22.4 37.5 2030
24.5 53.1 11
23.1 58.9 1163
22.0 61.9 1324
21.7 67.6 375
20.4 70.8 44
20.9 88.3 64
20.9 91.3 11
19.1 39.4 698
16.7 41.0 1538
15.7 53.4 449
17.5 57.5 1128
18.2 63.0 574
17.3 67.3 1148
17.9 71.7 656
16.6 83.3 210
17.8 86.5 230
16.6 91.6 69
10.3 43.3 1446
12.7 47.5 2120
12.5 52.3 1990
12.0 57.3 1684
11.1 62.1 911
12.6 67.8 476
12.5 72.8 1325
10.8 75.4 213
12.3 82.3 618
12.4 87.1 251
11.7 91.8 100
5.9 49.4 65
7.8 52.7 789
7.8 57.7 392
8.6 62.7 599
8.8 67.6 1188
8.0 72.6 1525
7.1 77.4 2555
6.1 82.4 2314
5.9 87.5 1909
6.1 92.5 1985
5.8 96.7 978
0.5 44.2 22
2.1 48.1 313
2.8 51.7 383
2.5 57.9 151
3.2 62.8 142
1.9 66.8 197
2.2 72.7 128
2.7 77.5 196
2.7 82.3 237
2.0 87.7 330
3.6 91.5 190
4.3 99.0 459
2.4 42.2 137
2.6 47.6 382
2.3 52.1 148
3.3 56.5 233
1.9 62.5 97
1.8 68.1 114
3.0 72.3 221
3.0 77.5 116
2.6 82.6 299
1.9 86.4 129
1.8 92.8 70
3.2 97.3 68
6.3 39.6 13
8.2 43.2 265
7.2 46.2 323
8.2 53.1 87
7.8 57.1 171
7.5 62.1 69
7.0 67.4 33
7.3 72.6 555
6.9 77.4 385
8.2 81.4 97
7.0 88.0 77
8.7 91.8 60
8.5 98.0 80
12.6 42.7 478
12.1 47.3 256
12.6 51.8 142
12.7 56.7 118
13.2 62.5 55
13.3 67.8 231
11.7 72.0 183
12.9 77.0 40
12.3 83.0 152
13.3 87.2 193
12.2 92.8 247
12.7 97.0 182

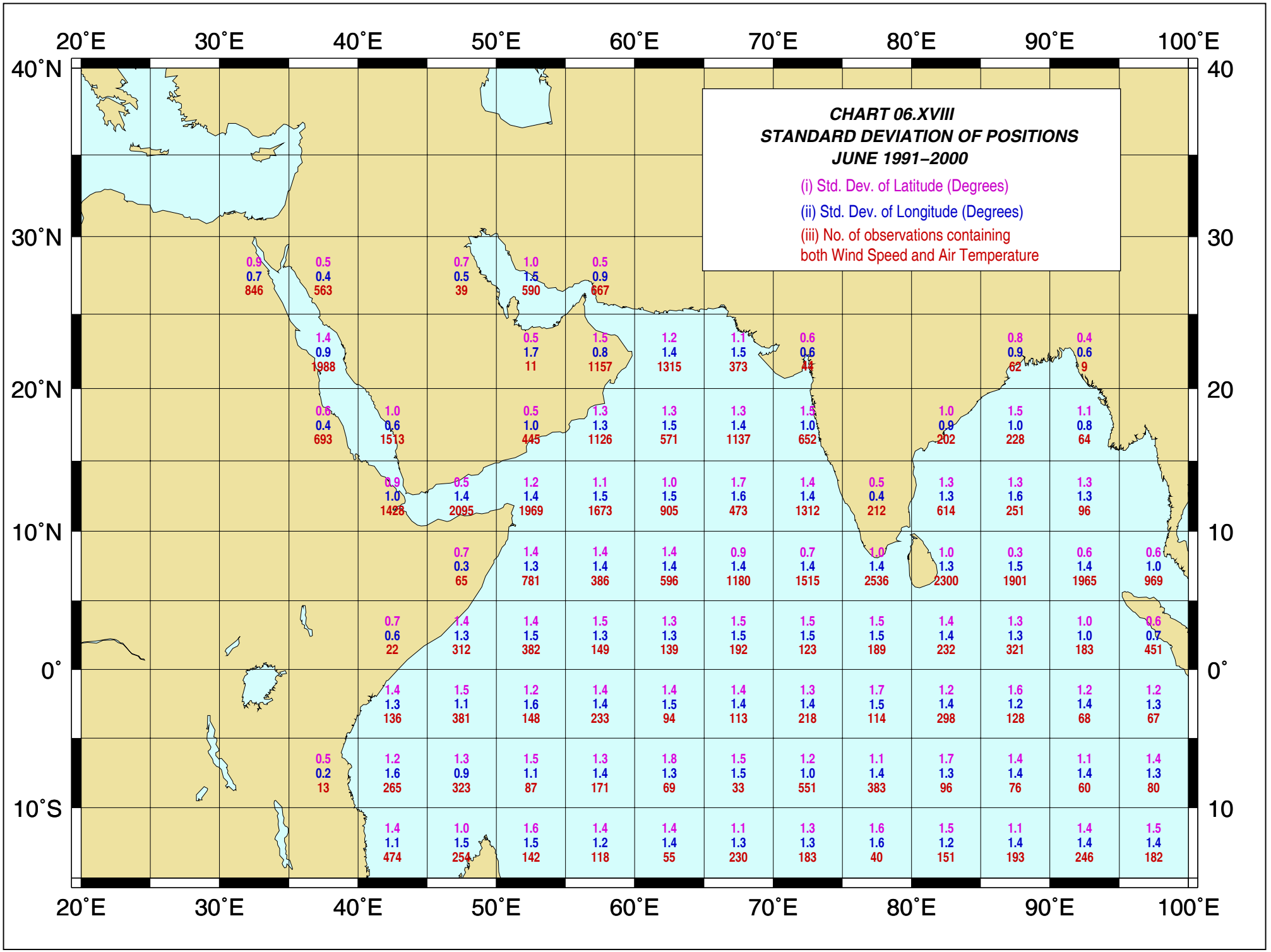
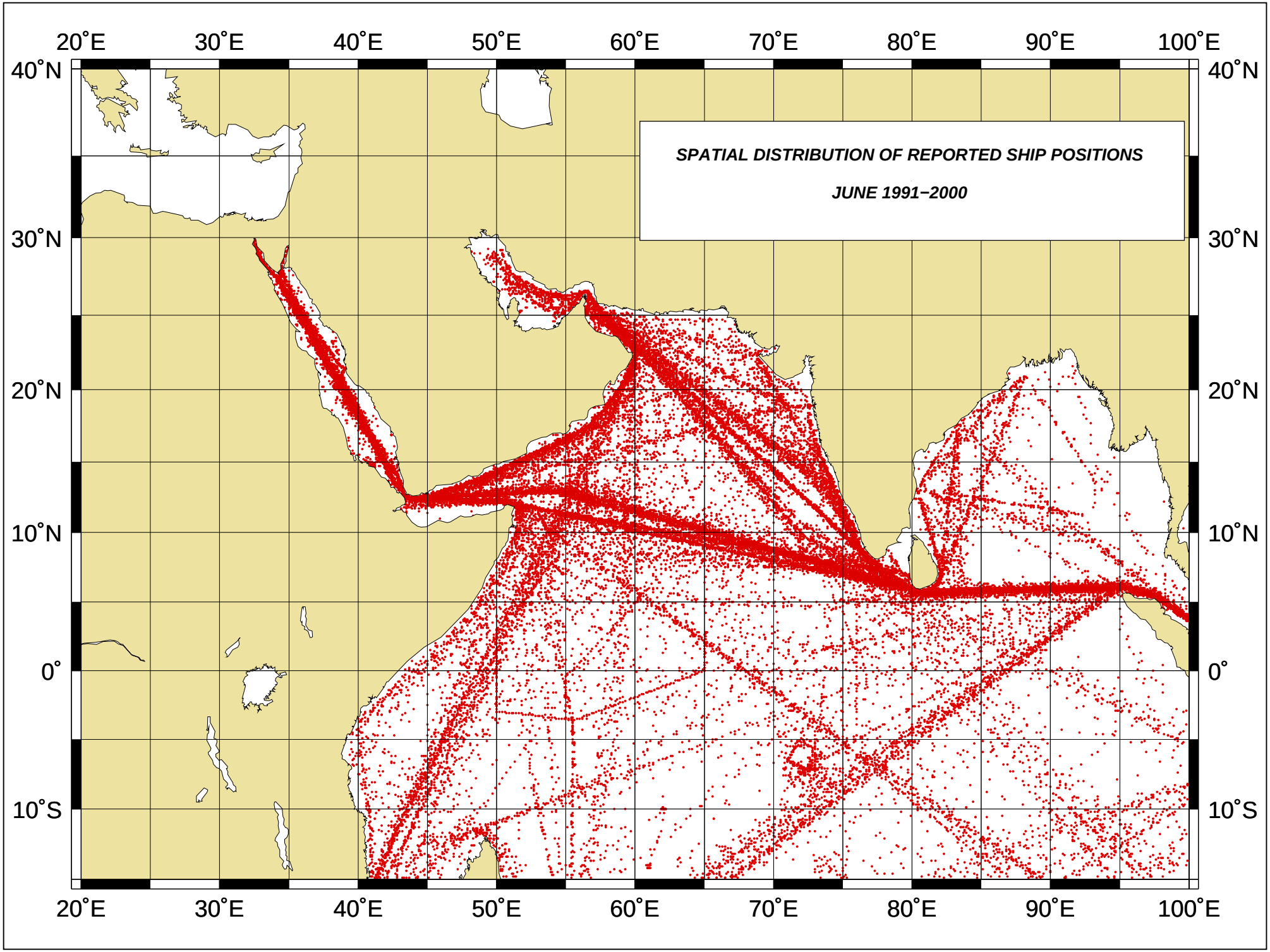
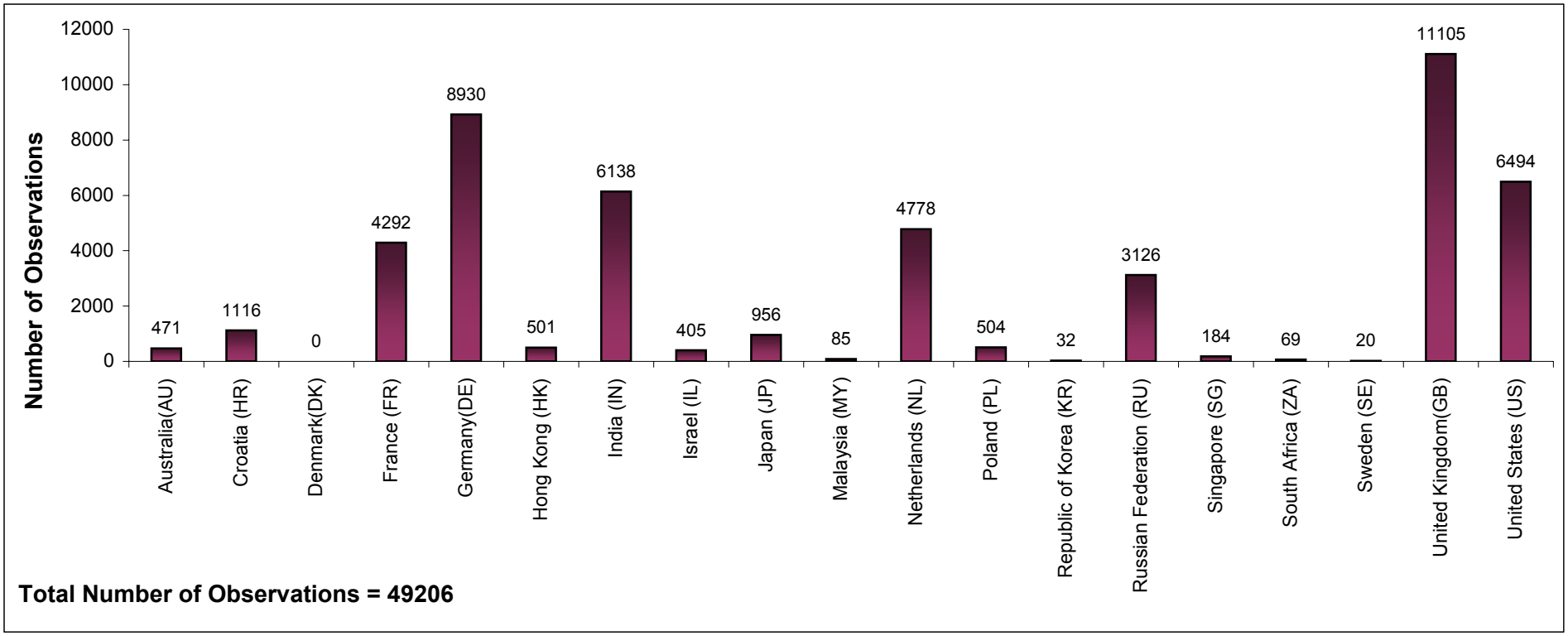


CHART 06.XVIII
STANDARD DEVIATION OF POSITIONS
JUNE 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.9 0.7 846
0.5 0.4 563
0.7 0.5 39
1.0 1.5 590
0.5 0.9 667
1.4 0.9 1988
0.5 1.7 11
1.5 0.8 1157
1.2 1.4 1315
1.1 1.5 373
0.6 0.6 44
0.8 0.9 62
0.4 0.6 9
0.6 0.4 693
1.0 0.6 1513
0.5 1.0 445
1.3 1.3 1126
1.3 1.5 571
1.3 1.4 1137
1.5 1.0 652
1.0 0.9 202
1.5 1.0 228
1.1 0.8 64
0.9 1.0 1428
0.5 1.4 2095
1.2 1.4 1969
1.1 1.5 1673
1.0 1.5 905
1.7 1.6 473
1.4 1.4 1312
0.5 0.4 212
1.3 1.3 614
1.3 1.6 251
1.3 1.3 96
0.7 0.3 65
1.4 1.3 781
1.4 1.4 386
1.4 1.4 596
0.9 1.4 1180
0.7 1.4 1515
1.0 1.4 2536
1.0 1.3 2300
0.3 1.5 1901
0.6 1.4 1965
0.6 1.0 969
0.7 0.6 22
1.4 1.3 312
1.4 1.5 382
1.5 1.3 149
1.3 1.3 139
1.5 1.5 192
1.5 1.5 123
1.5 1.5 189
1.4 1.4 232
1.3 1.3 321
1.0 1.0 183
0.6 0.7 451
1.4 1.3 136
1.5 1.1 381
1.2 1.6 148
1.4 1.4 233
1.4 1.5 94
1.4 1.4 113
1.3 1.4 218
1.7 1.5 114
1.2 1.4 298
1.6 1.2 128
1.2 1.4 68
1.2 1.3 67
0.5 0.2 13
1.2 1.6 265
1.3 0.9 323
1.5 1.1 87
1.3 1.4 171
1.8 1.3 69
1.5 1.5 33
1.2 1.0 551
1.1 1.4 383
1.7 1.3 96
1.4 1.4 76
1.1 1.4 60
1.4 1.3 80
1.4 1.1 474
1.0 1.5 254
1.6 1.5 142
1.4 1.2 118
1.4 1.4 55
1.1 1.3 230
1.3 1.3 183
1.6 1.6 40
1.5 1.2 151
1.1 1.4 193
1.4 1.4 246
1.5 1.4 182


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
JUNE 1991–2000
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S

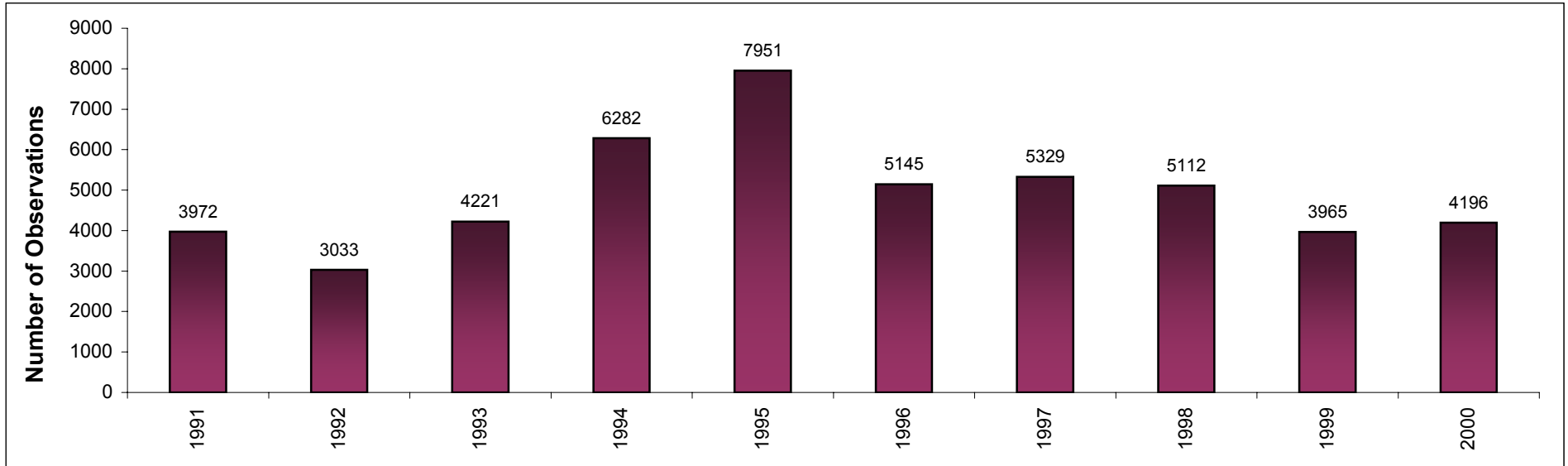
JUNE : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 49206

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations =49206

Marine Climatological Summary Charts 1991-2000

CHARTS OF JULY 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

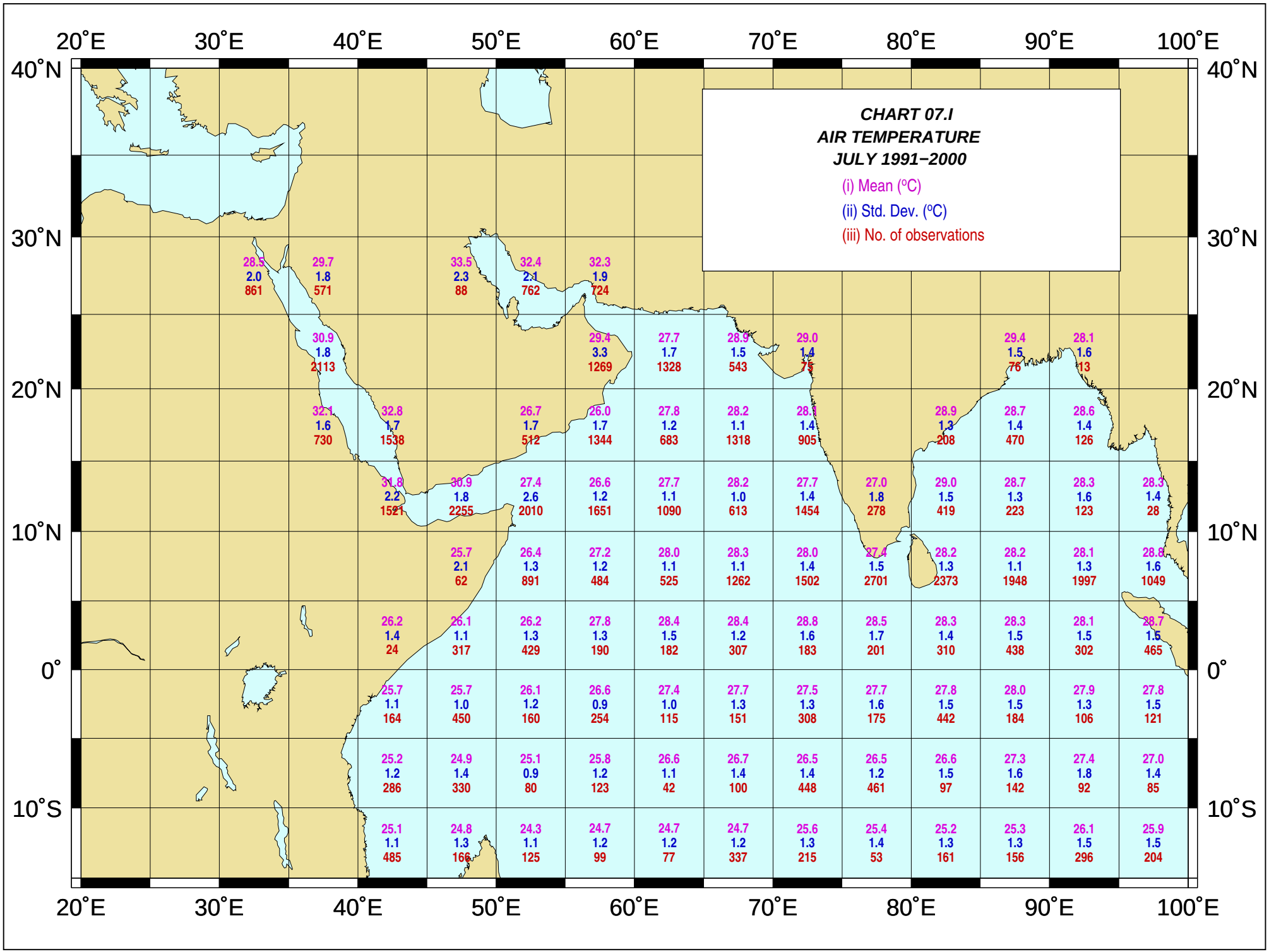


CHART 07.I
AIR TEMPERATURE
JULY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
28.5 2.0 861
29.7 1.8 571
33.5 2.3 88
32.4 2.1 762
32.3 1.9 724
30.9 1.8 2113
29.4 3.3 1269
27.7 1.7 1328
28.9 1.5 543
29.0 1.4 75
29.4 1.5 76
28.1 1.6 13
32.1 1.6 730
32.8 1.7 1538
26.7 1.7 512
26.0 1.7 1344
27.8 1.2 683
28.2 1.1 1318
28.9 1.3 208
28.7 1.4 470
28.6 1.4 126
31.8 2.2 1521
30.9 1.8 2255
27.4 2.6 2010
26.6 1.2 1651
27.7 1.1 1090
28.2 1.0 613
27.7 1.4 1454
27.0 1.8 278
29.0 1.5 419
28.7 1.3 223
28.3 1.6 123
28.3 1.4 28
25.7 2.1 62
26.4 1.3 891
27.2 1.2 484
28.0 1.1 525
28.3 1.1 1262
28.0 1.4 1502
27.4 1.5 2701
28.2 1.3 2373
28.2 1.1 1948
28.1 1.3 1997
28.8 1.6 1049
26.2 1.4 24
26.1 1.1 317
26.2 1.3 429
27.8 1.3 190
28.4 1.5 182
28.4 1.2 307
28.8 1.6 183
28.5 1.7 201
28.3 1.4 310
28.3 1.5 438
28.1 1.5 302
28.7 1.5 465
25.7 1.1 164
25.7 1.0 450
26.1 1.2 160
26.6 0.9 254
27.4 1.0 115
27.7 1.3 151
27.5 1.3 308
27.7 1.6 175
27.8 1.5 442
28.0 1.5 184
27.9 1.3 106
27.8 1.5 121
25.2 1.2 286
24.9 1.4 330
25.1 0.9 80
25.8 1.2 123
26.6 1.1 42
26.7 1.4 100
26.5 1.4 448
26.5 1.2 461
26.6 1.5 97
27.3 1.6 142
27.4 1.8 92
27.0 1.4 85
25.1 1.1 485
24.8 1.3 166
24.3 1.1 125
24.7 1.2 99
24.7 1.2 77
24.7 1.2 337
25.6 1.3 215
25.4 1.4 53
25.2 1.3 161
25.3 1.3 156
26.1 1.5 296
25.9 1.5 204

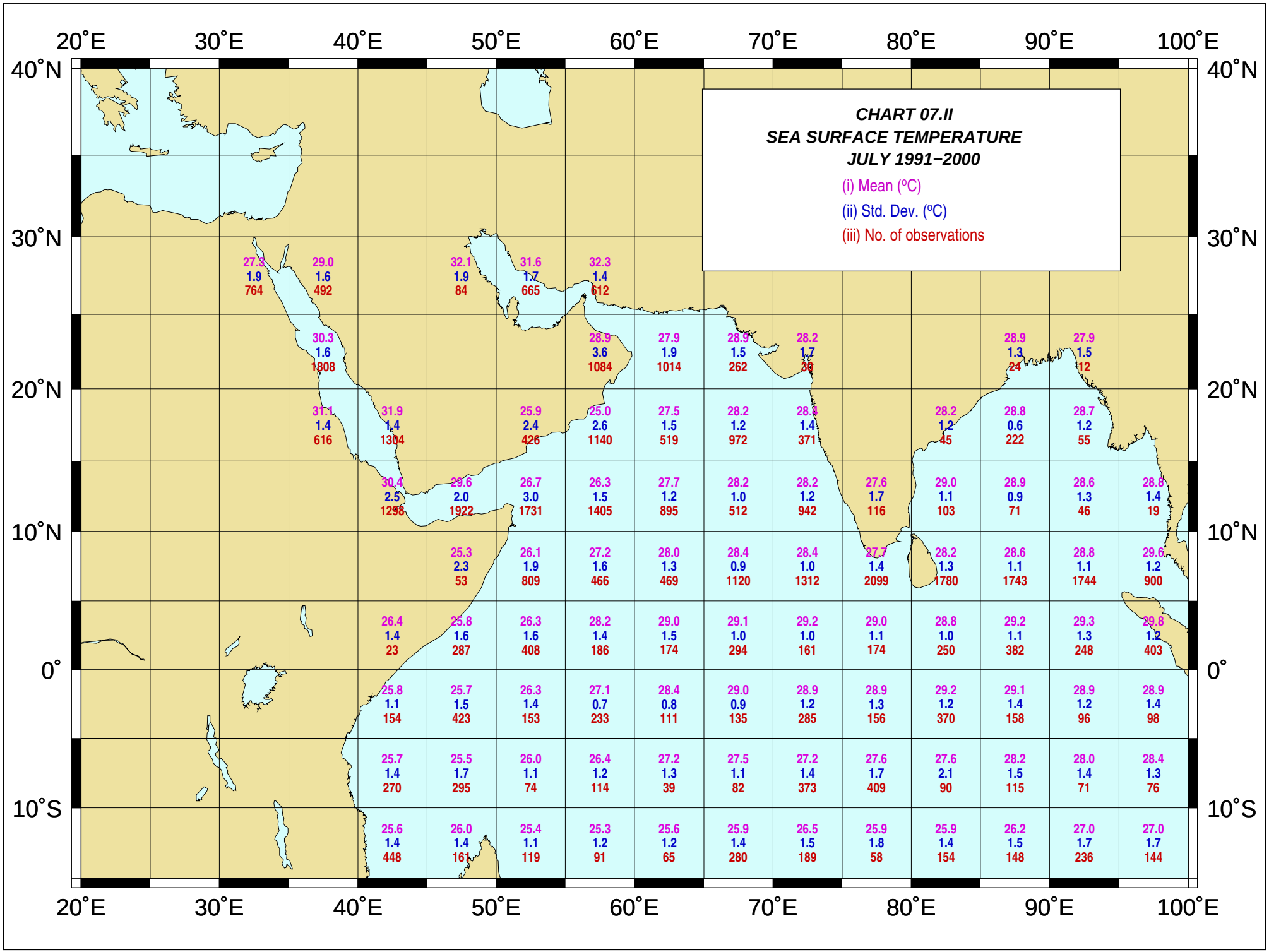


CHART 07.II
SEA SURFACE TEMPERATURE
JULY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.3 1.9 764
29.0 1.6 492
32.1 1.9 84
31.6 1.7 665
32.3 1.4 612
30.3 1.6 1808
28.9 3.6 1084
27.9 1.9 1014
28.9 1.5 262
28.2 1.7 30
28.9 1.3 24
27.9 1.5 12
31.1 1.4 616
31.9 1.4 1304
25.9 2.4 426
25.0 2.6 1140
27.5 1.5 519
28.2 1.2 972
28.2 1.4 371
28.2 1.2 45
28.8 0.6 222
28.7 1.2 55
30.4 2.5 1298
29.6 2.0 1922
26.7 3.0 1731
26.3 1.5 1405
27.7 1.2 895
28.2 1.0 512
28.2 1.2 942
27.6 1.7 116
29.0 1.1 103
28.9 0.9 71
28.6 1.3 46
28.8 1.4 19
25.3 2.3 53
26.1 1.9 809
27.2 1.6 466
28.0 1.3 469
28.4 0.9 1120
28.4 1.0 1312
27.7 1.4 2099
28.2 1.3 1780
28.6 1.1 1743
28.8 1.1 1744
29.6 1.2 900
26.4 1.4 23
25.8 1.6 287
26.3 1.6 408
28.2 1.4 186
29.0 1.5 174
29.1 1.0 294
29.2 1.0 161
29.0 1.1 174
28.8 1.0 250
29.2 1.1 382
29.3 1.3 248
29.8 1.2 403
25.8 1.1 154
25.7 1.5 423
26.3 1.4 153
27.1 0.7 233
28.4 0.8 111
29.0 0.9 135
28.9 1.2 285
28.9 1.3 156
29.2 1.2 370
29.1 1.4 158
28.9 1.2 96
28.9 1.4 98
25.7 1.4 270
25.5 1.7 295
26.0 1.1 74
26.4 1.2 114
27.2 1.3 39
27.5 1.1 82
27.2 1.4 373
27.6 1.7 409
27.6 2.1 90
28.2 1.5 115
28.0 1.4 71
28.4 1.3 76
25.6 1.4 448
26.0 1.4 161
25.4 1.1 119
25.3 1.2 91
25.6 1.2 65
25.9 1.4 280
26.5 1.5 189
25.9 1.8 58
25.9 1.4 154
26.2 1.5 148
27.0 1.7 236
27.0 1.7 144

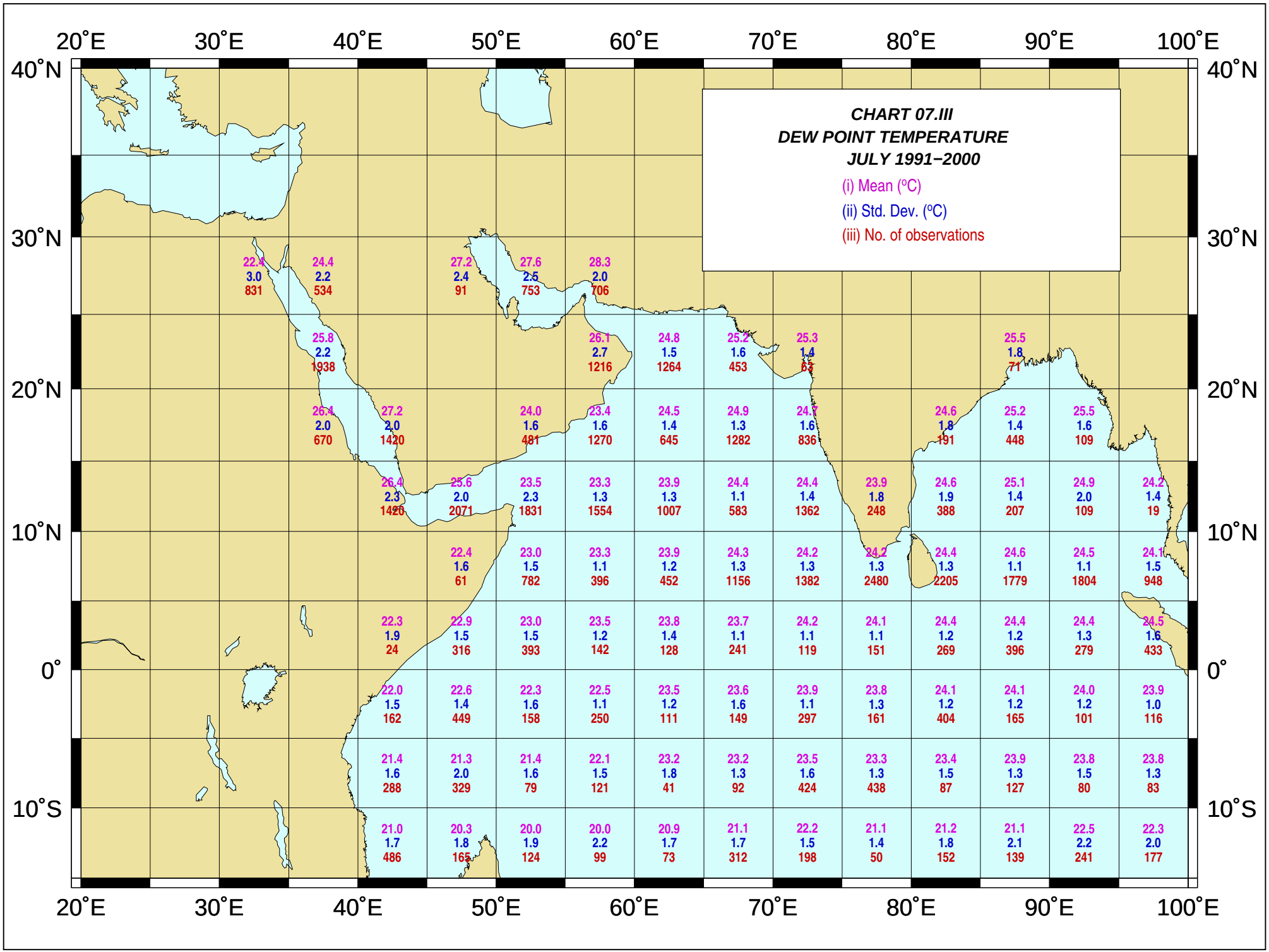


CHART 07.III
DEW POINT TEMPERATURE
JULY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
22.4 3.0 831
24.4 2.2 534
27.2 2.4 91
27.6 2.5 753
28.3 2.0 706
25.8 2.2 1938
26.1 2.7 1216
24.8 1.5 1264
25.2 1.6 453
25.3 1.4
25.5 1.8 71
26.4 2.0 670
27.2 2.0 1420
24.0 1.6 481
23.4 1.6 1270
24.5 1.4 645
24.9 1.3 1282
24.7 1.6 836
24.6 1.8 191
25.2 1.4 448
25.5 1.6 109
26.4 2.3 1426
25.6 2.0 2071
23.5 2.3 1831
23.3 1.3 1554
23.9 1.3 1007
24.4 1.1 583
24.4 1.4 1362
23.9 1.8 248
24.6 1.9 388
25.1 1.4 207
24.9 2.0 109
24.2 1.4 19
22.4 1.6 61
23.0 1.5 782
23.3 1.1 396
23.9 1.2 452
24.3 1.3 1156
24.2 1.3 1382
24.2 1.3 2480
24.4 1.3 2205
24.6 1.1 1779
24.5 1.1 1804
24.1 1.5 948
22.3 1.9 24
22.9 1.5 316
23.0 1.5 393
23.5 1.2 142
23.8 1.4 128
23.7 1.1 241
24.2 1.1 119
24.1 1.1 151
24.4 1.2 269
24.4 1.2 396
24.4 1.3 279
24.5 1.6 433
22.0 1.5 162
22.6 1.4 449
22.3 1.6 158
22.5 1.1 250
23.5 1.2 111
23.6 1.6 149
23.9 1.1 297
23.8 1.3 161
24.1 1.2 404
24.1 1.2 165
24.0 1.2 101
23.9 1.0 116
21.4 1.6 288
21.3 2.0 329
21.4 1.6 79
22.1 1.5 121
23.2 1.8 41
23.2 1.3 92
23.5 1.6 424
23.3 1.3 438
23.4 1.5 87
23.9 1.3 127
23.8 1.5 80
23.8 1.3 83
21.0 1.7 486
20.3 1.8 165
20.0 1.9 124
20.0 2.2 99
20.9 1.7 73
21.1 1.7 312
22.2 1.5 198
21.1 1.4 50
21.2 1.8 152
21.1 2.1 139
22.5 2.2 241
22.3 2.0 177

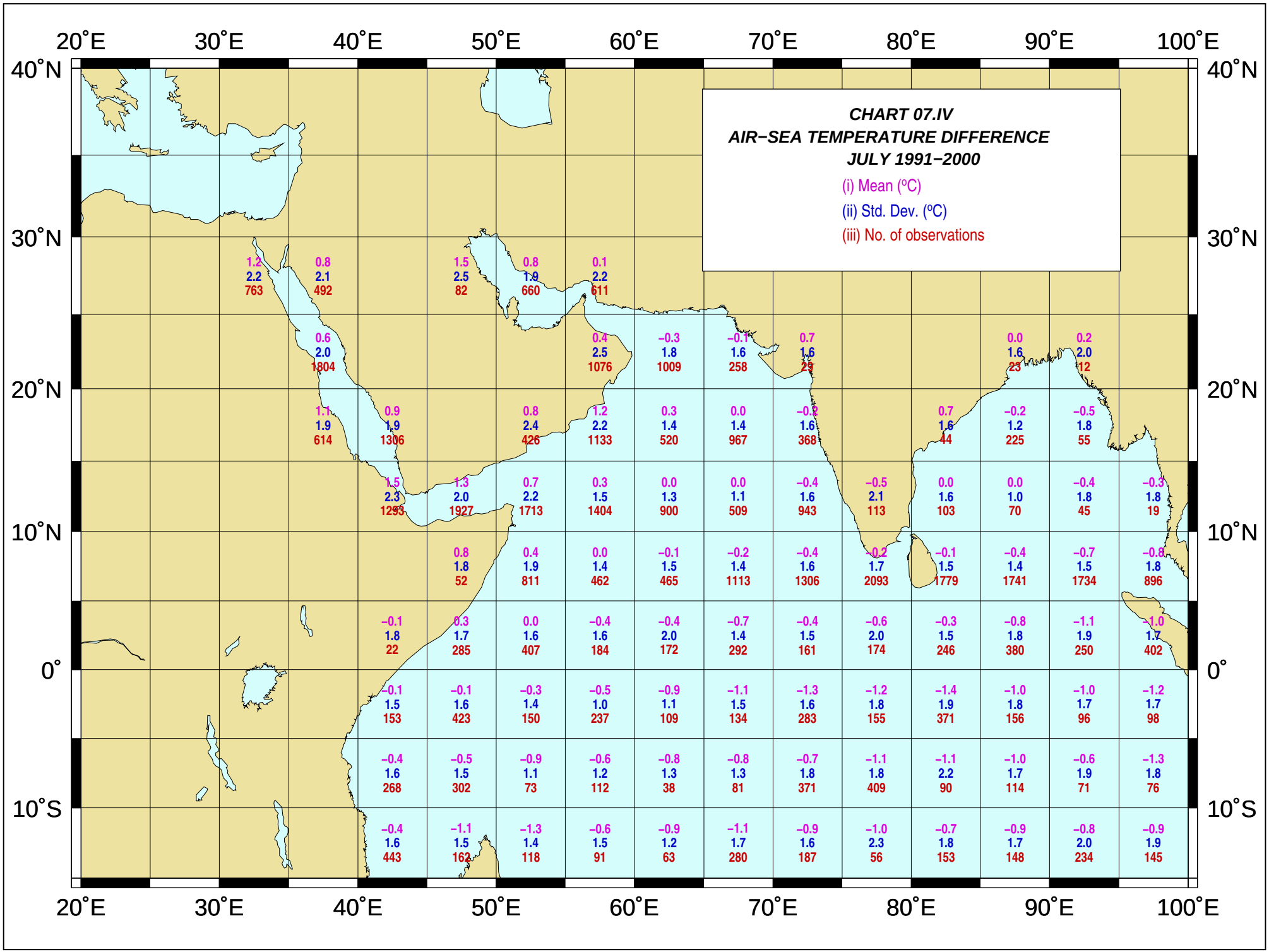


CHART 07.IV
AIR–SEA TEMPERATURE DIFFERENCE
JULY 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.2 2.2 763
0.8 2.1 492
1.5 2.5 82
0.8 1.9 660
0.1 2.2 611
0.6 2.0 1804
0.4 2.5 1076
−0.3 1.8 1009
−0.1 1.6 258
0.7 1.6 29
0.0 1.6 23
0.2 2.0 12
1.1 1.9 614
0.9 1.9 1306
0.8 2.4 426
1.2 2.2 1133
0.3 1.4 520
0.0 1.4 967
−0.2 1.6 368
0.7 1.6 44
−0.2 1.2 225
−0.5 1.8 55
1.5 2.3 1293
1.3 2.0 1927
0.7 2.2 1713
0.3 1.5 1404
0.0 1.3 900
0.0 1.1 509
−0.4 1.6 943
−0.5 2.1 113
0.0 1.6 103
0.0 1.0 70
−0.4 1.8 45
−0.3 1.8 19
0.8 1.8 52
0.4 1.9 811
0.0 1.4 462
−0.1 1.5 465
−0.2 1.4 1113
−0.4 1.6 1306
−0.2 1.7 2093
−0.1 1.5 1779
−0.4 1.4 1741
−0.7 1.5 1734
−0.8 1.8 896
−0.1 1.8 22
0.3 1.7 285
0.0 1.6 407
−0.4 1.6 184
−0.4 2.0 172
−0.7 1.4 292
−0.4 1.5 161
−0.6 2.0 174
−0.3 1.5 246
−0.8 1.8 380
−1.1 1.9 250
−1.0 1.7 402
−0.1 1.5 153
−0.1 1.6 423
−0.3 1.4 150
−0.5 1.0 237
−0.9 1.1 109
−1.1 1.5 134
−1.3 1.6 283
−1.2 1.8 155
−1.4 1.9 371
−1.0 1.8 156
−1.0 1.7 96
−1.2 1.7 98
−0.4 1.6 268
−0.5 1.5 302
−0.9 1.1 73
−0.6 1.2 112
−0.8 1.3 38
−0.8 1.3 81
−0.7 1.8 371
−1.1 1.8 409
−1.1 2.2 90
−1.0 1.7 114
−0.6 1.9 71
−1.3 1.8 76
−0.4 1.6 443
−1.1 1.5 162
−1.3 1.4 118
−0.6 1.5 91
−0.9 1.2 63
−1.1 1.7 280
−0.9 1.6 187
−1.0 2.3 56
−0.7 1.8 153
−0.9 1.7 148
−0.8 2.0 234
−0.9 1.9 145

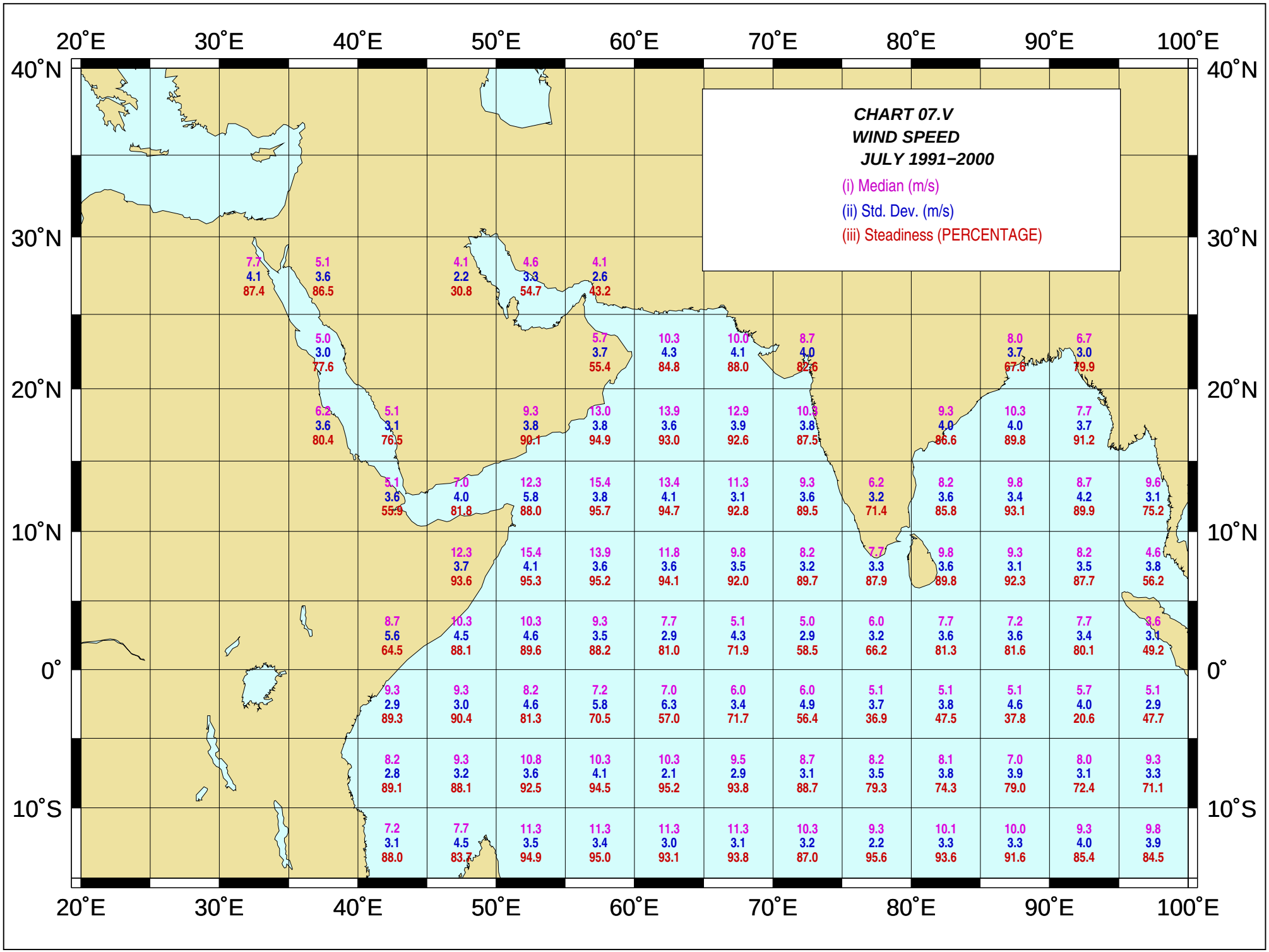


CHART 07.V
WIND SPEED
JULY 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 4.1 87.4
5.1 3.6 86.5
4.1 2.2 30.8
4.6 3.3 54.7
4.1 2.6 43.2
5.0 3.0 77.6
5.7 3.7 55.4
10.3 4.3 84.8
10.0 4.1 88.0
8.7 4.0 82.6
8.0 3.7 67.6
6.7 3.0 79.9
6.2 3.6 80.4
5.1 3.1 76.5
9.3 3.8 90.1
13.0 3.8 94.9
13.9 3.6 93.0
12.9 3.9 92.6
10.3 3.8 87.5
9.3 4.0 86.6
10.3 4.0 89.8
7.7 3.7 91.2
5.1 3.6 55.9
7.0 4.0 81.8
12.3 5.8 88.0
15.4 3.8 95.7
13.4 4.1 94.7
11.3 3.1 92.8
9.3 3.6 89.5
6.2 3.2 71.4
8.2 3.6 85.8
9.8 3.4 93.1
8.7 4.2 89.9
9.6 3.1 75.2
12.3 3.7 93.6
15.4 4.1 95.3
13.9 3.6 95.2
11.8 3.6 94.1
9.8 3.5 92.0
8.2 3.2 89.7
7.7 3.3 87.9
9.8 3.6 89.8
9.3 3.1 92.3
8.2 3.5 87.7
4.6 3.8 56.2
8.7 5.6 64.5
10.3 4.5 88.1
10.3 4.6 89.6
9.3 3.5 88.2
7.7 2.9 81.0
5.1 4.3 71.9
5.0 2.9 58.5
6.0 3.2 66.2
7.7 3.6 81.3
7.2 3.6 81.6
7.7 3.4 80.1
3.6 3.1 49.2
9.3 2.9 89.3
9.3 3.0 90.4
8.2 4.6 81.3
7.2 5.8 70.5
7.0 6.3 57.0
6.0 3.4 71.7
6.0 4.9 56.4
5.1 3.7 36.9
5.1 3.8 47.5
5.1 4.6 37.8
5.7 4.0 20.6
5.1 2.9 47.7
8.2 2.8 89.1
9.3 3.2 88.1
10.8 3.6 92.5
10.3 4.1 94.5
10.3 2.1 95.2
9.5 2.9 93.8
8.7 3.1 88.7
8.2 3.5 79.3
8.1 3.8 74.3
7.0 3.9 79.0
8.0 3.1 72.4
9.3 3.3 71.1
7.2 3.1 88.0
7.7 4.5 83.7
11.3 3.5 94.9
11.3 3.4 95.0
11.3 3.0 93.1
11.3 3.1 93.8
10.3 3.2 87.0
9.3 2.2 95.6
10.1 3.3 93.6
10.0 3.3 91.6
9.3 4.0 85.4
9.8 3.9 84.5

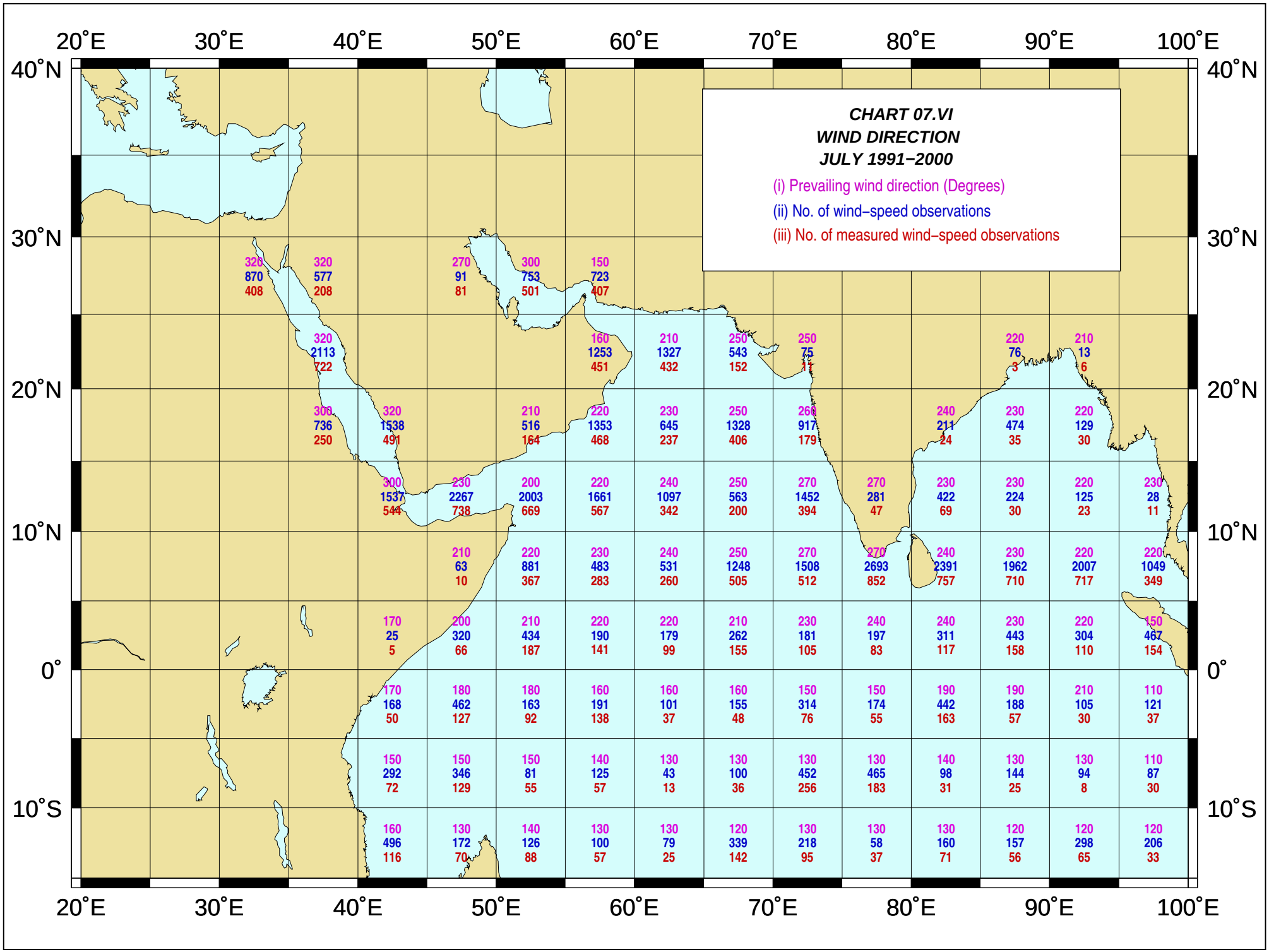


CHART 07.VI
WIND DIRECTION
JULY 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
320 870 408
320 577 208
270 91 81
300 753 501
150 723 407
320 2113 722
160 1253 451
210 1327 432
250 543 152
250 75 11
220 76 3
210 13 6
300 736 250
320 1538 491
210 516 164
220 1353 468
230 645 237
250 1328 406
260 917 179
240 211 24
230 474 35
220 129 30
300 1537 544
230 2267 738
200 2003 669
220 1661 567
240 1097 342
250 563 200
270 1452 394
270 281 47
230 422 69
230 224 30
220 125 23
230 28 11
210 63 10
220 881 367
230 483 283
240 531 260
250 1248 505
270 1508 512
270 2693 852
240 2391 757
230 1962 710
220 2007 717
220 1049 349
170 25 5
200 320 66
210 434 187
220 190 141
220 179 99
210 262 155
230 181 105
240 197 83
240 311 117
230 443 158
220 304 110
150 487 154
170 168 50
180 462 127
180 163 92
160 191 138
160 101 37
160 155 48
150 314 76
150 174 55
190 442 163
190 188 57
210 105 30
110 121 37
150 292 72
150 346 129
150 81 55
140 125 57
130 43 13
130 100 36
130 452 256
130 465 183
140 98 31
130 144 25
130 94 8
110 87 30
160 496 116
130 172 70
140 126 88
130 100 57
130 79 25
120 339 142
130 218 95
130 58 37
130 160 71
120 157 56
120 298 65
120 206 33

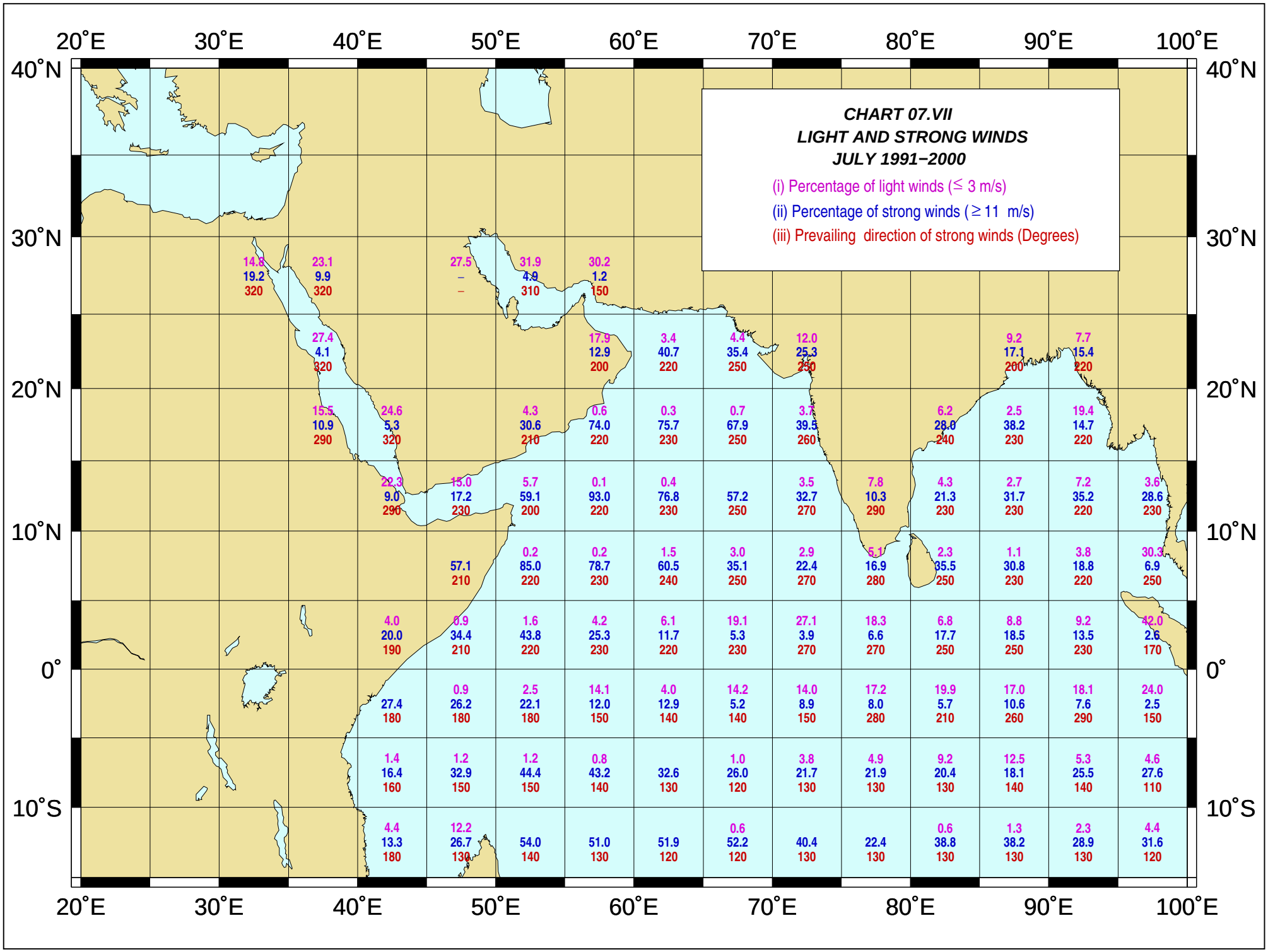


CHART 07.VII
LIGHT AND STRONG WINDS
JULY 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
14.8 19.2 320
23.1 9.9 320
27.5 – –
31.9 4.9 310
30.2 1.2 150
27.4 4.1 320
17.9 12.9 200
3.4 40.7 220
4.4 35.4 250
12.0 25.3 250
9.2 17.1 200
7.7 15.4 220
15.5 10.9 290
24.6 5.3 320
4.3 30.6 210
0.6 74.0 220
0.3 75.7 230
0.7 67.9 250
3.7 39.5 260
6.2 28.0 240
2.5 38.2 230
19.4 14.7 220
22.3 9.0 290
15.0 17.2 230
5.7 59.1 200
0.1 93.0 220
0.4 76.8 230
57.2 250
3.5 32.7 270
7.8 10.3 290
4.3 21.3 230
2.7 31.7 230
7.2 35.2 220
3.6 28.6 230
57.1 210
0.2 85.0 220
0.2 78.7 230
1.5 60.5 240
3.0 35.1 250
2.9 22.4 270
5.1 16.9 280
2.3 35.5 250
1.1 30.8 230
3.8 18.8 220
30.3 6.9 250
4.0 20.0 190
0.9 34.4 210
1.6 43.8 220
4.2 25.3 230
6.1 11.7 220
19.1 5.3 230
27.1 3.9 270
18.3 6.6 270
6.8 17.7 250
8.8 18.5 250
9.2 13.5 230
42.0 2.6 170
0.9 26.2 180
2.5 22.1 180
14.1 12.0 150
4.0 12.9 140
14.2 5.2 140
14.0 8.9 150
17.2 8.0 280
19.9 5.7 210
17.0 10.6 260
18.1 7.6 290
24.0 2.5 150
27.4 180
1.4 16.4 160
1.2 32.9 150
1.2 44.4 150
0.8 43.2 140
32.6 130
1.0 26.0 120
3.8 21.7 130
4.9 21.9 130
9.2 20.4 130
12.5 18.1 140
5.3 25.5 140
4.6 27.6 110
4.4 13.3 180
12.2 26.7 130
54.0 140
51.0 130
51.9 120
0.6 52.2 120
40.4 130
22.4 130
0.6 38.8 130
1.3 38.2 130
2.3 28.9 130
4.4 31.6 120

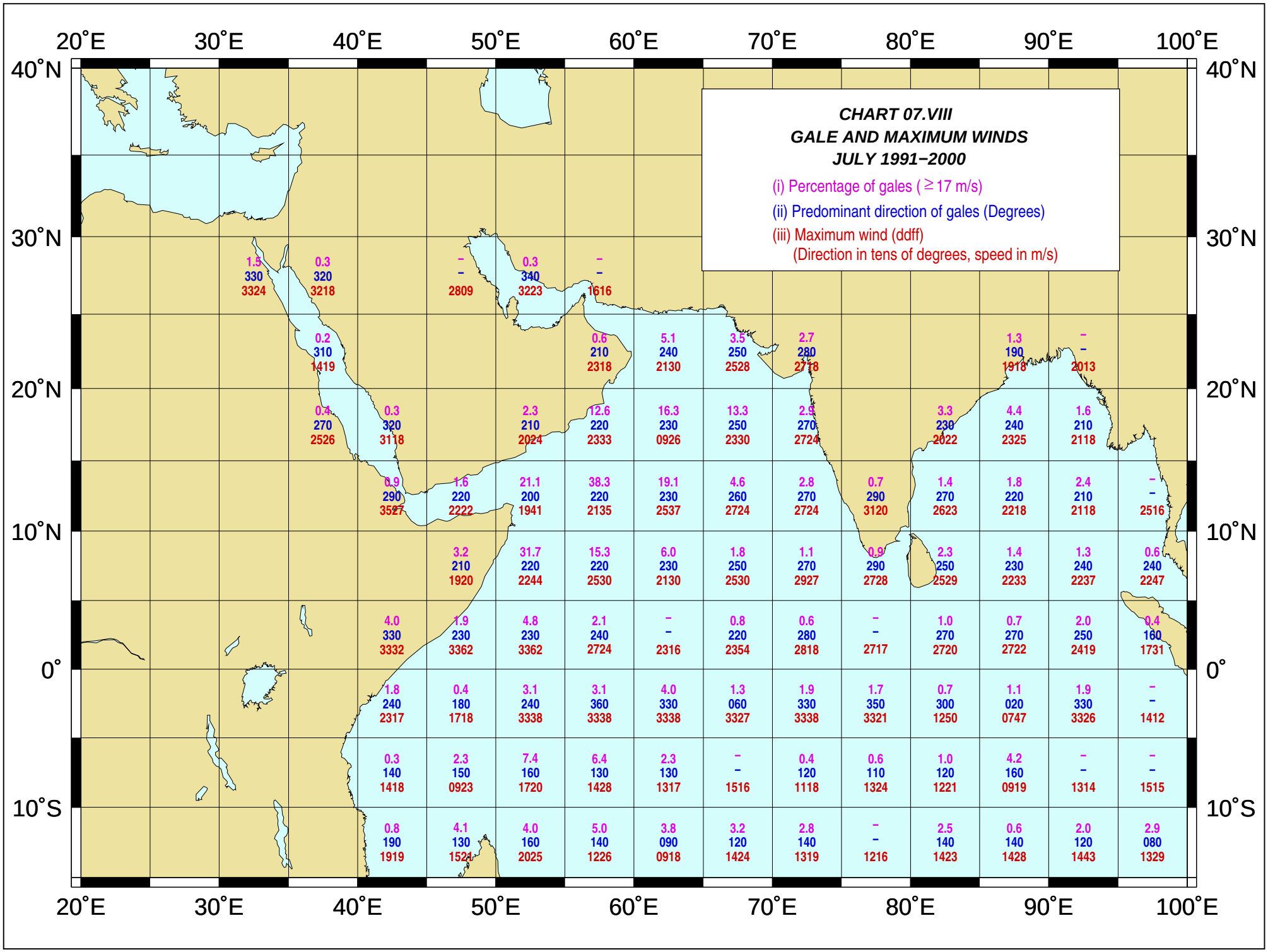


CHART 07.VIII
GALE AND MAXIMUM WINDS
JULY 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.5 330 3324
0.3 320 3218
– – 2809
0.3 340 3223
– – 1616
0.2 310 1419
0.6 210 2318
5.1 240 2130
3.5 250 2528
2.7 280 2718
1.3 190 1918
– – 2013
0.4 270 2526
0.3 320 3118
2.3 210 2024
12.6 220 2333
16.3 230 0926
13.3 250 2330
2.9 270 2724
3.3 230 2022
4.4 240 2325
1.6 210 2118
0.9 290 3527
1.6 220 2222
21.1 200 1941
38.3 220 2135
19.1 230 2537
4.6 260 2724
2.8 270 2724
0.7 290 3120
1.4 270 2623
1.8 220 2218
2.4 210 2118
– – 2516
3.2 210 1920
31.7 220 2244
15.3 220 2530
6.0 230 2130
1.8 250 2530
1.1 270 2927
0.9 290 2728
2.3 250 2529
1.4 230 2233
1.3 240 2237
0.6 240 2247
4.0 330 3332
1.9 230 3362
4.8 230 3362
2.1 240 2724
– – 2316
0.8 220 2354
0.6 280 2818
– – 2717
1.0 270 2720
0.7 270 2722
2.0 250 2419
0.4 160 1731
1.8 240 2317
0.4 180 1718
3.1 240 3338
3.1 360 3338
4.0 330 3338
1.3 060 3327
1.9 330 3338
1.7 350 3321
0.7 300 1250
1.1 020 0747
1.9 330 3326
– – 1412
0.3 140 1418
2.3 150 0923
7.4 160 1720
6.4 130 1428
2.3 130 1317
– – 1516
0.4 120 1118
0.6 110 1324
1.0 120 1221
4.2 160 0919
– – 1314
– – 1515
0.8 190 1919
4.1 130 1521
4.0 160 2025
5.0 140 1226
3.8 090 0918
3.2 120 1424
2.8 140 1319
– – 1216
2.5 140 1423
0.6 140 1428
2.0 120 1443
2.9 080 1329

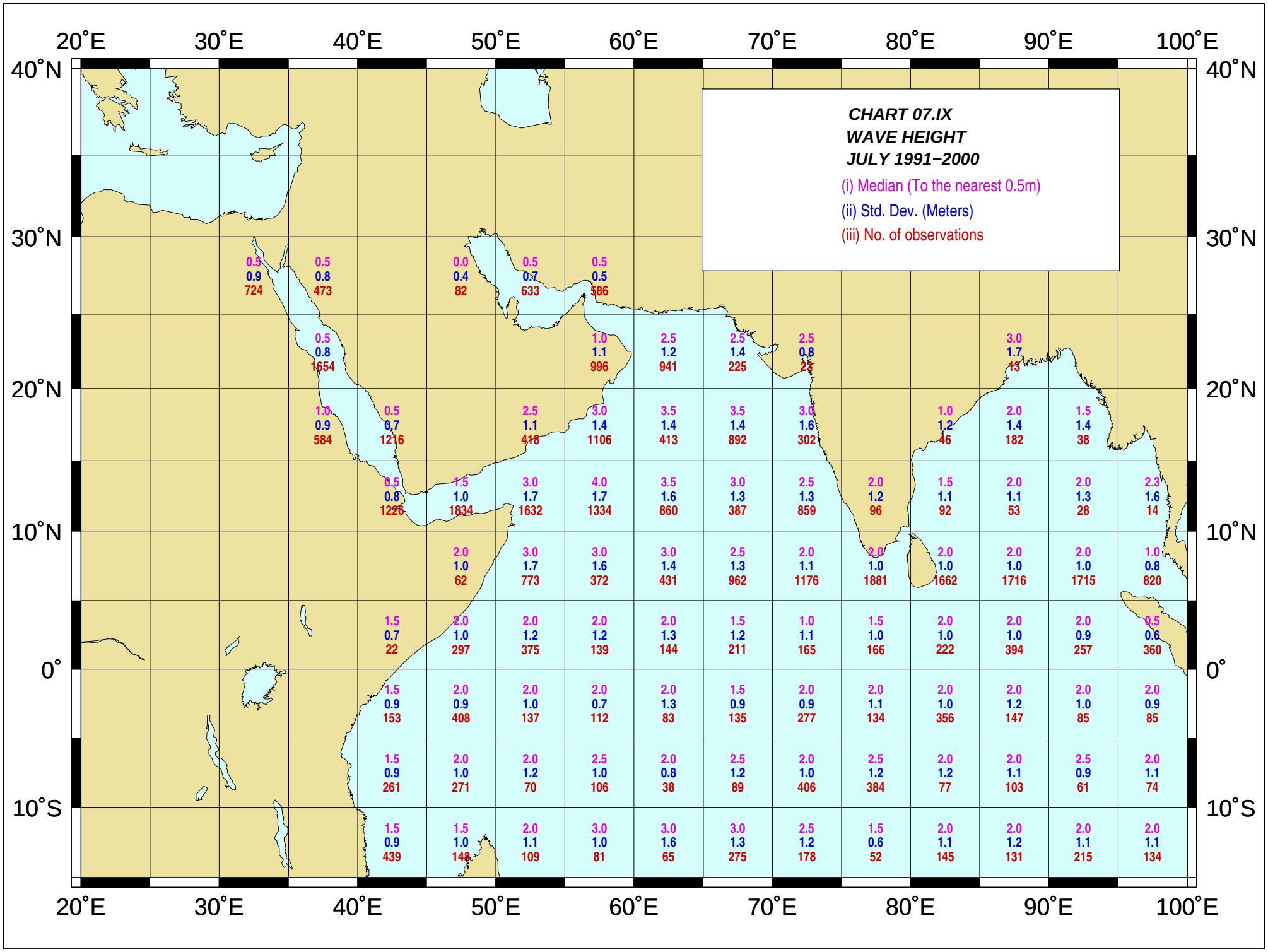


CHART 07.IX
WAVE HEIGHT
JULY 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.5 0.9 724
0.5 0.8 473
0.0 0.4 82
0.5 0.7 633
0.5 0.5 586
0.5 0.8 1654
1.0 1.1 996
2.5 1.2 941
2.5 1.4 225
2.5 0.8 23
3.0 1.7 13
1.0 0.9 584
0.5 0.7 1216
2.5 1.1 418
3.0 1.4 1106
3.5 1.4 413
3.5 1.4 892
3.0 1.6 302
1.0 1.2 46
2.0 1.4 182
1.5 1.4 38
0.5 0.8 1226
1.5 1.0 1834
3.0 1.7 1632
4.0 1.7 1334
3.5 1.6 860
3.0 1.3 387
2.5 1.3 859
2.0 1.2 96
1.5 1.1 92
2.0 1.1 53
2.0 1.3 28
2.3 1.6 14
2.0 1.0 62
3.0 1.7 773
3.0 1.6 372
3.0 1.4 431
2.5 1.3 962
2.0 1.1 1176
2.0 1.0 1881
2.0 1.0 1662
2.0 1.0 1716
2.0 1.0 1715
1.0 0.8 820
1.5 0.7 22
2.0 1.0 297
2.0 1.2 375
2.0 1.2 139
2.0 1.3 144
1.5 1.2 211
1.0 1.1 165
1.5 1.0 166
2.0 1.0 222
2.0 1.0 394
2.0 0.9 257
0.5 0.6 360
1.5 0.9 153
2.0 0.9 408
2.0 1.0 137
2.0 0.7 112
2.0 1.3 83
1.5 0.9 135
2.0 0.9 277
2.0 1.1 134
2.0 1.0 356
2.0 1.2 147
2.0 1.0 85
2.0 0.9 85
1.5 0.9 261
2.0 1.0 271
2.0 1.2 70
2.5 1.0 106
2.0 0.8 38
2.5 1.2 89
2.0 1.0 406
2.5 1.2 384
2.0 1.2 77
2.0 1.1 103
2.5 0.9 61
2.0 1.1 74
1.5 0.9 439
1.5 1.0 148
2.0 1.1 109
3.0 1.0 81
3.0 1.6 65
3.0 1.3 275
2.5 1.2 178
1.5 0.6 52
2.0 1.1 145
2.0 1.2 131
2.0 1.1 215
2.0 1.1 134

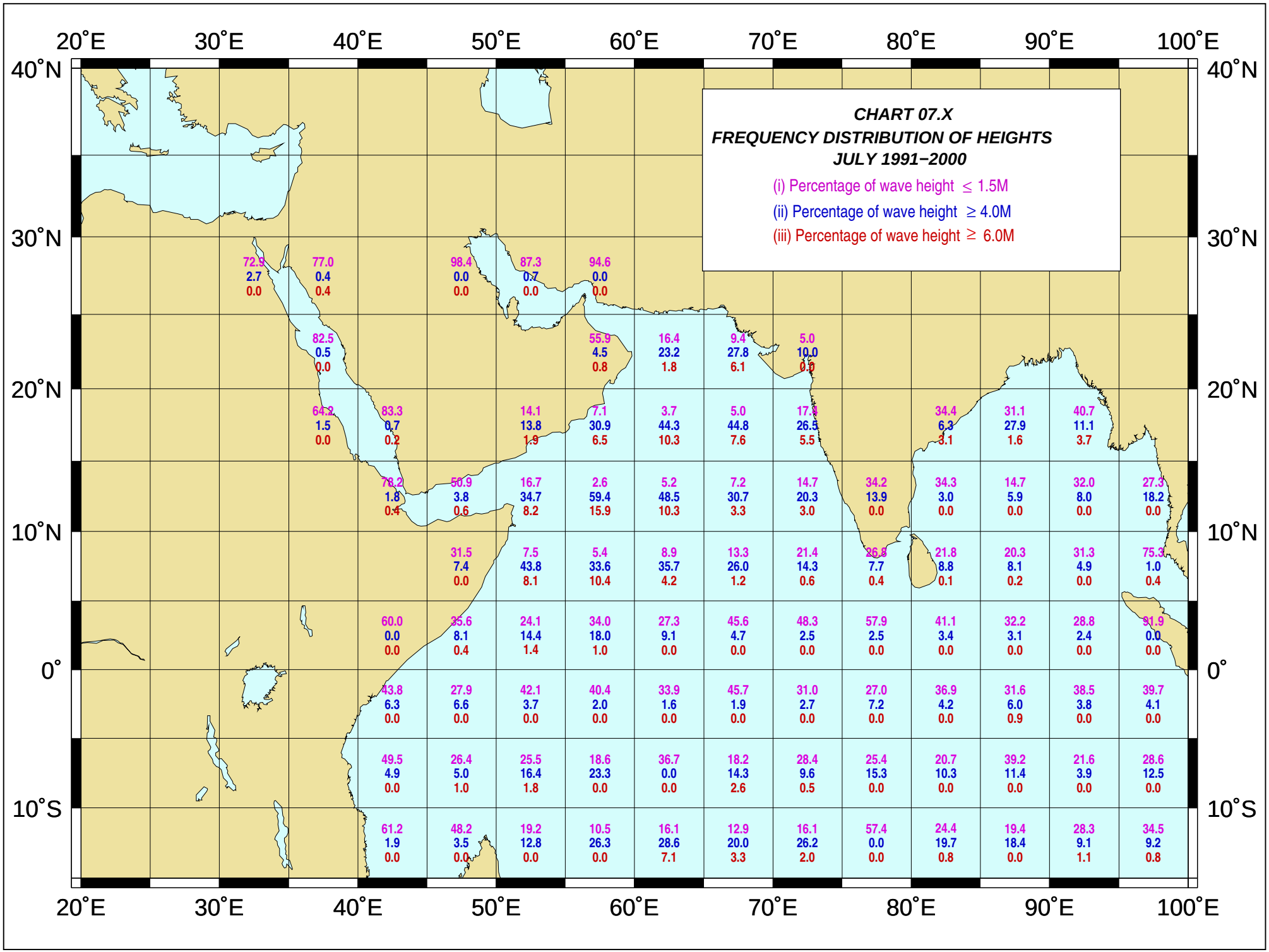


CHART 07.X
FREQUENCY DISTRIBUTION OF HEIGHTS
JULY 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
72.9 2.7 0.0
77.0 0.4 0.4
98.4 0.0 0.0
87.3 0.7 0.0
94.6 0.0 0.0
82.5 0.5 0.0
55.9 4.5 0.8
16.4 23.2 1.8
9.4 27.8 6.1
5.0 10.0 0.9
64.2 1.5 0.0
83.3 0.7 0.2
14.1 13.8 1.9
7.1 30.9 6.5
3.7 44.3 10.3
5.0 44.8 7.6
17.9 26.5 5.5
34.4 6.3 3.1
31.1 27.9 1.6
40.7 11.1 3.7
78.2 1.8 0.4
50.9 3.8 0.6
16.7 34.7 8.2
2.6 59.4 15.9
5.2 48.5 10.3
7.2 30.7 3.3
14.7 20.3 3.0
34.2 13.9 0.0
34.3 3.0 0.0
14.7 5.9 0.0
32.0 8.0 0.0
27.3 18.2 0.0
31.5 7.4 0.0
7.5 43.8 8.1
5.4 33.6 10.4
8.9 35.7 4.2
13.3 26.0 1.2
21.4 14.3 0.6
26.9 7.7 0.4
21.8 8.8 0.1
20.3 8.1 0.2
31.3 4.9 0.0
75.3 1.0 0.4
60.0 0.0 0.0
35.6 8.1 0.4
24.1 14.4 1.4
34.0 18.0 1.0
27.3 9.1 0.0
45.6 4.7 0.0
48.3 2.5 0.0
57.9 2.5 0.0
41.1 3.4 0.0
32.2 3.1 0.0
28.8 2.4 0.0
91.9 0.0 0.0
43.8 6.3 0.0
27.9 6.6 0.0
42.1 3.7 0.0
40.4 2.0 0.0
33.9 1.6 0.0
45.7 1.9 0.0
31.0 2.7 0.0
27.0 7.2 0.0
36.9 4.2 0.0
31.6 6.0 0.9
38.5 3.8 0.0
39.7 4.1 0.0
49.5 4.9 0.0
26.4 5.0 1.0
25.5 16.4 1.8
18.6 23.3 0.0
36.7 0.0 0.0
18.2 14.3 2.6
28.4 9.6 0.5
25.4 15.3 0.0
20.7 10.3 0.0
39.2 11.4 0.0
21.6 3.9 0.0
28.6 12.5 0.0
61.2 1.9 0.0
48.2 3.5 0.0
19.2 12.8 0.0
10.5 26.3 0.0
16.1 28.6 7.1
12.9 20.0 3.3
16.1 26.2 2.0
57.4 0.0 0.0
24.4 19.7 0.8
19.4 18.4 0.0
28.3 9.1 1.1
34.5 9.2 0.8

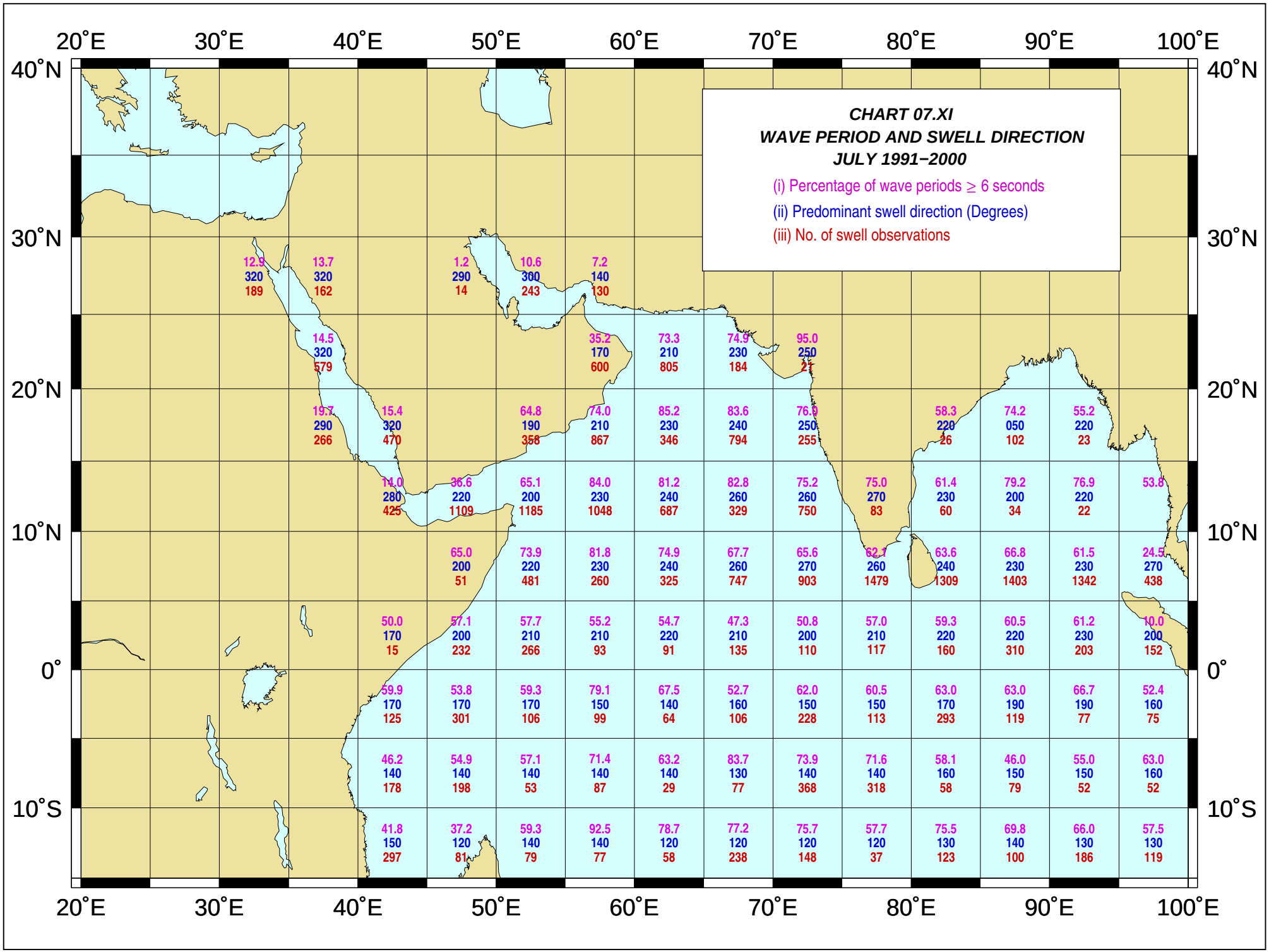


CHART 07.XI
WAVE PERIOD AND SWELL DIRECTION
JULY 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
12.9 320 189
13.7 320 162
1.2 290 14
10.6 300 243
7.2 140 130
14.5 320 579
35.2 170 600
73.3 210 805
74.9 230 184
95.0 250 21
19.7 290 266
15.4 320 470
64.8 190 358
74.0 210 867
85.2 230 346
83.6 240 794
76.9 250 255
58.3 220 26
74.2 050 102
55.2 220 23
11.0 280 425
36.6 220 1109
65.1 200 1185
84.0 230 1048
81.2 240 687
82.8 260 329
75.2 260 750
75.0 270 83
61.4 230 60
79.2 200 34
76.9 220 22
53.8
65.0 200 51
73.9 220 481
81.8 230 260
74.9 240 325
67.7 260 747
65.6 270 903
62.1 260 1479
63.6 240 1309
66.8 230 1403
61.5 230 1342
24.5 270 438
50.0 170 15
57.1 200 232
57.7 210 266
55.2 210 93
54.7 220 91
47.3 210 135
50.8 200 110
57.0 210 117
59.3 220 160
60.5 220 310
61.2 230 203
10.0 200 152
59.9 170 125
53.8 170 301
59.3 170 106
79.1 150 99
67.5 140 64
52.7 160 106
62.0 150 228
60.5 150 113
63.0 170 293
63.0 190 119
66.7 190 77
52.4 160 75
46.2 140 178
54.9 140 198
57.1 140 53
71.4 140 87
63.2 140 29
83.7 130 77
73.9 140 368
71.6 140 318
58.1 160 58
46.0 150 79
55.0 150 52
63.0 160 52
41.8 150 297
37.2 120 81
59.3 140 79
92.5 140 77
78.7 120 58
77.2 120 238
75.7 120 148
57.7 120 37
75.5 130 123
69.8 140 100
66.0 130 186
57.5 130 119

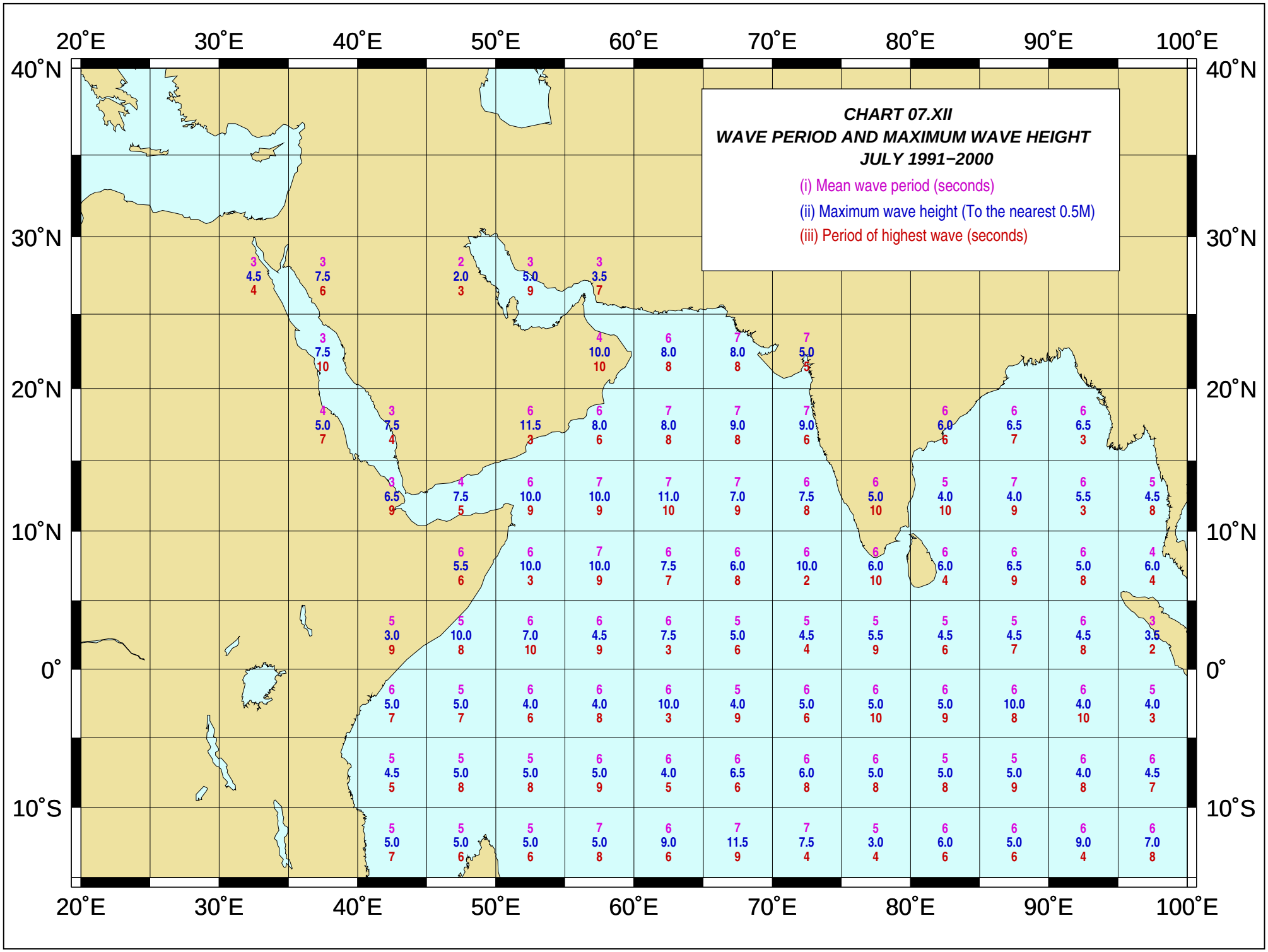


CHART 07.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
JULY 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
3 4.5 4
3 7.5 6
2 2.0 3
3 5.0 9
3 3.5 7
3 7.5 10
4 10.0 10
6 8.0 8
7 8.0 8
7 5.0 5
4 5.0 7
3 7.5 4
6 11.5 3
6 8.0 6
7 8.0 8
7 9.0 8
7 9.0 6
6 6.0 6
6 6.5 7
6 6.5 3
3 6.5 9
4 7.5 5
6 10.0 9
7 10.0 9
7 11.0 10
7 7.0 9
6 7.5 8
6 5.0 10
5 4.0 10
7 4.0 9
6 5.5 3
5 4.5 8
6 5.5 6
6 10.0 3
7 10.0 9
6 7.5 7
6 6.0 8
6 10.0 2
6 6.0 10
6 6.0 4
6 6.5 9
6 5.0 8
4 6.0 4
5 3.0 9
5 10.0 8
6 7.0 10
6 4.5 9
6 7.5 3
5 5.0 6
5 4.5 4
5 5.5 9
5 4.5 6
5 4.5 7
6 4.5 8
3 3.5 2
6 5.0 7
5 5.0 7
6 4.0 6
6 4.0 8
6 10.0 3
5 4.0 9
6 5.0 6
6 5.0 10
6 5.0 9
6 10.0 8
6 4.0 10
5 4.0 3
5 4.5 5
5 5.0 8
5 5.0 8
6 5.0 9
6 4.0 5
6 6.5 6
6 6.0 8
6 5.0 8
5 5.0 8
5 5.0 9
6 4.0 8
6 4.5 7
5 5.0 7
5 5.0 6
5 5.0 6
7 5.0 8
6 9.0 6
7 11.5 9
7 7.5 4
5 3.0 4
6 6.0 6
6 5.0 6
6 9.0 4
6 7.0 8

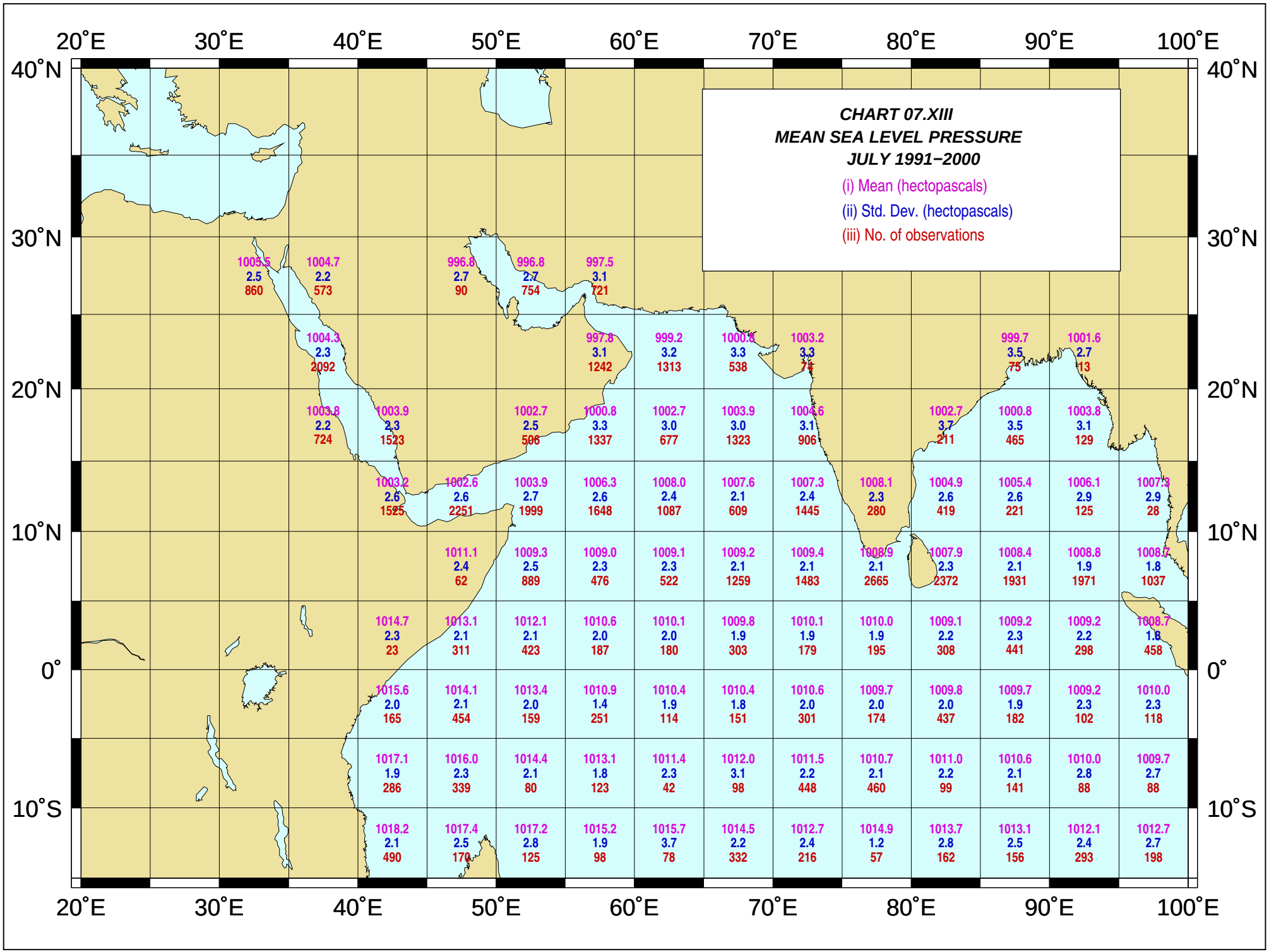


CHART 07.XIII
MEAN SEA LEVEL PRESSURE
JULY 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1005.5 2.5 860
1004.7 2.2 573
996.8 2.7 90
996.8 2.7 754
997.5 3.1 721
1004.3 2.3 2092
997.8 3.1 1242
999.2 3.2 1313
1000.8 3.3 538
1003.2 3.3 74
999.7 3.5 75
1001.6 2.7 113
1003.8 2.2 724
1003.9 2.3 1523
1002.7 2.5 506
1000.8 3.3 1337
1002.7 3.0 677
1003.9 3.0 1323
1004.6 3.1 906
1002.7 3.7 211
1000.8 3.5 465
1003.8 3.1 129
1003.2 2.6 1525
1002.6 2.6 2251
1003.9 2.7 1999
1006.3 2.6 1648
1008.0 2.4 1087
1007.6 2.1 609
1007.3 2.4 1445
1008.1 2.3 280
1004.9 2.6 419
1005.4 2.6 221
1006.1 2.9 125
1007.3 2.9 28
1011.1 2.4 62
1009.3 2.5 889
1009.0 2.3 476
1009.1 2.3 522
1009.2 2.1 1259
1009.4 2.1 1483
1008.9 2.1 2665
1007.9 2.3 2372
1008.4 2.1 1931
1008.8 1.9 1971
1008.7 1.8 1037
1014.7 2.3 23
1013.1 2.1 311
1012.1 2.1 423
1010.6 2.0 187
1010.1 2.0 180
1009.8 1.9 303
1010.1 1.9 179
1010.0 1.9 195
1009.1 2.2 308
1009.2 2.3 441
1009.2 2.2 298
1008.7 1.8 458
1015.6 2.0 165
1014.1 2.1 454
1013.4 2.0 159
1010.9 1.4 251
1010.4 1.9 114
1010.4 1.8 151
1010.6 2.0 301
1009.7 2.0 174
1009.8 2.0 437
1009.7 1.9 182
1009.2 2.3 102
1010.0 2.3 118
1017.1 1.9 286
1016.0 2.3 339
1014.4 2.1 80
1013.1 1.8 123
1011.4 2.3 42
1012.0 3.1 98
1011.5 2.2 448
1010.7 2.1 460
1011.0 2.2 99
1010.6 2.1 141
1010.0 2.8 88
1009.7 2.7 88
1018.2 2.1 490
1017.4 2.5 170
1017.2 2.8 125
1015.2 1.9 98
1015.7 3.7 78
1014.5 2.2 332
1012.7 2.4 216
1014.9 1.2 57
1013.7 2.8 162
1013.1 2.5 156
1012.1 2.4 293
1012.7 2.7 198

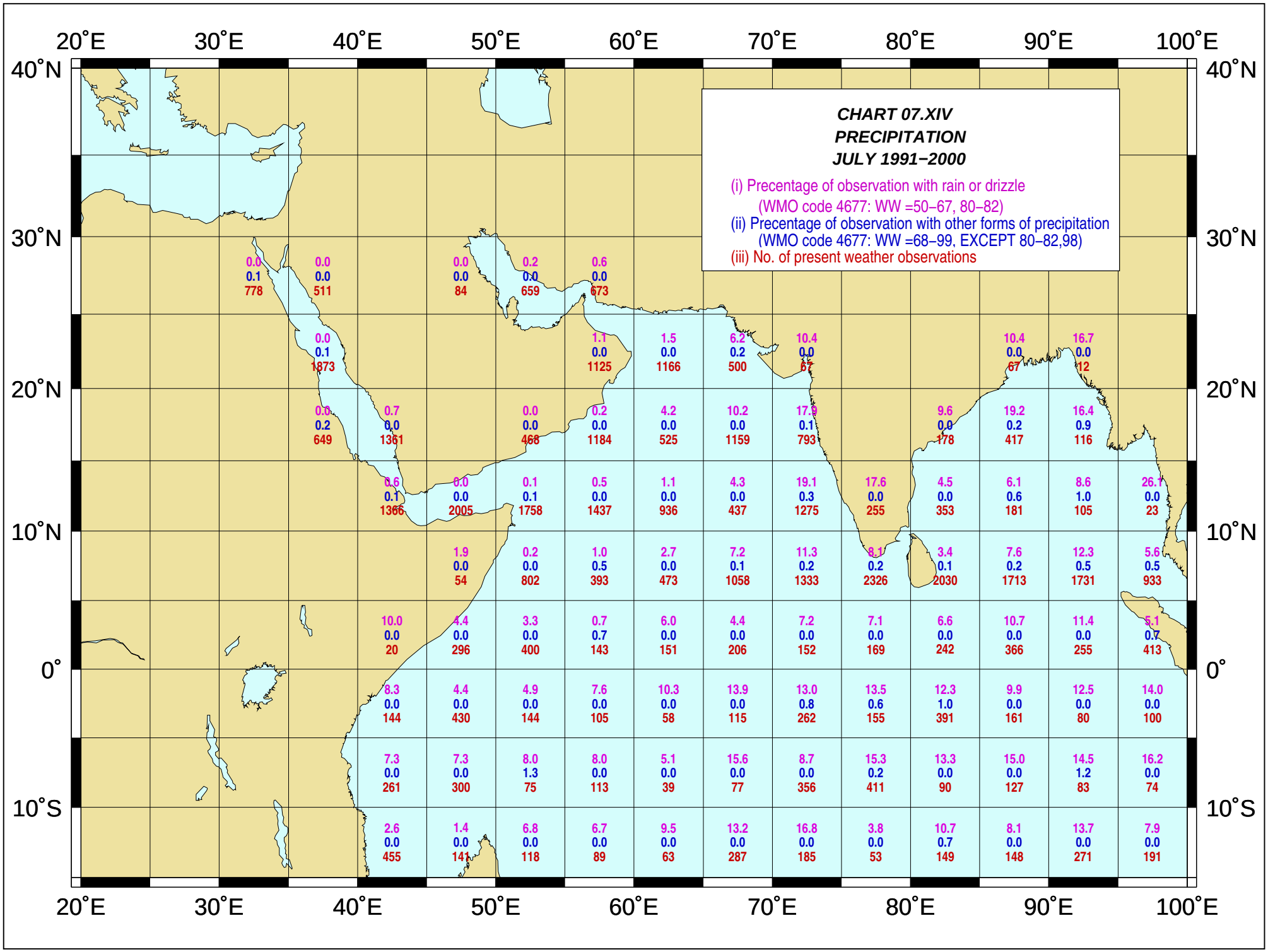


CHART 07.XIV
PRECIPITATION
JULY 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.0 0.1 778
0.0 0.0 511
0.0 0.0 84
0.2 0.0 659
0.6 0.0 673
0.0 0.1 1873
1.1 0.0 1125
1.5 0.0 1166
6.2 0.2 500
10.4 0.0 67
10.4 0.0 67
16.7 0.0 12
0.0 0.2 649
0.7 0.0 1361
0.0 0.0 468
0.2 0.0 1184
4.2 0.0 525
10.2 0.0 1159
17.9 0.1 793
9.6 0.0 178
19.2 0.2 417
16.4 0.9 116
0.6 0.1 1366
0.0 0.0 2005
0.1 0.1 1758
0.5 0.0 1437
1.1 0.0 936
4.3 0.0 437
19.1 0.3 1275
17.6 0.0 255
4.5 0.0 353
6.1 0.6 181
8.6 1.0 105
26.1 0.0 23
1.9 0.0 54
0.2 0.0 802
1.0 0.5 393
2.7 0.0 473
7.2 0.1 1058
11.3 0.2 1333
8.1 0.2 2326
3.4 0.1 2030
7.6 0.2 1713
12.3 0.5 1731
5.6 0.5 933
10.0 0.0 20
4.4 0.0 296
3.3 0.0 400
0.7 0.7 143
6.0 0.0 151
4.4 0.0 206
7.2 0.0 152
7.1 0.0 169
6.6 0.0 242
10.7 0.0 366
11.4 0.0 255
5.1 0.7 413
8.3 0.0 144
4.4 0.0 430
4.9 0.0 144
7.6 0.0 105
10.3 0.0 58
13.9 0.0 115
13.0 0.8 262
13.5 0.6 155
12.3 1.0 391
9.9 0.0 161
12.5 0.0 80
14.0 0.0 100
7.3 0.0 261
7.3 0.0 300
8.0 1.3 75
8.0 0.0 113
5.1 0.0 39
15.6 0.0 77
8.7 0.0 356
15.3 0.2 411
13.3 0.0 90
15.0 0.0 127
14.5 1.2 83
16.2 0.0 74
2.6 0.0 455
1.4 0.0 141
6.8 0.0 118
6.7 0.0 89
9.5 0.0 63
13.2 0.0 287
16.8 0.0 185
3.8 0.0 53
10.7 0.7 149
8.1 0.0 148
13.7 0.0 271
7.9 0.0 191

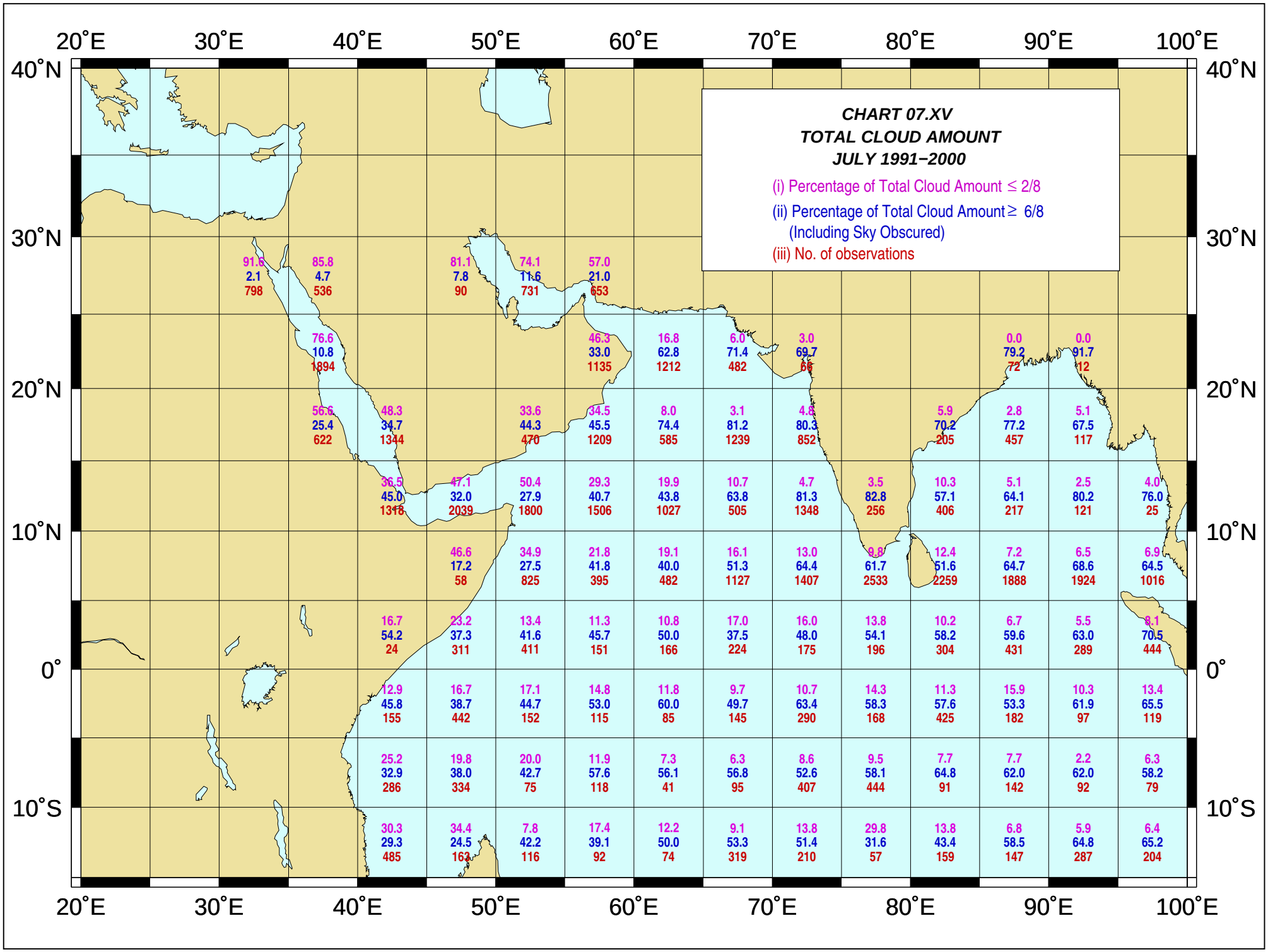


CHART 07.XV
TOTAL CLOUD AMOUNT
JULY 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
91.6 2.1 798
85.8 4.7 536
81.1 7.8 90
74.1 11.6 731
57.0 21.0 653
76.6 10.8 1894
46.3 33.0 1135
16.8 62.8 1212
6.0 71.4 482
3.0 69.7 66
0.0 79.2 72
0.0 91.7 12
56.6 25.4 622
48.3 34.7 1344
33.6 44.3 470
34.5 45.5 1209
8.0 74.4 585
3.1 81.2 1239
4.6 80.3 852
5.9 70.2 205
2.8 77.2 457
5.1 67.5 117
36.5 45.0 1318
47.1 32.0 2039
50.4 27.9 1800
29.3 40.7 1506
19.9 43.8 1027
10.7 63.8 505
4.7 81.3 1348
3.5 82.8 256
10.3 57.1 406
5.1 64.1 217
2.5 80.2 121
4.0 76.0 25
46.6 17.2 58
34.9 27.5 825
21.8 41.8 395
19.1 40.0 482
16.1 51.3 1127
13.0 64.4 1407
9.8 61.7 2533
12.4 51.6 2259
7.2 64.7 1888
6.5 68.6 1924
6.9 64.5 1016
16.7 54.2 24
23.2 37.3 311
13.4 41.6 411
11.3 45.7 151
10.8 50.0 166
17.0 37.5 224
16.0 48.0 175
13.8 54.1 196
10.2 58.2 304
6.7 59.6 431
5.5 63.0 289
8.1 70.5 444
12.9 45.8 155
16.7 38.7 442
17.1 44.7 152
14.8 53.0 115
11.8 60.0 85
9.7 49.7 145
10.7 63.4 290
14.3 58.3 168
11.3 57.6 425
15.9 53.3 182
10.3 61.9 97
13.4 65.5 119
25.2 32.9 286
19.8 38.0 334
20.0 42.7 75
11.9 57.6 118
7.3 56.1 41
6.3 56.8 95
8.6 52.6 407
9.5 58.1 444
7.7 64.8 91
7.7 62.0 142
2.2 62.0 92
6.3 58.2 79
30.3 29.3 485
34.4 24.5 163
7.8 42.2 116
17.4 39.1 92
12.2 50.0 74
9.1 53.3 319
13.8 51.4 210
29.8 31.6 57
13.8 43.4 159
6.8 58.5 147
5.9 64.8 287
6.4 65.2 204

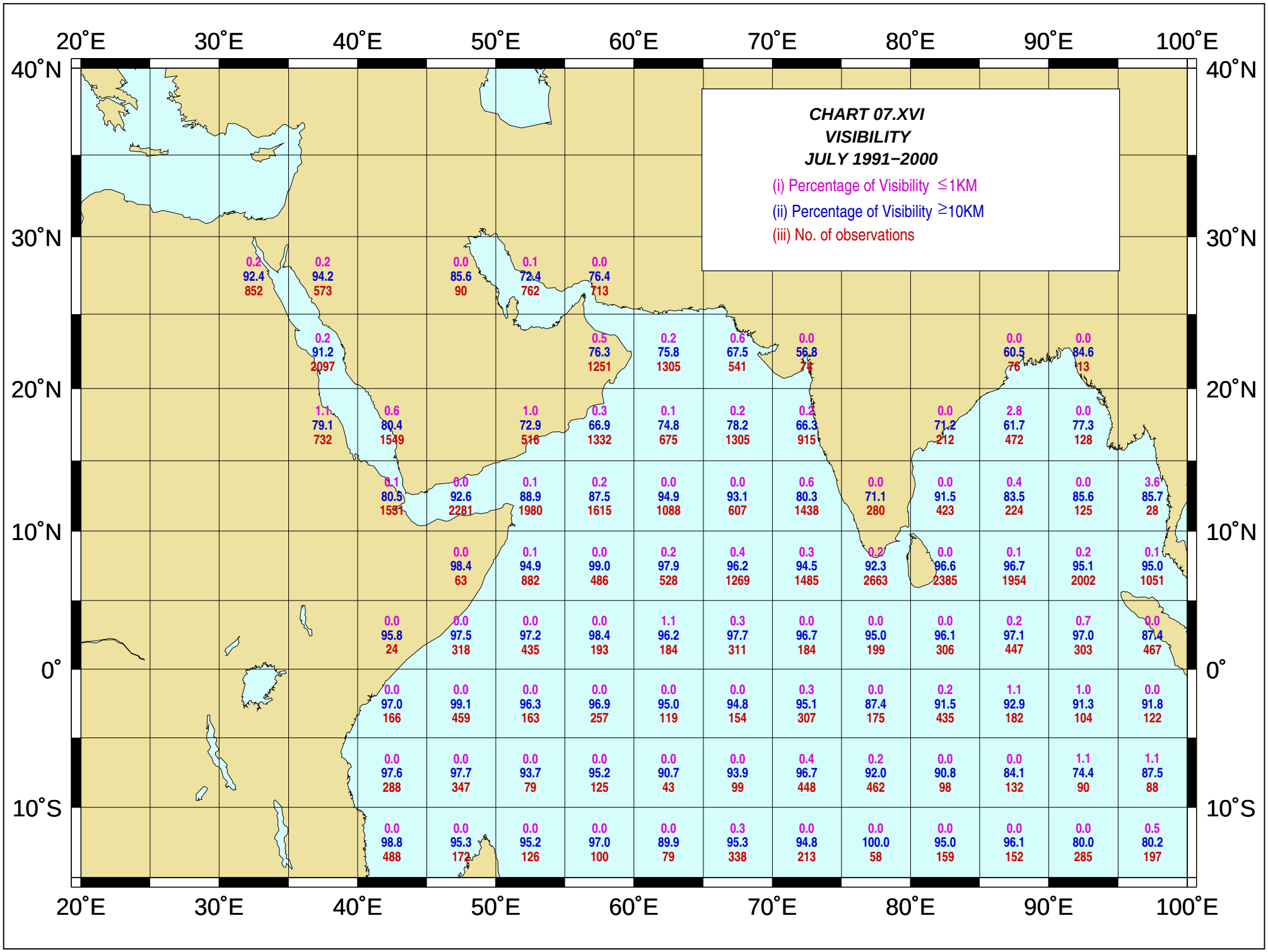


CHART 07.XVI
VISIBILITY
JULY 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.2 92.4 852
0.2 94.2 573
0.0 85.6 90
0.1 72.4 762
0.0 76.4 713
0.2 91.2 2097
0.5 76.3 1251
0.2 75.8 1305
0.6 67.5 541
0.0 56.8
0.0 60.5 76
0.0 84.6 13
1.1 79.1 732
0.6 80.4 1549
1.0 72.9 516
0.3 66.9 1332
0.1 74.8 675
0.2 78.2 1305
0.2 66.3 915
0.0 71.2 212
2.8 61.7 472
0.0 77.3 128
0.1 80.5 1531
0.0 92.6 2281
0.1 88.9 1980
0.2 87.5 1615
0.0 94.9 1088
0.0 93.1 607
0.6 80.3 1438
0.0 71.1 280
0.0 91.5 423
0.4 83.5 224
0.0 85.6 125
3.6 85.7 28
0.0 98.4 63
0.1 94.9 882
0.0 99.0 486
0.2 97.9 528
0.4 96.2 1269
0.3 94.5 1485
0.2 92.3 2663
0.0 96.6 2385
0.1 96.7 1954
0.2 95.1 2002
0.1 95.0 1051
0.0 95.8 24
0.0 97.5 318
0.0 97.2 435
0.0 98.4 193
1.1 96.2 184
0.3 97.7 311
0.0 96.7 184
0.0 95.0 199
0.0 96.1 306
0.2 97.1 447
0.7 97.0 303
0.0 87.4 467
0.0 97.0 166
0.0 99.1 459
0.0 96.3 163
0.0 96.9 257
0.0 95.0 119
0.0 94.8 154
0.3 95.1 307
0.0 87.4 175
0.2 91.5 435
1.1 92.9 182
1.0 91.3 104
0.0 91.8 122
0.0 97.6 288
0.0 97.7 347
0.0 93.7 79
0.0 95.2 125
0.0 90.7 43
0.0 93.9 99
0.4 96.7 448
0.2 92.0 462
0.0 90.8 98
0.0 84.1 132
1.1 74.4 90
1.1 87.5 88
0.0 98.8 488
0.0 95.3 172
0.0 95.2 126
0.0 97.0 100
0.0 89.9 79
0.3 95.3 338
0.0 94.8 213
0.0 100.0 58
0.0 95.0 159
0.0 96.1 152
0.0 80.0 285
0.5 80.2 197

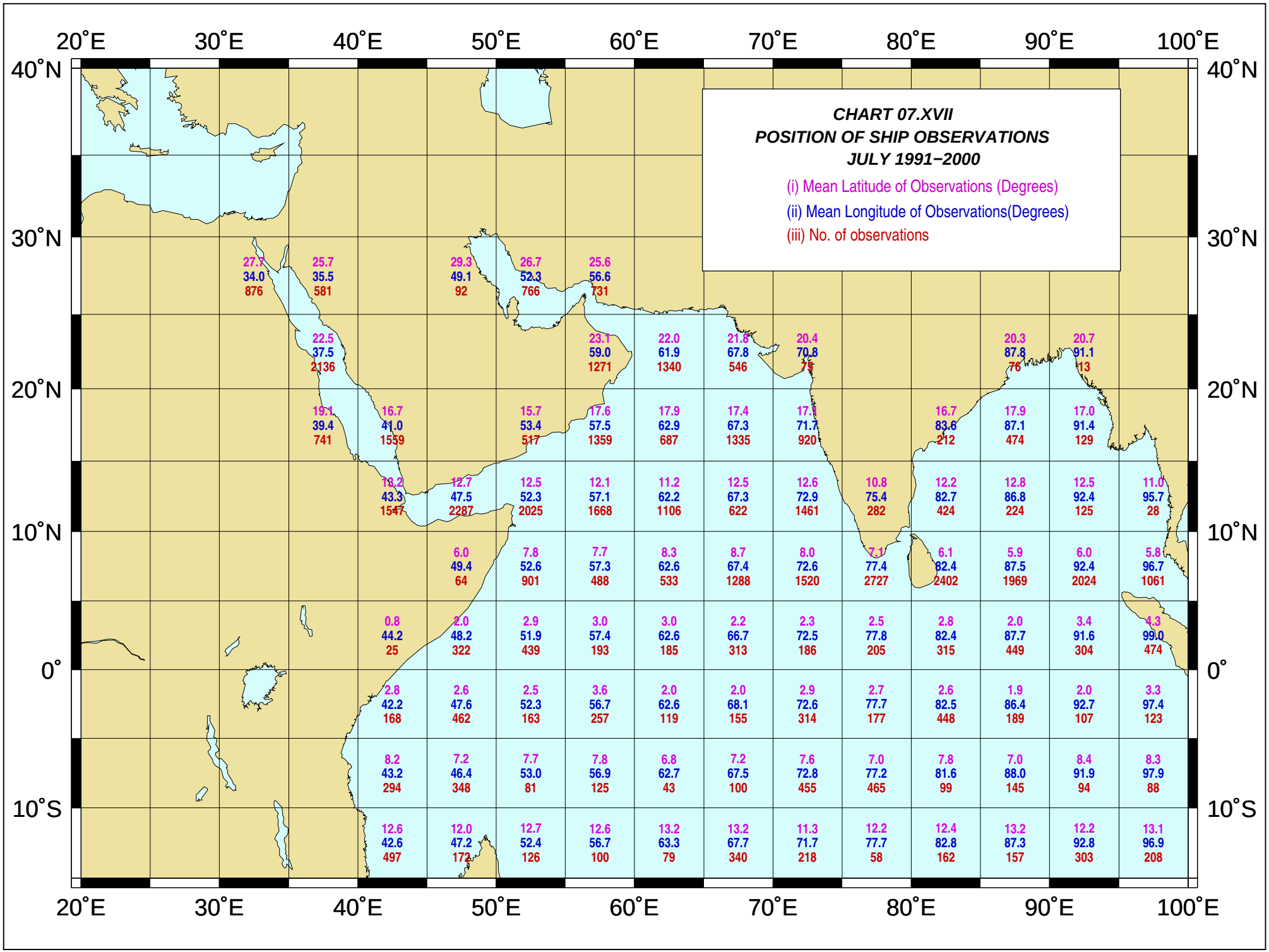


CHART 07.XVII
POSITION OF SHIP OBSERVATIONS
JULY 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.7 34.0 876
25.7 35.5 581
29.3 49.1 92
26.7 52.3 766
25.6 56.6 731
22.5 37.5 2136
23.1 59.0 1271
22.0 61.9 1340
21.8 67.8 546
20.4 70.8 75
20.3 87.8 76
20.7 91.1 13
19.1 39.4 741
16.7 41.0 1559
15.7 53.4 517
17.6 57.5 1359
17.9 62.9 687
17.4 67.3 1335
17.1 71.7 920
16.7 83.6 212
17.9 87.1 474
17.0 91.4 129
11.2 43.3 1547
12.7 47.5 2287
12.5 52.3 2025
12.1 57.1 1668
11.2 62.2 1106
12.5 67.3 622
12.6 72.9 1461
10.8 75.4 282
12.2 82.7 424
12.8 86.8 224
12.5 92.4 125
11.0 95.7 28
6.0 49.4 64
7.8 52.6 901
7.7 57.3 488
8.3 62.6 533
8.7 67.4 1288
8.0 72.6 1520
7.1 77.4 2727
6.1 82.4 2402
5.9 87.5 1969
6.0 92.4 2024
5.8 96.7 1061
0.8 44.2 25
2.0 48.2 322
2.9 51.9 439
3.0 57.4 193
3.0 62.6 185
2.2 66.7 313
2.3 72.5 186
2.5 77.8 205
2.8 82.4 315
2.0 87.7 449
3.4 91.6 304
4.3 99.0 474
2.8 42.2 168
2.6 47.6 462
2.5 52.3 163
3.6 56.7 257
2.0 62.6 119
2.0 68.1 155
2.9 72.6 314
2.7 77.7 177
2.6 82.5 448
1.9 86.4 189
2.0 92.7 107
3.3 97.4 123
8.2 43.2 294
7.2 46.4 348
7.7 53.0 81
7.8 56.9 125
6.8 62.7 43
7.2 67.5 100
7.6 72.8 455
7.0 77.2 465
7.8 81.6 99
7.0 88.0 145
8.4 91.9 94
8.3 97.9 88
12.6 42.6 497
12.0 47.2 172
12.7 52.4 126
12.6 56.7 100
13.2 63.3 79
13.2 67.7 340
11.3 71.7 218
12.2 77.7 58
12.4 82.8 162
13.2 87.3 157
12.2 92.8 303
13.1 96.9 208

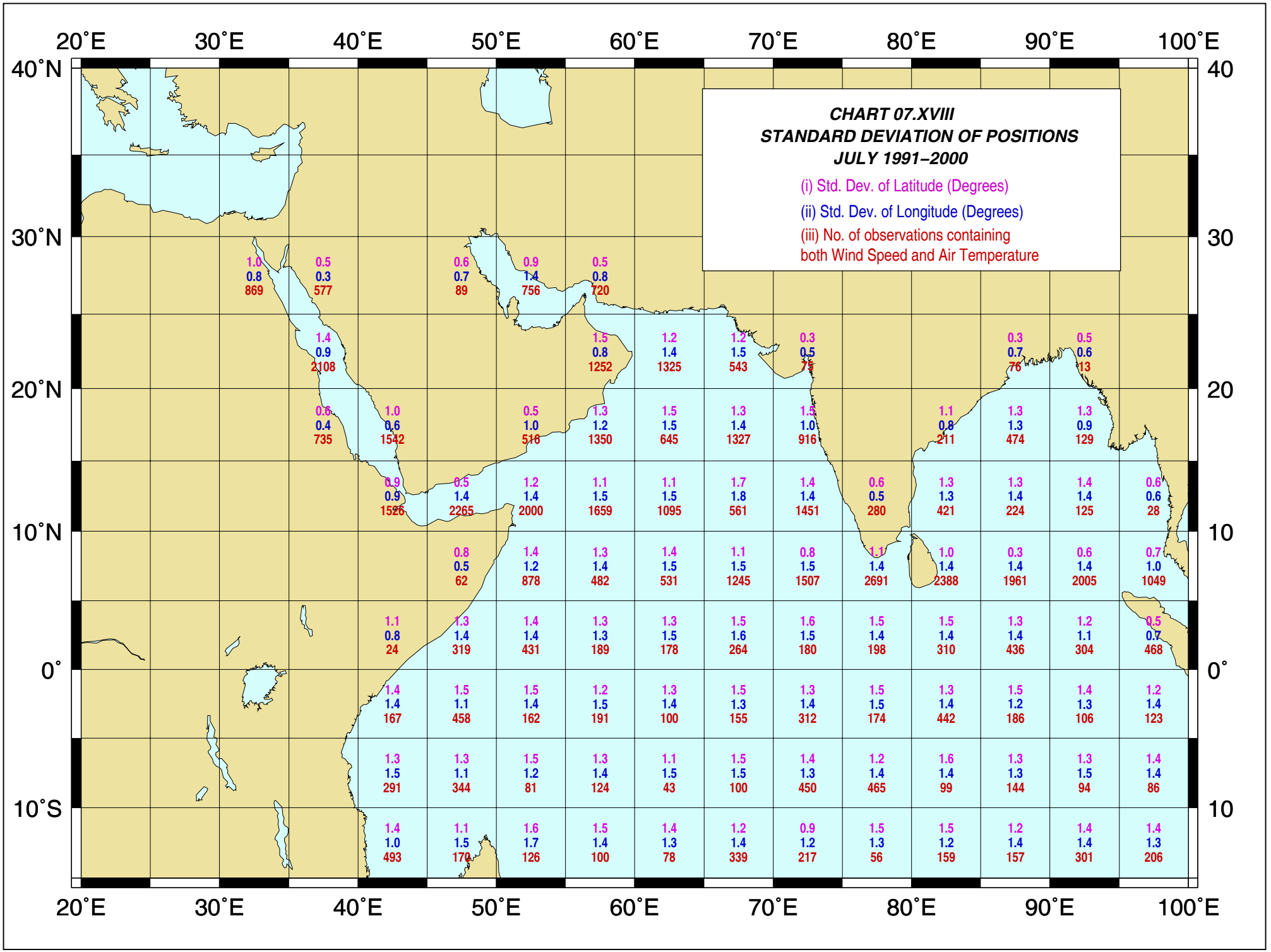
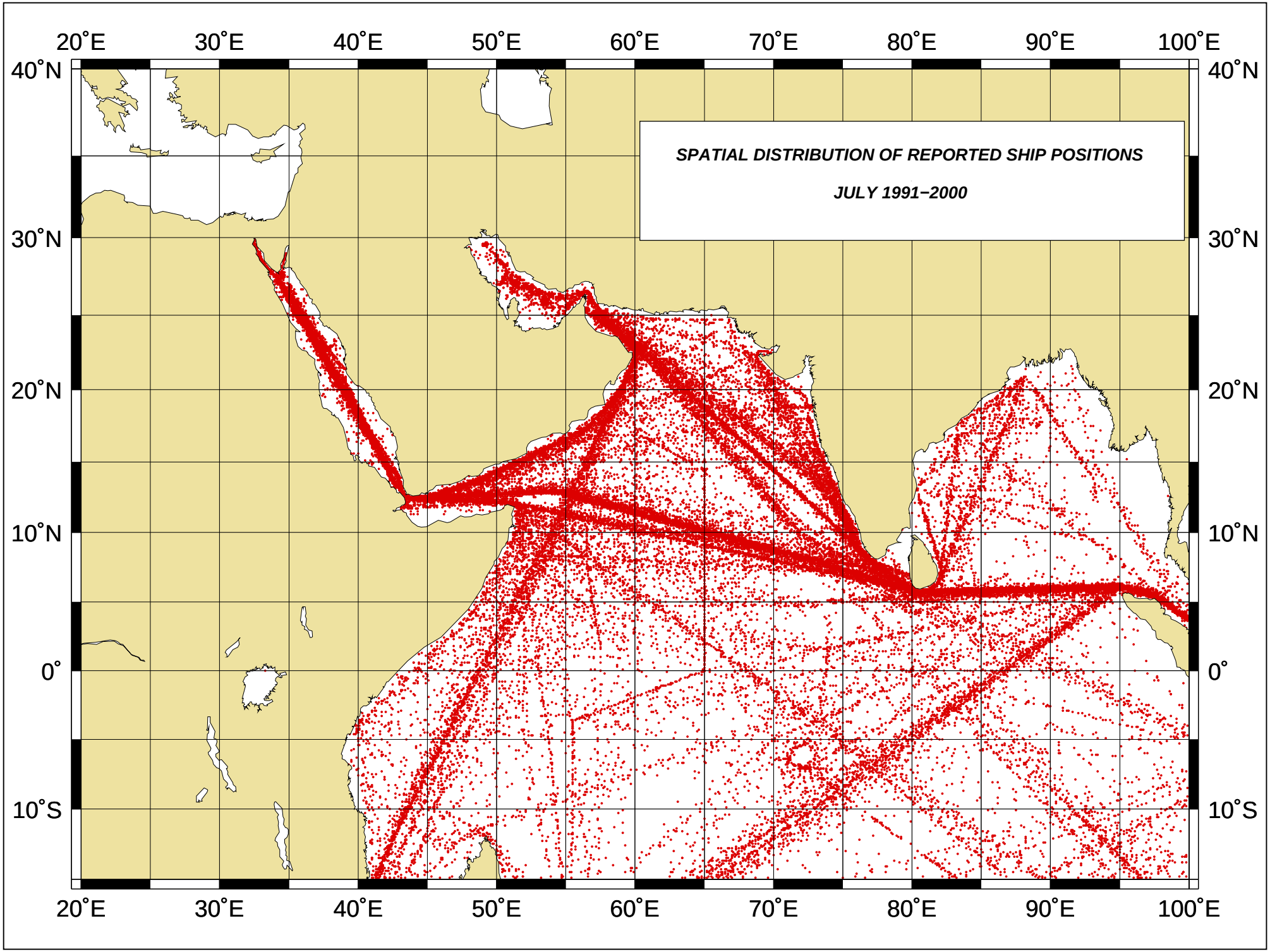
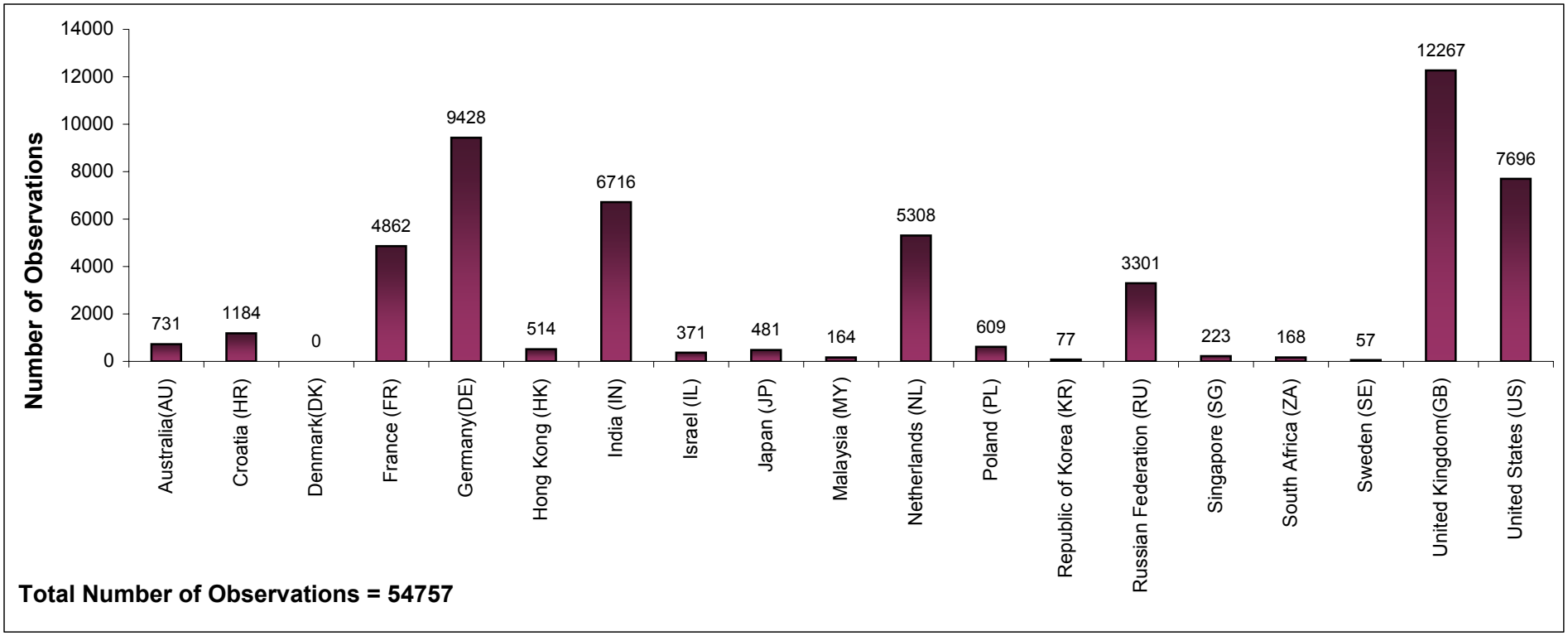


CHART 07.XVIII
STANDARD DEVIATION OF POSITIONS
JULY 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.8 869
0.5 0.3 577
0.6 0.7 89
0.9 1.4 756
0.5 0.8 720
1.4 0.9 2108
1.5 0.8 1252
1.2 1.4 1325
1.2 1.5 543
0.3 0.5 75
0.3 0.7 76
0.5 0.6 13
0.6 0.4 735
1.0 0.6 1542
0.5 1.0 516
1.3 1.2 1350
1.5 1.5 645
1.3 1.4 1327
1.5 1.0 916
1.1 0.8 211
1.3 1.3 474
1.3 0.9 129
0.9 0.9 1526
0.5 1.4 2265
1.2 1.4 2000
1.1 1.5 1659
1.1 1.5 1095
1.7 1.8 561
1.4 1.4 1451
0.6 0.5 280
1.3 1.3 421
1.3 1.4 224
1.4 1.4 125
0.6 0.6 28
0.8 0.5 62
1.4 1.2 878
1.3 1.4 482
1.4 1.5 531
1.1 1.5 1245
0.8 1.5 1507
1.1 1.4 2691
1.0 1.4 2388
0.3 1.4 1961
0.6 1.4 2005
0.7 1.0 1049
1.1 0.8 24
1.3 1.4 319
1.4 1.4 431
1.3 1.3 189
1.3 1.5 178
1.5 1.6 264
1.6 1.5 180
1.5 1.4 198
1.5 1.4 310
1.3 1.4 436
1.2 1.1 304
0.5 0.7 468
1.4 1.4 167
1.5 1.1 458
1.5 1.4 162
1.2 1.5 191
1.3 1.4 100
1.5 1.3 155
1.3 1.4 312
1.5 1.5 174
1.3 1.4 442
1.5 1.2 186
1.4 1.3 106
1.2 1.4 123
1.3 1.5 291
1.3 1.1 344
1.5 1.2 81
1.3 1.4 124
1.1 1.5 43
1.5 1.5 100
1.4 1.3 450
1.2 1.4 465
1.6 1.4 99
1.3 1.3 144
1.3 1.5 94
1.4 1.4 86
1.4 1.0 493
1.1 1.5 170
1.6 1.7 126
1.5 1.4 100
1.4 1.3 78
1.2 1.4 339
0.9 1.2 217
1.5 1.3 56
1.5 1.2 159
1.2 1.4 157
1.4 1.4 301
1.4 1.3 206


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
JULY 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

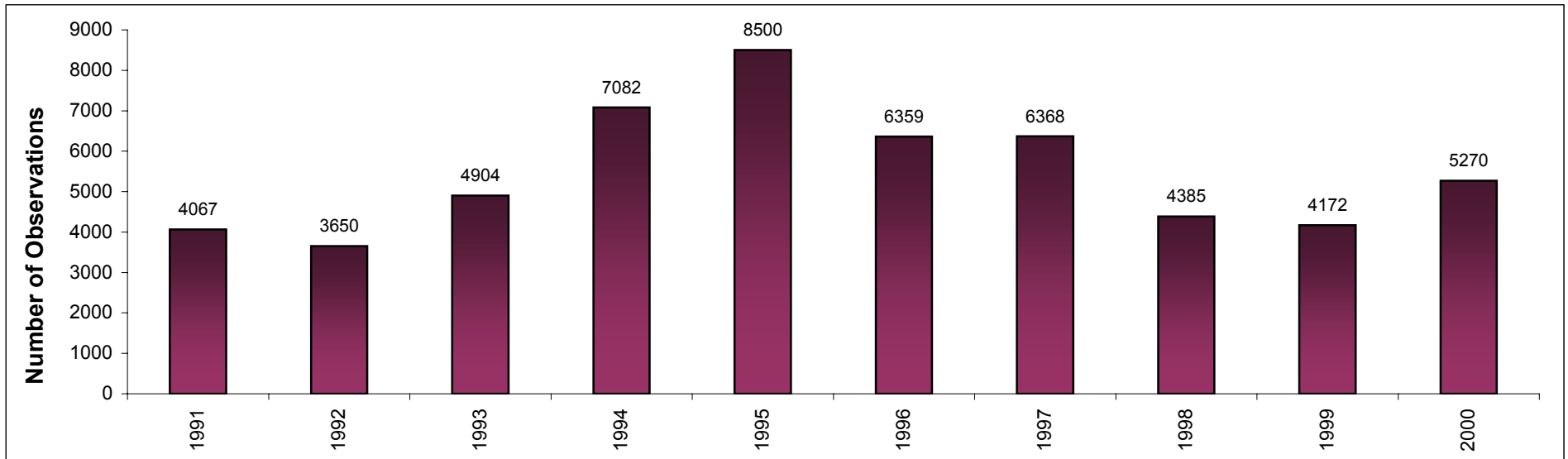
JULY : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 54757

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 54757

Marine Climatological Summary Charts 1991-2000

CHARTS OF AUGUST 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

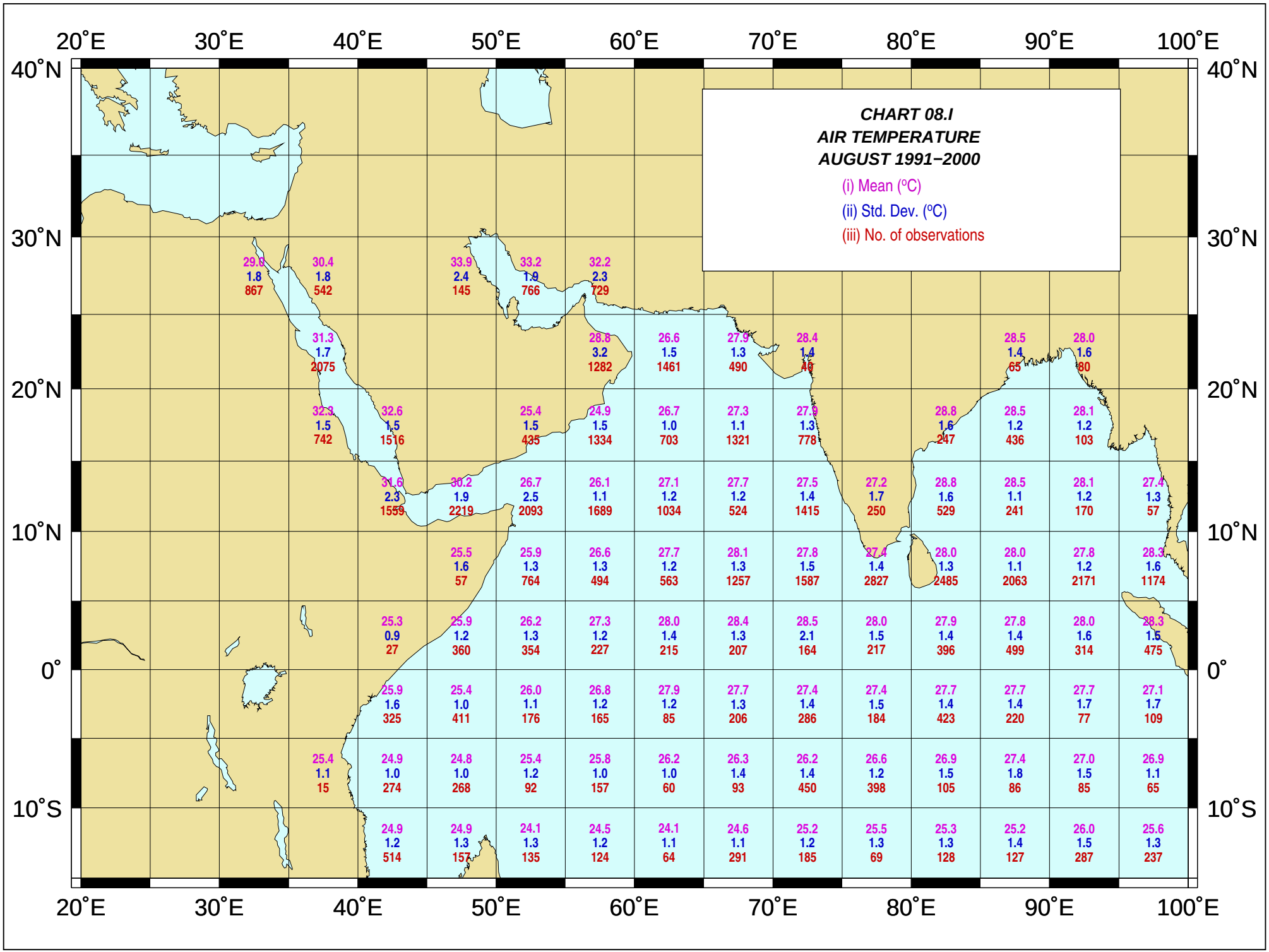


CHART 08.I
AIR TEMPERATURE
AUGUST 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
29.6 1.8 867
30.4 1.8 542
33.9 2.4 145
33.2 1.9 766
32.2 2.3 729
31.3 1.7 2075
28.8 3.2 1282
26.6 1.5 1461
27.9 1.3 490
28.4 1.4 46
28.5 1.4 65
28.0 1.6 80
32.3 1.5 742
32.6 1.5 1516
25.4 1.5 435
24.9 1.5 1334
26.7 1.0 703
27.3 1.1 1321
27.9 1.3 778
28.8 1.6 247
28.5 1.2 436
28.1 1.2 103
31.6 2.3 1559
30.2 1.9 2219
26.7 2.5 2093
26.1 1.1 1689
27.1 1.2 1034
27.7 1.2 524
27.5 1.4 1415
27.2 1.7 250
28.8 1.6 529
28.5 1.1 241
28.1 1.2 170
27.4 1.3 57
25.5 1.6 57
25.9 1.3 764
26.6 1.3 494
27.7 1.2 563
28.1 1.3 1257
27.8 1.5 1587
27.4 1.4 2827
28.0 1.3 2485
28.0 1.1 2063
27.8 1.2 2171
28.3 1.6 1174
25.3 0.9 27
25.9 1.2 360
26.2 1.3 354
27.3 1.2 227
28.0 1.4 215
28.4 1.3 207
28.5 2.1 164
28.0 1.5 217
27.9 1.4 396
27.8 1.4 499
28.0 1.6 314
28.3 1.5 475
25.9 1.6 325
25.4 1.0 411
26.0 1.1 176
26.8 1.2 165
27.9 1.2 85
27.7 1.3 206
27.4 1.4 286
27.4 1.5 184
27.7 1.4 423
27.7 1.4 220
27.7 1.7 77
27.1 1.7 109
25.4 1.1 15
24.9 1.0 274
24.8 1.0 268
25.4 1.2 92
25.8 1.0 157
26.2 1.0 60
26.3 1.4 93
26.2 1.4 450
26.6 1.2 398
26.9 1.5 105
27.4 1.8 86
27.0 1.5 85
26.9 1.1 65
24.9 1.2 514
24.9 1.3 157
24.1 1.3 135
24.5 1.2 124
24.1 1.1 64
24.6 1.1 291
25.2 1.2 185
25.5 1.3 69
25.3 1.3 128
25.2 1.4 127
26.0 1.5 287
25.6 1.3 237

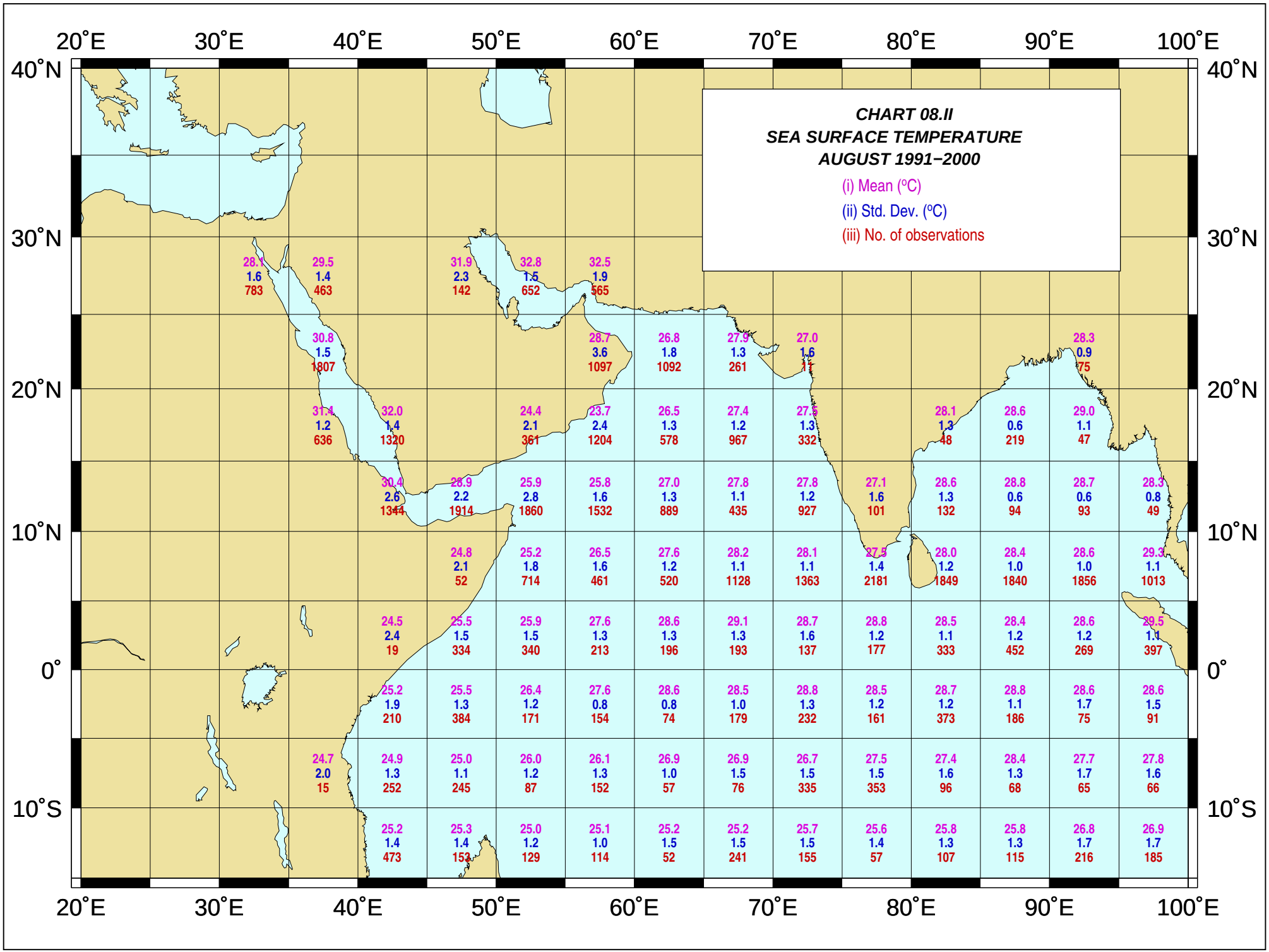


CHART 08.II
SEA SURFACE TEMPERATURE
AUGUST 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
28.1 1.6 783
29.5 1.4 463
31.9 2.3 142
32.8 1.5 652
32.5 1.9 565
30.8 1.5 1807
28.7 3.6 1097
26.8 1.8 1092
27.9 1.3 261
27.0 1.6 11
28.3 0.9 75
31.4 1.2 636
32.0 1.4 1320
24.4 2.1 361
23.7 2.4 1204
26.5 1.3 578
27.4 1.2 967
27.8 1.3 332
28.1 1.3 48
28.6 0.6 219
29.0 1.1 47
30.4 2.6 1344
28.9 2.2 1914
25.9 2.8 1860
25.8 1.6 1532
27.0 1.3 889
27.8 1.1 435
27.8 1.2 927
27.1 1.6 101
28.6 1.3 132
28.8 0.6 94
28.7 0.6 93
28.3 0.8 49
24.8 2.1 52
25.2 1.8 714
26.5 1.6 461
27.6 1.2 520
28.2 1.1 1128
28.1 1.1 1363
27.5 1.4 2181
28.0 1.2 1849
28.4 1.0 1840
28.6 1.0 1856
29.3 1.1 1013
24.5 2.4 19
25.5 1.5 334
25.9 1.5 340
27.6 1.3 213
28.6 1.3 196
29.1 1.3 193
28.7 1.6 137
28.8 1.2 177
28.5 1.1 333
28.4 1.2 452
28.6 1.2 269
29.5 1.1 397
25.2 1.9 210
25.5 1.3 384
26.4 1.2 171
27.6 0.8 154
28.6 0.8 74
28.5 1.0 179
28.8 1.3 232
28.5 1.2 161
28.7 1.2 373
28.8 1.1 186
28.6 1.7 75
28.6 1.5 91
24.7 2.0 15
24.9 1.3 252
25.0 1.1 245
26.0 1.2 87
26.1 1.3 152
26.9 1.0 57
26.9 1.5 76
26.7 1.5 335
27.5 1.5 353
27.4 1.6 96
28.4 1.3 68
27.7 1.7 65
27.8 1.6 66
25.2 1.4 473
25.3 1.4 153
25.0 1.2 129
25.1 1.0 114
25.2 1.5 52
25.2 1.5 241
25.7 1.5 155
25.6 1.4 57
25.8 1.3 107
25.8 1.3 115
26.8 1.7 216
26.9 1.7 185

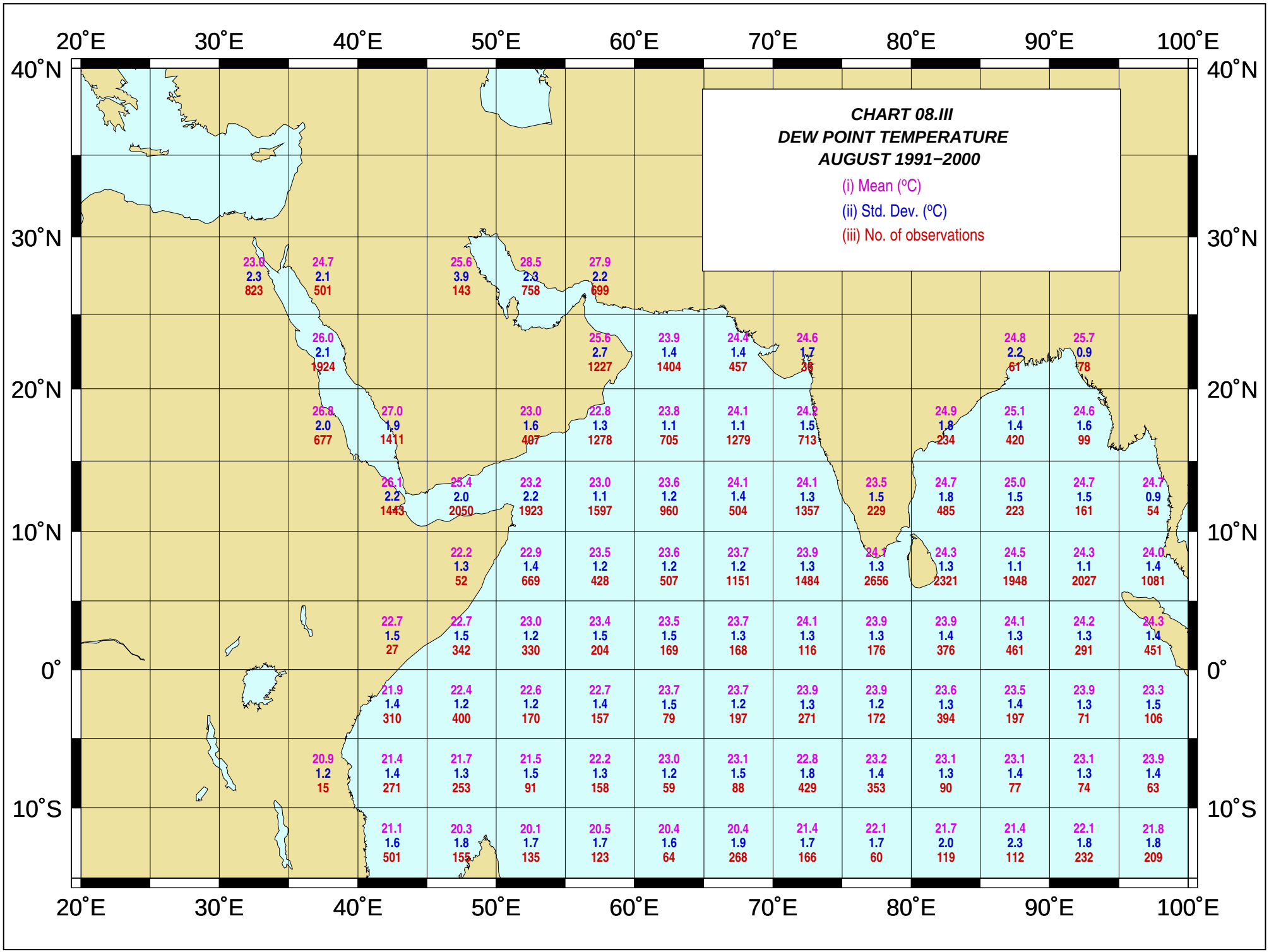


CHART 08.III
DEW POINT TEMPERATURE
AUGUST 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
23.8 2.3 823
24.7 2.1 501
25.6 3.9 143
28.5 2.3 758
27.9 2.2 699
26.0 2.1 1924
25.6 2.7 1227
23.9 1.4 1404
24.4 1.4 457
24.6 1.7 36
24.8 2.2 61
25.7 0.9 78
26.8 2.0 677
27.0 1.9 1411
23.0 1.6 407
22.8 1.3 1278
23.8 1.1 705
24.1 1.1 1279
24.2 1.5 713
24.9 1.8 234
25.1 1.4 420
24.6 1.6 99
26.1 2.2 1443
25.4 2.0 2050
23.2 2.2 1923
23.0 1.1 1597
23.6 1.2 960
24.1 1.4 504
24.1 1.3 1357
23.5 1.5 229
24.7 1.8 485
25.0 1.5 223
24.7 1.5 161
24.7 0.9 54
22.2 1.3 52
22.9 1.4 669
23.5 1.2 428
23.6 1.2 507
23.7 1.2 1151
23.9 1.3 1484
24.1 1.3 2656
24.3 1.3 2321
24.5 1.1 1948
24.3 1.1 2027
24.0 1.4 1081
22.7 1.5 27
22.7 1.5 342
23.0 1.2 330
23.4 1.5 204
23.5 1.5 169
23.7 1.3 168
24.1 1.3 116
23.9 1.3 176
23.9 1.4 376
24.1 1.3 461
24.2 1.3 291
24.3 1.4 451
21.9 1.4 310
22.4 1.2 400
22.6 1.2 170
22.7 1.4 157
23.7 1.5 79
23.7 1.2 197
23.9 1.3 271
23.9 1.2 172
23.6 1.3 394
23.5 1.4 197
23.9 1.3 71
23.3 1.5 106
20.9 1.2 15
21.4 1.4 271
21.7 1.3 253
21.5 1.5 91
22.2 1.3 158
23.0 1.2 59
23.1 1.5 88
22.8 1.8 429
23.2 1.4 353
23.1 1.3 90
23.1 1.4 77
23.1 1.3 74
23.9 1.4 63
21.1 1.6 501
20.3 1.8 155
20.1 1.7 135
20.5 1.7 123
20.4 1.6 64
20.4 1.9 268
21.4 1.7 166
22.1 1.7 60
21.7 2.0 119
21.4 2.3 112
22.1 1.8 232
21.8 1.8 209

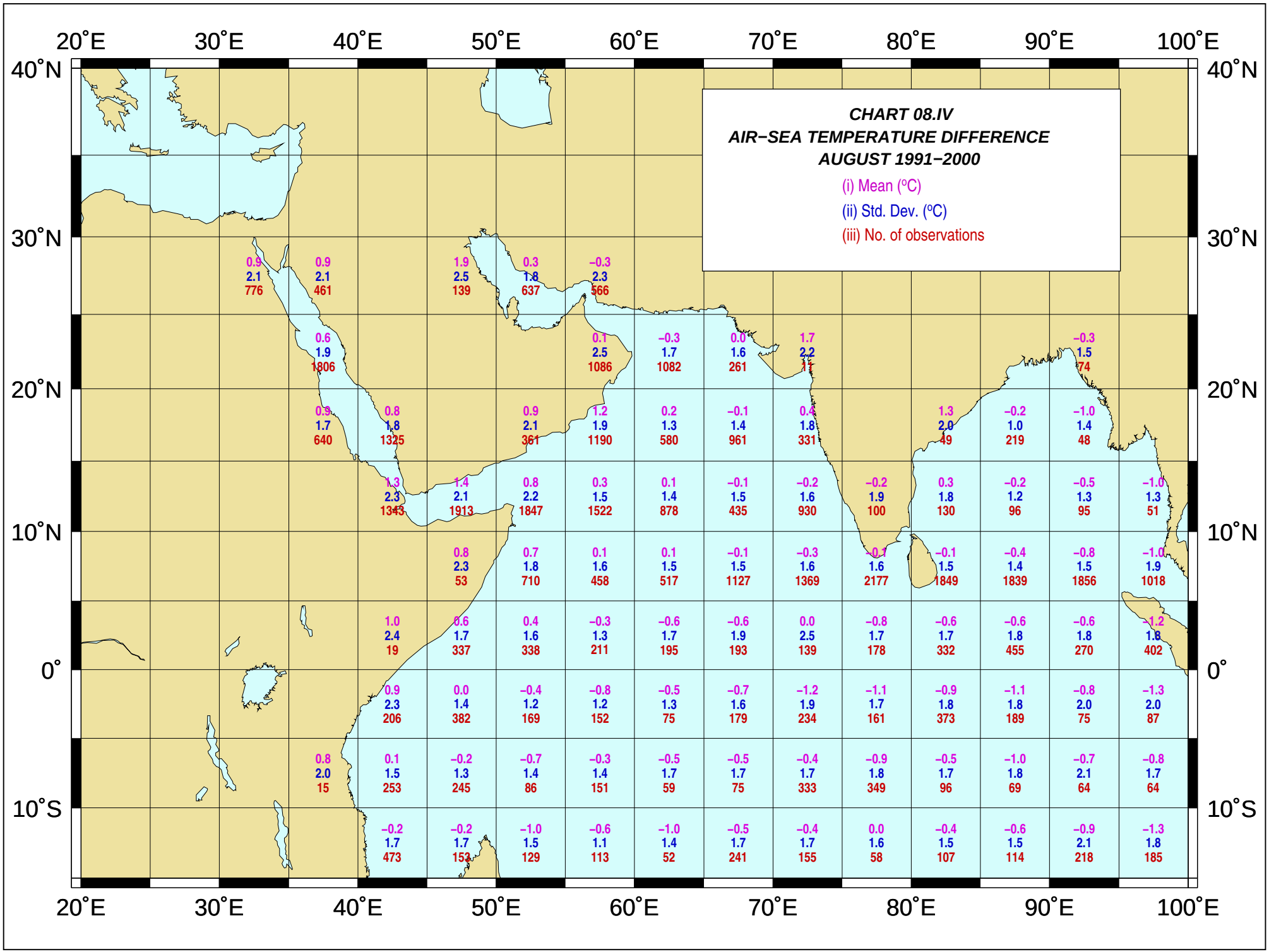


CHART 08.IV
AIR–SEA TEMPERATURE DIFFERENCE
AUGUST 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.9 2.1 776
0.9 2.1 461
1.9 2.5 139
0.3 1.8 637
−0.3 2.3 566
0.6 1.9 1806
0.1 2.5 1086
−0.3 1.7 1082
0.0 1.6 261
1.7 2.2 11
−0.3 1.5 74
0.9 1.7 640
0.8 1.8 1325
0.9 2.1 361
1.2 1.9 1190
0.2 1.3 580
−0.1 1.4 961
0.4 1.8 331
1.3 2.0 49
−0.2 1.0 219
−1.0 1.4 48
1.3 2.3 1343
1.4 2.1 1913
0.8 2.2 1847
0.3 1.5 1522
0.1 1.4 878
−0.1 1.5 435
−0.2 1.6 930
−0.2 1.9 100
0.3 1.8 130
−0.2 1.2 96
−0.5 1.3 95
−1.0 1.3 51
0.8 2.3 53
0.7 1.8 710
0.1 1.6 458
0.1 1.5 517
−0.1 1.5 1127
−0.3 1.6 1369
−0.1 1.6 2177
−0.1 1.5 1849
−0.4 1.4 1839
−0.8 1.5 1856
−1.0 1.9 1018
1.0 2.4 19
0.6 1.7 337
0.4 1.6 338
−0.3 1.3 211
−0.6 1.7 195
−0.6 1.9 193
0.0 2.5 139
−0.8 1.7 178
−0.6 1.7 332
−0.6 1.8 455
−0.6 1.8 270
−1.2 1.8 402
0.9 2.3 206
0.0 1.4 382
−0.4 1.2 169
−0.8 1.2 152
−0.5 1.3 75
−0.7 1.6 179
−1.2 1.9 234
−1.1 1.7 161
−0.9 1.8 373
−1.1 1.8 189
−0.8 2.0 75
−1.3 2.0 87
0.8 2.0 15
0.1 1.5 253
−0.2 1.3 245
−0.7 1.4 86
−0.3 1.4 151
−0.5 1.7 59
−0.5 1.7 75
−0.4 1.7 333
−0.9 1.8 349
−0.5 1.7 96
−1.0 1.8 69
−0.7 2.1 64
−0.8 1.7 64
−0.2 1.7 473
−0.2 1.7 153
−1.0 1.5 129
−0.6 1.1 113
−1.0 1.4 52
−0.5 1.7 241
−0.4 1.7 155
0.0 1.6 58
−0.4 1.5 107
−0.6 1.5 114
−0.9 2.1 218
−1.3 1.8 185

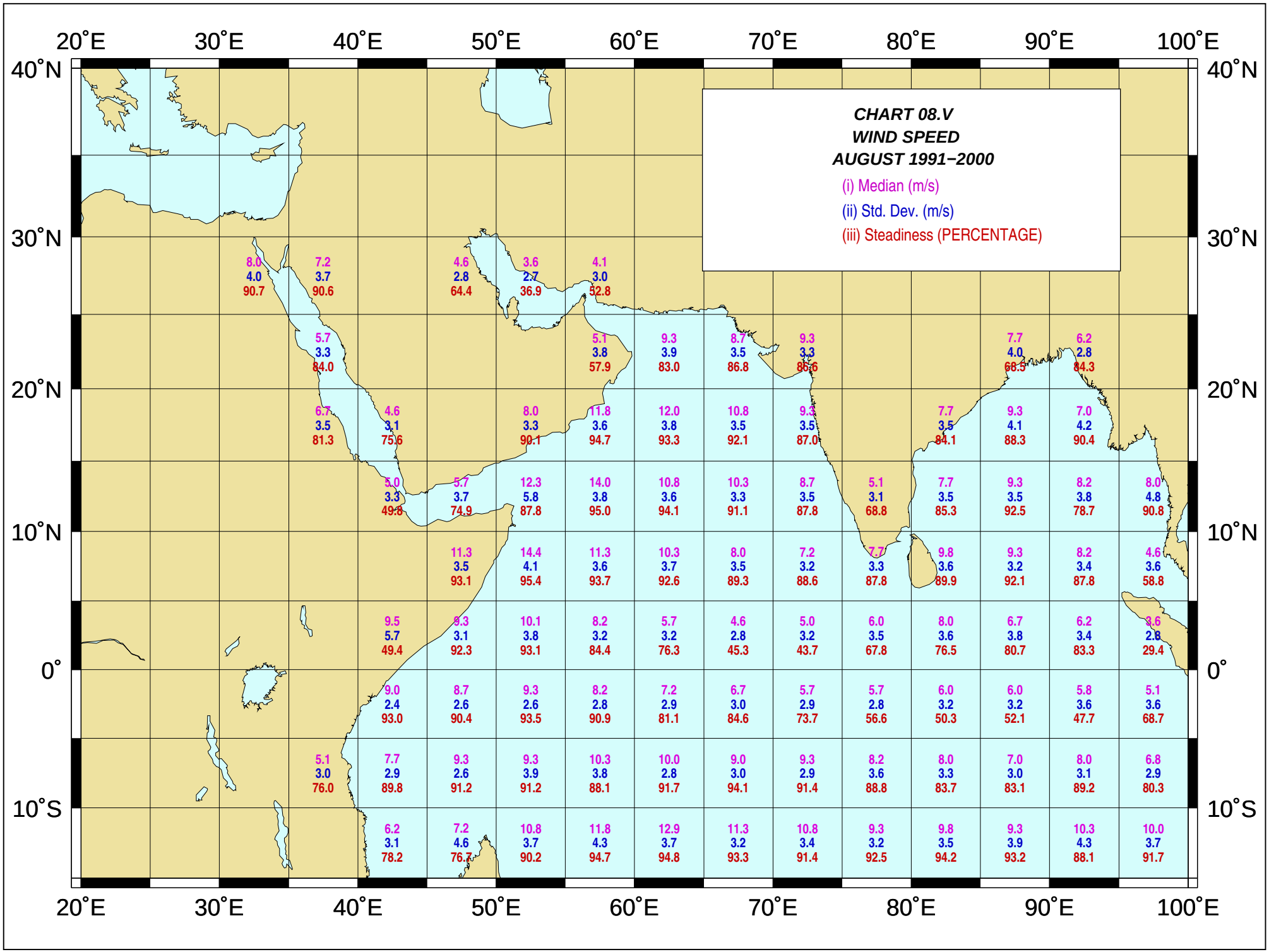


CHART 08.V
WIND SPEED
AUGUST 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
8.0 4.0 90.7
7.2 3.7 90.6
4.6 2.8 64.4
3.6 2.7 36.9
4.1 3.0 52.8
5.7 3.3 84.0
5.1 3.8 57.9
9.3 3.9 83.0
8.7 3.5 86.8
9.3 3.3 85.6
7.7 4.0 88.5
6.2 2.8 84.3
6.7 3.5 81.3
4.6 3.1 75.6
8.0 3.3 90.1
11.8 3.6 94.7
12.0 3.8 93.3
10.8 3.5 92.1
9.3 3.5 87.0
7.7 3.5 84.1
9.3 4.1 88.3
7.0 4.2 90.4
5.0 3.3 49.8
5.7 3.7 74.9
12.3 5.8 87.8
14.0 3.8 95.0
10.8 3.6 94.1
10.3 3.3 91.1
8.7 3.5 87.8
5.1 3.1 68.8
7.7 3.5 85.3
9.3 3.5 92.5
8.2 3.8 78.7
8.0 4.8 90.8
11.3 3.5 93.1
14.4 4.1 95.4
11.3 3.6 93.7
10.3 3.7 92.6
8.0 3.5 89.3
7.2 3.2 88.6
7.7 3.3 87.8
9.8 3.6 89.9
9.3 3.2 92.1
8.2 3.4 87.8
4.6 3.6 58.8
9.5 5.7 49.4
9.3 3.1 92.3
10.1 3.8 93.1
8.2 3.2 84.4
5.7 3.2 76.3
4.6 2.8 45.3
5.0 3.2 43.7
6.0 3.5 67.8
8.0 3.6 76.5
6.7 3.8 80.7
6.2 3.4 83.3
3.6 2.8 29.4
9.0 2.4 93.0
8.7 2.6 90.4
9.3 2.6 93.5
8.2 2.8 90.9
7.2 2.9 81.1
6.7 3.0 84.6
5.7 2.9 73.7
5.7 2.8 56.6
6.0 3.2 50.3
6.0 3.2 52.1
5.8 3.6 47.7
5.1 3.6 68.7
5.1 3.0 76.0
7.7 2.9 89.8
9.3 2.6 91.2
9.3 3.9 91.2
10.3 3.8 88.1
10.0 2.8 91.7
9.0 3.0 94.1
9.3 2.9 91.4
8.2 3.6 88.8
8.0 3.3 83.7
7.0 3.0 83.1
8.0 3.1 89.2
6.8 2.9 80.3
6.2 3.1 78.2
7.2 4.6 76.7
10.8 3.7 90.2
11.8 4.3 94.7
12.9 3.7 94.8
11.3 3.2 93.3
10.8 3.4 91.4
9.3 3.2 92.5
9.8 3.5 94.2
9.3 3.9 93.2
10.3 4.3 88.1
10.0 3.7 91.7

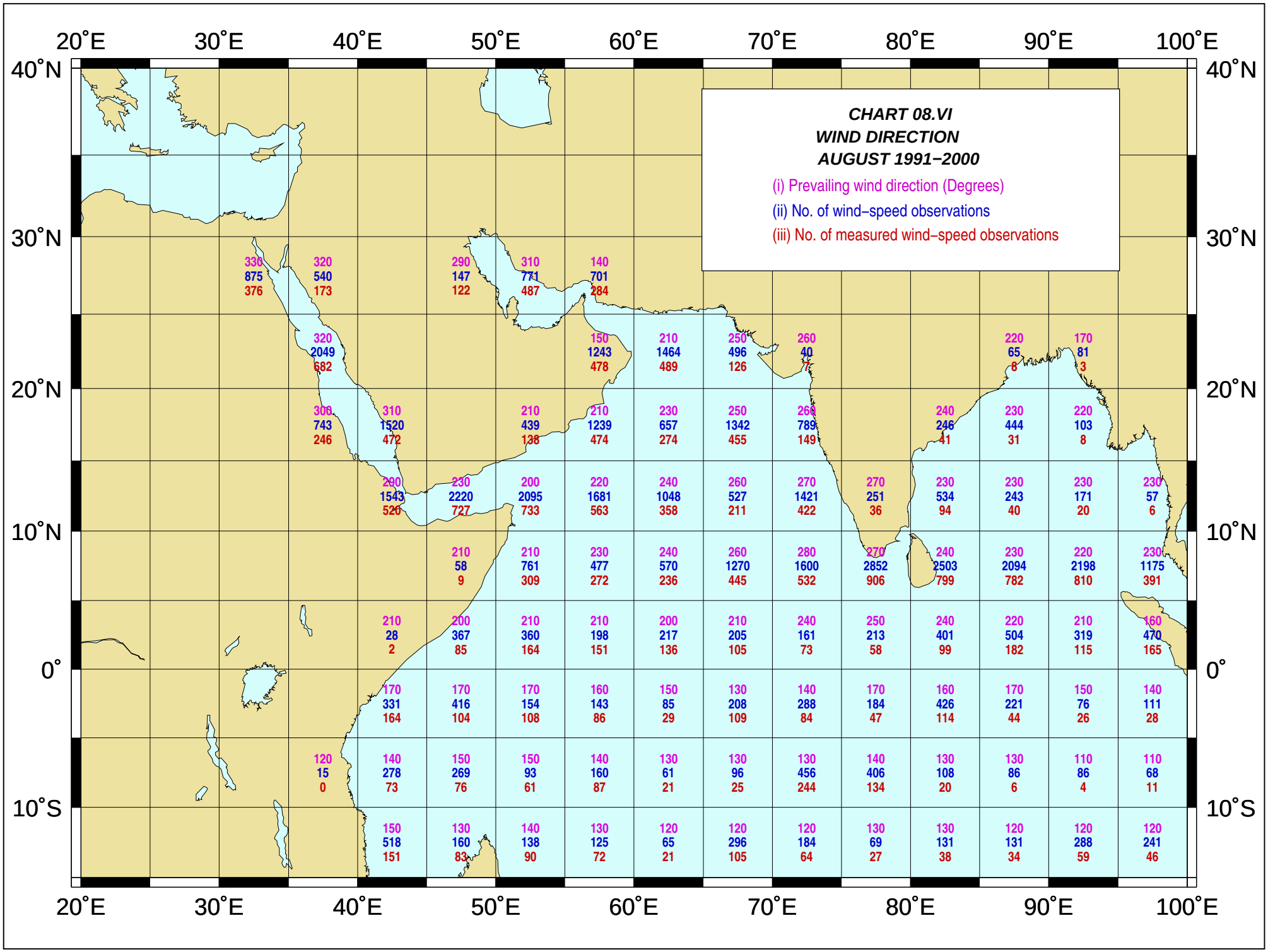


CHART 08.VI
WIND DIRECTION
AUGUST 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
330 875 376
320 540 173
290 147 122
310 771 487
140 701 284
320 2049 682
150 1243 478
210 1464 489
250 496 126
260 40 7
220 65 8
170 81 3
300 743 246
310 1520 472
210 439 138
210 1239 474
230 657 274
250 1342 455
260 789 149
240 246 41
230 444 31
220 103 8
290 1543 520
230 2220 727
200 2095 733
220 1681 563
240 1048 358
260 527 211
270 1421 422
270 251 36
230 534 94
230 243 40
230 171 20
230 57 6
210 58 9
210 761 309
230 477 272
240 570 236
260 1270 445
280 1600 532
270 2852 906
240 2503 799
230 2094 782
220 2198 810
230 1175 391
210 28 2
200 367 85
210 360 164
210 198 151
200 217 136
210 205 105
240 161 73
250 213 58
240 401 99
220 504 182
210 319 115
160 470 165
170 331 164
170 416 104
170 154 108
160 143 86
150 85 29
130 208 109
140 288 84
170 184 47
160 426 114
170 221 44
150 76 26
140 111 28
120 15 0
140 278 73
150 269 76
150 93 61
140 160 87
130 61 21
130 96 25
130 456 244
140 406 134
130 108 20
130 86 6
110 86 4
110 68 11
150 518 151
130 160 83
140 138 90
130 125 72
120 65 21
120 296 105
120 184 64
130 69 27
130 131 38
120 131 34
120 288 59
120 241 46

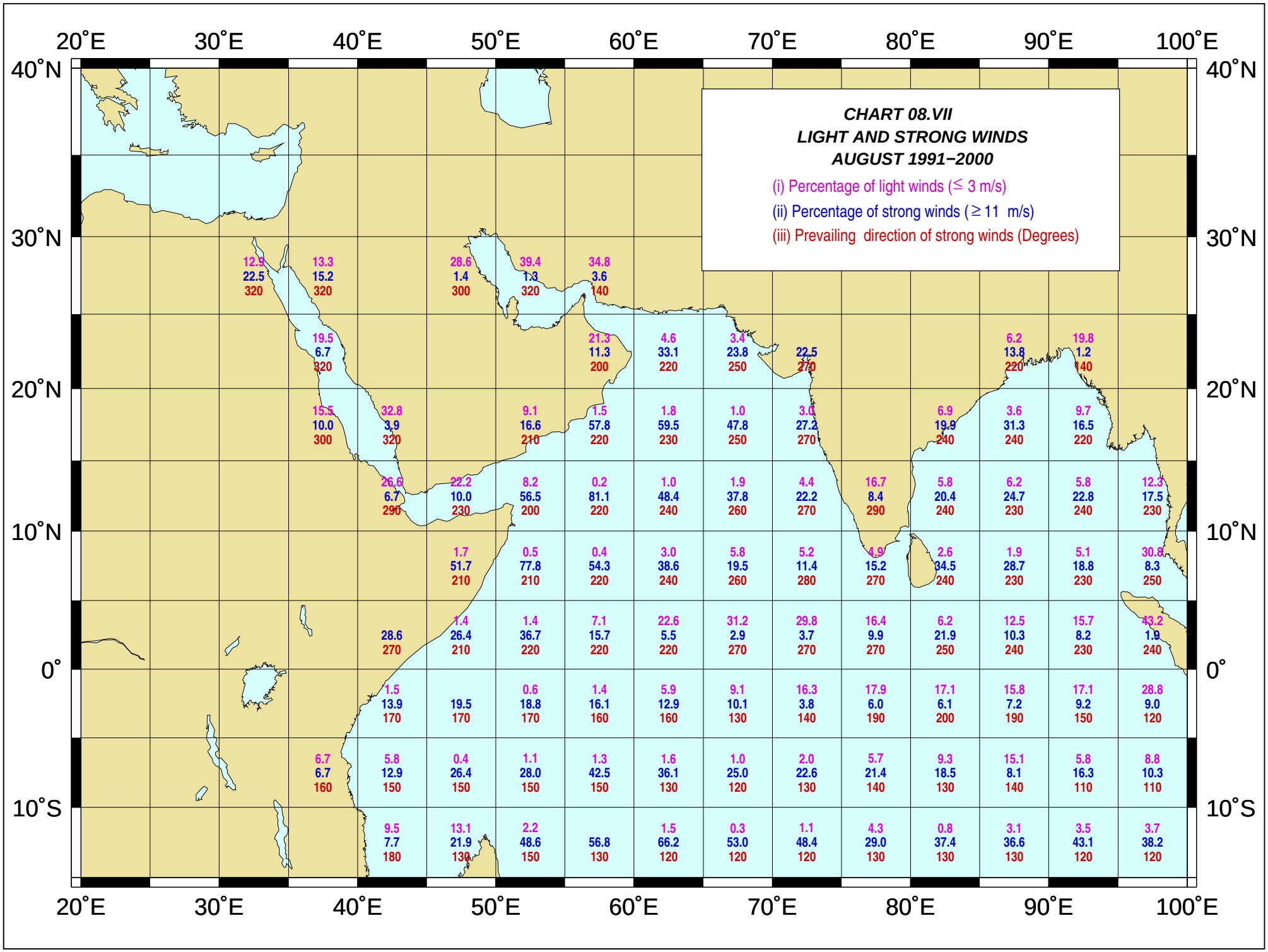


CHART 08.VII
LIGHT AND STRONG WINDS
AUGUST 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
12.9 22.5 320
13.3 15.2 320
28.6 1.4 300
39.4 1.3 320
34.8 3.6 140
19.5 6.7 320
21.3 11.3 200
4.6 33.1 220
3.4 23.8 250
22.5 270
6.2 13.8 220
19.8 1.2 140
15.5 10.0 300
32.8 3.9 320
9.1 16.6 210
1.5 57.8 220
1.8 59.5 230
1.0 47.8 250
3.0 27.2 270
6.9 19.9 240
3.6 31.3 240
9.7 16.5 220
26.6 6.7 290
22.2 10.0 230
8.2 56.5 200
0.2 81.1 220
1.0 48.4 240
1.9 37.8 260
4.4 22.2 270
16.7 8.4 290
5.8 20.4 240
6.2 24.7 230
5.8 22.8 240
12.3 17.5 230
1.7 51.7 210
0.5 77.8 210
0.4 54.3 220
3.0 38.6 240
5.8 19.5 260
5.2 11.4 280
4.9 15.2 270
2.6 34.5 240
1.9 28.7 230
5.1 18.8 230
30.8 8.3 250
28.6 270
1.4 26.4 210
1.4 36.7 220
7.1 15.7 220
22.6 5.5 220
31.2 2.9 270
29.8 3.7 270
16.4 9.9 270
6.2 21.9 250
12.5 10.3 240
15.7 8.2 230
43.2 1.9 240
1.5 13.9 170
19.5 170
0.6 18.8 170
1.4 16.1 160
5.9 12.9 160
9.1 10.1 130
16.3 3.8 140
17.9 6.0 190
17.1 6.1 200
15.8 7.2 190
17.1 9.2 150
28.8 9.0 120
6.7 6.7 160
5.8 12.9 150
0.4 26.4 150
1.1 28.0 150
1.3 42.5 150
1.6 36.1 130
1.0 25.0 120
2.0 22.6 130
5.7 21.4 140
9.3 18.5 130
15.1 8.1 140
5.8 16.3 110
8.8 10.3 110
9.5 7.7 180
13.1 21.9 130
2.2 48.6 150
56.8 130
1.5 66.2 120
0.3 53.0 120
1.1 48.4 120
4.3 29.0 130
0.8 37.4 130
3.1 36.6 130
3.5 43.1 120
3.7 38.2 120

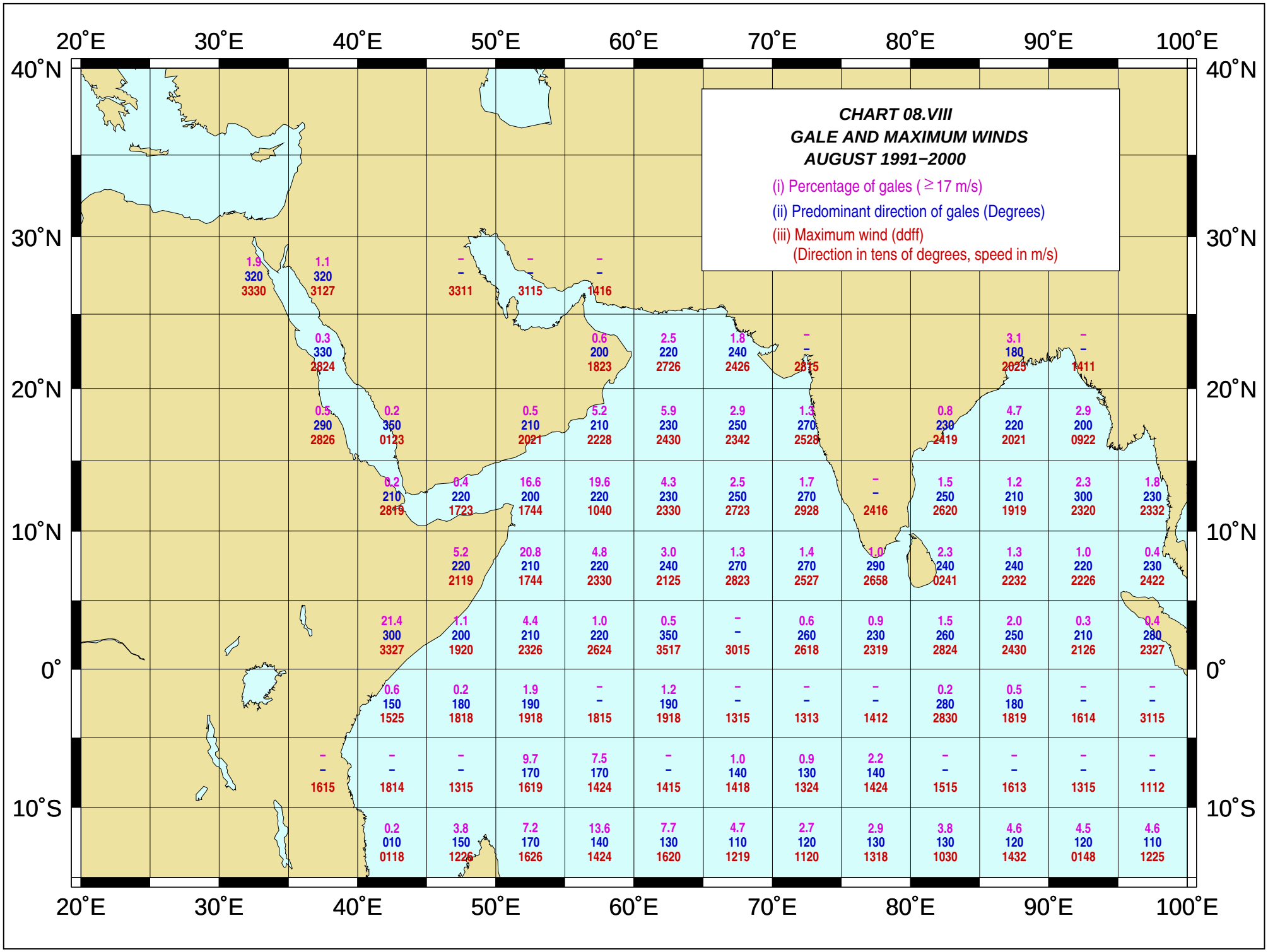


CHART 08.VIII
GALE AND MAXIMUM WINDS
AUGUST 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.9 320 3330
1.1 320 3127
– – 3311
– – 3115
– – 1416
0.3 330 2824
0.6 200 1823
2.5 220 2726
1.8 240 2426
– – 2815
3.1 180 2025
– – 1411
0.5 290 2826
0.2 350 0123
0.5 210 2021
5.2 210 2228
5.9 230 2430
2.9 250 2342
1.3 270 2528
0.8 230 2419
4.7 220 2021
2.9 200 0922
0.2 210 2819
0.4 220 1723
16.6 200 1744
19.6 220 1040
4.3 230 2330
2.5 250 2723
1.7 270 2928
– – 2416
1.5 250 2620
1.2 210 1919
2.3 300 2320
1.8 230 2332
5.2 220 2119
20.8 210 1744
4.8 220 2330
3.0 240 2125
1.3 270 2823
1.4 270 2527
1.0 290 2658
2.3 240 0241
1.3 240 2232
1.0 220 2226
0.4 230 2422
21.4 300 3327
1.1 200 1920
4.4 210 2326
1.0 220 2624
0.5 350 3517
– – 3015
0.6 260 2618
0.9 230 2319
1.5 260 2824
2.0 250 2430
0.3 210 2126
0.4 280 2327
0.6 150 1525
0.2 180 1818
1.9 190 1918
– – 1815
1.2 190 1918
– – 1315
– – 1313
– – 1412
0.2 280 2830
0.5 180 1819
– – 1614
– – 3115
– – 1615
– – 1814
– – 1315
9.7 170 1619
7.5 170 1424
– – 1415
1.0 140 1418
0.9 130 1324
2.2 140 1424
– – 1515
– – 1613
– – 1315
– – 1112
0.2 010 0118
3.8 150 1226
7.2 170 1626
13.6 140 1424
7.7 130 1620
4.7 110 1219
2.7 120 1120
2.9 130 1318
3.8 130 1030
4.6 120 1432
4.5 120 0148
4.6 110 1225

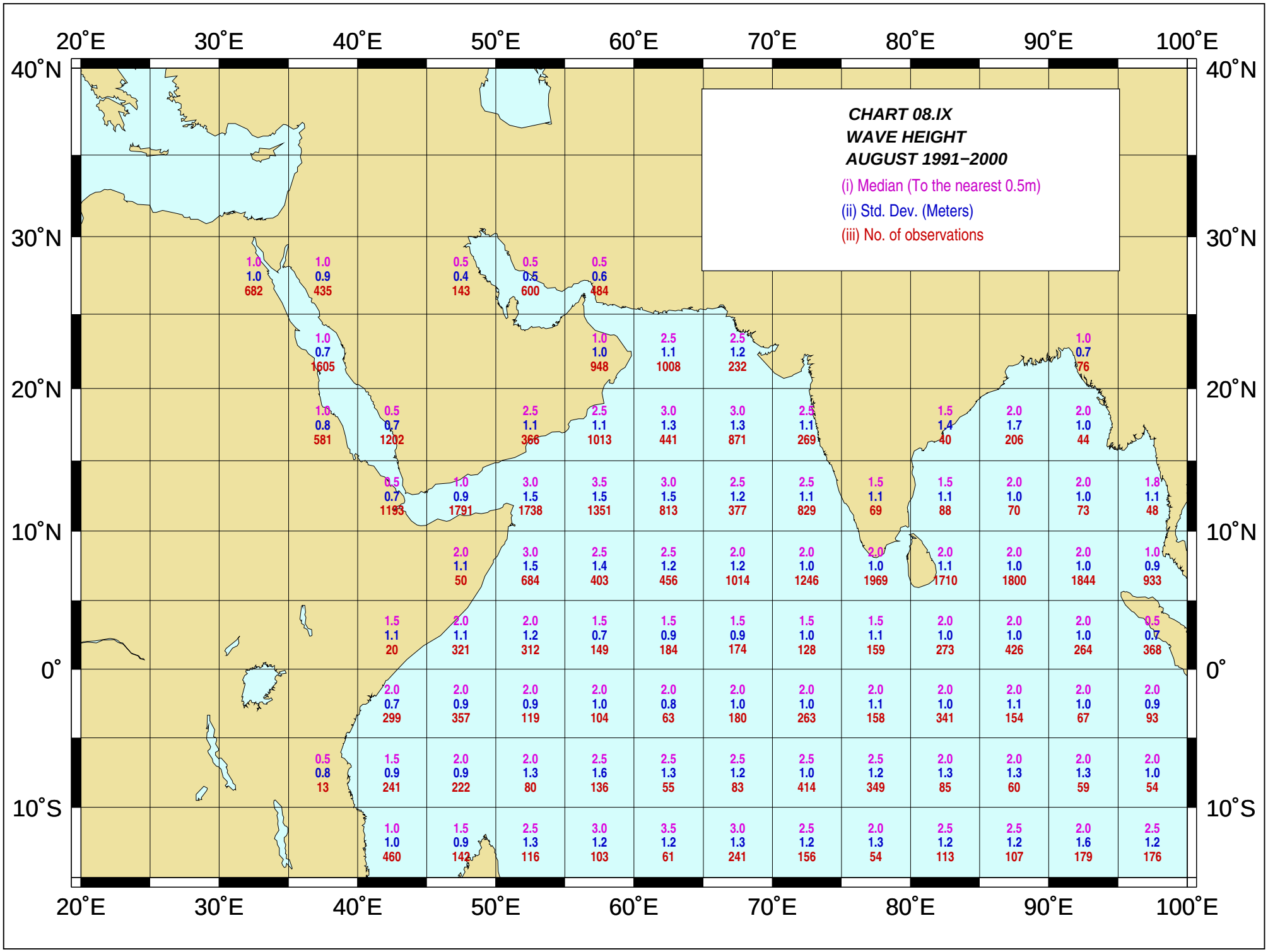


CHART 08.IX
WAVE HEIGHT
AUGUST 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 1.0 682
1.0 0.9 435
0.5 0.4 143
0.5 0.5 600
0.5 0.6 484
1.0 0.7 1605
1.0 1.0 948
2.5 1.1 1008
2.5 1.2 232
1.0 0.7 76
1.0 0.8 581
0.5 0.7 1202
2.5 1.1 366
2.5 1.1 1013
3.0 1.3 441
3.0 1.3 871
2.5 1.1 269
1.5 1.4 40
2.0 1.7 206
2.0 1.0 44
0.5 0.7 1193
1.0 0.9 1791
3.0 1.5 1738
3.5 1.5 1351
3.0 1.5 813
2.5 1.2 377
2.5 1.1 829
1.5 1.1 69
1.5 1.1 88
2.0 1.0 70
2.0 1.0 73
1.8 1.1 48
2.0 1.1 50
3.0 1.5 684
2.5 1.4 403
2.5 1.2 456
2.0 1.2 1014
2.0 1.0 1246
2.0 1.0 1969
2.0 1.1 1710
2.0 1.0 1800
2.0 1.0 1844
1.0 0.9 933
1.5 1.1 20
2.0 1.1 321
2.0 1.2 312
1.5 0.7 149
1.5 0.9 184
1.5 0.9 174
1.5 1.0 128
1.5 1.1 159
2.0 1.0 273
2.0 1.0 426
2.0 1.0 264
0.5 0.7 368
2.0 0.7 299
2.0 0.9 357
2.0 0.9 119
2.0 1.0 104
2.0 0.8 63
2.0 1.0 180
2.0 1.0 263
2.0 1.1 158
2.0 1.0 341
2.0 1.1 154
2.0 1.0 67
2.0 0.9 93
0.5 0.8 13
1.5 0.9 241
2.0 0.9 222
2.0 1.3 80
2.5 1.6 136
2.5 1.3 55
2.5 1.2 83
2.5 1.0 414
2.5 1.2 349
2.0 1.3 85
2.0 1.3 60
2.0 1.3 59
2.0 1.0 54
1.0 1.0 460
1.5 0.9 142
2.5 1.3 116
3.0 1.2 103
3.5 1.2 61
3.0 1.3 241
2.5 1.2 156
2.0 1.3 54
2.5 1.2 113
2.5 1.2 107
2.0 1.6 179
2.5 1.2 176

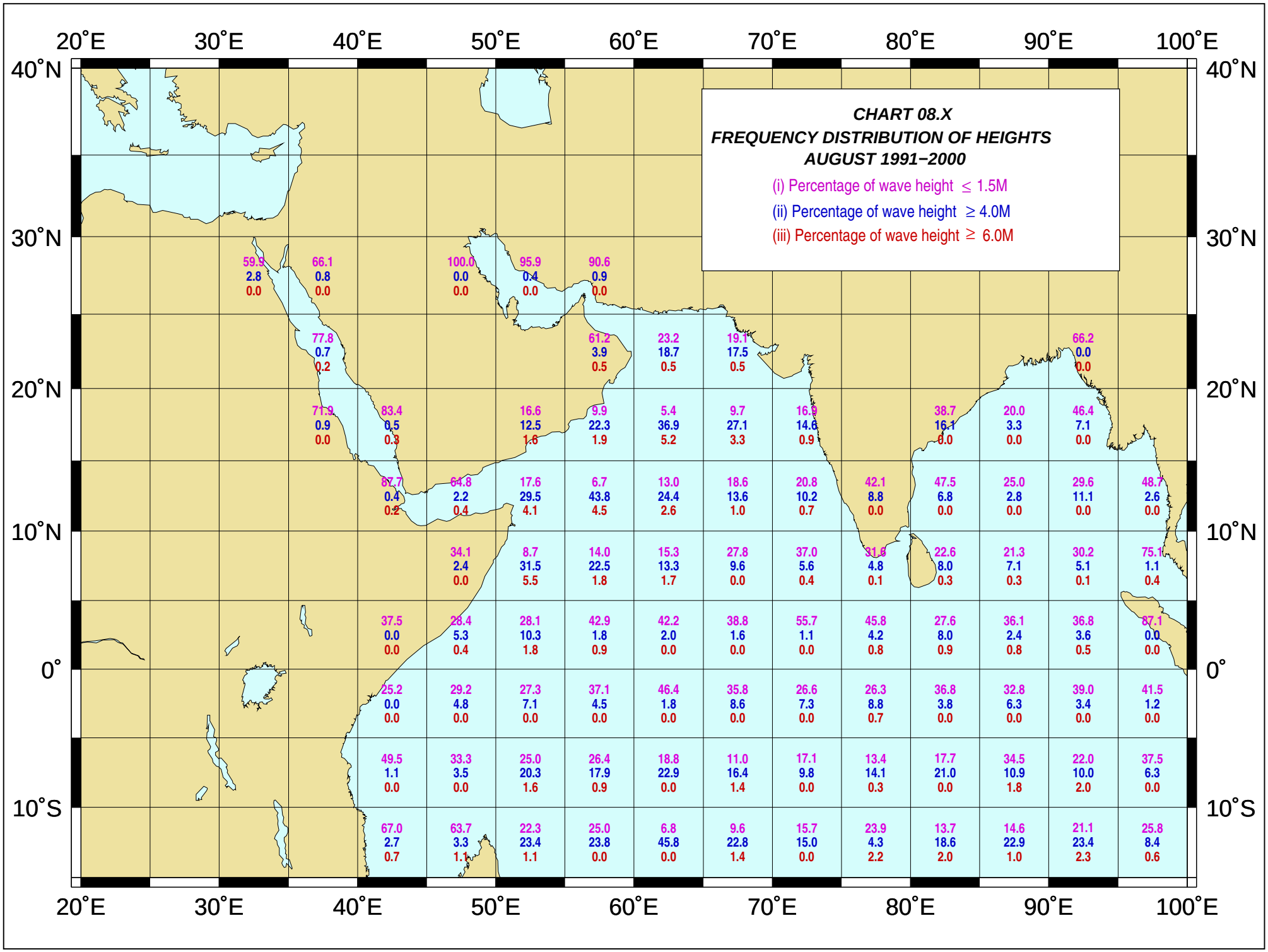


CHART 08.X
FREQUENCY DISTRIBUTION OF HEIGHTS
AUGUST 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
59.9 2.8 0.0
66.1 0.8 0.0
100.0 0.0 0.0
95.9 0.4 0.0
90.6 0.9 0.0
77.8 0.7 0.2
61.2 3.9 0.5
23.2 18.7 0.5
19.1 17.5 0.5
66.2 0.0 0.0
71.9 0.9 0.0
83.4 0.5 0.3
16.6 12.5 1.6
9.9 22.3 1.9
5.4 36.9 5.2
9.7 27.1 3.3
16.9 14.6 0.9
38.7 16.1 0.0
20.0 3.3 0.0
46.4 7.1 0.0
87.7 0.4 0.2
64.8 2.2 0.4
17.6 29.5 4.1
6.7 43.8 4.5
13.0 24.4 2.6
18.6 13.6 1.0
20.8 10.2 0.7
42.1 8.8 0.0
47.5 6.8 0.0
25.0 2.8 0.0
29.6 11.1 0.0
48.7 2.6 0.0
34.1 2.4 0.0
8.7 31.5 5.5
14.0 22.5 1.8
15.3 13.3 1.7
27.8 9.6 0.0
37.0 5.6 0.4
31.6 4.8 0.1
22.6 8.0 0.3
21.3 7.1 0.3
30.2 5.1 0.1
75.1 1.1 0.4
37.5 0.0 0.0
28.4 5.3 0.4
28.1 10.3 1.8
42.9 1.8 0.9
42.2 2.0 0.0
38.8 1.6 0.0
55.7 1.1 0.0
45.8 4.2 0.8
27.6 8.0 0.9
36.1 2.4 0.8
36.8 3.6 0.5
87.1 0.0 0.0
25.2 0.0 0.0
29.2 4.8 0.0
27.3 7.1 0.0
37.1 4.5 0.0
46.4 1.8 0.0
35.8 8.6 0.0
26.6 7.3 0.0
26.3 8.8 0.7
36.8 3.8 0.0
32.8 6.3 0.0
39.0 3.4 0.0
41.5 1.2 0.0
49.5 1.1 0.0
33.3 3.5 0.0
25.0 20.3 1.6
26.4 17.9 0.9
18.8 22.9 0.0
11.0 16.4 1.4
17.1 9.8 0.0
13.4 14.1 0.3
17.7 21.0 0.0
34.5 10.9 1.8
22.0 10.0 2.0
37.5 6.3 0.0
67.0 2.7 0.7
63.7 3.3 1.1
22.3 23.4 1.1
25.0 23.8 0.0
6.8 45.8 0.0
9.6 22.8 1.4
15.7 15.0 0.0
23.9 4.3 2.2
13.7 18.6 2.0
14.6 22.9 1.0
21.1 23.4 2.3
25.8 8.4 0.6

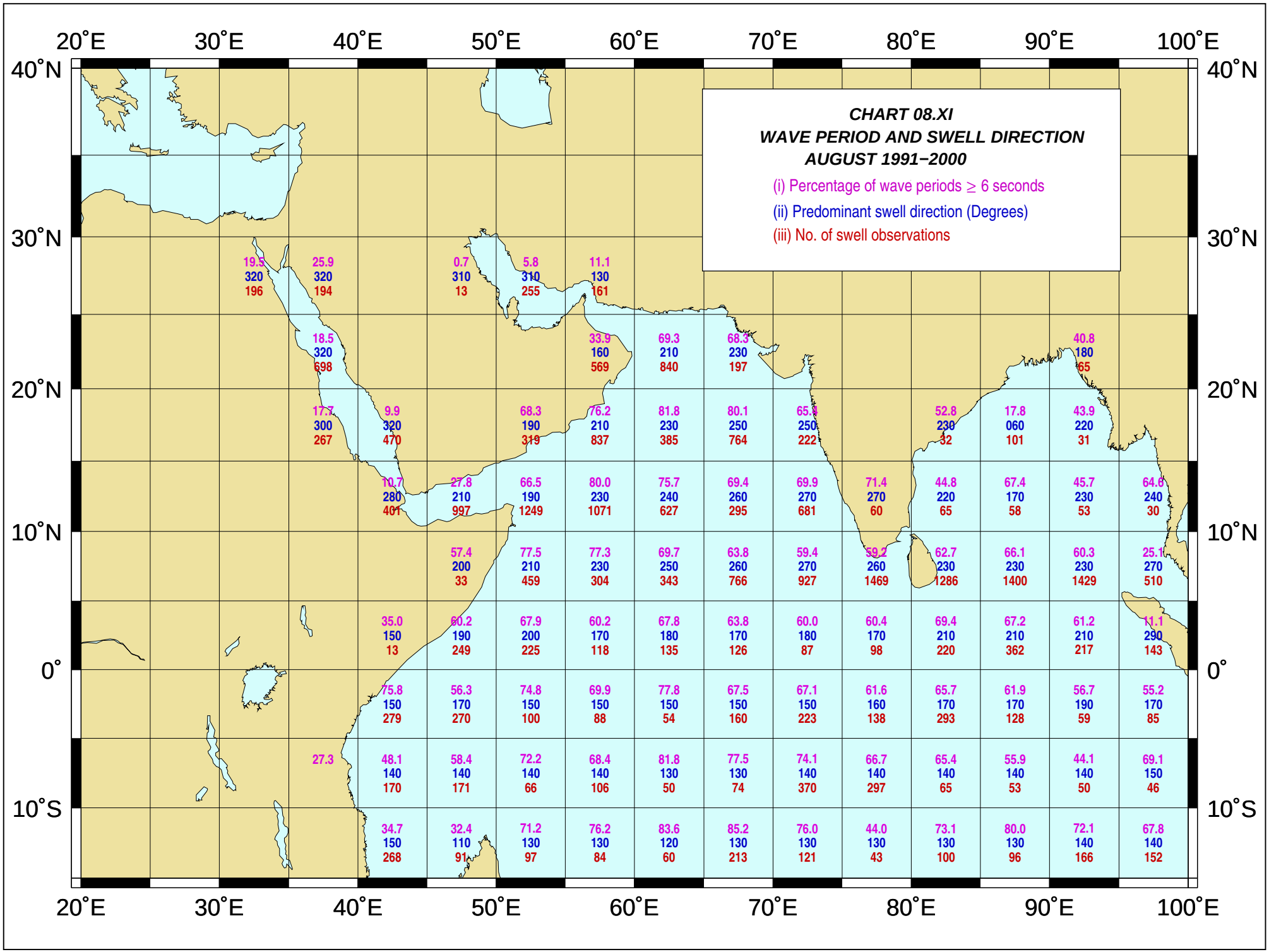


CHART 08.XI
WAVE PERIOD AND SWELL DIRECTION
AUGUST 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
19.5 320 196
25.9 320 194
0.7 310 13
5.8 310 255
11.1 130 161
18.5 320 698
33.9 160 569
69.3 210 840
68.3 230 197
40.8 180 65
17.7 300 267
9.9 320 470
68.3 190 319
76.2 210 837
81.8 230 385
80.1 250 764
65.9 250 222
52.8 230 32
17.8 060 101
43.9 220 31
10.7 280 401
27.8 210 997
66.5 190 1249
80.0 230 1071
75.7 240 627
69.4 260 295
69.9 270 681
71.4 270 60
44.8 220 65
67.4 170 58
45.7 230 53
64.6 240 30
57.4 200 33
77.5 210 459
77.3 230 304
69.7 250 343
63.8 260 766
59.4 270 927
59.2 260 1469
62.7 230 1286
66.1 230 1400
60.3 230 1429
25.1 270 510
35.0 150 13
60.2 190 249
67.9 200 225
60.2 170 118
67.8 180 135
63.8 170 126
60.0 180 87
60.4 170 98
69.4 210 220
67.2 210 362
61.2 210 217
11.1 290 143
75.8 150 279
56.3 170 270
74.8 150 100
69.9 150 88
77.8 150 54
67.5 150 160
67.1 150 223
61.6 160 138
65.7 170 293
61.9 170 128
56.7 190 59
55.2 170 85
27.3
48.1 140 170
58.4 140 171
72.2 140 66
68.4 140 106
81.8 130 50
77.5 130 74
74.1 140 370
66.7 140 297
65.4 140 65
55.9 140 53
44.1 140 50
69.1 150 46
34.7 150 268
32.4 110 91
71.2 130 97
76.2 130 84
83.6 120 60
85.2 130 213
76.0 130 121
44.0 130 43
73.1 130 100
80.0 130 96
72.1 140 166
67.8 140 152

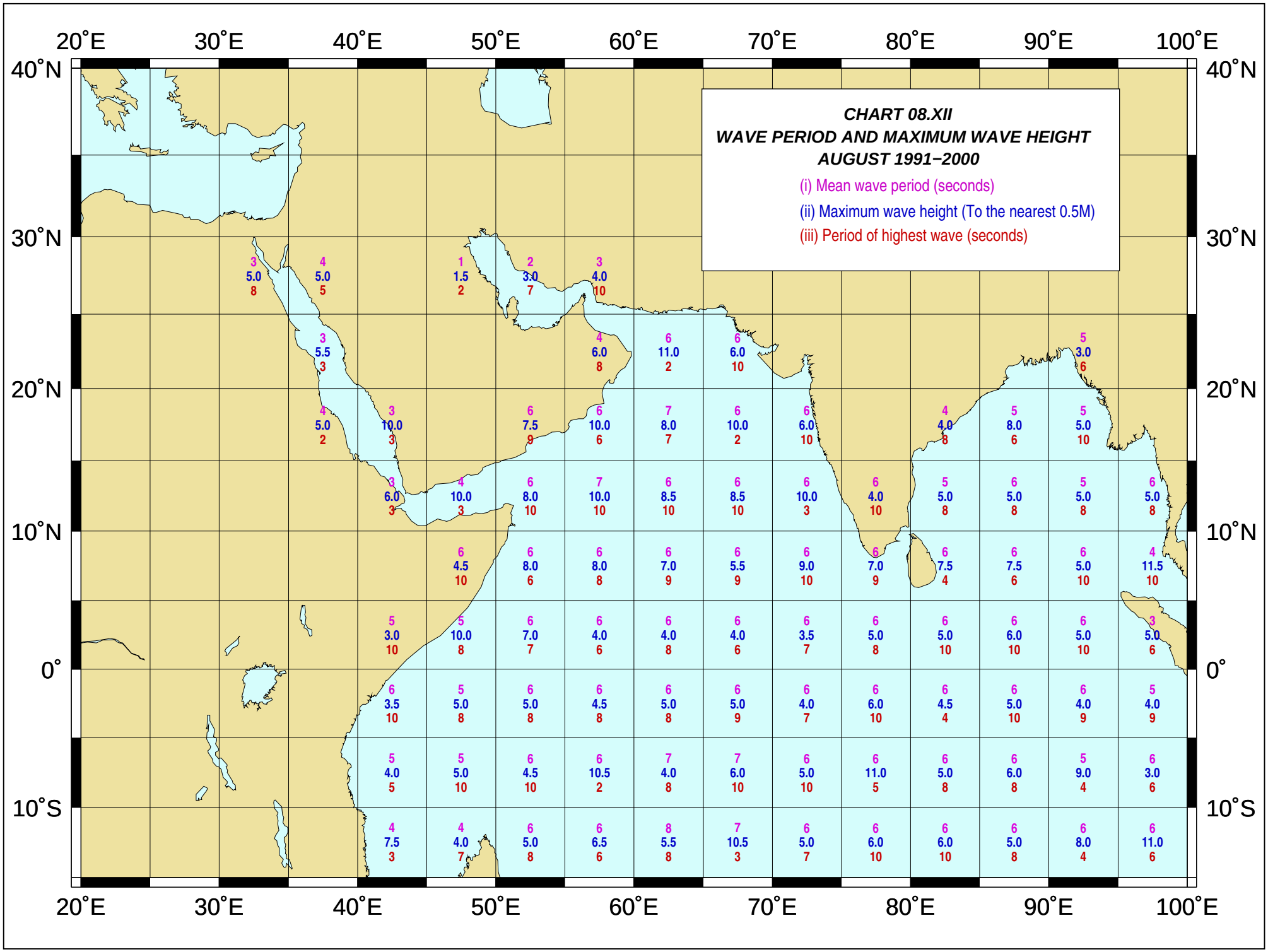


CHART 08.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
AUGUST 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
3 5.0 8
4 5.0 5
1 1.5 2
2 3.0 7
3 4.0 10
3 5.5 3
4 6.0 8
6 11.0 2
6 6.0 10
5 3.0 6
4 5.0 2
3 10.0 3
6 7.5 9
6 10.0 6
7 8.0 7
6 10.0 2
6 6.0 10
4 4.0 8
5 8.0 6
5 5.0 10
3 6.0 3
4 10.0 3
6 8.0 10
7 10.0 10
6 8.5 10
6 8.5 10
6 10.0 3
6 4.0 10
5 5.0 8
6 5.0 8
5 5.0 8
6 5.0 8
6 4.5 10
6 8.0 6
6 8.0 8
6 7.0 9
6 5.5 9
6 9.0 10
6 7.0 9
6 7.5 4
6 7.5 6
6 5.0 10
4 11.5 10
5 3.0 10
5 10.0 8
6 7.0 7
6 4.0 6
6 4.0 8
6 4.0 6
6 3.5 7
6 5.0 8
6 5.0 10
6 6.0 10
6 5.0 10
3 5.0 6
6 3.5 10
5 5.0 8
6 5.0 8
6 4.5 8
6 5.0 8
6 5.0 9
6 4.0 7
6 6.0 10
6 4.5 4
6 5.0 10
6 4.0 9
5 4.0 9
5 4.0 5
5 5.0 10
6 4.5 10
6 10.5 2
7 4.0 8
7 6.0 10
6 5.0 10
6 11.0 5
6 5.0 8
6 6.0 8
5 9.0 4
6 3.0 6
4 7.5 3
4 4.0 7
6 5.0 8
6 6.5 6
8 5.5 8
7 10.5 3
6 5.0 7
6 6.0 10
6 6.0 10
6 5.0 8
6 8.0 4
6 11.0 6

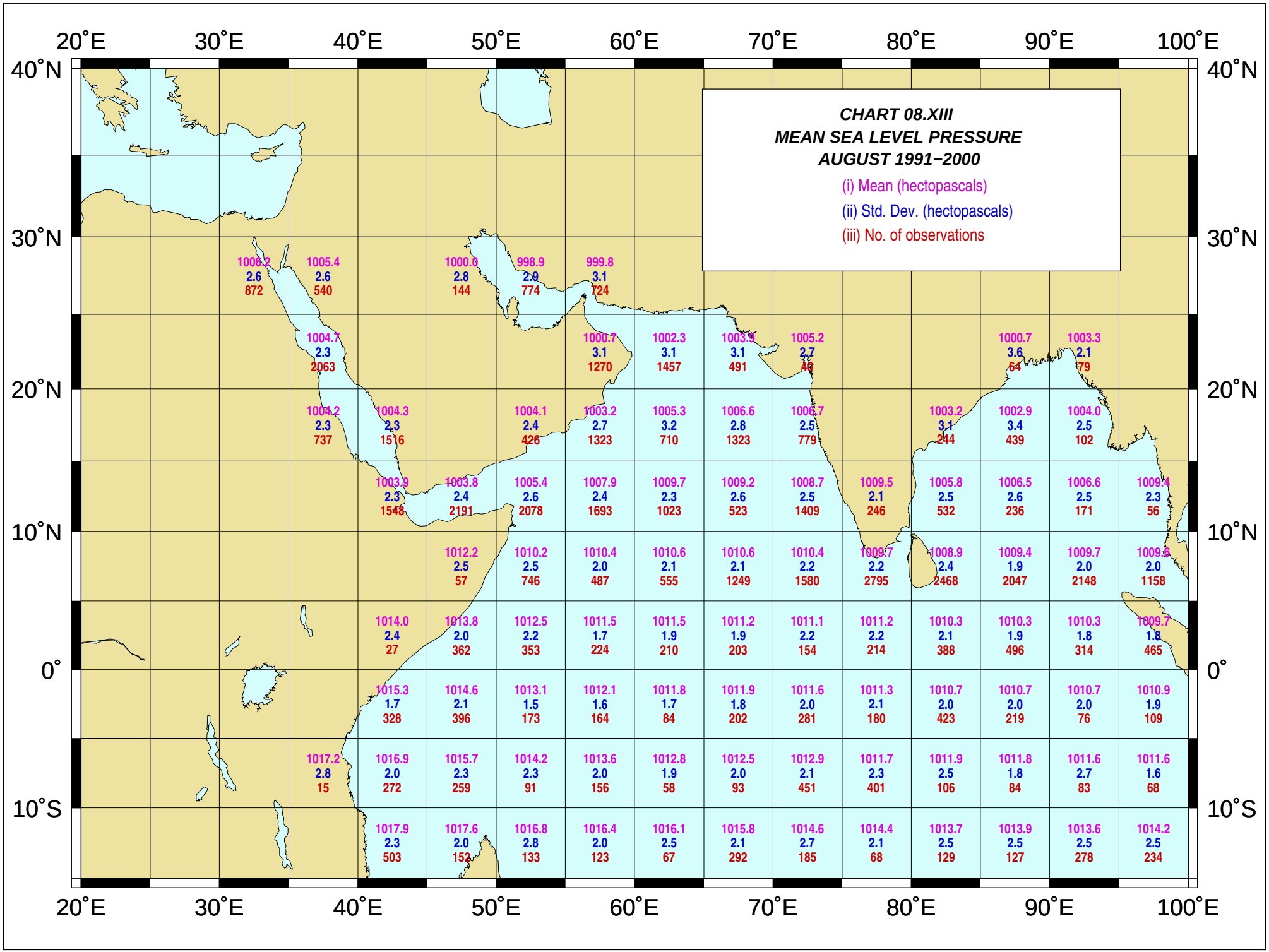


CHART 08.XIII
MEAN SEA LEVEL PRESSURE
AUGUST 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1006.2 2.6 872
1005.4 2.6 540
1000.0 2.8 144
998.9 2.9 774
999.8 3.1 724
1004.7 2.3 2063
1000.7 3.1 1270
1002.3 3.1 1457
1003.3 3.1 491
1005.2 2.7 46
1000.7 3.6 64
1003.3 2.1 79
1004.2 2.3 737
1004.3 2.3 1516
1004.1 2.4 426
1003.2 2.7 1323
1005.3 3.2 710
1006.6 2.8 1323
1006.7 2.5 779
1003.2 3.1 244
1002.9 3.4 439
1004.0 2.5 102
1003.9 2.3 1548
1003.8 2.4 2191
1005.4 2.6 2078
1007.9 2.4 1693
1009.7 2.3 1023
1009.2 2.6 523
1008.7 2.5 1409
1009.5 2.1 246
1005.8 2.5 532
1006.5 2.6 236
1006.6 2.5 171
1009.4 2.3 56
1012.2 2.5 57
1010.2 2.5 746
1010.4 2.0 487
1010.6 2.1 555
1010.6 2.1 1249
1010.4 2.2 1580
1009.7 2.2 2795
1008.9 2.4 2468
1009.4 1.9 2047
1009.7 2.0 2148
1009.6 2.0 1158
1014.0 2.4 27
1013.8 2.0 362
1012.5 2.2 353
1011.5 1.7 224
1011.5 1.9 210
1011.2 1.9 203
1011.1 2.2 154
1011.2 2.2 214
1010.3 2.1 388
1010.3 1.9 496
1010.3 1.8 314
1009.7 1.8 465
1015.3 1.7 328
1014.6 2.1 396
1013.1 1.5 173
1012.1 1.6 164
1011.8 1.7 84
1011.9 1.8 202
1011.6 2.0 281
1011.3 2.1 180
1010.7 2.0 423
1010.7 2.0 219
1010.7 2.0 76
1010.9 1.9 109
1017.2 2.8 15
1016.9 2.0 272
1015.7 2.3 259
1014.2 2.3 91
1013.6 2.0 156
1012.8 1.9 58
1012.5 2.0 93
1012.9 2.1 451
1011.7 2.3 401
1011.9 2.5 106
1011.8 1.8 84
1011.6 2.7 83
1011.6 1.6 68
1017.9 2.3 503
1017.6 2.0 152
1016.8 2.8 133
1016.4 2.0 123
1016.1 2.5 67
1015.8 2.1 292
1014.6 2.7 185
1014.4 2.1 68
1013.7 2.5 129
1013.9 2.5 127
1013.6 2.5 278
1014.2 2.5 234

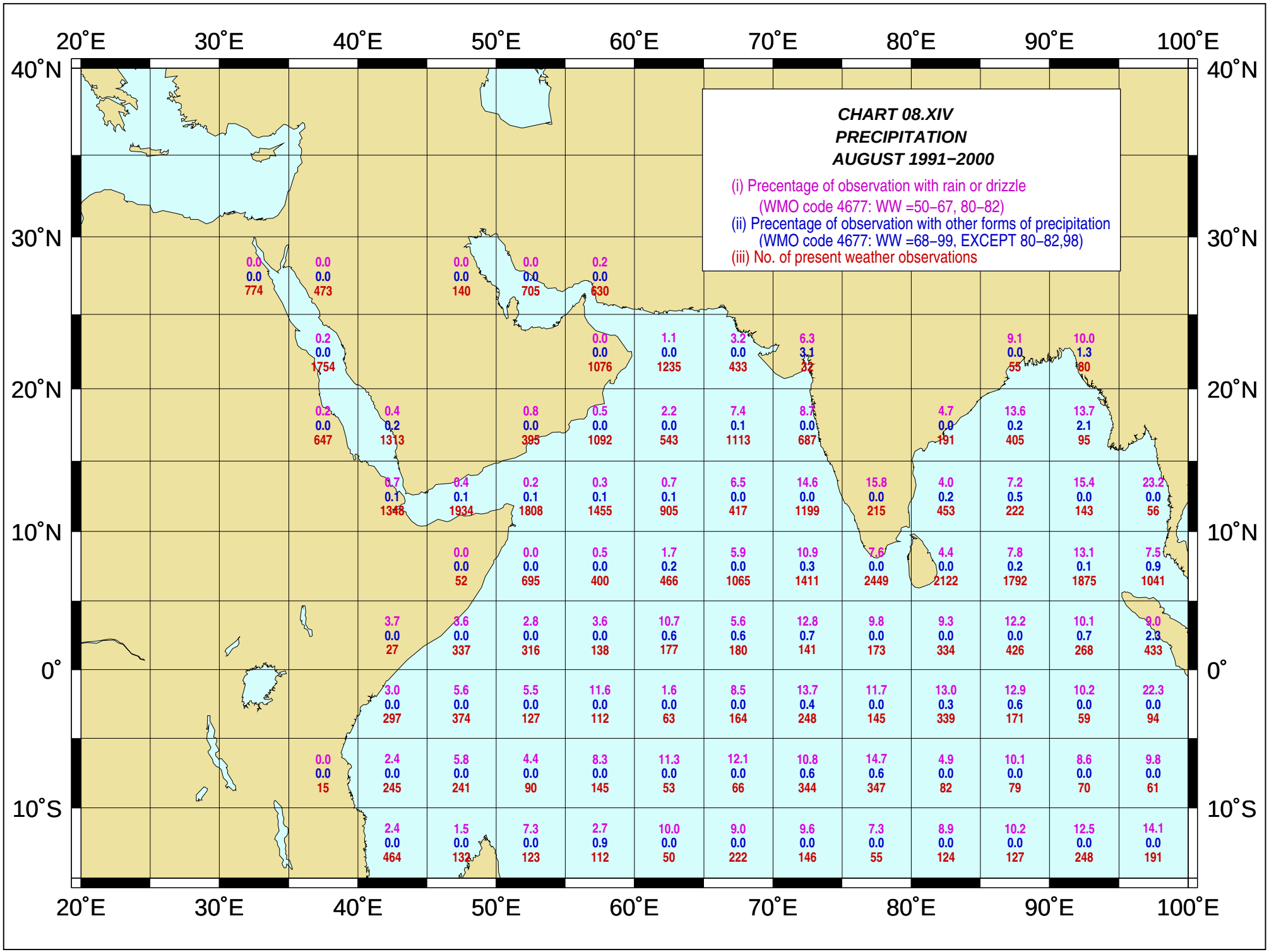


CHART 08.XIV
PRECIPITATION
AUGUST 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.0 0.0 774
0.0 0.0 473
0.0 0.0 140
0.0 0.0 705
0.2 0.0 630
0.2 0.0 1754
0.0 0.0 1076
1.1 0.0 1235
3.2 0.0 433
6.3 3.1 32
9.1 0.0 55
10.0 1.3 80
0.2 0.0 647
0.4 0.2 1313
0.8 0.0 395
0.5 0.0 1092
2.2 0.0 543
7.4 0.1 1113
8.7 0.0 687
4.7 0.0 191
13.6 0.2 405
13.7 2.1 95
0.7 0.1 1348
0.4 0.1 1934
0.2 0.1 1808
0.3 0.1 1455
0.7 0.1 905
6.5 0.0 417
14.6 0.0 1199
15.8 0.0 215
4.0 0.2 453
7.2 0.5 222
15.4 0.0 143
23.2 0.0 56
0.0 0.0 52
0.0 0.0 695
0.5 0.0 400
1.7 0.2 466
5.9 0.0 1065
10.9 0.3 1411
7.6 0.0 2449
4.4 0.0 2122
7.8 0.2 1792
13.1 0.1 1875
7.5 0.9 1041
3.7 0.0 27
3.6 0.0 337
2.8 0.0 316
3.6 0.0 138
10.7 0.6 177
5.6 0.6 180
12.8 0.7 141
9.8 0.0 173
9.3 0.0 334
12.2 0.0 426
10.1 0.7 268
9.0 2.3 433
3.0 0.0 297
5.6 0.0 374
5.5 0.0 127
11.6 0.0 112
1.6 0.0 63
8.5 0.0 164
13.7 0.4 248
11.7 0.0 145
13.0 0.3 339
12.9 0.6 171
10.2 0.0 59
22.3 0.0 94
0.0 0.0 15
2.4 0.0 245
5.8 0.0 241
4.4 0.0 90
8.3 0.0 145
11.3 0.0 53
12.1 0.0 66
10.8 0.6 344
14.7 0.6 347
4.9 0.0 82
10.1 0.0 79
8.6 0.0 70
9.8 0.0 61
2.4 0.0 464
1.5 0.0 132
7.3 0.0 123
2.7 0.9 112
10.0 0.0 50
9.0 0.0 222
9.6 0.0 146
7.3 0.0 55
8.9 0.0 124
10.2 0.0 127
12.5 0.0 248
14.1 0.0 191

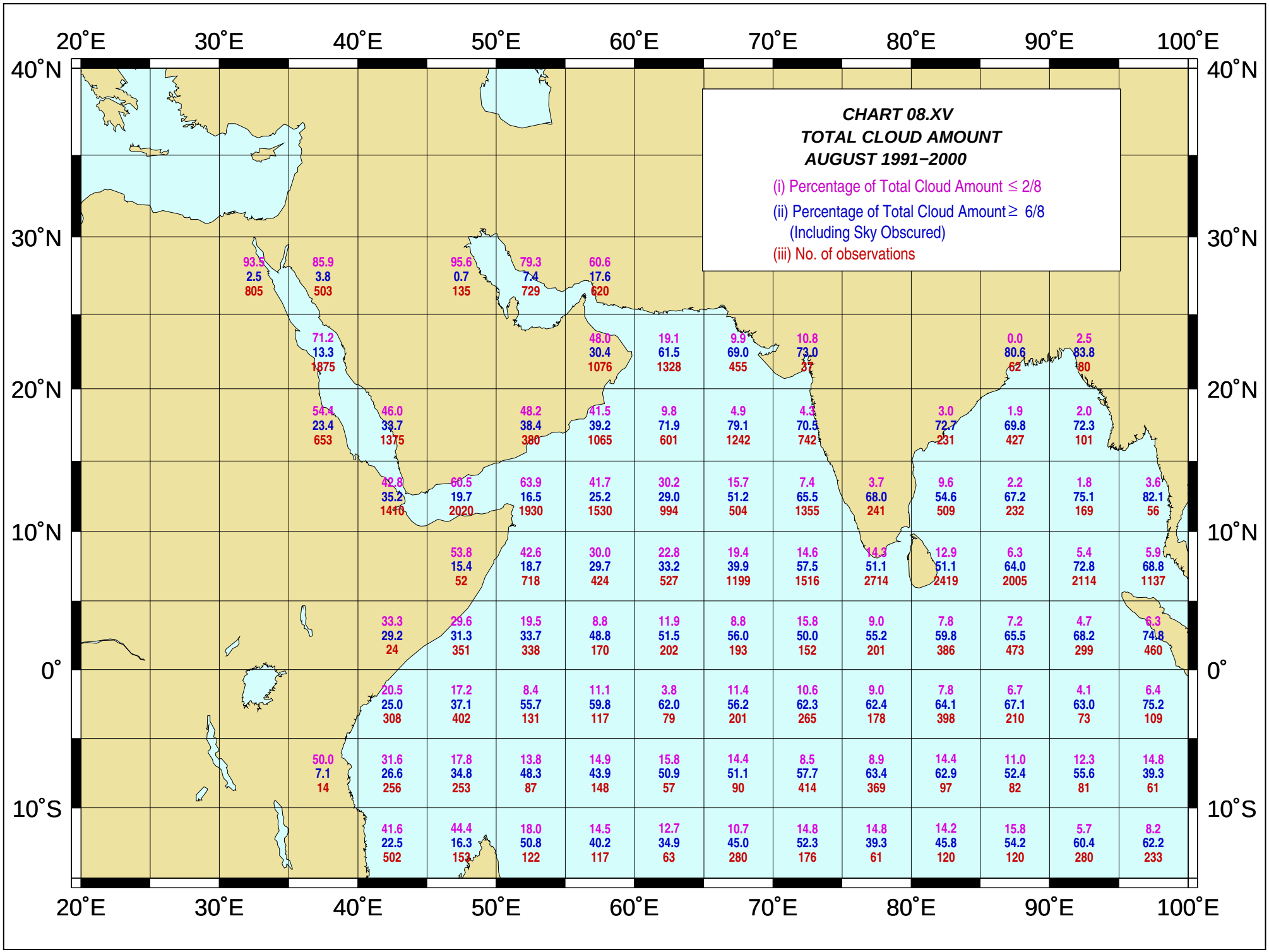


CHART 08.XV
TOTAL CLOUD AMOUNT
AUGUST 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
93.5 2.5 805
85.9 3.8 503
95.6 0.7 135
79.3 7.4 729
60.6 17.6 620
71.2 13.3 1875
48.0 30.4 1076
19.1 61.5 1328
9.9 69.0 455
10.8 73.0 37
0.0 80.6 62
2.5 83.8 80
54.4 23.4 653
46.0 33.7 1375
48.2 38.4 380
41.5 39.2 1065
9.8 71.9 601
4.9 79.1 1242
4.3 70.5 742
3.0 72.7 231
1.9 69.8 427
2.0 72.3 101
42.8 35.2 1410
60.5 19.7 2020
63.9 16.5 1930
41.7 25.2 1530
30.2 29.0 994
15.7 51.2 504
7.4 65.5 1355
3.7 68.0 241
9.6 54.6 509
2.2 67.2 232
1.8 75.1 169
3.6 82.1 56
53.8 15.4 52
42.6 18.7 718
30.0 29.7 424
22.8 33.2 527
19.4 39.9 1199
14.6 57.5 1516
14.3 51.1 2714
12.9 51.1 2419
6.3 64.0 2005
5.4 72.8 2114
5.9 68.8 1137
33.3 29.2 24
29.6 31.3 351
19.5 33.7 338
8.8 48.8 170
11.9 51.5 202
8.8 56.0 193
15.8 50.0 152
9.0 55.2 201
7.8 59.8 386
7.2 65.5 473
4.7 68.2 299
6.3 74.8 460
20.5 25.0 308
17.2 37.1 402
8.4 55.7 131
11.1 59.8 117
3.8 62.0 79
11.4 56.2 201
10.6 62.3 265
9.0 62.4 178
7.8 64.1 398
6.7 67.1 210
4.1 63.0 73
6.4 75.2 109
50.0 7.1 14
31.6 26.6 256
17.8 34.8 253
13.8 48.3 87
14.9 43.9 148
15.8 50.9 57
14.4 51.1 90
8.5 57.7 414
8.9 63.4 369
14.4 62.9 97
11.0 52.4 82
12.3 55.6 81
14.8 39.3 61
41.6 22.5 502
44.4 16.3 153
18.0 50.8 122
14.5 40.2 117
12.7 34.9 63
10.7 45.0 280
14.8 52.3 176
14.8 39.3 61
14.2 45.8 120
15.8 54.2 120
5.7 60.4 280
8.2 62.2 233

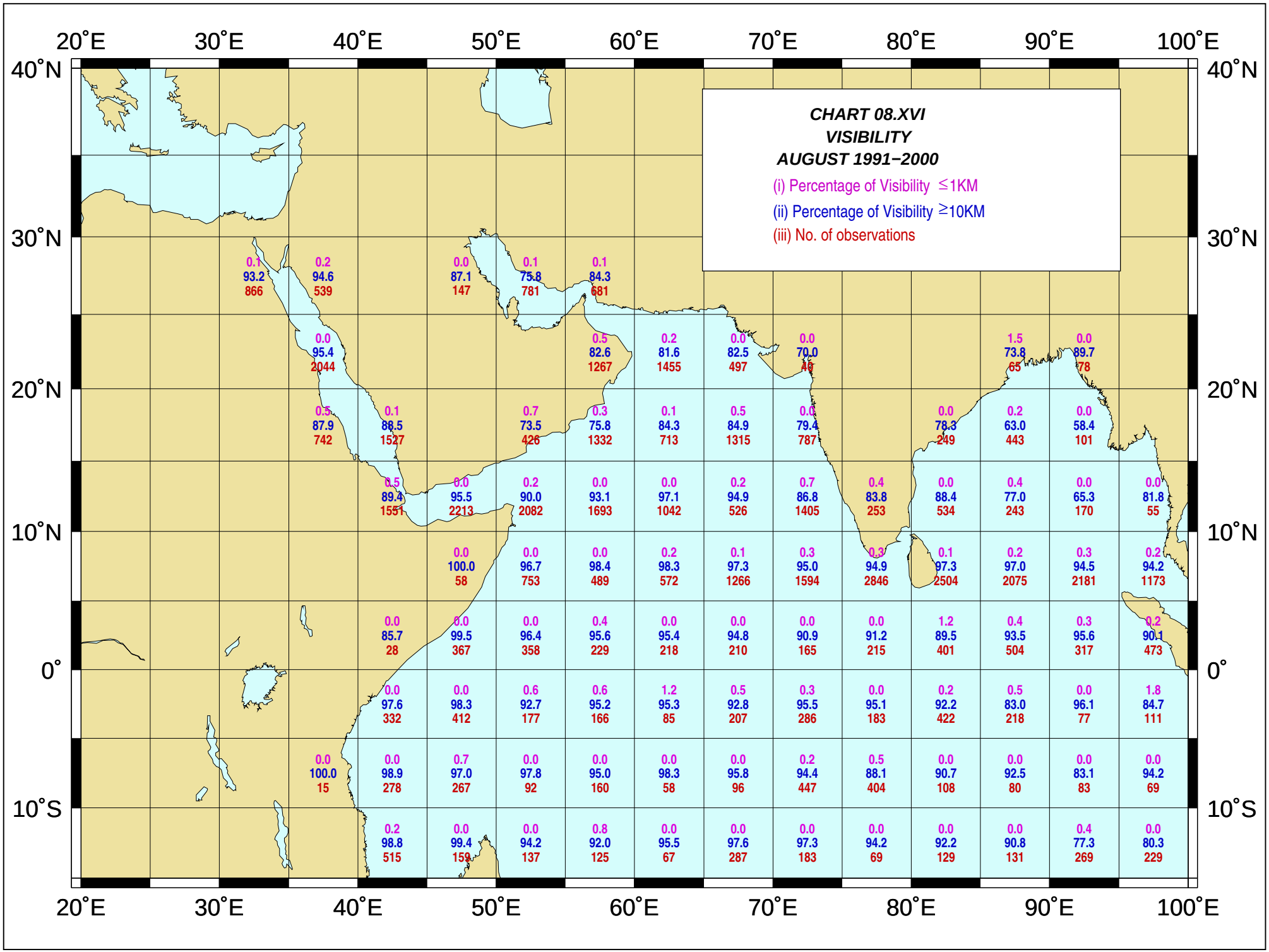


CHART 08.XVI
VISIBILITY
AUGUST 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 93.2 866
0.2 94.6 539
0.0 87.1 147
0.1 75.8 781
0.1 84.3 681
0.0 95.4 2044
0.5 82.6 1267
0.2 81.6 1455
0.0 82.5 497
0.0 70.0 46
1.5 73.8 65
0.0 89.7 78
0.5 87.9 742
0.1 88.5 1527
0.7 73.5 426
0.3 75.8 1332
0.1 84.3 713
0.5 84.9 1315
0.0 79.4 787
0.0 78.3 249
0.2 63.0 443
0.0 58.4 101
0.5 89.4 1551
0.0 95.5 2213
0.2 90.0 2082
0.0 93.1 1693
0.0 97.1 1042
0.2 94.9 526
0.7 86.8 1405
0.4 83.8 253
0.0 88.4 534
0.4 77.0 243
0.0 65.3 170
0.0 81.8 55
0.0 100.0 58
0.0 96.7 753
0.0 98.4 489
0.2 98.3 572
0.1 97.3 1266
0.3 95.0 1594
0.3 94.9 2846
0.1 97.3 2504
0.2 97.0 2075
0.3 94.5 2181
0.2 94.2 1173
0.0 85.7 28
0.0 99.5 367
0.0 96.4 358
0.4 95.6 229
0.0 95.4 218
0.0 94.8 210
0.0 90.9 165
0.0 91.2 215
1.2 89.5 401
0.4 93.5 504
0.3 95.6 317
0.2 90.1 473
0.0 97.6 332
0.0 98.3 412
0.6 92.7 177
0.6 95.2 166
1.2 95.3 85
0.5 92.8 207
0.3 95.5 286
0.0 95.1 183
0.2 92.2 422
0.5 83.0 218
0.0 96.1 77
1.8 84.7 111
0.0 100.0 15
0.0 98.9 278
0.7 97.0 267
0.0 97.8 92
0.0 95.0 160
0.0 98.3 58
0.0 95.8 96
0.2 94.4 447
0.5 88.1 404
0.0 90.7 108
0.0 92.5 80
0.0 83.1 83
0.0 94.2 69
0.2 98.8 515
0.0 99.4 159
0.0 94.2 137
0.8 92.0 125
0.0 95.5 67
0.0 97.6 287
0.0 97.3 183
0.0 94.2 69
0.0 92.2 129
0.0 90.8 131
0.4 77.3 269
0.0 80.3 229

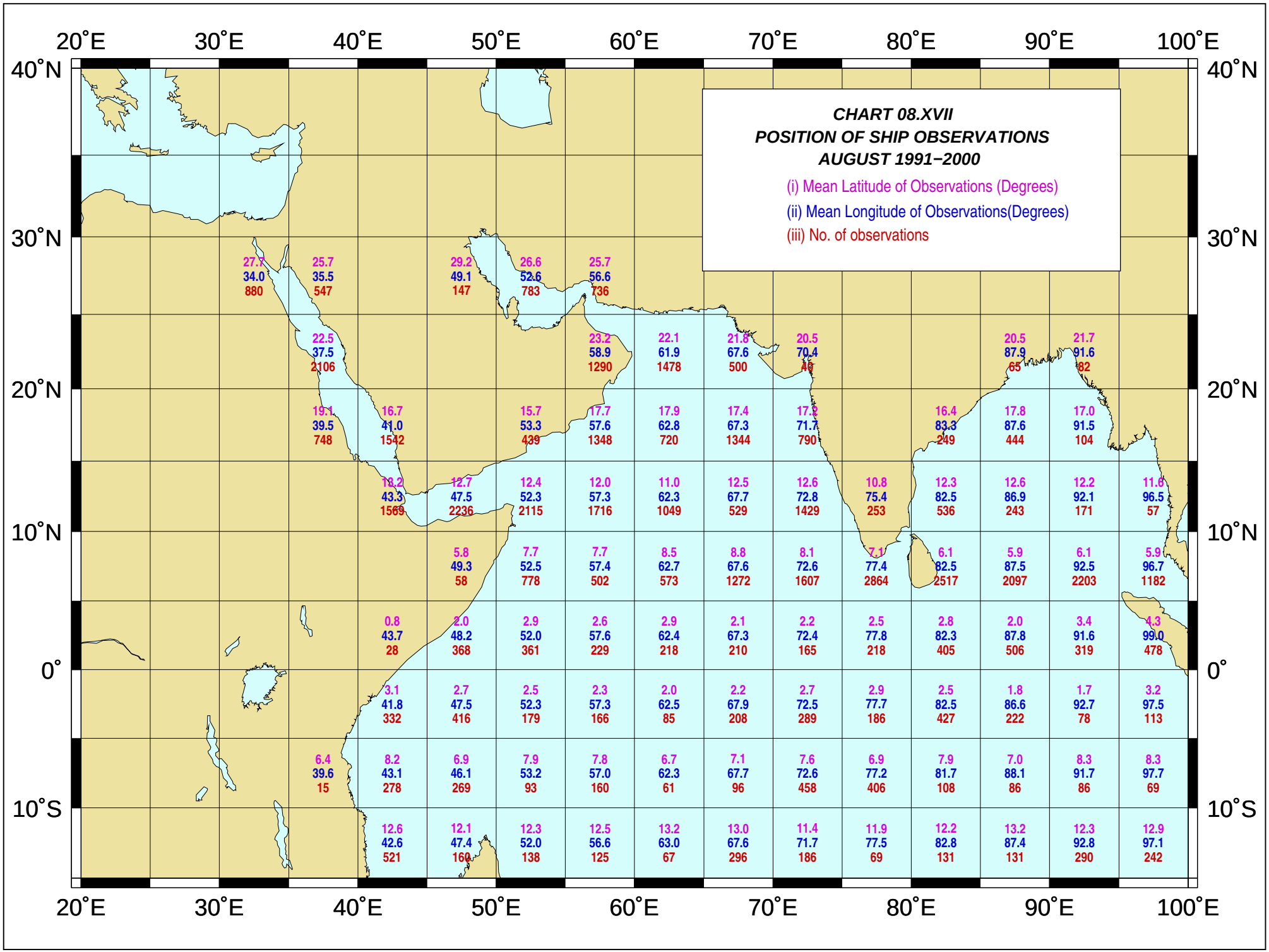


CHART 08.XVII
POSITION OF SHIP OBSERVATIONS
AUGUST 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.7 34.0 880
25.7 35.5 547
29.2 49.1 147
26.6 52.6 783
25.7 56.6 736
22.5 37.5 2106
23.2 58.9 1290
22.1 61.9 1478
21.8 67.6 500
20.5 70.4 46
20.5 87.9 65
21.7 91.6 82
19.1 39.5 748
16.7 41.0 1542
15.7 53.3 439
17.7 57.6 1348
17.9 62.8 720
17.4 67.3 1344
17.2 71.7 790
16.4 83.3 249
17.8 87.6 444
17.0 91.5 104
10.2 43.3 1569
12.7 47.5 2236
12.4 52.3 2115
12.0 57.3 1716
11.0 62.3 1049
12.5 67.7 529
12.6 72.8 1429
10.8 75.4 253
12.3 82.5 536
12.6 86.9 243
12.2 92.1 171
11.6 96.5 57
5.8 49.3 58
7.7 52.5 778
7.7 57.4 502
8.5 62.7 573
8.8 67.6 1272
8.1 72.6 1607
7.1 77.4 2864
6.1 82.5 2517
5.9 87.5 2097
6.1 92.5 2203
5.9 96.7 1182
0.8 43.7 28
2.0 48.2 368
2.9 52.0 361
2.6 57.6 229
2.9 62.4 218
2.1 67.3 210
2.2 72.4 165
2.5 77.8 218
2.8 82.3 405
2.0 87.8 506
3.4 91.6 319
4.3 99.0 478
3.1 41.8 332
2.7 47.5 416
2.5 52.3 179
2.3 57.3 166
2.0 62.5 85
2.2 67.9 208
2.7 72.5 289
2.9 77.7 186
2.5 82.5 427
1.8 86.6 222
1.7 92.7 78
3.2 97.5 113
6.4 39.6 15
8.2 43.1 278
6.9 46.1 269
7.9 53.2 93
7.8 57.0 160
6.7 62.3 61
7.1 67.7 96
7.6 72.6 458
6.9 77.2 406
7.9 81.7 108
7.0 88.1 86
8.3 91.7 86
8.3 97.7 69
12.6 42.6 521
12.1 47.4 160
12.3 52.0 138
12.5 56.6 125
13.2 63.0 67
13.0 67.6 296
11.4 71.7 186
11.9 77.5 69
12.2 82.8 131
13.2 87.4 131
12.3 92.8 290
12.9 97.1 242

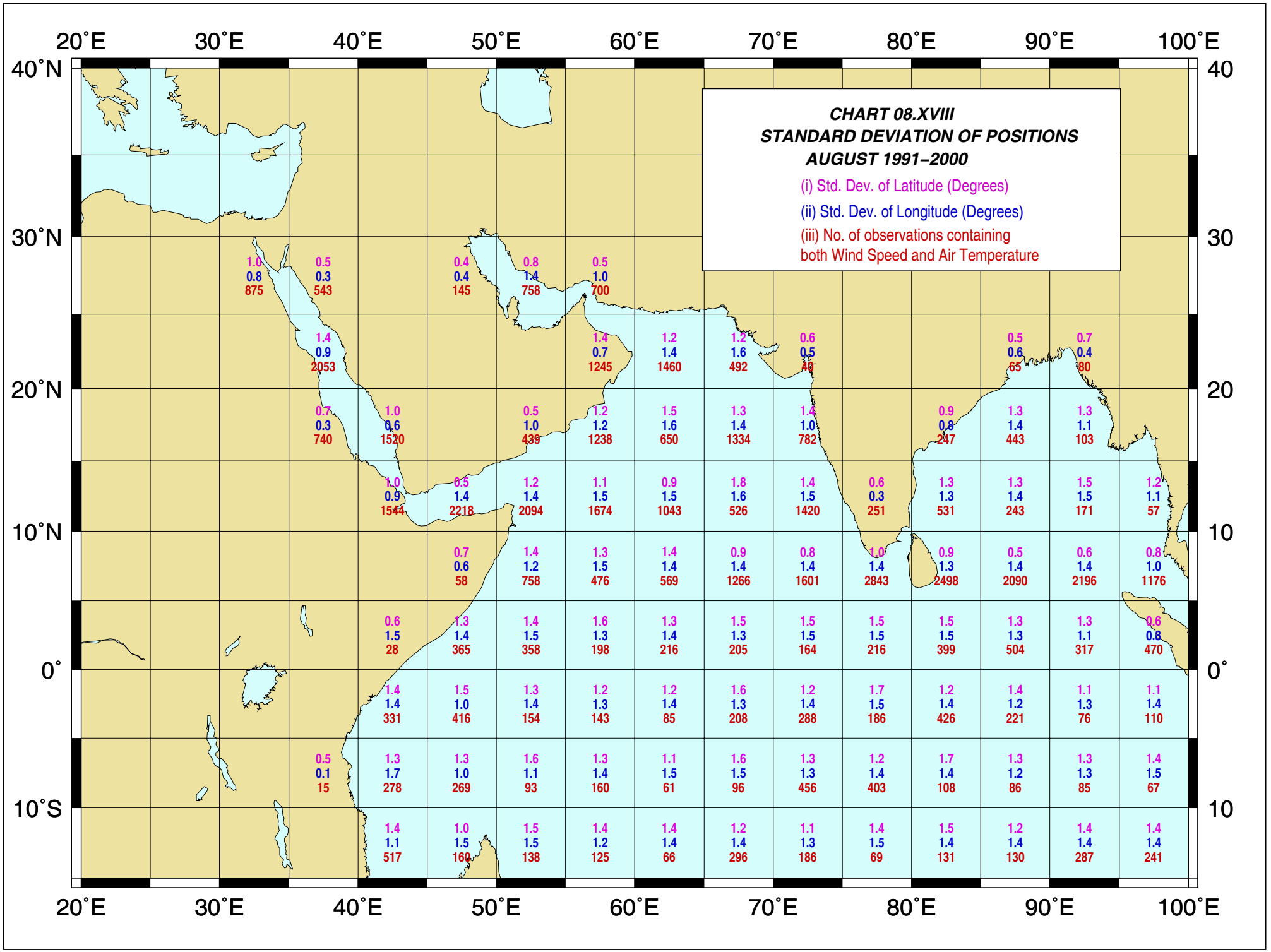
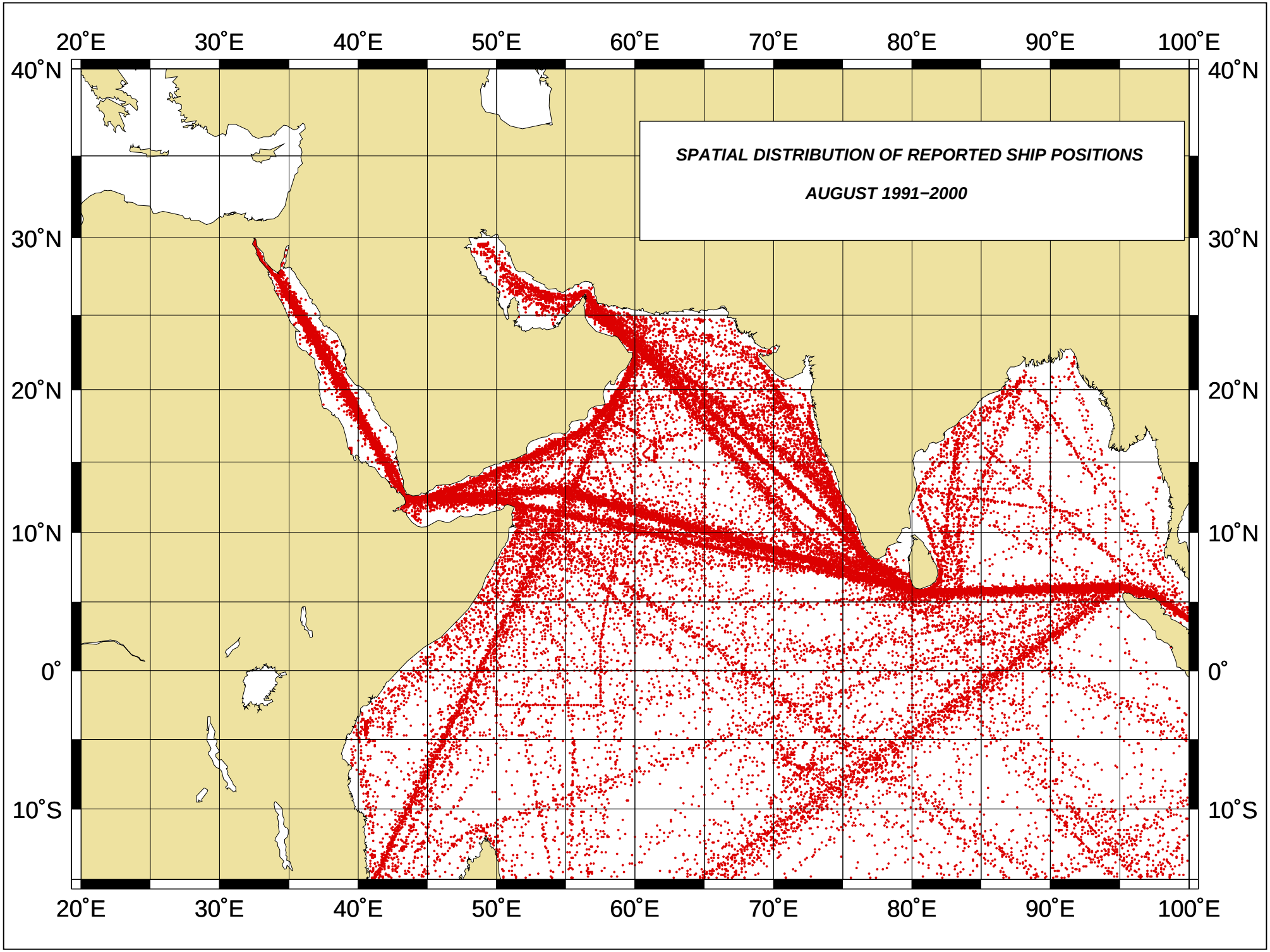
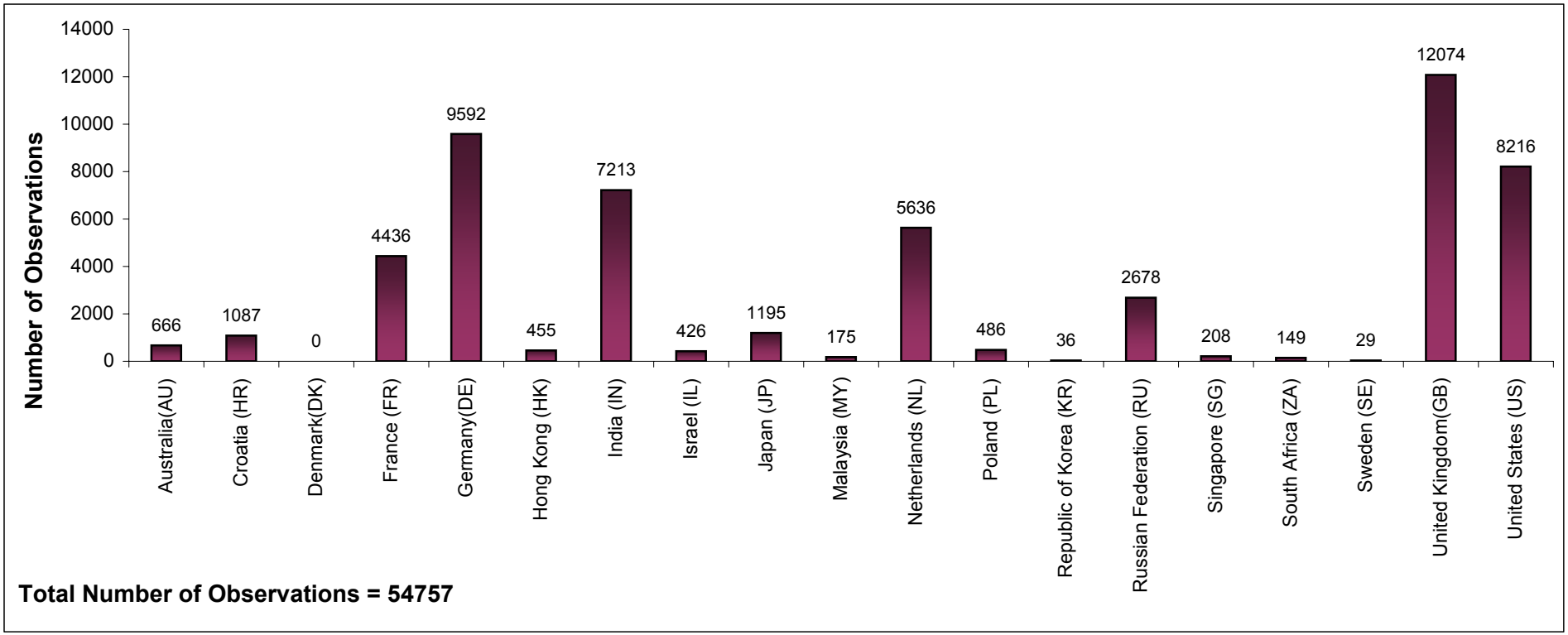


CHART 08.XVIII
STANDARD DEVIATION OF POSITIONS
AUGUST 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.8 875
0.5 0.3 543
0.4 0.4 145
0.8 1.4 758
0.5 1.0 700
1.4 0.9 2053
1.4 0.7 1245
1.2 1.4 1460
1.2 1.6 492
0.6 0.5 49
0.5 0.6 65
0.7 0.4 80
0.7 0.3 740
1.0 0.6 1520
0.5 1.0 439
1.2 1.2 1238
1.5 1.6 650
1.3 1.4 1334
1.4 1.0 782
0.9 0.8 247
1.3 1.4 443
1.3 1.1 103
1.0 0.9 1544
0.5 1.4 2218
1.2 1.4 2094
1.1 1.5 1674
0.9 1.5 1043
1.8 1.6 526
1.4 1.5 1420
0.6 0.3 251
1.3 1.3 531
1.3 1.4 243
1.5 1.5 171
1.2 1.1 57
0.7 0.6 58
1.4 1.2 758
1.3 1.5 476
1.4 1.4 569
0.9 1.4 1266
0.8 1.4 1601
1.0 1.4 2843
0.9 1.3 2498
0.5 1.4 2090
0.6 1.4 2196
0.8 1.0 1176
0.6 1.5 28
1.3 1.4 365
1.4 1.5 358
1.6 1.3 198
1.3 1.4 216
1.5 1.3 205
1.5 1.5 164
1.5 1.5 216
1.5 1.5 399
1.3 1.3 504
1.3 1.1 317
0.6 0.8 470
1.4 1.4 331
1.5 1.0 416
1.3 1.4 154
1.2 1.3 143
1.2 1.4 85
1.6 1.3 208
1.2 1.4 288
1.7 1.5 186
1.2 1.4 426
1.4 1.2 221
1.1 1.3 76
1.1 1.4 110
0.5 0.1 15
1.3 1.7 278
1.3 1.0 269
1.6 1.1 93
1.3 1.4 160
1.1 1.5 61
1.6 1.5 96
1.3 1.3 456
1.2 1.4 403
1.7 1.4 108
1.3 1.2 86
1.3 1.3 85
1.4 1.5 67
1.4 1.1 517
1.0 1.5 160
1.5 1.5 138
1.4 1.2 125
1.4 1.4 66
1.2 1.4 296
1.1 1.3 186
1.4 1.5 69
1.5 1.4 131
1.2 1.4 130
1.4 1.4 287
1.4 1.4 241


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
AUGUST 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

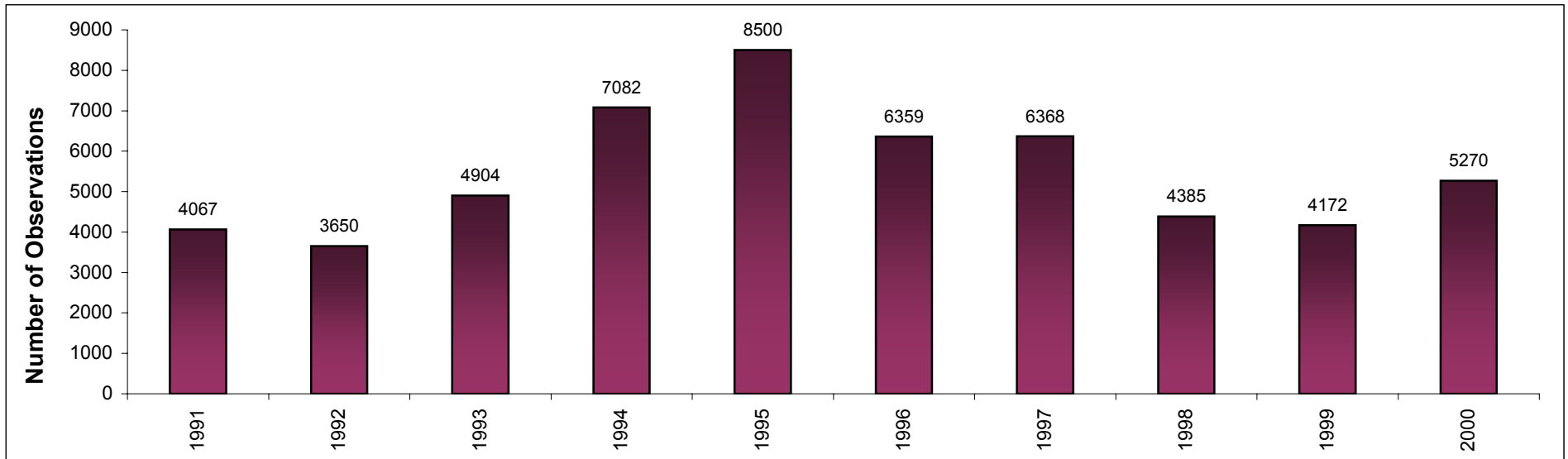
AUGUST : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 54757

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 54757

Marine Climatological Summary Charts 1991-2000

CHARTS OF SEPTEMBER 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

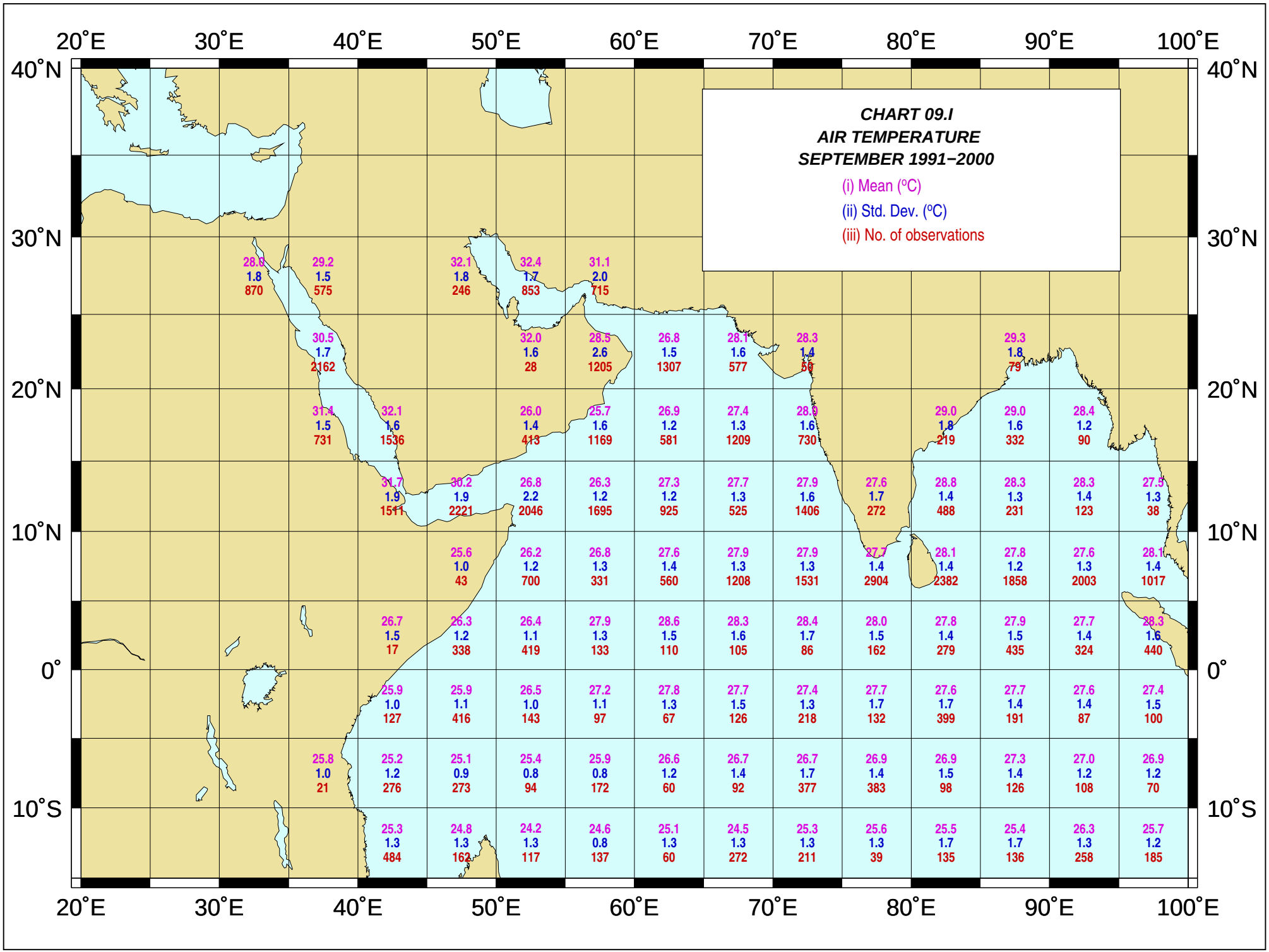


CHART 09.I
AIR TEMPERATURE
SEPTEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
28.8 1.8 870
29.2 1.5 575
32.1 1.8 246
32.4 1.7 853
31.1 2.0 715
30.5 1.7 2162
32.0 1.6 28
28.5 2.6 1205
26.8 1.5 1307
28.1 1.6 577
28.3 1.4 56
29.3 1.8 79
31.4 1.5 731
32.1 1.6 1536
26.0 1.4 413
25.7 1.6 1169
26.9 1.2 581
27.4 1.3 1209
28.9 1.6 730
29.0 1.8 219
29.0 1.6 332
28.4 1.2 90
31.7 1.9 1511
30.2 1.9 2221
26.8 2.2 2046
26.3 1.2 1695
27.3 1.2 925
27.7 1.3 525
27.9 1.6 1406
27.6 1.7 272
28.8 1.4 488
28.3 1.3 231
28.3 1.4 123
27.5 1.3 38
25.6 1.0 43
26.2 1.2 700
26.8 1.3 331
27.6 1.4 560
27.9 1.3 1208
27.9 1.3 1531
27.7 1.4 2904
28.1 1.4 2382
27.8 1.2 1858
27.6 1.3 2003
28.1 1.4 1017
26.7 1.5 17
26.3 1.2 338
26.4 1.1 419
27.9 1.3 133
28.6 1.5 110
28.3 1.6 105
28.4 1.7 86
28.0 1.5 162
27.8 1.4 279
27.9 1.5 435
27.7 1.4 324
28.3 1.6 440
25.9 1.0 127
25.9 1.1 416
26.5 1.0 143
27.2 1.1 97
27.8 1.3 67
27.7 1.5 126
27.4 1.3 218
27.7 1.7 132
27.6 1.7 399
27.7 1.4 191
27.6 1.4 87
27.4 1.5 100
25.8 1.0 21
25.2 1.2 276
25.1 0.9 273
25.4 0.8 94
25.9 0.8 172
26.6 1.2 60
26.7 1.4 92
26.7 1.7 377
26.9 1.4 383
26.9 1.5 98
27.3 1.4 126
27.0 1.2 108
26.9 1.2 70
25.3 1.3 484
24.8 1.3 162
24.2 1.3 117
24.6 0.8 137
25.1 1.3 60
24.5 1.3 272
25.3 1.3 211
25.6 1.3 39
25.5 1.7 135
25.4 1.7 136
26.3 1.3 258
25.7 1.2 185

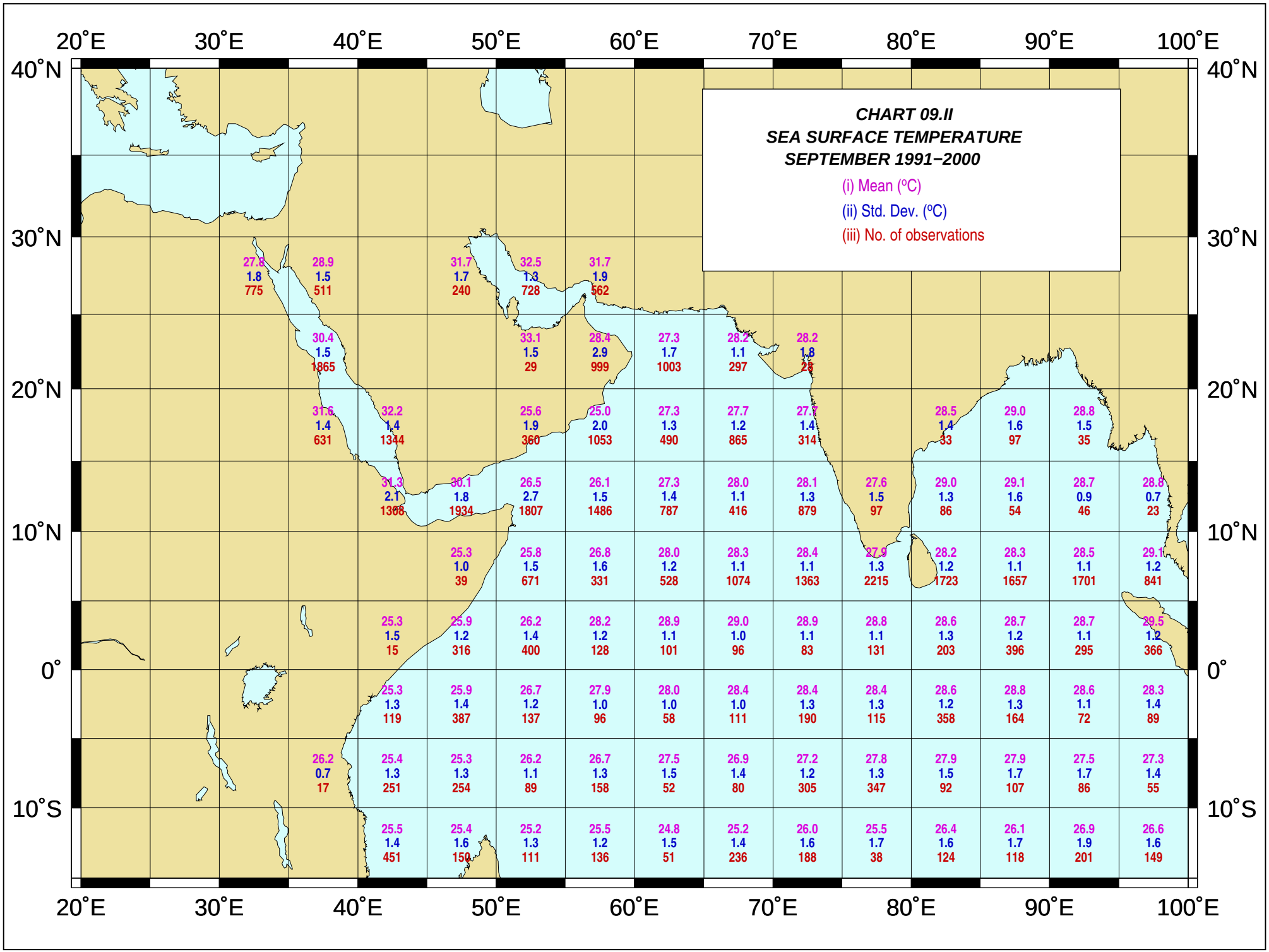


CHART 09.II
SEA SURFACE TEMPERATURE
SEPTEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.8 1.8 775
28.9 1.5 511
31.7 1.7 240
32.5 1.3 728
31.7 1.9 562
30.4 1.5 1865
33.1 1.5 29
28.4 2.9 999
27.3 1.7 1003
28.2 1.1 297
28.2 1.8 26
31.6 1.4 631
32.2 1.4 1344
25.6 1.9 360
25.0 2.0 1053
27.3 1.3 490
27.7 1.2 865
27.7 1.4 314
28.5 1.4 33
29.0 1.6 97
28.8 1.5 35
31.3 2.1 1308
30.1 1.8 1934
26.5 2.7 1807
26.1 1.5 1486
27.3 1.4 787
28.0 1.1 416
28.1 1.3 879
27.6 1.5 97
29.0 1.3 86
29.1 1.6 54
28.7 0.9 46
28.8 0.7 23
25.3 1.0 39
25.8 1.5 671
26.8 1.6 331
28.0 1.2 528
28.3 1.1 1074
28.4 1.1 1363
27.9 1.3 2215
28.2 1.2 1723
28.3 1.1 1657
28.5 1.1 1701
29.1 1.2 841
25.3 1.5 15
25.9 1.2 316
26.2 1.4 400
28.2 1.2 128
28.9 1.1 101
29.0 1.0 96
28.9 1.1 83
28.8 1.1 131
28.6 1.3 203
28.7 1.2 396
28.7 1.1 295
29.5 1.2 366
25.3 1.3 119
25.9 1.4 387
26.7 1.2 137
27.9 1.0 96
28.0 1.0 58
28.4 1.0 111
28.4 1.3 190
28.4 1.3 115
28.6 1.2 358
28.8 1.3 164
28.6 1.1 72
28.3 1.4 89
26.2 0.7 17
25.4 1.3 251
25.3 1.3 254
26.2 1.1 89
26.7 1.3 158
27.5 1.5 52
26.9 1.4 80
27.2 1.2 305
27.8 1.3 347
27.9 1.5 92
27.9 1.7 107
27.5 1.7 86
27.3 1.4 55
25.5 1.4 451
25.4 1.6 150
25.2 1.3 111
25.5 1.2 136
24.8 1.5 51
25.2 1.4 236
26.0 1.6 188
25.5 1.7 38
26.4 1.6 124
26.1 1.7 118
26.9 1.9 201
26.6 1.6 149

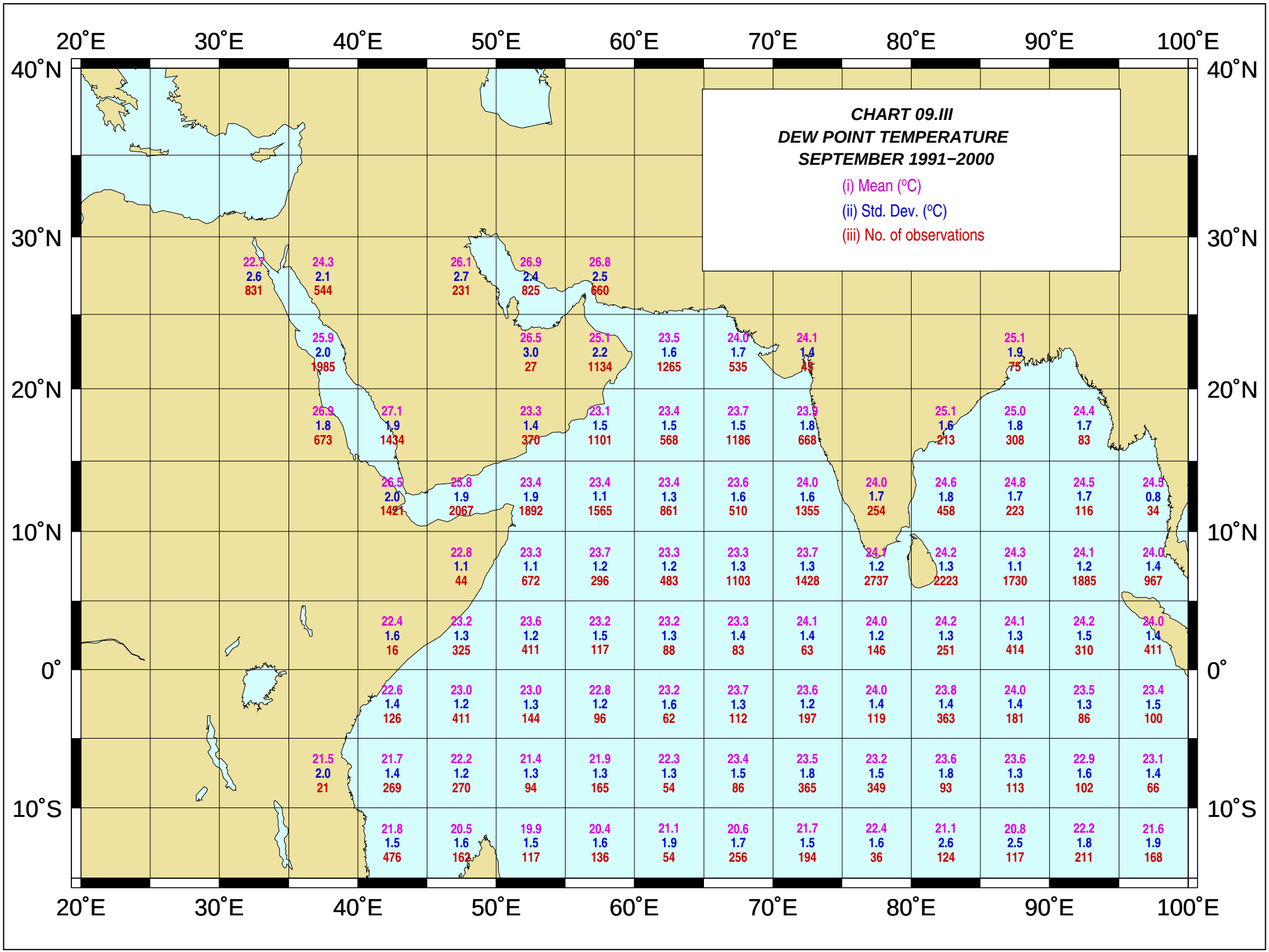


CHART 09.III
DEW POINT TEMPERATURE
SEPTEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
22.7 2.6 831
24.3 2.1 544
26.1 2.7 231
26.9 2.4 825
26.8 2.5 660
25.9 2.0 1985
26.5 3.0 27
25.1 2.2 1134
23.5 1.6 1265
24.0 1.7 535
24.1 1.4 45
25.1 1.9 75
26.9 1.8 673
27.1 1.9 1434
23.3 1.4 370
23.1 1.5 1101
23.4 1.5 568
23.7 1.5 1186
23.9 1.8 668
25.1 1.6 213
25.0 1.8 308
24.4 1.7 83
26.5 2.0 1421
25.8 1.9 2067
23.4 1.9 1892
23.4 1.1 1565
23.4 1.3 861
23.6 1.6 510
24.0 1.6 1355
24.0 1.7 254
24.6 1.8 458
24.8 1.7 223
24.5 1.7 116
24.5 0.8 34
22.8 1.1 44
23.3 1.1 672
23.7 1.2 296
23.3 1.2 483
23.3 1.3 1103
23.7 1.3 1428
24.1 1.2 2737
24.2 1.3 2223
24.3 1.1 1730
24.1 1.2 1885
24.0 1.4 967
22.4 1.6 16
23.2 1.3 325
23.6 1.2 411
23.2 1.5 117
23.2 1.3 88
23.3 1.4 83
24.1 1.4 63
24.0 1.2 146
24.2 1.3 251
24.1 1.3 414
24.2 1.5 310
24.0 1.4 411
22.6 1.4 126
23.0 1.2 411
23.0 1.3 144
22.8 1.2 96
23.2 1.6 62
23.7 1.3 112
23.6 1.2 197
24.0 1.4 119
23.8 1.4 363
24.0 1.4 181
23.5 1.3 86
23.4 1.5 100
21.5 2.0 21
21.7 1.4 269
22.2 1.2 270
21.4 1.3 94
21.9 1.3 165
22.3 1.3 54
23.4 1.5 86
23.5 1.8 365
23.2 1.5 349
23.6 1.8 93
23.6 1.3 113
22.9 1.6 102
23.1 1.4 66
21.8 1.5 476
20.5 1.6 162
19.9 1.5 117
20.4 1.6 136
21.1 1.9 54
20.6 1.7 256
21.7 1.5 194
22.4 1.6 36
21.1 2.6 124
20.8 2.5 117
22.2 1.8 211
21.6 1.9 168

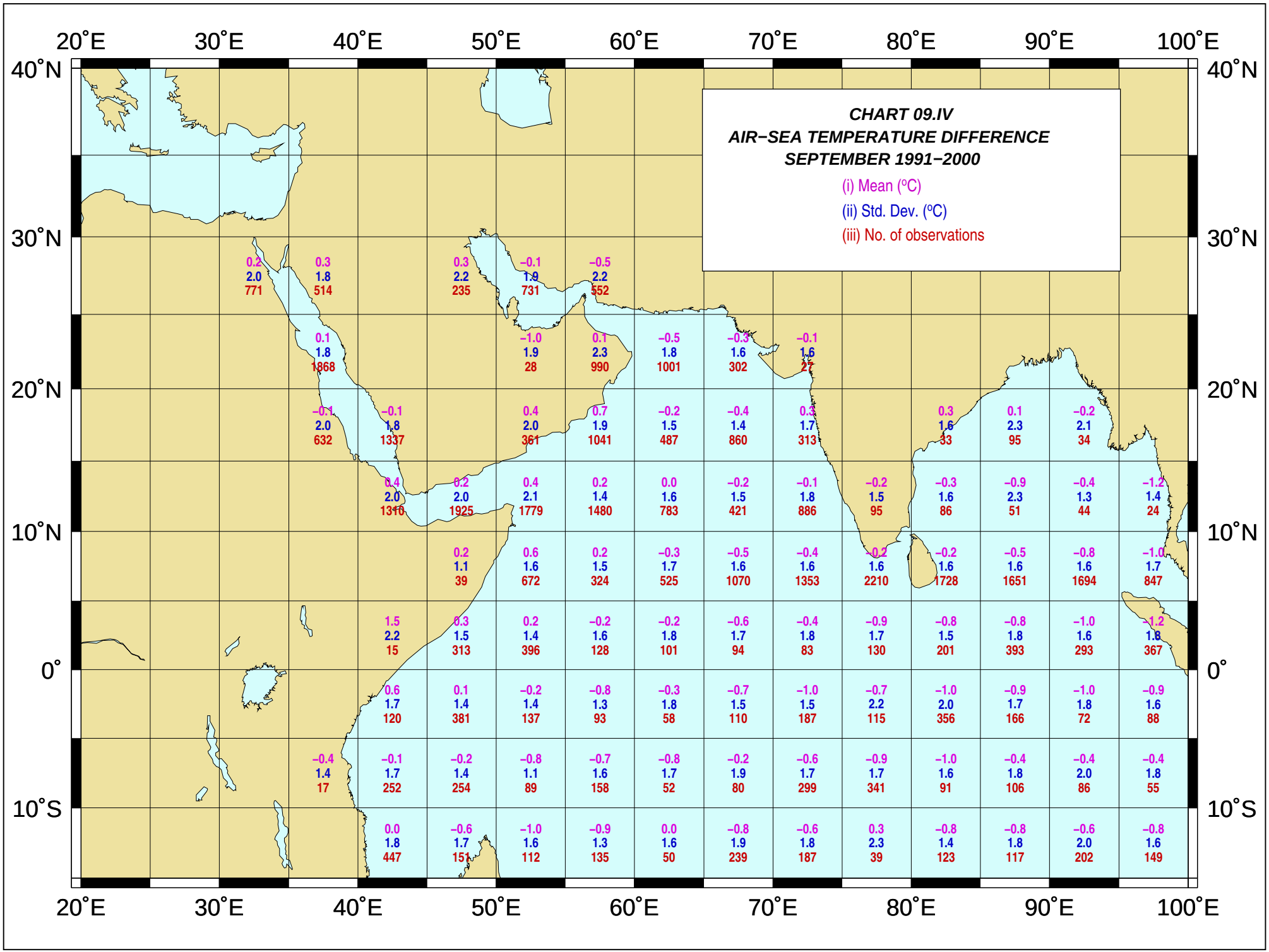


CHART 09.IV
AIR–SEA TEMPERATURE DIFFERENCE
SEPTEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.2 2.0 771
0.3 1.8 514
0.3 2.2 235
−0.1 1.9 731
−0.5 2.2 552
0.1 1.8 1868
−1.0 1.9 28
0.1 2.3 990
−0.5 1.8 1001
−0.3 1.6 302
−0.1 1.6 27
−0.1 2.0 632
−0.1 1.8 1337
0.4 2.0 361
0.7 1.9 1041
−0.2 1.5 487
−0.4 1.4 860
0.3 1.7 313
0.3 1.6 33
0.1 2.3 95
−0.2 2.1 34
0.4 2.0 1310
0.2 2.0 1925
0.4 2.1 1779
0.2 1.4 1480
0.0 1.6 783
−0.2 1.5 421
−0.1 1.8 886
−0.2 1.5 95
−0.3 1.6 86
−0.9 2.3 51
−0.4 1.3 44
−1.2 1.4 24
0.2 1.1 39
0.6 1.6 672
0.2 1.5 324
−0.3 1.7 525
−0.5 1.6 1070
−0.4 1.6 1353
−0.2 1.6 2210
−0.2 1.6 1728
−0.5 1.6 1651
−0.8 1.6 1694
−1.0 1.7 847
1.5 2.2 15
0.3 1.5 313
0.2 1.4 396
−0.2 1.6 128
−0.2 1.8 101
−0.6 1.7 94
−0.4 1.8 83
−0.9 1.7 130
−0.8 1.5 201
−0.8 1.8 393
−1.0 1.6 293
−1.2 1.8 367
0.6 1.7 120
0.1 1.4 381
−0.2 1.4 137
−0.8 1.3 93
−0.3 1.8 58
−0.7 1.5 110
−1.0 1.5 187
−0.7 2.2 115
−1.0 2.0 356
−0.9 1.7 166
−1.0 1.8 72
−0.9 1.6 88
−0.4 1.4 17
−0.1 1.7 252
−0.2 1.4 254
−0.8 1.1 89
−0.7 1.6 158
−0.8 1.7 52
−0.2 1.9 80
−0.6 1.7 299
−0.9 1.7 341
−1.0 1.6 91
−0.4 1.8 106
−0.4 2.0 86
−0.4 1.8 55
0.0 1.8 447
−0.6 1.7 151
−1.0 1.6 112
−0.9 1.3 135
0.0 1.6 50
−0.8 1.9 239
−0.6 1.8 187
0.3 2.3 39
−0.8 1.4 123
−0.8 1.8 117
−0.6 2.0 202
−0.8 1.6 149

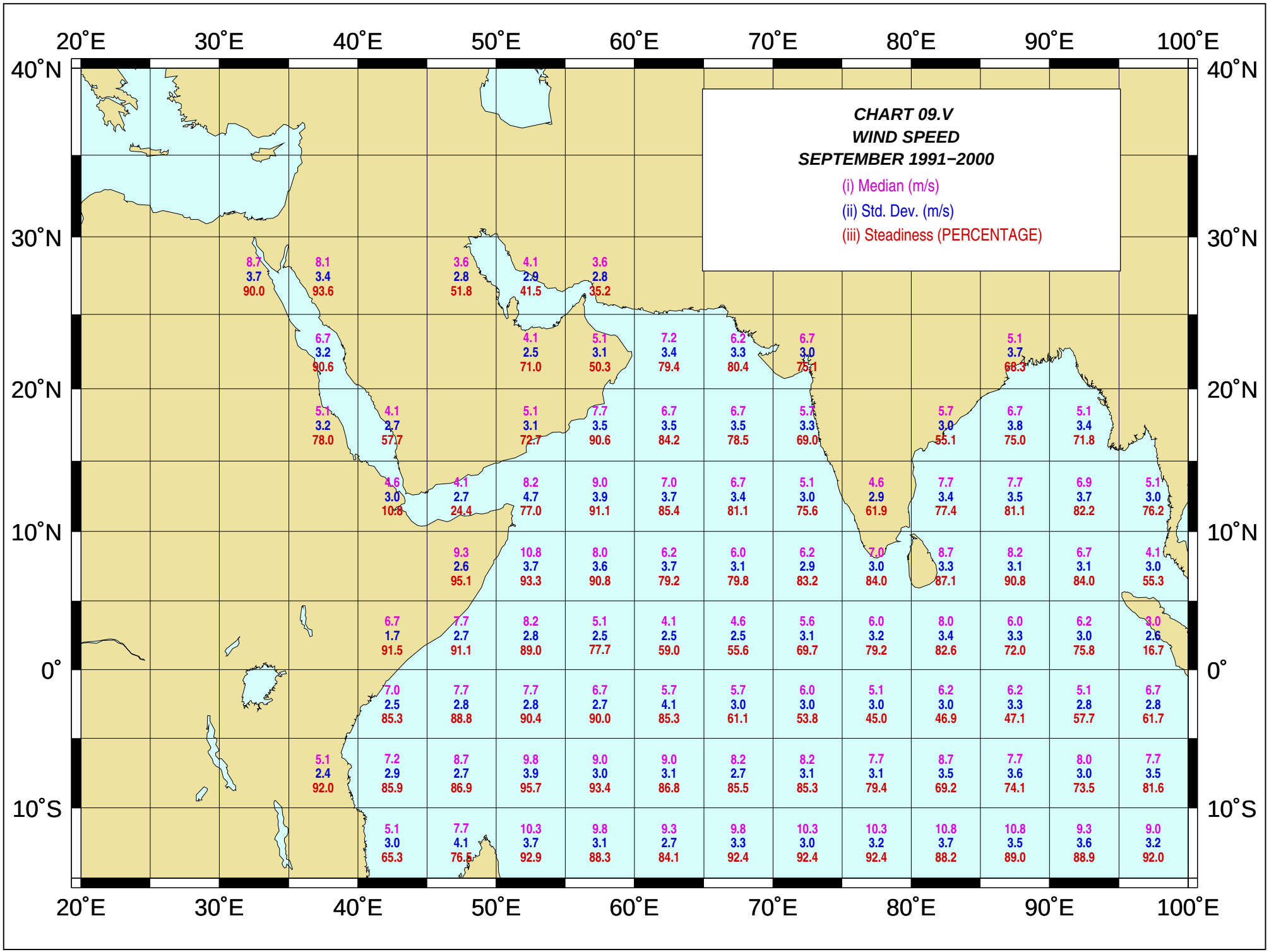


CHART 09.V
WIND SPEED
SEPTEMBER 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
8.7 3.7 90.0
8.1 3.4 93.6
3.6 2.8 51.8
4.1 2.9 41.5
3.6 2.8 35.2
6.7 3.2 90.6
4.1 2.5 71.0
5.1 3.1 50.3
7.2 3.4 79.4
6.2 3.3 80.4
6.7 3.0 75.1
5.1 3.7 68.3
5.1 3.2 78.0
4.1 2.7 57.7
5.1 3.1 72.7
7.7 3.5 90.6
6.7 3.5 84.2
6.7 3.5 78.5
5.7 3.3 69.0
5.7 3.0 55.1
6.7 3.8 75.0
5.1 3.4 71.8
4.6 3.0 10.8
4.1 2.7 24.4
8.2 4.7 77.0
9.0 3.9 91.1
7.0 3.7 85.4
6.7 3.4 81.1
5.1 3.0 75.6
4.6 2.9 61.9
7.7 3.4 77.4
7.7 3.5 81.1
6.9 3.7 82.2
5.1 3.0 76.2
9.3 2.6 95.1
10.8 3.7 93.3
8.0 3.6 90.8
6.2 3.7 79.2
6.0 3.1 79.8
6.2 2.9 83.2
7.0 3.0 84.0
8.7 3.3 87.1
8.2 3.1 90.8
6.7 3.1 84.0
4.1 3.0 55.3
6.7 1.7 91.5
7.7 2.7 91.1
8.2 2.8 89.0
5.1 2.5 77.7
4.1 2.5 59.0
4.6 2.5 55.6
5.6 3.1 69.7
6.0 3.2 79.2
8.0 3.4 82.6
6.0 3.3 72.0
6.2 3.0 75.8
3.0 2.6 16.7
7.0 2.5 85.3
7.7 2.8 88.8
7.7 2.8 90.4
6.7 2.7 90.0
5.7 4.1 85.3
5.7 3.0 61.1
6.0 3.0 53.8
5.1 3.0 45.0
6.2 3.0 46.9
6.2 3.3 47.1
5.1 2.8 57.7
6.7 2.8 61.7
5.1 2.4 92.0
7.2 2.9 85.9
8.7 2.7 86.9
9.8 3.9 95.7
9.0 3.0 93.4
9.0 3.1 86.8
8.2 2.7 85.5
8.2 3.1 85.3
7.7 3.1 79.4
8.7 3.5 69.2
7.7 3.6 74.1
8.0 3.0 73.5
7.7 3.5 81.6
5.1 3.0 65.3
7.7 4.1 76.5
10.3 3.7 92.9
9.8 3.1 88.3
9.3 2.7 84.1
9.8 3.3 92.4
10.3 3.0 92.4
10.3 3.2 92.4
10.8 3.7 88.2
10.8 3.5 89.0
9.3 3.6 88.9
9.0 3.2 92.0

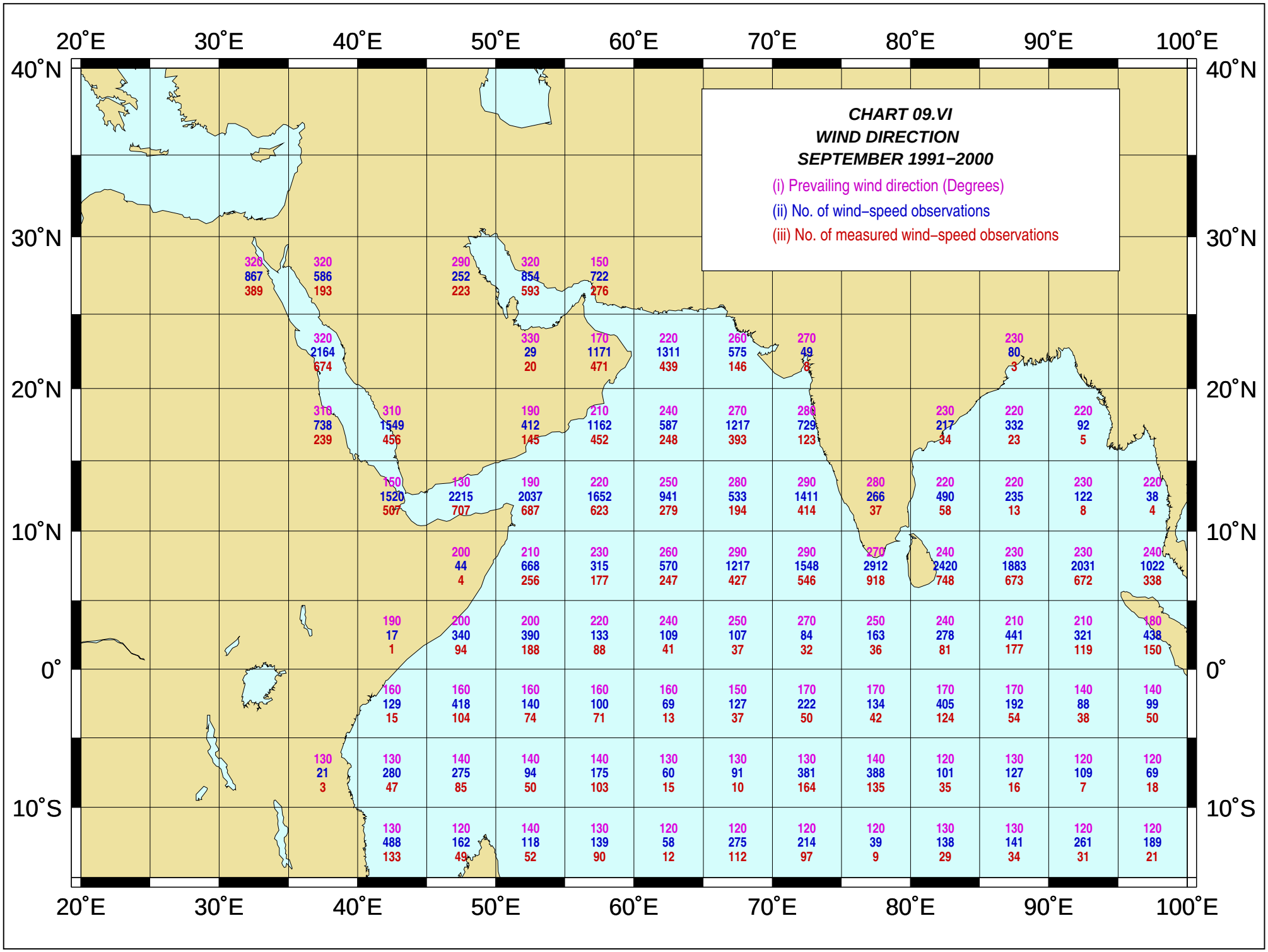


CHART 09.VI
WIND DIRECTION
SEPTEMBER 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
320 867 389
320 586 193
290 252 223
320 854 593
150 722 276
320 2164 674
330 29 20
170 1171 471
220 1311 439
260 575 146
270 49 8
230 80 3
310 738 239
310 1549 456
190 412 145
210 1162 452
240 587 248
270 1217 393
280 729 123
230 217 34
220 332 23
220 92 5
150 1520 507
130 2215 707
190 2037 687
220 1652 623
250 941 279
280 533 194
290 1411 414
280 266 37
220 490 58
220 235 13
230 122 8
220 38 4
200 44 4
210 668 256
230 315 177
260 570 247
290 1217 427
290 1548 546
270 2912 918
240 2420 748
230 1883 673
230 2031 672
240 1022 338
190 17 1
200 340 94
200 390 188
220 133 88
240 109 41
250 107 37
270 84 32
250 163 36
240 278 81
210 441 177
210 321 119
180 438 150
160 129 15
160 418 104
160 140 74
160 100 71
160 69 13
150 127 37
170 222 50
170 134 42
170 405 124
170 192 54
140 88 38
140 99 50
130 21 3
130 280 47
140 275 85
140 94 50
140 175 103
130 60 15
130 91 10
130 381 164
140 388 135
120 101 35
130 127 16
120 109 7
120 69 18
130 488 133
120 162 49
140 118 52
130 139 90
120 58 12
120 275 112
120 214 97
120 39 9
130 138 29
130 141 34
120 261 31
120 189 21

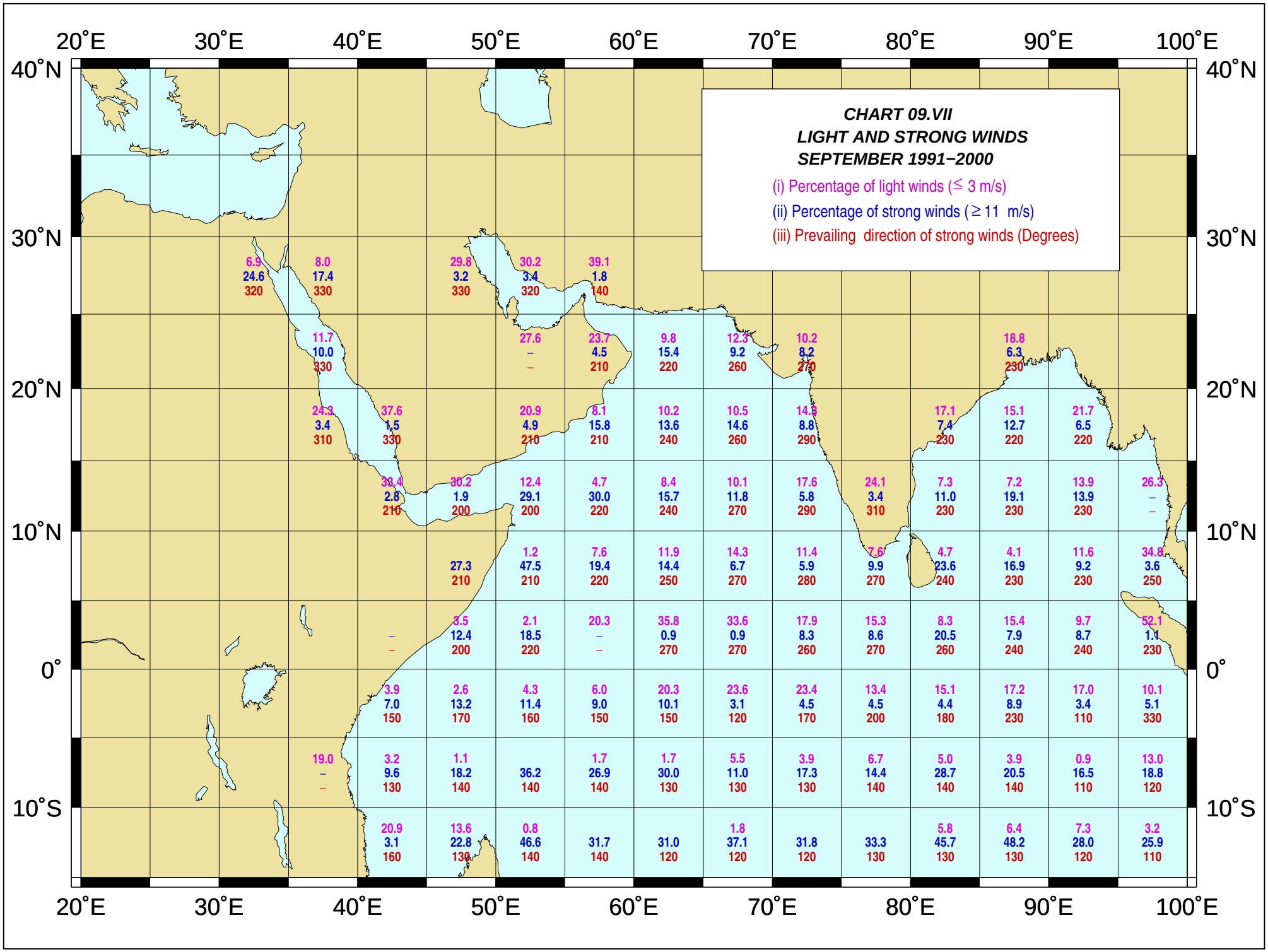


CHART 09.VII
LIGHT AND STRONG WINDS
SEPTEMBER 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
6.9 24.6 320
8.0 17.4 330
29.8 3.2 330
30.2 3.4 320
39.1 1.8 140
11.7 10.0 330
27.6 – –
23.7 4.5 210
9.8 15.4 220
12.3 9.2 260
10.2 8.2 270
18.8 6.3 230
24.3 3.4 310
37.6 1.5 330
20.9 4.9 210
8.1 15.8 210
10.2 13.6 240
10.5 14.6 260
14.9 8.8 290
17.1 7.4 230
15.1 12.7 220
21.7 6.5 220
30.4 2.8 210
30.2 1.9 200
12.4 29.1 200
4.7 30.0 220
8.4 15.7 240
10.1 11.8 270
17.6 5.8 290
24.1 3.4 310
7.3 11.0 230
7.2 19.1 230
13.9 13.9 230
26.3 – –
27.3 210
1.2 47.5 210
7.6 19.4 220
11.9 14.4 250
14.3 6.7 270
11.4 5.9 280
7.6 9.9 270
4.7 23.6 240
4.1 16.9 230
11.6 9.2 230
34.8 3.6 250
– –
3.5 12.4 200
2.1 18.5 220
20.3 – –
35.8 0.9 270
33.6 0.9 270
17.9 8.3 260
15.3 8.6 270
8.3 20.5 260
15.4 7.9 240
9.7 8.7 240
52.1 1.1 230
3.9 7.0 150
2.6 13.2 170
4.3 11.4 160
6.0 9.0 150
20.3 10.1 150
23.6 3.1 120
23.4 4.5 170
13.4 4.5 200
15.1 4.4 180
17.2 8.9 230
17.0 3.4 110
10.1 5.1 330
19.0 – –
3.2 9.6 130
1.1 18.2 140
36.2 140
1.7 26.9 140
1.7 30.0 130
5.5 11.0 130
3.9 17.3 130
6.7 14.4 140
5.0 28.7 140
3.9 20.5 140
0.9 16.5 110
13.0 18.8 120
20.9 3.1 160
13.6 22.8 130
0.8 46.6 140
31.7 140
31.0 120
1.8 37.1 120
31.8 120
33.3 130
5.8 45.7 130
6.4 48.2 130
7.3 28.0 120
3.2 25.9 110

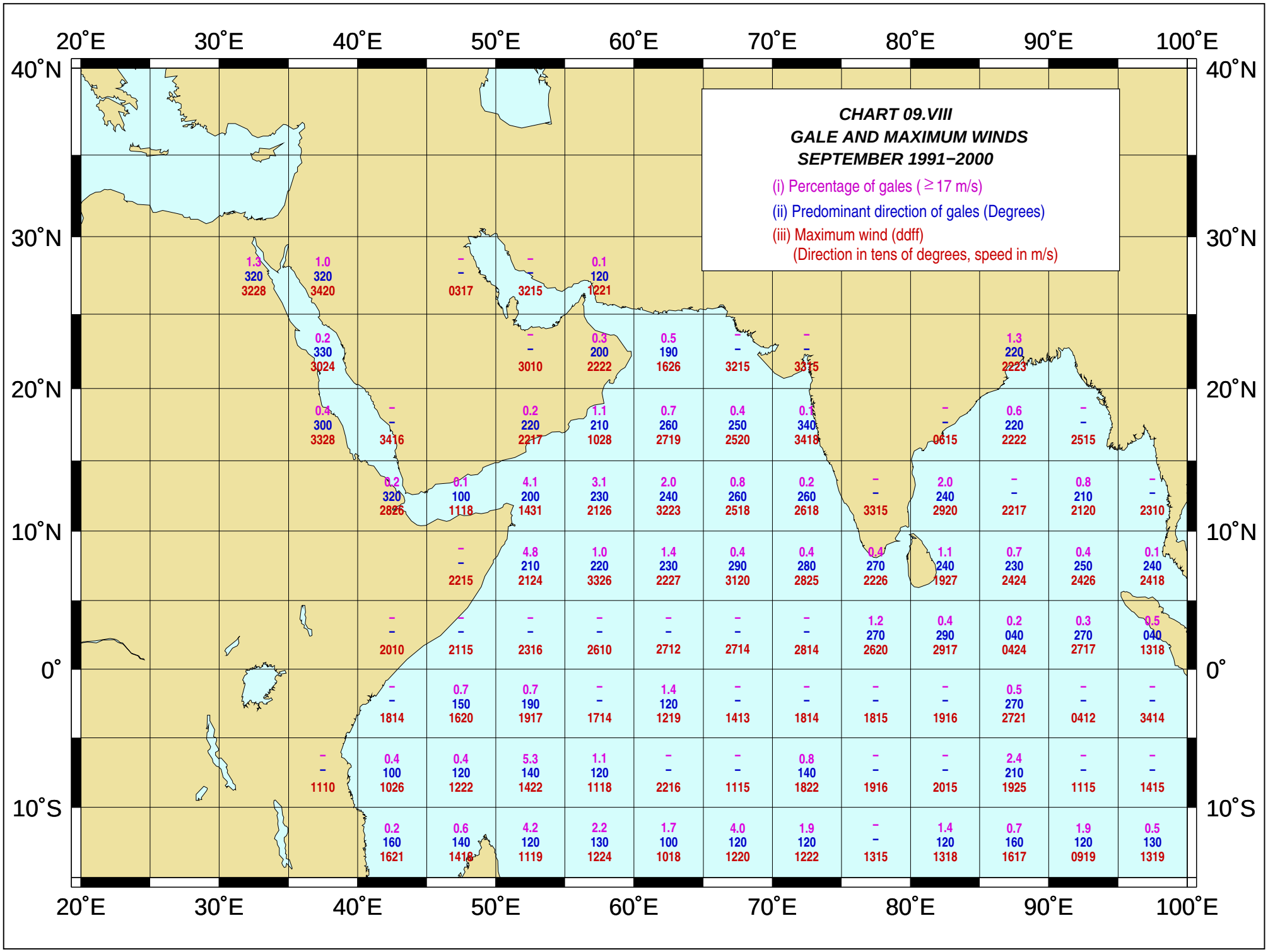


CHART 09.VIII
GALE AND MAXIMUM WINDS
SEPTEMBER 1991–2000
(i) Percentage of gales (≥17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.3 320 3228
1.0 320 3420
– – 0317
– – 3215
0.1 120 1221
0.2 330 3024
– – 3010
0.3 200 2222
0.5 190 1626
– – 3215
– – 3315
1.3 220 2223
0.4 300 3328
– – 3416
0.2 220 2217
1.1 210 1028
0.7 260 2719
0.4 250 2520
0.5 340 3418
– – 0615
0.6 220 2222
– – 2515
0.2 320 2826
0.1 100 1118
4.1 200 1431
3.1 230 2126
2.0 240 3223
0.8 260 2518
0.2 260 2618
– – 3315
2.0 240 2920
– – 2217
0.8 210 2120
– – 2310
– – 2215
4.8 210 2124
1.0 220 3326
1.4 230 2227
0.4 290 3120
0.4 280 2825
0.4 270 2226
1.1 240 1927
0.7 230 2424
0.4 250 2426
0.1 240 2418
– – 2010
– – 2115
– – 2316
– – 2610
– – 2712
– – 2714
– – 2814
1.2 270 2620
0.4 290 2917
0.2 040 0424
0.3 270 2717
0.5 040 1318
– – 1814
0.7 150 1620
0.7 190 1917
– – 1714
1.4 120 1219
– – 1413
– – 1814
– – 1815
– – 1916
0.5 270 2721
– – 0412
– – 3414
– – 1110
0.4 100 1026
0.4 120 1222
5.3 140 1422
1.1 120 1118
– – 2216
– – 1115
0.8 140 1822
– – 1916
– – 2015
2.4 210 1925
– – 1115
– – 1415
0.2 160 1621
0.6 140 1418
4.2 120 1119
2.2 130 1224
1.7 100 1018
4.0 120 1220
1.9 120 1222
– – 1315
1.4 120 1318
0.7 160 1617
1.9 120 0919
0.5 130 1319

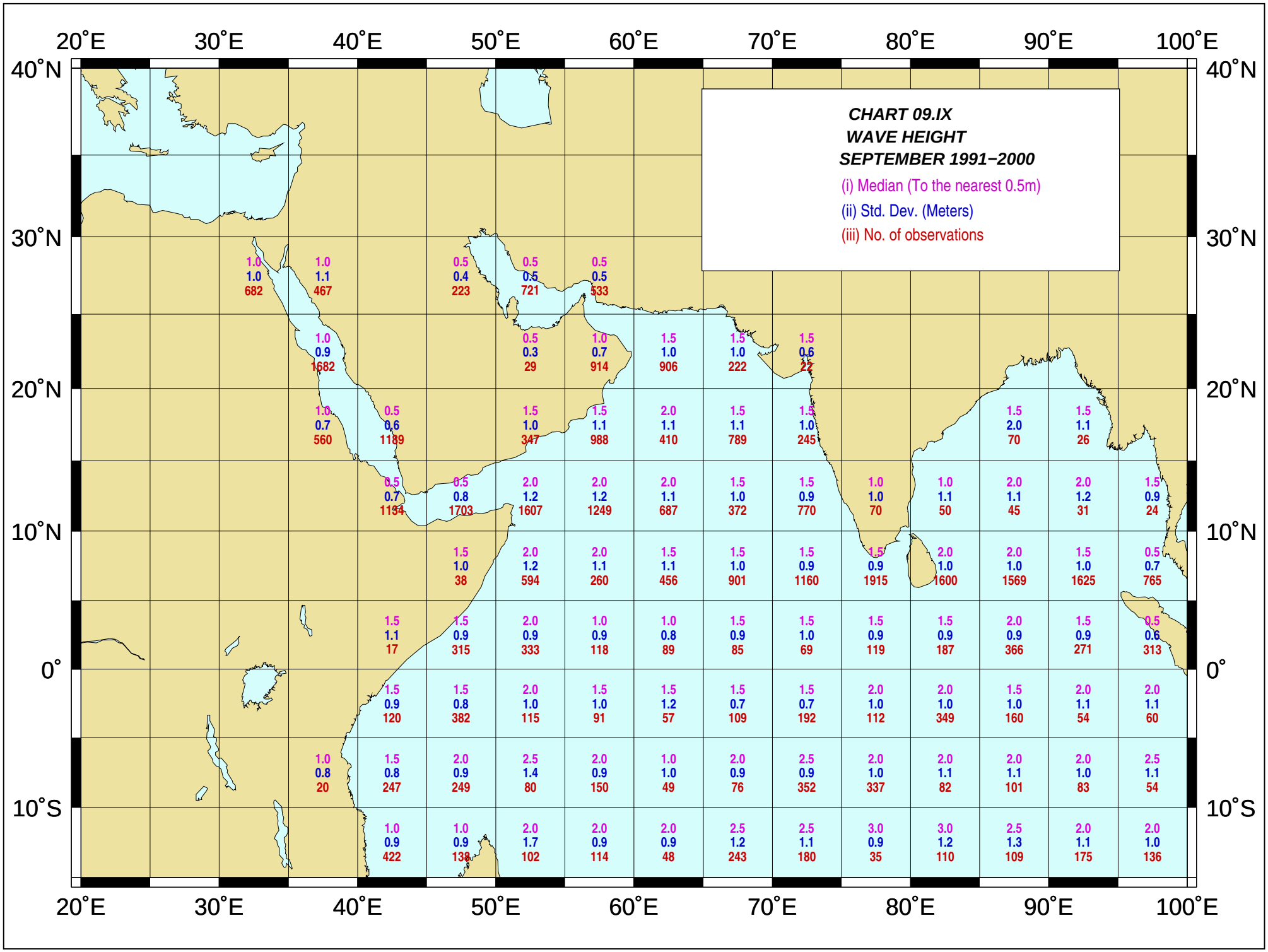


CHART 09.IX
WAVE HEIGHT
SEPTEMBER 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 1.0 682
1.0 1.1 467
0.5 0.4 223
0.5 0.5 721
0.5 0.5 533
1.0 0.9 1682
0.5 0.3 29
1.0 0.7 914
1.5 1.0 906
1.5 1.0 222
1.5 0.6 22
1.0 0.7 560
0.5 0.6 1189
1.5 1.0 347
1.5 1.1 988
2.0 1.1 410
1.5 1.1 789
1.5 1.0 245
1.5 2.0 70
1.5 1.1 26
0.5 0.7 1154
0.5 0.8 1703
2.0 1.2 1607
2.0 1.2 1249
2.0 1.1 687
1.5 1.0 372
1.5 0.9 770
1.0 1.0 70
1.0 1.1 50
2.0 1.1 45
2.0 1.2 31
1.5 0.9 24
1.5 1.0 38
2.0 1.2 594
2.0 1.1 260
1.5 1.1 456
1.5 1.0 901
1.5 0.9 1160
1.5 0.9 1915
2.0 1.0 1600
2.0 1.0 1569
1.5 1.0 1625
0.5 0.7 765
1.5 1.1 17
1.5 0.9 315
2.0 0.9 333
1.0 0.9 118
1.0 0.8 89
1.5 0.9 85
1.5 1.0 69
1.5 0.9 119
1.5 0.9 187
2.0 0.9 366
1.5 0.9 271
0.5 0.6 313
1.5 0.9 120
1.5 0.8 382
2.0 1.0 115
1.5 1.0 91
1.5 1.2 57
1.5 0.7 109
1.5 0.7 192
2.0 1.0 112
2.0 1.0 349
1.5 1.0 160
2.0 1.1 54
2.0 1.1 60
1.0 0.8 20
1.5 0.8 247
2.0 0.9 249
2.5 1.4 80
2.0 0.9 150
1.0 1.0 49
2.0 0.9 76
2.5 0.9 352
2.0 1.0 337
2.0 1.1 82
2.0 1.1 101
2.0 1.0 83
2.5 1.1 54
1.0 0.9 422
1.0 0.9 138
2.0 1.7 102
2.0 0.9 114
2.0 0.9 48
2.5 1.2 243
2.5 1.1 180
3.0 0.9 35
3.0 1.2 110
2.5 1.3 109
2.0 1.1 175
2.0 1.0 136

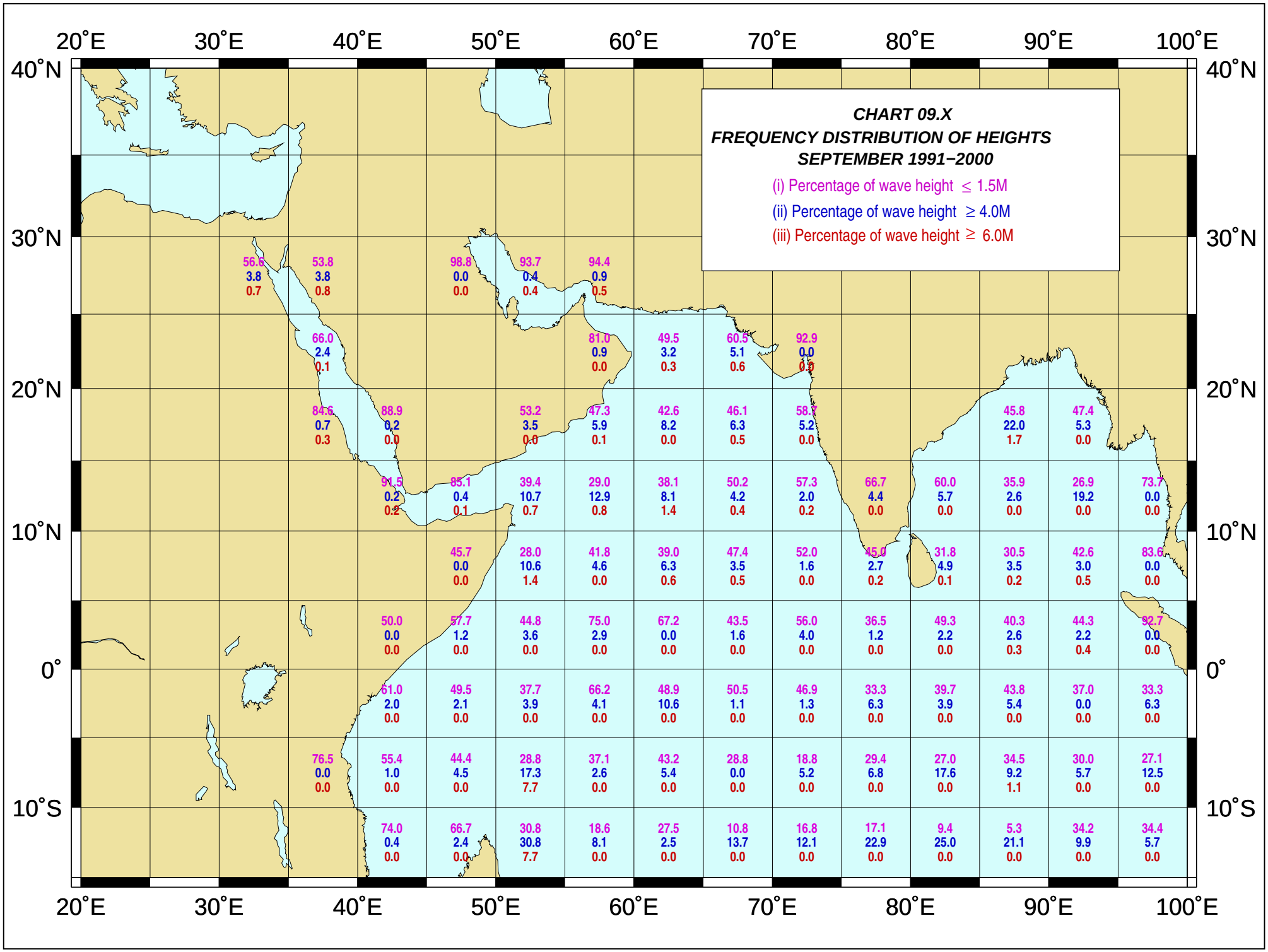


CHART 09.X
FREQUENCY DISTRIBUTION OF HEIGHTS
SEPTEMBER 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
56.6 3.8 0.7
53.8 3.8 0.8
98.8 0.0 0.0
93.7 0.4 0.4
94.4 0.9 0.5
66.0 2.4 0.1
81.0 0.9 0.0
49.5 3.2 0.3
60.5 5.1 0.6
92.9 0.0 0.0
84.6 0.7 0.3
88.9 0.2 0.0
53.2 3.5 0.0
47.3 5.9 0.1
42.6 8.2 0.0
46.1 6.3 0.5
58.7 5.2 0.0
45.8 22.0 1.7
47.4 5.3 0.0
91.5 0.2 0.2
85.1 0.4 0.1
39.4 10.7 0.7
29.0 12.9 0.8
38.1 8.1 1.4
50.2 4.2 0.4
57.3 2.0 0.2
66.7 4.4 0.0
60.0 5.7 0.0
35.9 2.6 0.0
26.9 19.2 0.0
73.7 0.0 0.0
45.7 0.0 0.0
28.0 10.6 1.4
41.8 4.6 0.0
39.0 6.3 0.6
47.4 3.5 0.5
52.0 1.6 0.0
45.0 2.7 0.2
31.8 4.9 0.1
30.5 3.5 0.2
42.6 3.0 0.5
83.6 0.0 0.0
50.0 0.0 0.0
57.7 1.2 0.0
44.8 3.6 0.0
75.0 2.9 0.0
67.2 0.0 0.0
43.5 1.6 0.0
56.0 4.0 0.0
36.5 1.2 0.0
49.3 2.2 0.0
40.3 2.6 0.3
44.3 2.2 0.4
92.7 0.0 0.0
61.0 2.0 0.0
49.5 2.1 0.0
37.7 3.9 0.0
66.2 4.1 0.0
48.9 10.6 0.0
50.5 1.1 0.0
46.9 1.3 0.0
33.3 6.3 0.0
39.7 3.9 0.0
43.8 5.4 0.0
37.0 0.0 0.0
33.3 6.3 0.0
76.5 0.0 0.0
55.4 1.0 0.0
44.4 4.5 0.0
28.8 17.3 7.7
37.1 2.6 0.0
43.2 5.4 0.0
28.8 0.0 0.0
18.8 5.2 0.0
29.4 6.8 0.0
27.0 17.6 0.0
34.5 9.2 1.1
30.0 5.7 0.0
27.1 12.5 0.0
74.0 0.4 0.0
66.7 2.4 0.0
30.8 30.8 7.7
18.6 8.1 0.0
27.5 2.5 0.0
10.8 13.7 0.0
16.8 12.1 0.0
17.1 22.9 0.0
9.4 25.0 0.0
5.3 21.1 0.0
34.2 9.9 0.0
34.4 5.7 0.0

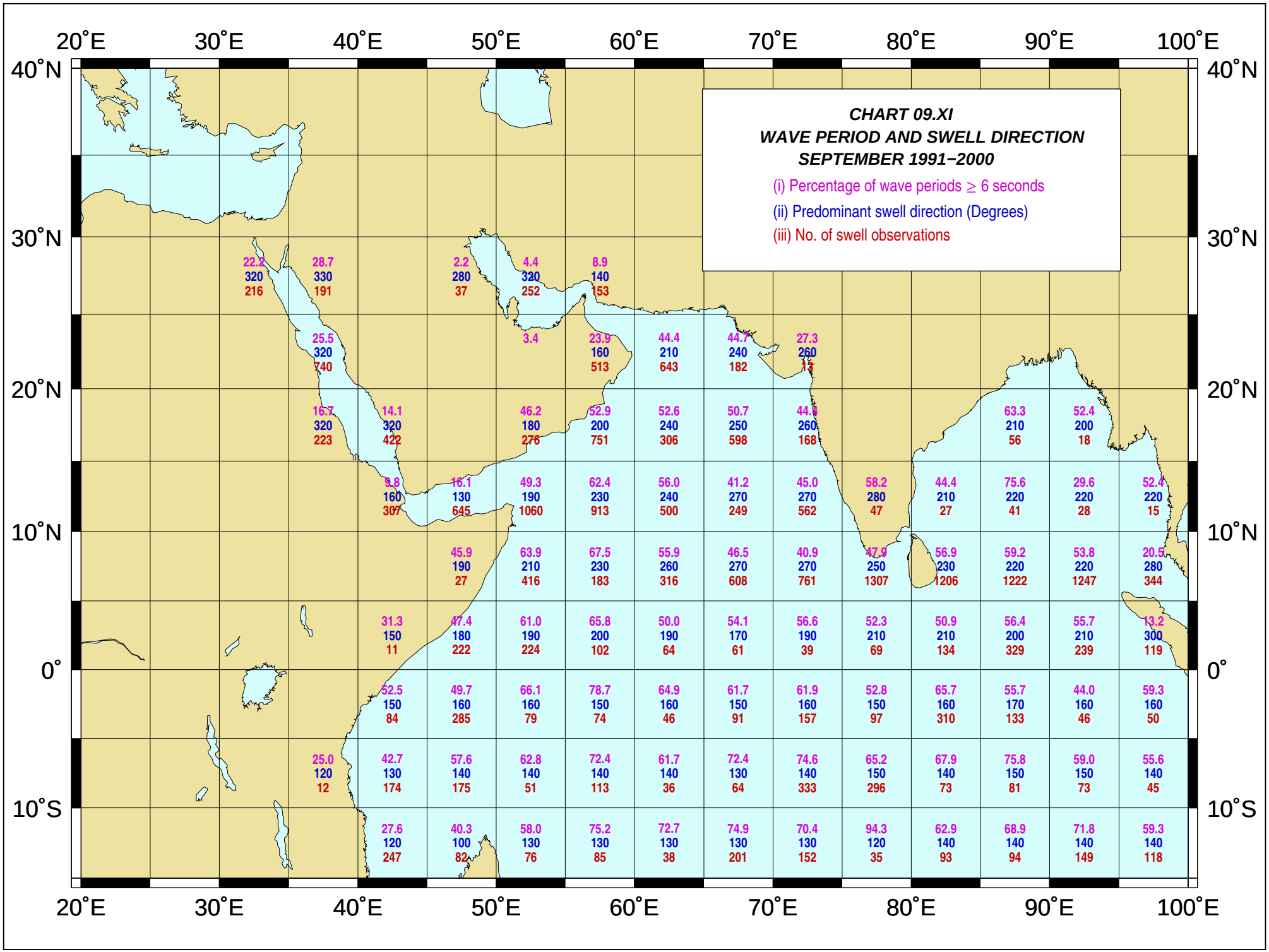


CHART 09.XI
WAVE PERIOD AND SWELL DIRECTION
SEPTEMBER 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
22.2 320 216
28.7 330 191
2.2 280 37
4.4 320 252
8.9 140 153
25.5 320 740
3.4
23.9 160 513
44.4 210 643
44.7 240 182
27.3 260
16.7 320 223
14.1 320 422
46.2 180 276
52.9 200 751
52.6 240 306
50.7 250 598
63.3 210 56
52.4 200 18
9.8 160 307
16.1 130 645
49.3 190 1060
62.4 230 913
56.0 240 500
41.2 270 249
45.0 270 562
58.2 280 47
44.4 210 27
75.6 220 41
29.6 220 28
52.4 220 15
45.9 190 27
63.9 210 416
67.5 230 183
55.9 260 316
46.5 270 608
40.9 270 761
47.9 250 1307
56.9 230 1206
59.2 220 1222
53.8 220 1247
20.5 280 344
31.3 150 11
47.4 180 222
61.0 190 224
65.8 200 102
50.0 190 64
54.1 170 61
56.6 190 39
52.3 210 69
50.9 210 134
56.4 200 329
55.7 210 239
13.2 300 119
52.5 150 84
49.7 160 285
66.1 160 79
78.7 150 74
64.9 160 46
61.7 150 91
61.9 160 157
52.8 150 97
65.7 160 310
55.7 170 133
44.0 160 46
59.3 160 50
25.0 120 12
42.7 130 174
57.6 140 175
62.8 140 51
72.4 140 113
61.7 140 36
72.4 130 64
74.6 140 333
65.2 150 296
67.9 140 73
75.8 150 81
59.0 150 73
55.6 140 45
27.6 120 247
40.3 100 82
58.0 130 76
75.2 130 85
72.7 130 38
74.9 130 201
70.4 130 152
94.3 120 35
62.9 140 93
68.9 140 94
71.8 140 149
59.3 140 118

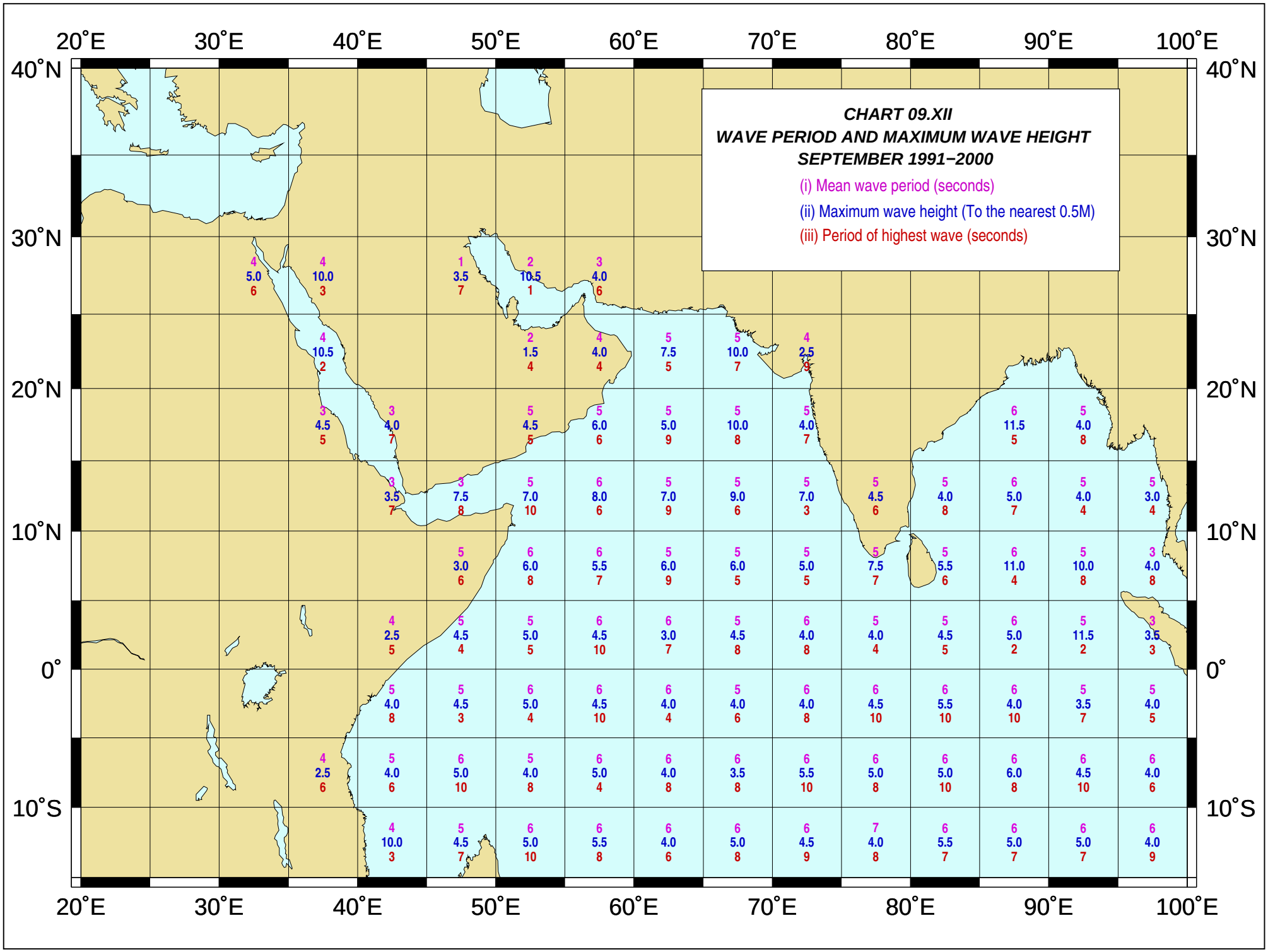


CHART 09.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
SEPTEMBER 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
4 5.0 6
4 10.0 3
1 3.5 7
2 10.5 1
3 4.0 6
4 10.5 2
2 1.5 4
4 4.0 4
5 7.5 5
5 10.0 7
4 2.5 5
3 4.5 5
3 4.0 7
5 4.5 5
5 6.0 6
5 5.0 9
5 10.0 8
5 4.0 7
6 11.5 5
5 4.0 8
3 3.5 7
3 7.5 8
5 7.0 10
6 8.0 6
5 7.0 9
5 9.0 6
5 7.0 3
5 4.5 6
5 4.0 8
6 5.0 7
5 4.0 4
5 3.0 4
5 3.0 6
6 6.0 8
6 5.5 7
5 6.0 9
5 6.0 5
5 5.0 5
5 7.5 7
5 5.5 6
6 11.0 4
5 10.0 8
3 4.0 8
4 2.5 5
5 4.5 4
5 5.0 5
6 4.5 10
6 3.0 7
5 4.5 8
6 4.0 8
5 4.0 4
5 4.5 5
6 5.0 2
5 11.5 2
3 3.5 3
5 4.0 8
5 4.5 3
6 5.0 4
6 4.5 10
6 4.0 4
5 4.0 6
6 4.0 8
6 4.5 10
6 5.5 10
6 4.0 10
5 3.5 7
5 4.0 5
4 2.5 6
5 4.0 6
6 5.0 10
5 4.0 8
6 5.0 4
6 4.0 8
6 3.5 8
6 5.5 10
6 5.0 8
6 5.0 10
6 6.0 8
6 4.5 10
6 4.0 6
4 10.0 3
5 4.5 7
6 5.0 10
6 5.5 8
6 4.0 6
6 5.0 8
6 4.5 9
7 4.0 8
6 5.5 7
6 5.0 7
6 5.0 7
6 4.0 9

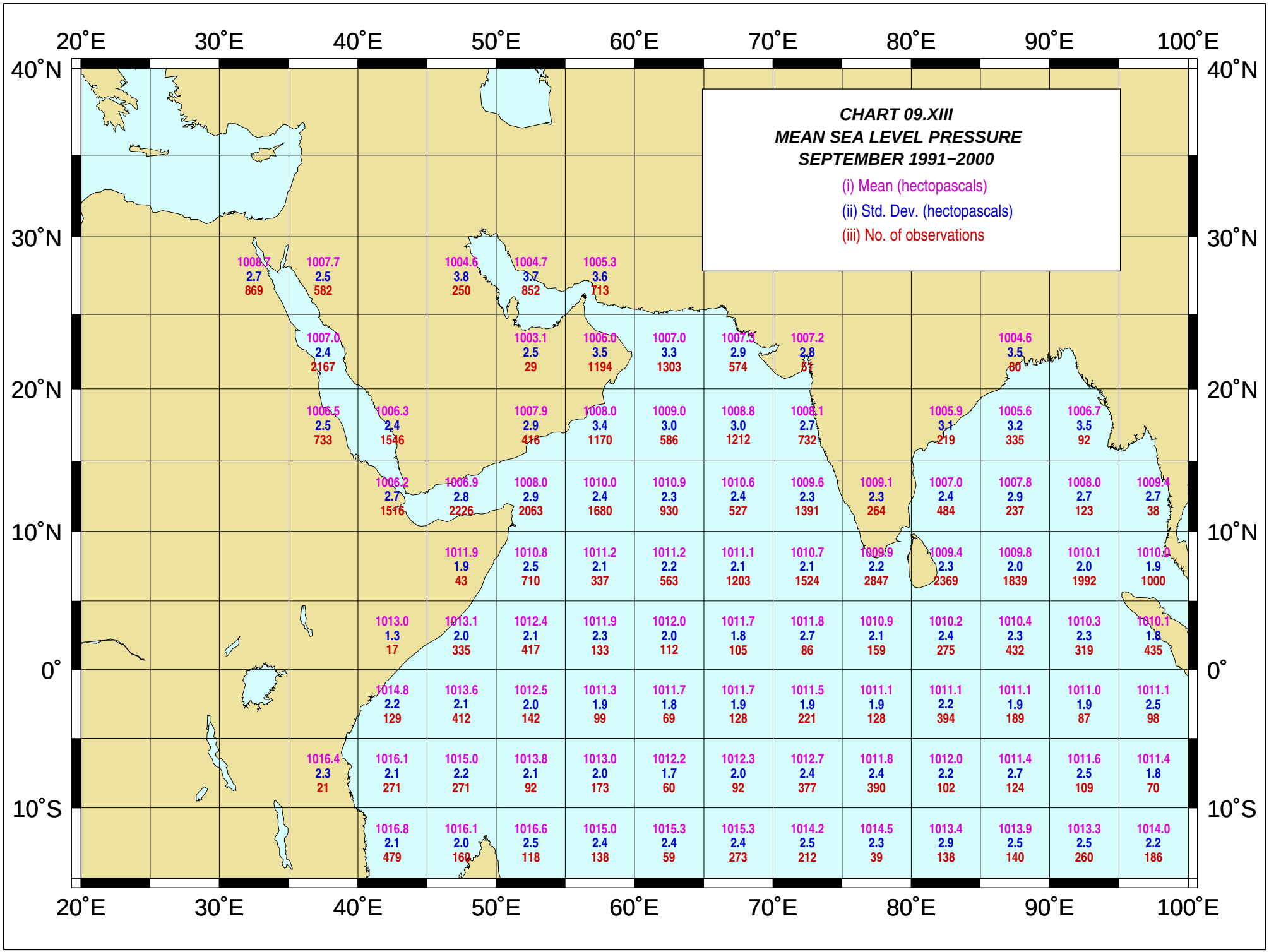


CHART 09.XIII
MEAN SEA LEVEL PRESSURE
SEPTEMBER 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1008.7 2.7 869
1007.7 2.5 582
1004.6 3.8 250
1004.7 3.7 852
1005.3 3.6 713
1007.0 2.4 2167
1003.1 2.5 29
1006.0 3.5 1194
1007.0 3.3 1303
1007.3 2.9 574
1007.2 2.8 51
1004.6 3.5 80
1006.5 2.5 733
1006.3 2.4 1546
1007.9 2.9 416
1008.0 3.4 1170
1009.0 3.0 586
1008.8 3.0 1212
1008.1 2.7 732
1005.9 3.1 219
1005.6 3.2 335
1006.7 3.5 92
1006.2 2.7 1516
1006.9 2.8 2226
1008.0 2.9 2063
1010.0 2.4 1680
1010.9 2.3 930
1010.6 2.4 527
1009.6 2.3 1391
1009.1 2.3 264
1007.0 2.4 484
1007.8 2.9 237
1008.0 2.7 123
1009.4 2.7 38
1011.9 1.9 43
1010.8 2.5 710
1011.2 2.1 337
1011.2 2.2 563
1011.1 2.1 1203
1010.7 2.1 1524
1009.9 2.2 2847
1009.4 2.3 2369
1009.8 2.0 1839
1010.1 2.0 1992
1010.0 1.9 1000
1013.0 1.3 17
1013.1 2.0 335
1012.4 2.1 417
1011.9 2.3 133
1012.0 2.0 112
1011.7 1.8 105
1011.8 2.7 86
1010.9 2.1 159
1010.2 2.4 275
1010.4 2.3 432
1010.3 2.3 319
1010.1 1.8 435
1014.8 2.2 129
1013.6 2.1 412
1012.5 2.0 142
1011.3 1.9 99
1011.7 1.8 69
1011.7 1.9 128
1011.5 1.9 221
1011.1 1.9 128
1011.1 2.2 394
1011.1 1.9 189
1011.0 1.9 87
1011.1 2.5 98
1016.4 2.3 21
1016.1 2.1 271
1015.0 2.2 271
1013.8 2.1 92
1013.0 2.0 173
1012.2 1.7 60
1012.3 2.0 92
1012.7 2.4 377
1011.8 2.4 390
1012.0 2.2 102
1011.4 2.7 124
1011.6 2.5 109
1011.4 1.8 70
1016.8 2.1 479
1016.1 2.0 160
1016.6 2.5 118
1015.0 2.4 138
1015.3 2.4 59
1015.3 2.4 273
1014.2 2.5 212
1014.5 2.3 39
1013.4 2.9 138
1013.9 2.5 140
1013.3 2.5 260
1014.0 2.2 186

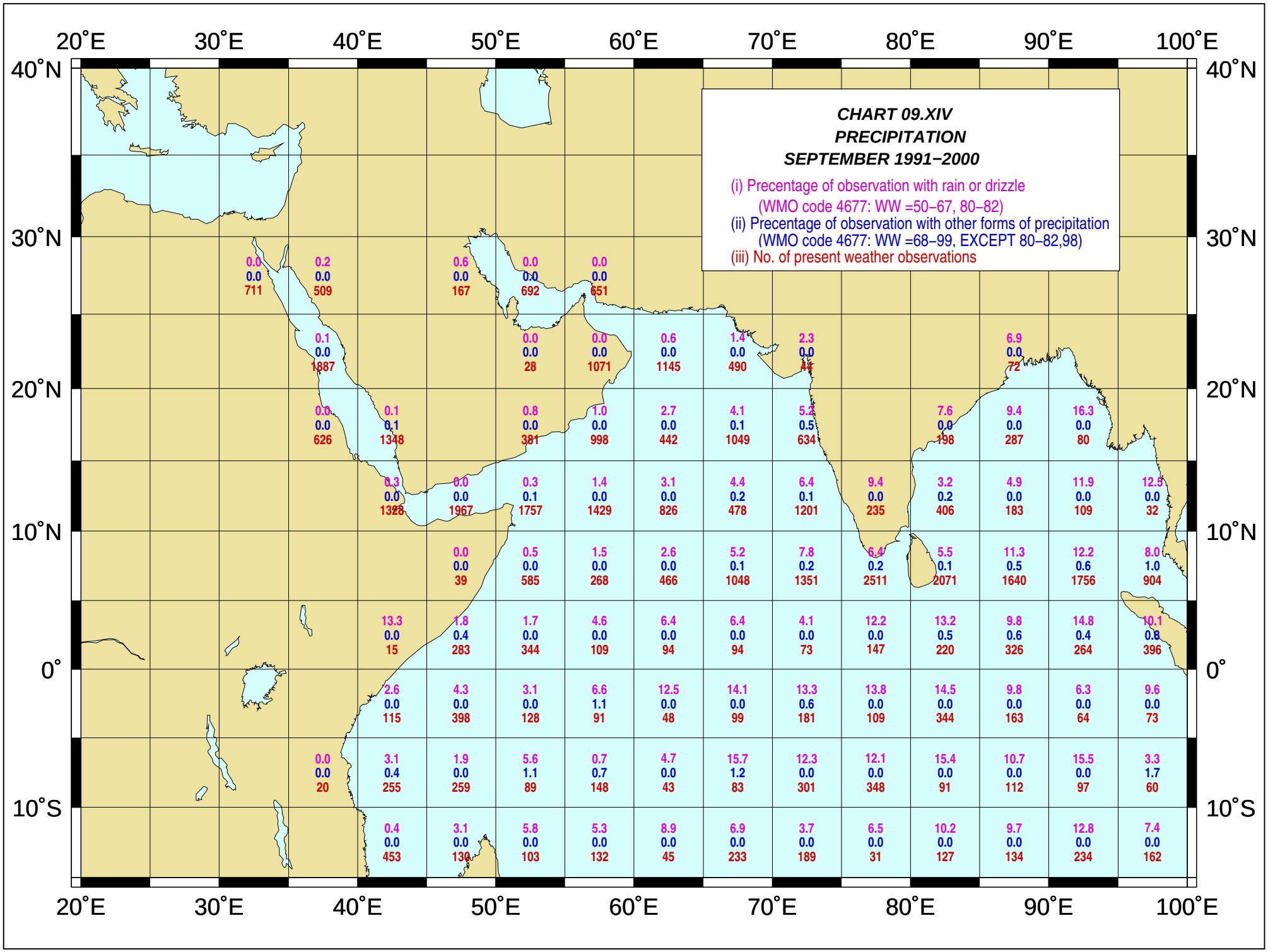


CHART 09.XIV
PRECIPITATION
SEPTEMBER 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.0 0.0 711
0.2 0.0 509
0.6 0.0 167
0.0 0.0 692
0.0 0.0 651
0.1 0.0 1887
0.0 0.0 28
0.0 0.0 1071
0.6 0.0 1145
1.4 0.0 490
2.3 0.0 44
6.9 0.0 72
0.0 0.0 626
0.1 0.1 1348
0.8 0.0 381
1.0 0.0 998
2.7 0.0 442
4.1 0.1 1049
5.2 0.5 634
7.6 0.0 198
9.4 0.0 287
16.3 0.0 80
0.3 0.0 1328
0.0 0.0 1967
0.3 0.1 1757
1.4 0.0 1429
3.1 0.0 826
4.4 0.2 478
6.4 0.1 1201
9.4 0.0 235
3.2 0.2 406
4.9 0.0 183
11.9 0.0 109
12.5 0.0 32
0.0 0.0 39
0.5 0.0 585
1.5 0.0 268
2.6 0.0 466
5.2 0.1 1048
7.8 0.2 1351
6.4 0.2 2511
5.5 0.1 2071
11.3 0.5 1640
12.2 0.6 1756
8.0 1.0 904
13.3 0.0 15
1.8 0.4 283
1.7 0.0 344
4.6 0.0 109
6.4 0.0 94
6.4 0.0 94
4.1 0.0 73
12.2 0.0 147
13.2 0.5 220
9.8 0.6 326
14.8 0.4 264
10.1 0.8 396
2.6 0.0 115
4.3 0.0 398
3.1 0.0 128
6.6 1.1 91
12.5 0.0 48
14.1 0.0 99
13.3 0.6 181
13.8 0.0 109
14.5 0.0 344
9.8 0.0 163
6.3 0.0 64
9.6 0.0 73
0.0 0.0 20
3.1 0.4 255
1.9 0.0 259
5.6 1.1 89
0.7 0.7 148
4.7 0.0 43
15.7 1.2 83
12.3 0.0 301
12.1 0.0 348
15.4 0.0 91
10.7 0.0 112
15.5 0.0 97
3.3 1.7 60
0.4 0.0 453
3.1 0.0 130
5.8 0.0 103
5.3 0.0 132
8.9 0.0 45
6.9 0.0 233
3.7 0.0 189
6.5 0.0 31
10.2 0.0 127
9.7 0.0 134
12.8 0.0 234
7.4 0.0 162

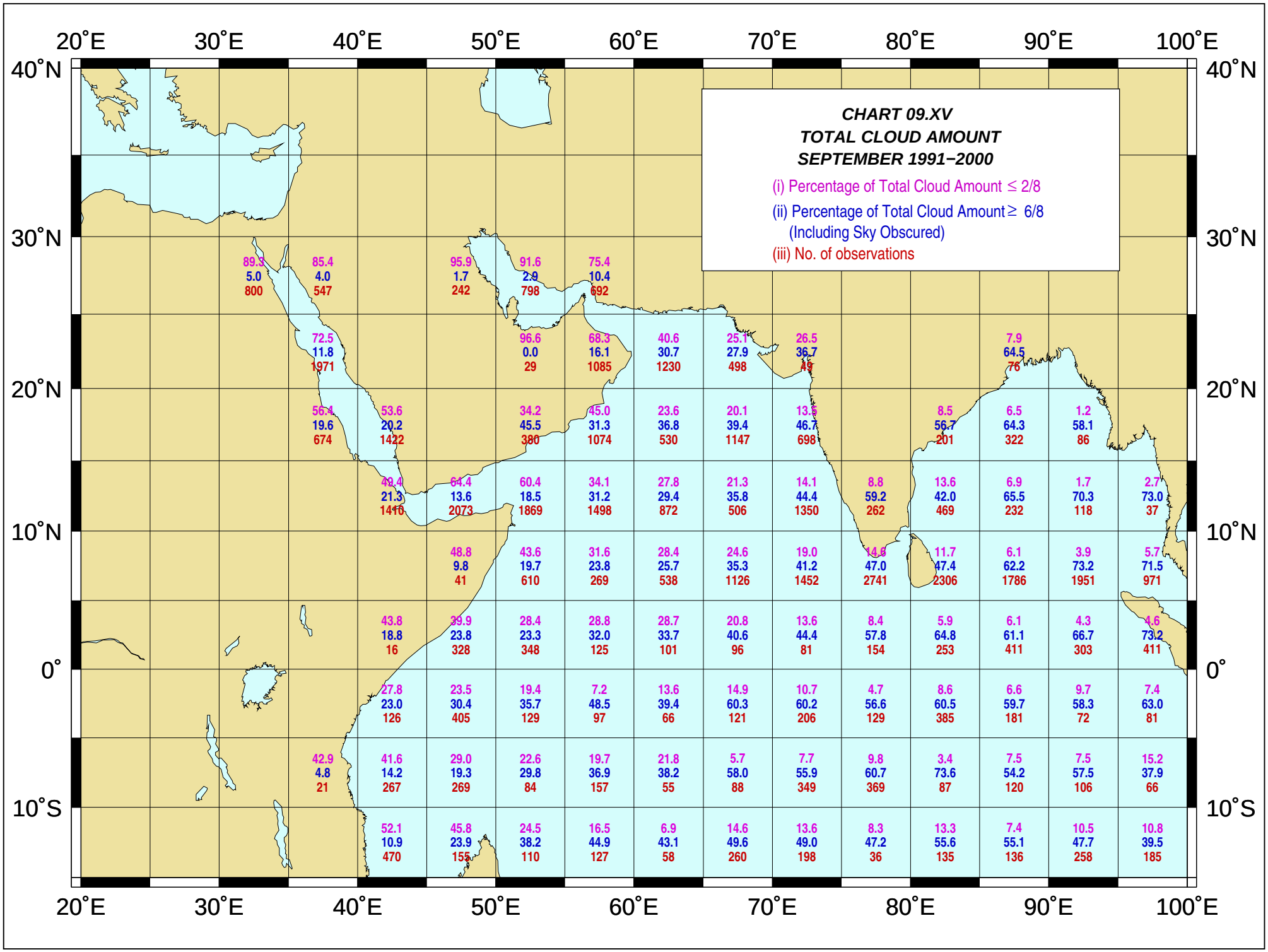


CHART 09.XV
TOTAL CLOUD AMOUNT
SEPTEMBER 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
89.3 5.0 800
85.4 4.0 547
95.9 1.7 242
91.6 2.9 798
75.4 10.4 692
72.5 11.8 1971
96.6 0.0 29
68.3 16.1 1085
40.6 30.7 1230
25.1 27.9 498
26.5 36.7 49
7.9 64.5 76
56.4 19.6 674
53.6 20.2 1422
34.2 45.5 380
45.0 31.3 1074
23.6 36.8 530
20.1 39.4 1147
13.5 46.7 698
8.5 56.7 201
6.5 64.3 322
1.2 58.1 86
49.4 21.3 1410
64.4 13.6 2073
60.4 18.5 1869
34.1 31.2 1498
27.8 29.4 872
21.3 35.8 506
14.1 44.4 1350
8.8 59.2 262
13.6 42.0 469
6.9 65.5 232
1.7 70.3 118
2.7 73.0 37
48.8 9.8 41
43.6 19.7 610
31.6 23.8 269
28.4 25.7 538
24.6 35.3 1126
19.0 41.2 1452
14.6 47.0 2741
11.7 47.4 2306
6.1 62.2 1786
3.9 73.2 1951
5.7 71.5 971
43.8 18.8 16
39.9 23.8 328
28.4 23.3 348
28.8 32.0 125
28.7 33.7 101
20.8 40.6 96
13.6 44.4 81
8.4 57.8 154
5.9 64.8 253
6.1 61.1 411
4.3 66.7 303
4.6 73.2 411
27.8 23.0 126
23.5 30.4 405
19.4 35.7 129
7.2 48.5 97
13.6 39.4 66
14.9 60.3 121
10.7 60.2 206
4.7 56.6 129
8.6 60.5 385
6.6 59.7 181
9.7 58.3 72
7.4 63.0 81
42.9 4.8 21
41.6 14.2 267
29.0 19.3 269
22.6 29.8 84
19.7 36.9 157
21.8 38.2 55
5.7 58.0 88
7.7 55.9 349
9.8 60.7 369
3.4 73.6 87
7.5 54.2 120
7.5 57.5 106
15.2 37.9 66
52.1 10.9 470
45.8 23.9 155
24.5 38.2 110
16.5 44.9 127
6.9 43.1 58
14.6 49.6 260
13.6 49.0 198
8.3 47.2 36
13.3 55.6 135
7.4 55.1 136
10.5 47.7 258
10.8 39.5 185

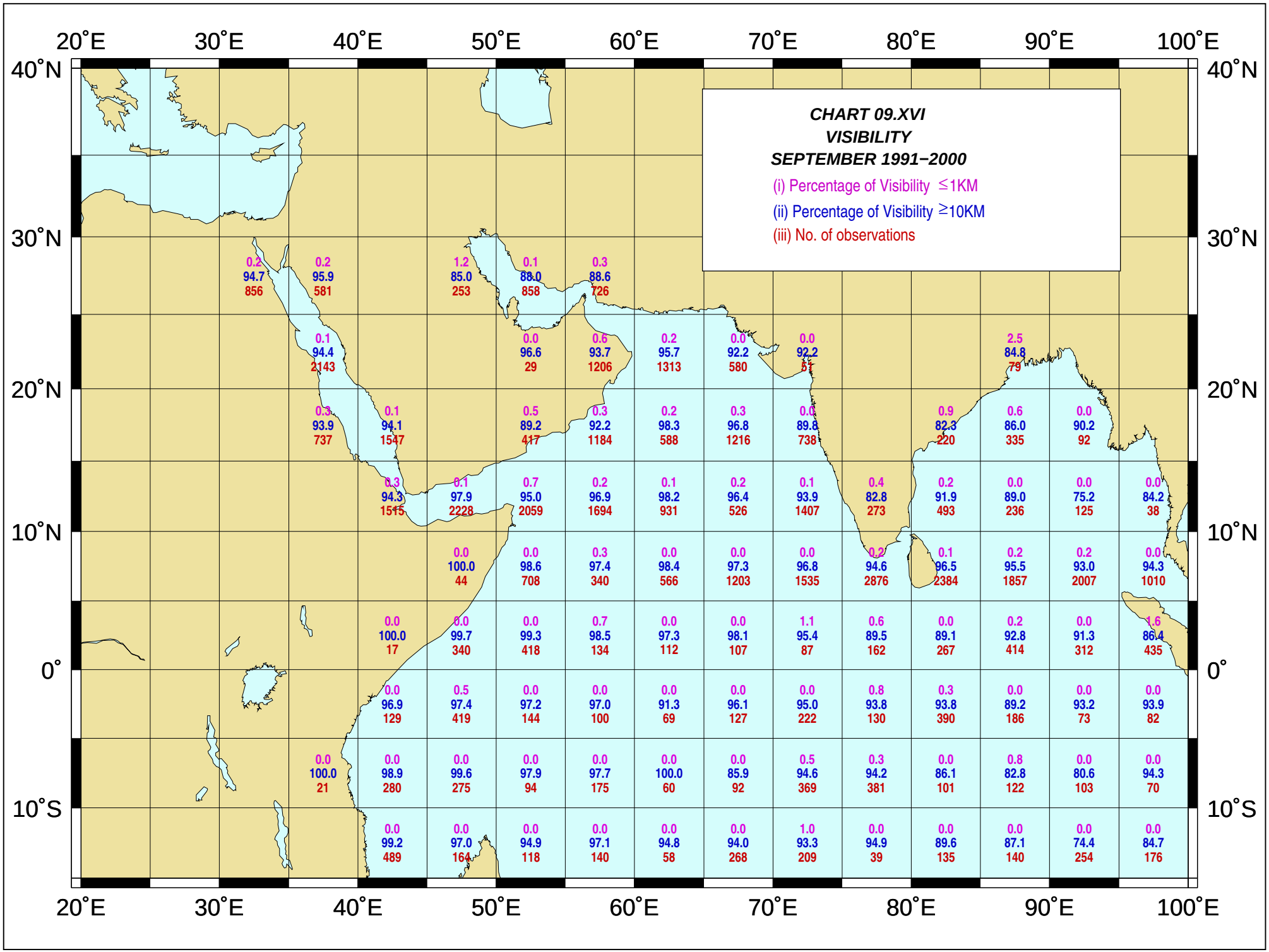


CHART 09.XVI
VISIBILITY
SEPTEMBER 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.2 94.7 856
0.2 95.9 581
1.2 85.0 253
0.1 88.0 858
0.3 88.6 726
0.1 94.4 2143
0.0 96.6 29
0.6 93.7 1206
0.2 95.7 1313
0.0 92.2 580
0.0 92.2 51
2.5 84.8 79
0.3 93.9 737
0.1 94.1 1547
0.5 89.2 417
0.3 92.2 1184
0.2 98.3 588
0.3 96.8 1216
0.0 89.8 738
0.9 82.3 220
0.6 86.0 335
0.0 90.2 92
0.3 94.3 1515
0.1 97.9 2228
0.7 95.0 2059
0.2 96.9 1694
0.1 98.2 931
0.2 96.4 526
0.1 93.9 1407
0.4 82.8 273
0.2 91.9 493
0.0 89.0 236
0.0 75.2 125
0.0 84.2 38
0.0 100.0 44
0.0 98.6 708
0.3 97.4 340
0.0 98.4 566
0.0 97.3 1203
0.0 96.8 1535
0.2 94.6 2876
0.1 96.5 2384
0.2 95.5 1857
0.2 93.0 2007
0.0 94.3 1010
0.0 100.0 17
0.0 99.7 340
0.0 99.3 418
0.7 98.5 134
0.0 97.3 112
0.0 98.1 107
1.1 95.4 87
0.6 89.5 162
0.0 89.1 267
0.2 92.8 414
0.0 91.3 312
1.6 86.4 435
0.0 96.9 129
0.5 97.4 419
0.0 97.2 144
0.0 97.0 100
0.0 91.3 69
0.0 96.1 127
0.0 95.0 222
0.8 93.8 130
0.3 93.8 390
0.0 89.2 186
0.0 93.2 73
0.0 93.9 82
0.0 100.0 21
0.0 98.9 280
0.0 99.6 275
0.0 97.9 94
0.0 97.7 175
0.0 100.0 60
0.0 85.9 92
0.5 94.6 369
0.3 94.2 381
0.0 86.1 101
0.8 82.8 122
0.0 80.6 103
0.0 94.3 70
0.0 99.2 489
0.0 97.0 164
0.0 94.9 118
0.0 97.1 140
0.0 94.8 58
0.0 94.0 268
1.0 93.3 209
0.0 94.9 39
0.0 89.6 135
0.0 87.1 140
0.0 74.4 254
0.0 84.7 176

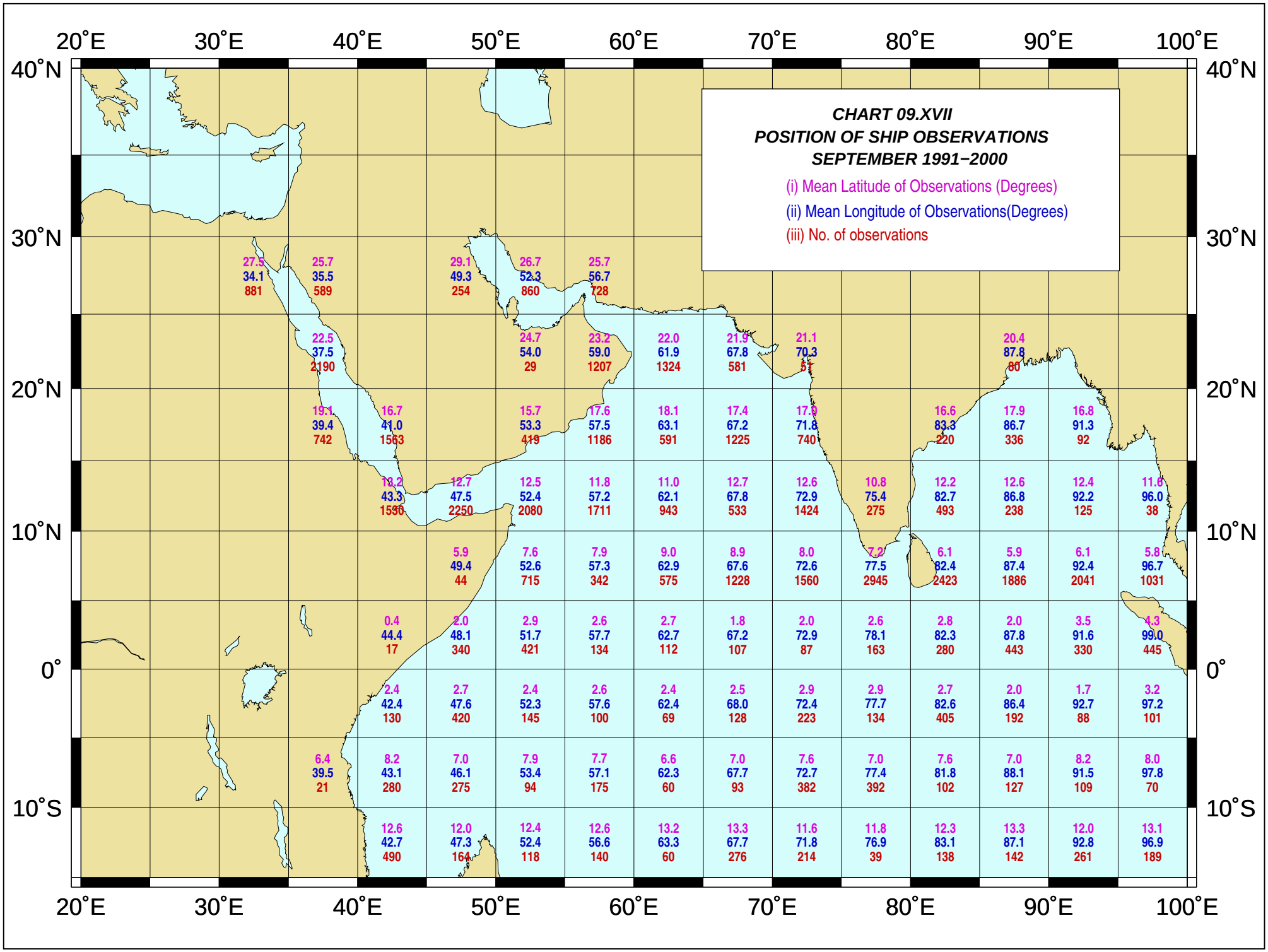


CHART 09.XVII
POSITION OF SHIP OBSERVATIONS
SEPTEMBER 1991−2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.5 34.1 881
25.7 35.5 589
29.1 49.3 254
26.7 52.3 860
25.7 56.7 728
22.5 37.5 2190
24.7 54.0 29
23.2 59.0 1207
22.0 61.9 1324
21.9 67.8 581
21.1 70.3 51
20.4 87.8 80
19.1 39.4 742
16.7 41.0 1563
15.7 53.3 419
17.6 57.5 1186
18.1 63.1 591
17.4 67.2 1225
17.9 71.8 740
16.6 83.3 220
17.9 86.7 336
16.8 91.3 92
19.2 43.3 1536
12.7 47.5 2250
12.5 52.4 2080
11.8 57.2 1711
11.0 62.1 943
12.7 67.8 533
12.6 72.9 1424
10.8 75.4 275
12.2 82.7 493
12.6 86.8 238
12.4 92.2 125
11.6 96.0 38
5.9 49.4 44
7.6 52.6 715
7.9 57.3 342
9.0 62.9 575
8.9 67.6 1228
8.0 72.6 1560
7.2 77.5 2945
6.1 82.4 2423
5.9 87.4 1886
6.1 92.4 2041
5.8 96.7 1031
0.4 44.4 17
2.0 48.1 340
2.9 51.7 421
2.6 57.7 134
2.7 62.7 112
1.8 67.2 107
2.0 72.9 87
2.6 78.1 163
2.8 82.3 280
2.0 87.8 443
3.5 91.6 330
4.3 99.0 445
2.4 42.4 130
2.7 47.6 420
2.4 52.3 145
2.6 57.6 100
2.4 62.4 69
2.5 68.0 128
2.9 72.4 223
2.9 77.7 134
2.7 82.6 405
2.0 86.4 192
1.7 92.7 88
3.2 97.2 101
6.4 39.5 21
8.2 43.1 280
7.0 46.1 275
7.9 53.4 94
7.7 57.1 175
6.6 62.3 60
7.0 67.7 93
7.6 72.7 382
7.0 77.4 392
7.6 81.8 102
7.0 88.1 127
8.2 91.5 109
8.0 97.8 70
12.6 42.7 490
12.0 47.3 164
12.4 52.4 118
12.6 56.6 140
13.2 63.3 60
13.3 67.7 276
11.6 71.8 214
11.8 76.9 39
12.3 83.1 138
13.3 87.1 142
12.0 92.8 261
13.1 96.9 189

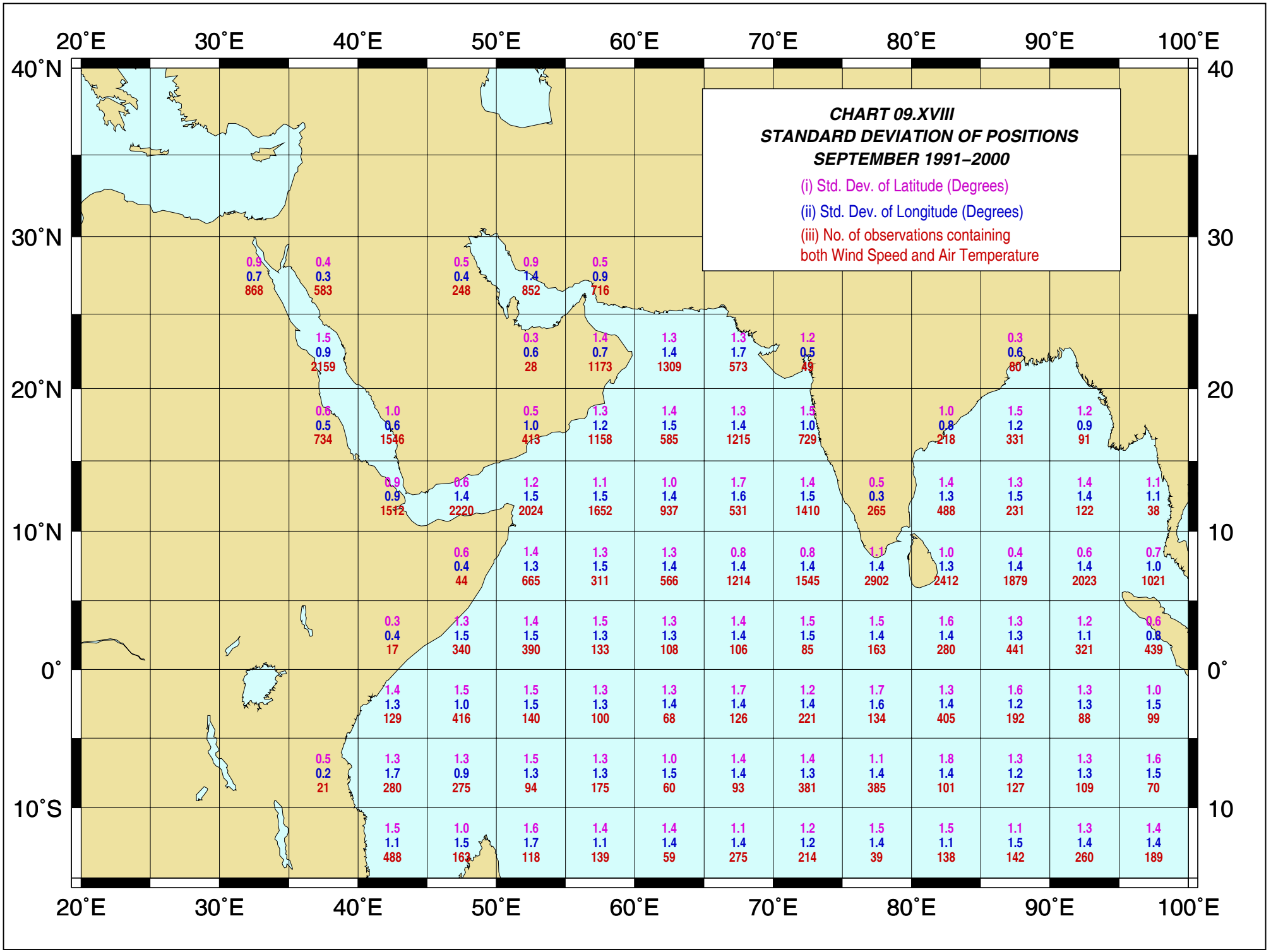
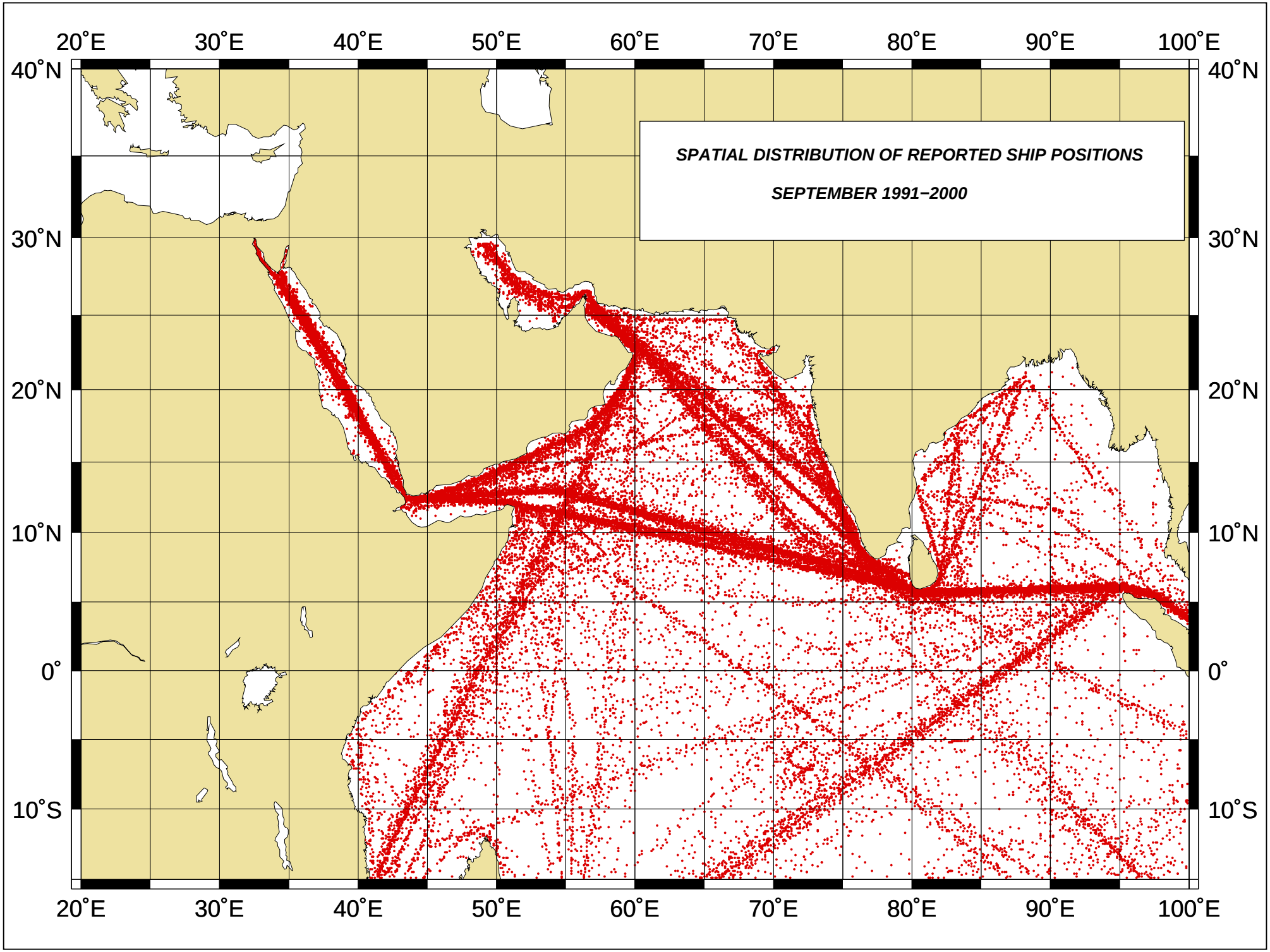
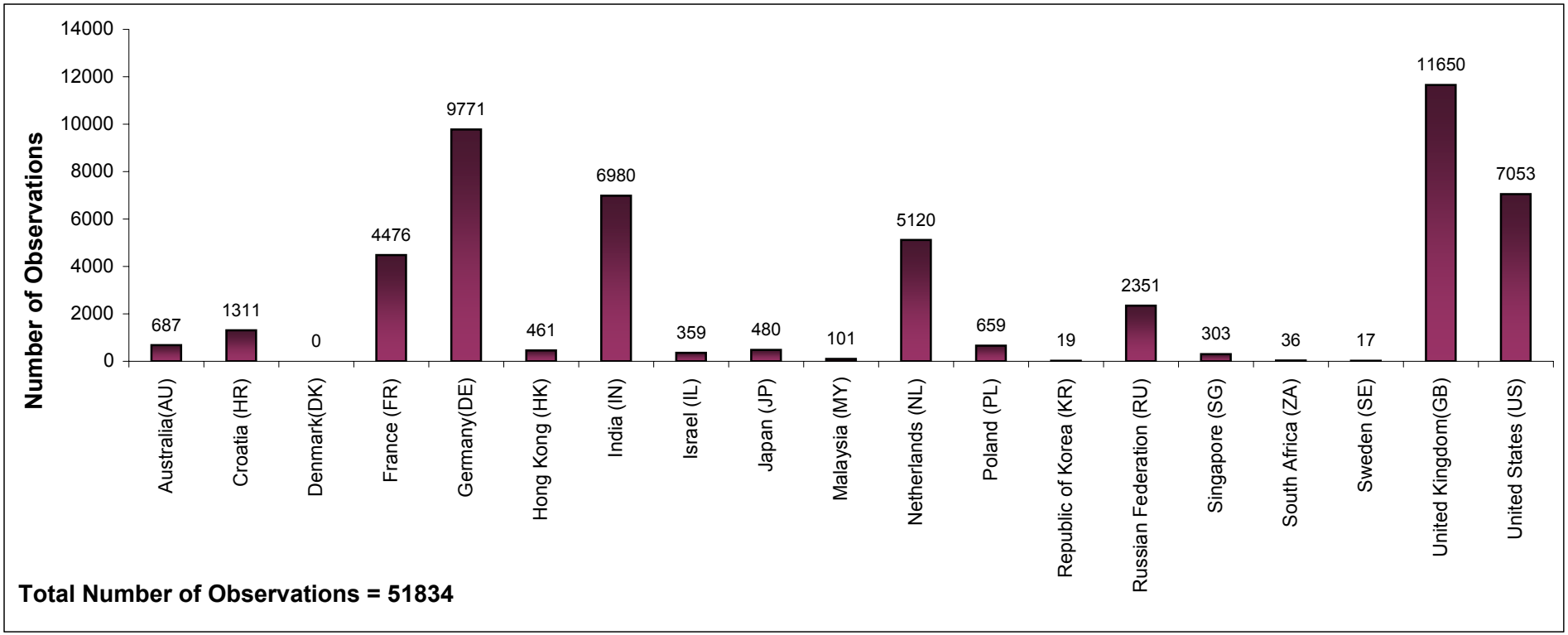


CHART 09.XVIII
STANDARD DEVIATION OF POSITIONS
SEPTEMBER 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.9 0.7 868
0.4 0.3 583
0.5 0.4 248
0.9 1.4 852
0.5 0.9 716
1.5 0.9 2159
0.3 0.6 28
1.4 0.7 1173
1.3 1.4 1309
1.3 1.7 573
1.2 0.5 49
0.3 0.6 80
0.6 0.5 734
1.0 0.6 1546
0.5 1.0 413
1.3 1.2 1158
1.4 1.5 585
1.3 1.4 1215
1.5 1.0 729
1.0 0.8 218
1.5 1.2 331
1.2 0.9 91
0.9 0.9 1512
0.6 1.4 2220
1.2 1.5 2024
1.1 1.5 1652
1.0 1.4 937
1.7 1.6 531
1.4 1.5 1410
0.5 0.3 265
1.4 1.3 488
1.3 1.5 231
1.4 1.4 122
1.1 1.1 38
0.6 0.4 44
1.4 1.3 665
1.3 1.5 311
1.3 1.4 566
0.8 1.4 1214
0.8 1.4 1545
1.1 1.4 2902
1.0 1.3 2412
0.4 1.4 1879
0.6 1.4 2023
0.7 1.0 1021
0.3 0.4 17
1.3 1.5 340
1.4 1.5 390
1.5 1.3 133
1.3 1.3 108
1.4 1.4 106
1.5 1.5 85
1.5 1.4 163
1.6 1.4 280
1.3 1.3 441
1.2 1.1 321
0.6 0.8 439
1.4 1.3 129
1.5 1.0 416
1.5 1.5 140
1.3 1.3 100
1.3 1.4 68
1.7 1.4 126
1.2 1.4 221
1.7 1.6 134
1.3 1.4 405
1.6 1.2 192
1.3 1.3 88
1.0 1.5 99
0.5 0.2 21
1.3 1.7 280
1.3 0.9 275
1.5 1.3 94
1.3 1.3 175
1.0 1.5 60
1.4 1.4 93
1.4 1.3 381
1.1 1.4 385
1.8 1.4 101
1.3 1.2 127
1.3 1.3 109
1.6 1.5 70
1.5 1.1 488
1.0 1.5 163
1.6 1.7 118
1.4 1.1 139
1.4 1.4 59
1.1 1.4 275
1.2 1.2 214
1.5 1.4 39
1.5 1.1 138
1.1 1.5 142
1.3 1.4 260
1.4 1.4 189


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
SEPTEMBER 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

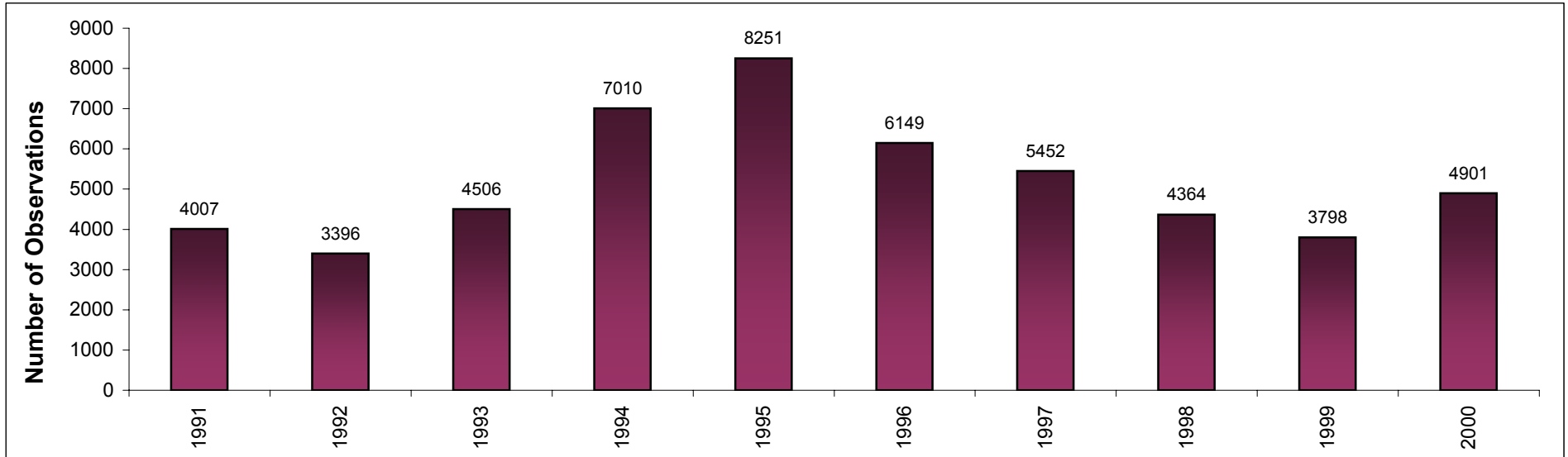
SEPTEMBER : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 51834

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 51834

Marine Climatological Summary Charts 1991-2000

CHARTS OF OCTOBER 1991 - 2000

CHART - I : AIR TEMPERATURE
CHART - II : SEA SURFACE TEMPERATURE
CHART - III : DEW POINT TEMPERATURE
CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED
CHART - VI : WIND DIRECTION
CHART - VII : LIGHT AND STRONG WINDS
CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT
CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS
CHART - XI : WAVE PERIOD AND SWELL DIRECTION
CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION
OF NUMBER OF OBSERVATIONS

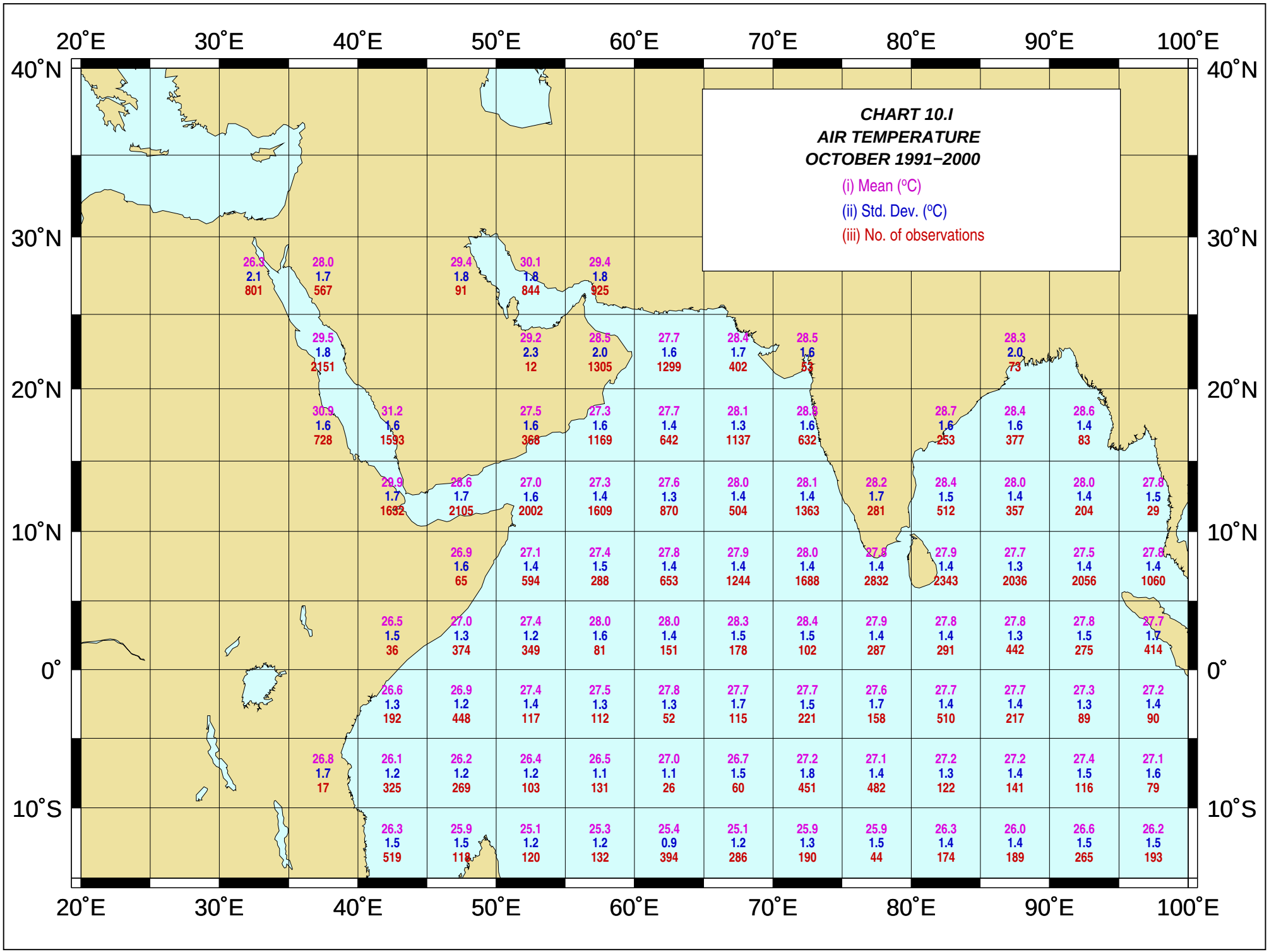


CHART 10.I
AIR TEMPERATURE
OCTOBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
26.3 2.1 801
28.0 1.7 567
29.4 1.8 91
30.1 1.8 844
29.4 1.8 925
29.5 1.8 2151
29.2 2.3 12
28.5 2.0 1305
27.7 1.6 1299
28.4 1.7 402
28.5 1.6 53
28.3 2.0 73
30.9 1.6 728
31.2 1.6 1593
27.5 1.6 368
27.3 1.6 1169
27.7 1.4 642
28.1 1.3 1137
28.3 1.6 632
28.7 1.6 253
28.4 1.6 377
28.6 1.4 83
29.9 1.7 1632
28.6 1.7 2105
27.0 1.6 2002
27.3 1.4 1609
27.6 1.3 870
28.0 1.4 504
28.1 1.4 1363
28.2 1.7 281
28.4 1.5 512
28.0 1.4 357
28.0 1.4 204
27.8 1.5 29
26.9 1.6 65
27.1 1.4 594
27.4 1.5 288
27.8 1.4 653
27.9 1.4 1244
28.0 1.4 1688
27.9 1.4 2832
27.9 1.4 2343
27.7 1.3 2036
27.5 1.4 2056
27.8 1.4 1060
26.5 1.5 36
27.0 1.3 374
27.4 1.2 349
28.0 1.6 81
28.0 1.4 151
28.3 1.5 178
28.4 1.5 102
27.9 1.4 287
27.8 1.4 291
27.8 1.3 442
27.8 1.5 275
27.7 1.7 414
26.6 1.3 192
26.9 1.2 448
27.4 1.4 117
27.5 1.3 112
27.8 1.3 52
27.7 1.7 115
27.7 1.5 221
27.6 1.7 158
27.7 1.4 510
27.7 1.4 217
27.3 1.3 89
27.2 1.4 90
26.8 1.7 17
26.1 1.2 325
26.2 1.2 269
26.4 1.2 103
26.5 1.1 131
27.0 1.1 26
26.7 1.5 60
27.2 1.8 451
27.1 1.4 482
27.2 1.3 122
27.2 1.4 141
27.4 1.5 116
27.1 1.6 79
26.3 1.5 519
25.9 1.5 118
25.1 1.2 120
25.3 1.2 132
25.4 0.9 394
25.1 1.2 286
25.9 1.3 190
25.9 1.5 44
26.3 1.4 174
26.0 1.4 189
26.6 1.5 265
26.2 1.5 193

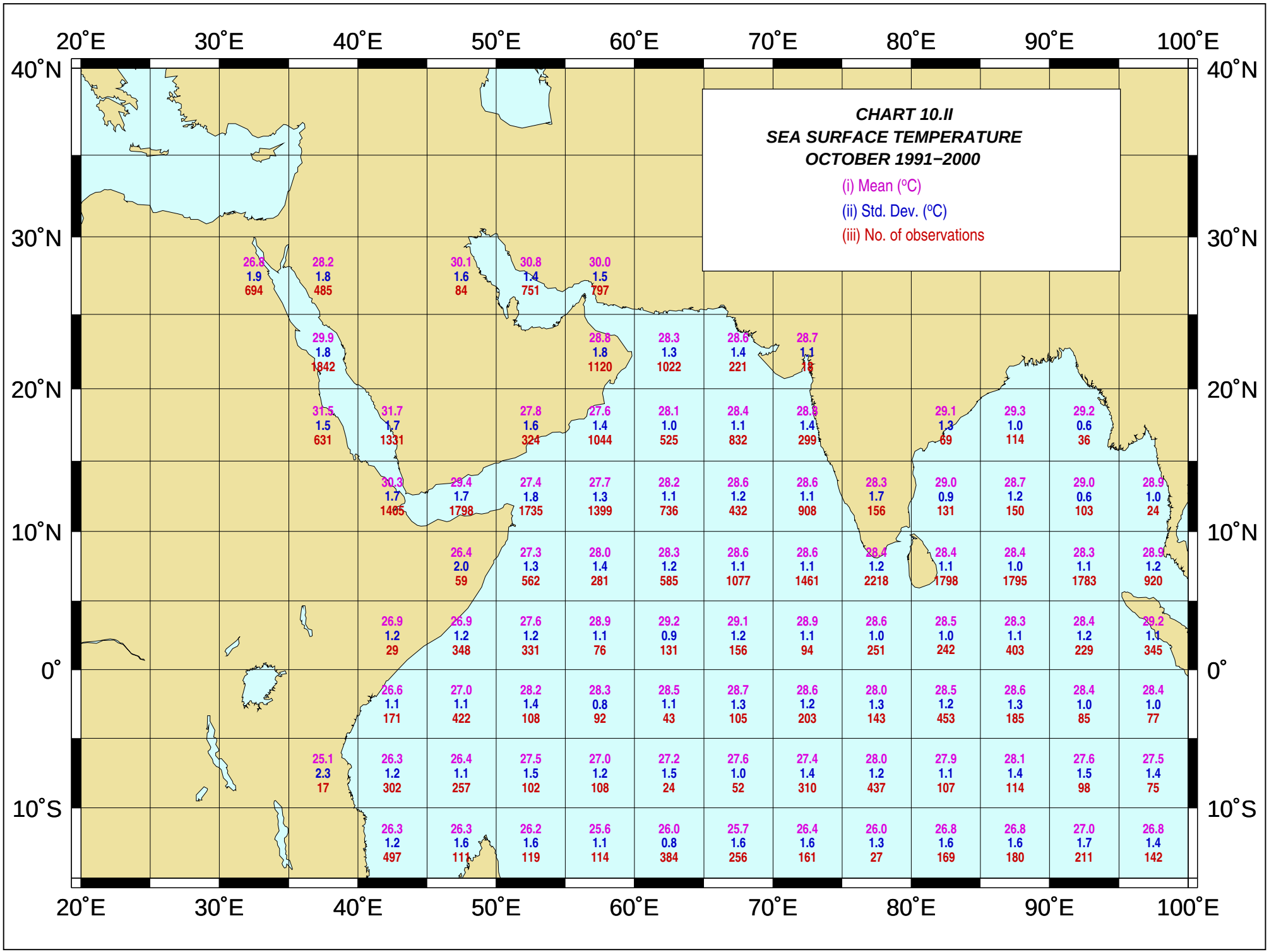


CHART 10.II
SEA SURFACE TEMPERATURE
OCTOBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
26.8 1.9 694
28.2 1.8 485
30.1 1.6 84
30.8 1.4 751
30.0 1.5 797
29.9 1.8 1842
28.8 1.8 1120
28.3 1.3 1022
28.6 1.4 221
28.7 1.1 16
31.5 1.5 631
31.7 1.7 1331
27.8 1.6 324
27.6 1.4 1044
28.1 1.0 525
28.4 1.1 832
28.3 1.4 299
29.1 1.3 69
29.3 1.0 114
29.2 0.6 36
30.3 1.7 1465
29.4 1.7 1798
27.4 1.8 1735
27.7 1.3 1399
28.2 1.1 736
28.6 1.2 432
28.6 1.1 908
28.3 1.7 156
29.0 0.9 131
28.7 1.2 150
29.0 0.6 103
28.9 1.0 24
26.4 2.0 59
27.3 1.3 562
28.0 1.4 281
28.3 1.2 585
28.6 1.1 1077
28.6 1.1 1461
28.4 1.2 2218
28.4 1.1 1798
28.4 1.0 1795
28.3 1.1 1783
28.9 1.2 920
26.9 1.2 29
26.9 1.2 348
27.6 1.2 331
28.9 1.1 76
29.2 0.9 131
29.1 1.2 156
28.9 1.1 94
28.6 1.0 251
28.5 1.0 242
28.3 1.1 403
28.4 1.2 229
29.2 1.1 345
26.6 1.1 171
27.0 1.1 422
28.2 1.4 108
28.3 0.8 92
28.5 1.1 43
28.7 1.3 105
28.6 1.2 203
28.0 1.3 143
28.5 1.2 453
28.6 1.3 185
28.4 1.0 85
28.4 1.0 77
25.1 2.3 17
26.3 1.2 302
26.4 1.1 257
27.5 1.5 102
27.0 1.2 108
27.2 1.5 24
27.6 1.0 52
27.4 1.4 310
28.0 1.2 437
27.9 1.1 107
28.1 1.4 114
27.6 1.5 98
27.5 1.4 75
26.3 1.2 497
26.3 1.6 111
26.2 1.6 119
25.6 1.1 114
26.0 0.8 384
25.7 1.6 256
26.4 1.6 161
26.0 1.3 27
26.8 1.6 169
26.8 1.6 180
27.0 1.7 211
26.8 1.4 142

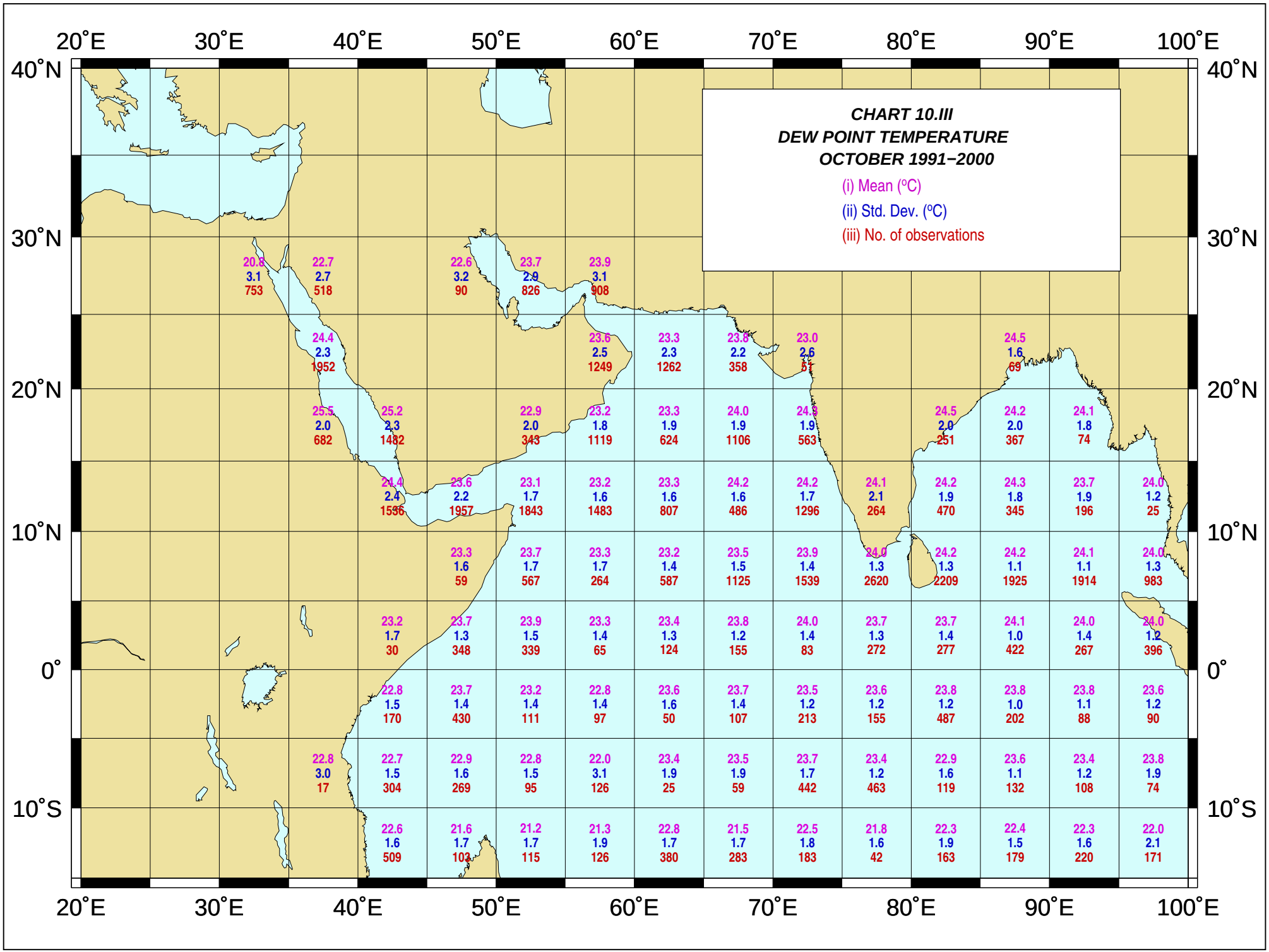


CHART 10.III
DEW POINT TEMPERATURE
OCTOBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
20.8 3.1 753
22.7 2.7 518
22.6 3.2 90
23.7 2.9 826
23.9 3.1 908
24.4 2.3 1952
23.6 2.5 1249
23.3 2.3 1262
23.8 2.2 358
23.0 2.6 51
24.5 1.6 69
25.5 2.0 682
25.2 2.3 1482
22.9 2.0 343
23.2 1.8 1119
23.3 1.9 624
24.0 1.9 1106
24.3 1.9 563
24.5 2.0 251
24.2 2.0 367
24.1 1.8 74
24.4 2.4 1536
23.6 2.2 1957
23.1 1.7 1843
23.2 1.6 1483
23.3 1.6 807
24.2 1.6 486
24.2 1.7 1296
24.1 2.1 264
24.2 1.9 470
24.3 1.8 345
23.7 1.9 196
24.0 1.2 25
23.3 1.6 59
23.7 1.7 567
23.3 1.7 264
23.2 1.4 587
23.5 1.5 1125
23.9 1.4 1539
24.0 1.3 2620
24.2 1.3 2209
24.2 1.1 1925
24.1 1.1 1914
24.0 1.3 983
23.2 1.7 30
23.7 1.3 348
23.9 1.5 339
23.3 1.4 65
23.4 1.3 124
23.8 1.2 155
24.0 1.4 83
23.7 1.3 272
23.7 1.4 277
24.1 1.0 422
24.0 1.4 267
24.0 1.2 396
22.8 1.5 170
23.7 1.4 430
23.2 1.4 111
22.8 1.4 97
23.6 1.6 50
23.7 1.4 107
23.5 1.2 213
23.6 1.2 155
23.8 1.2 487
23.8 1.0 202
23.8 1.1 88
23.6 1.2 90
22.8 3.0 17
22.7 1.5 304
22.9 1.6 269
22.8 1.5 95
22.0 3.1 126
23.4 1.9 25
23.5 1.9 59
23.7 1.7 442
23.4 1.2 463
22.9 1.6 119
23.6 1.1 132
23.4 1.2 108
23.8 1.9 74
22.6 1.6 509
21.6 1.7 103
21.2 1.7 115
21.3 1.9 126
22.8 1.7 380
21.5 1.7 283
22.5 1.8 183
21.8 1.6 42
22.3 1.9 163
22.4 1.5 179
22.3 1.6 220
22.0 2.1 171

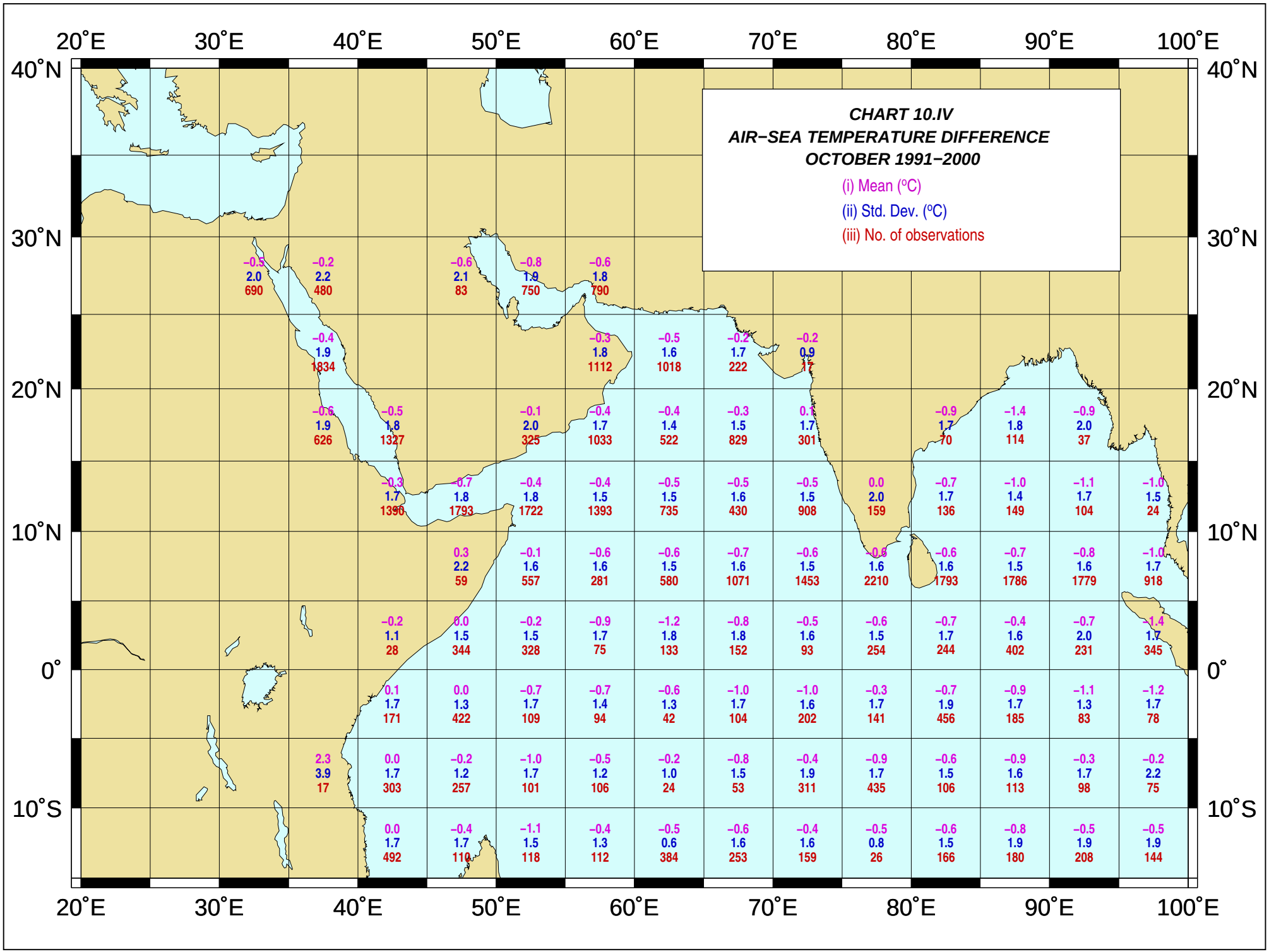


CHART 10.IV
AIR–SEA TEMPERATURE DIFFERENCE
OCTOBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
−0.5 2.0 690
−0.2 2.2 480
−0.6 2.1 83
−0.8 1.9 750
−0.6 1.8 790
−0.4 1.9 1834
−0.3 1.8 1112
−0.5 1.6 1018
−0.2 1.7 222
−0.2 0.9 17
−0.6 1.9 626
−0.5 1.8 1327
−0.1 2.0 325
−0.4 1.7 1033
−0.4 1.4 522
−0.3 1.5 829
0.1 1.7 301
−0.9 1.7 70
−1.4 1.8 114
−0.9 2.0 37
−0.3 1.7 1396
−0.7 1.8 1793
−0.4 1.8 1722
−0.4 1.5 1393
−0.5 1.5 735
−0.5 1.6 430
−0.5 1.5 908
0.0 2.0 159
−0.7 1.7 136
−1.0 1.4 149
−1.1 1.7 104
−1.0 1.5 24
0.3 2.2 59
−0.1 1.6 557
−0.6 1.6 281
−0.6 1.5 580
−0.7 1.6 1071
−0.6 1.5 1453
−0.6 1.6 2210
−0.6 1.6 1793
−0.7 1.5 1786
−0.8 1.6 1779
−1.0 1.7 918
−0.2 1.1 28
0.0 1.5 344
−0.2 1.5 328
−0.9 1.7 75
−1.2 1.8 133
−0.8 1.8 152
−0.5 1.6 93
−0.6 1.5 254
−0.7 1.7 244
−0.4 1.6 402
−0.7 2.0 231
−1.4 1.7 345
0.1 1.7 171
0.0 1.3 422
−0.7 1.7 109
−0.7 1.4 94
−0.6 1.3 42
−1.0 1.7 104
−1.0 1.6 202
−0.3 1.7 141
−0.7 1.9 456
−0.9 1.7 185
−1.1 1.3 83
−1.2 1.7 78
2.3 3.9 17
0.0 1.7 303
−0.2 1.2 257
−1.0 1.7 101
−0.5 1.2 106
−0.2 1.0 24
−0.8 1.5 53
−0.4 1.9 311
−0.9 1.7 435
−0.6 1.5 106
−0.9 1.6 113
−0.3 1.7 98
−0.2 2.2 75
0.0 1.7 492
−0.4 1.7 110
−1.1 1.5 118
−0.4 1.3 112
−0.5 0.6 384
−0.6 1.6 253
−0.4 1.6 159
−0.5 0.8 26
−0.6 1.5 166
−0.8 1.9 180
−0.5 1.9 208
−0.5 1.9 144

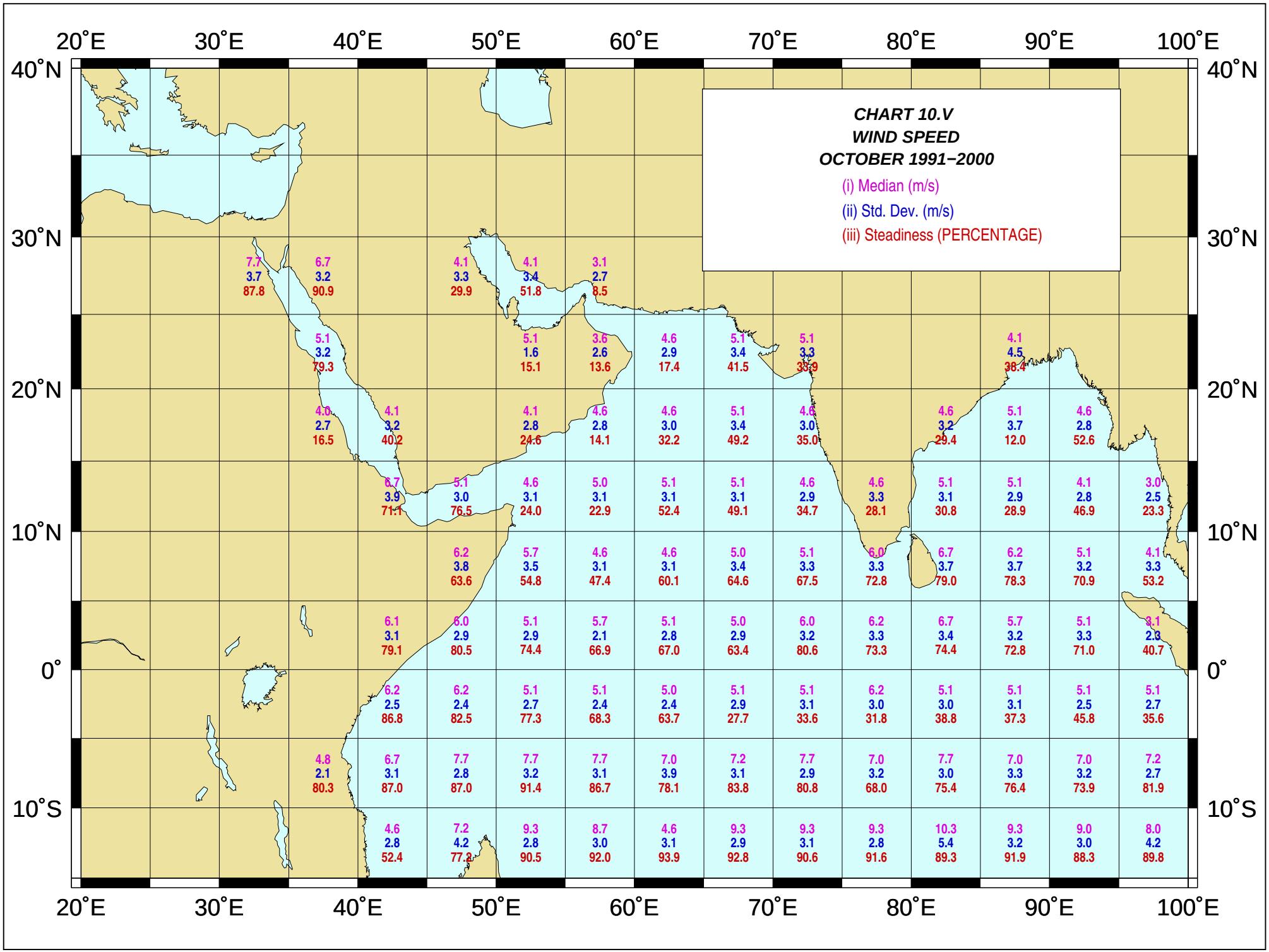


CHART 10.V
WIND SPEED
OCTOBER 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 3.7 87.8
6.7 3.2 90.9
4.1 3.3 29.9
4.1 3.4 51.8
3.1 2.7 8.5
5.1 3.2 79.3
5.1 1.6 15.1
3.6 2.6 13.6
4.6 2.9 17.4
5.1 3.4 41.5
5.1 3.3 33.9
4.1 4.5 38.4
4.0 2.7 16.5
4.1 3.2 40.2
4.1 2.8 24.6
4.6 2.8 14.1
4.6 3.0 32.2
5.1 3.4 49.2
4.6 3.0 35.0
4.6 3.2 29.4
5.1 3.7 12.0
4.6 2.8 52.6
6.7 3.9 71.1
5.1 3.0 76.5
4.6 3.1 24.0
5.0 3.1 22.9
5.1 3.1 52.4
5.1 3.1 49.1
4.6 2.9 34.7
4.6 3.3 28.1
5.1 3.1 30.8
5.1 2.9 28.9
4.1 2.8 46.9
3.0 2.5 23.3
6.2 3.8 63.6
5.7 3.5 54.8
4.6 3.1 47.4
4.6 3.1 60.1
5.0 3.4 64.6
5.1 3.3 67.5
6.0 3.3 72.8
6.7 3.7 79.0
6.2 3.7 78.3
5.1 3.2 70.9
4.1 3.3 53.2
6.1 3.1 79.1
6.0 2.9 80.5
5.1 2.9 74.4
5.7 2.1 66.9
5.1 2.8 67.0
5.0 2.9 63.4
6.0 3.2 80.6
6.2 3.3 73.3
6.7 3.4 74.4
5.7 3.2 72.8
5.1 3.3 71.0
3.1 2.3 40.7
6.2 2.5 86.8
6.2 2.4 82.5
5.1 2.7 77.3
5.1 2.4 68.3
5.0 2.4 63.7
5.1 2.9 27.7
5.1 3.1 33.6
6.2 3.0 31.8
5.1 3.0 38.8
5.1 3.1 37.3
5.1 2.5 45.8
5.1 2.7 35.6
4.8 2.1 80.3
6.7 3.1 87.0
7.7 2.8 87.0
7.7 3.2 91.4
7.7 3.1 86.7
7.0 3.9 78.1
7.2 3.1 83.8
7.7 2.9 80.8
7.0 3.2 68.0
7.7 3.0 75.4
7.0 3.3 76.4
7.0 3.2 73.9
7.2 2.7 81.9
4.6 2.8 52.4
7.2 4.2 77.2
9.3 2.8 90.5
8.7 3.0 92.0
4.6 3.1 93.9
9.3 2.9 92.8
9.3 3.1 90.6
9.3 2.8 91.6
10.3 5.4 89.3
9.3 3.2 91.9
9.0 3.0 88.3
8.0 4.2 89.8

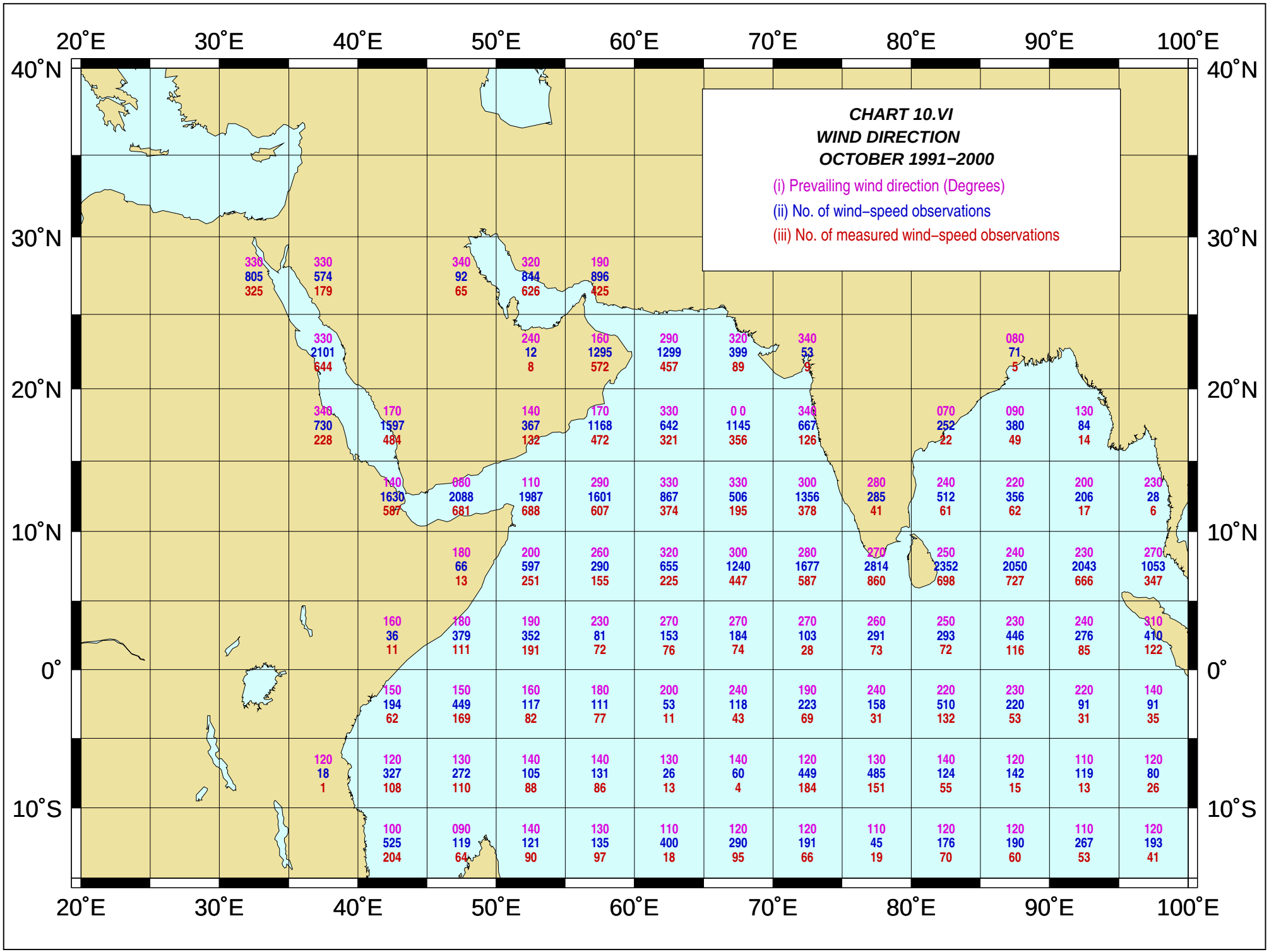


CHART 10.VI
WIND DIRECTION
OCTOBER 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
330 805 325
330 574 179
340 92 65
320 844 626
190 896 425
330 2101 644
240 12 8
160 1295 572
290 1299 457
320 399 89
340 53 5
080 71 5
340 730 228
170 1597 484
140 367 132
170 1168 472
330 642 321
0 0 1145 356
340 667 126
070 252 22
090 380 49
130 84 14
140 1630 587
080 2088 681
110 1987 688
290 1601 607
330 867 374
330 506 195
300 1356 378
280 285 41
240 512 61
220 356 62
200 206 17
230 28 6
180 66 13
200 597 251
260 290 155
320 655 225
300 1240 447
280 1677 587
270 2814 860
250 2352 698
240 2050 727
230 2043 666
270 1053 347
160 36 11
180 379 111
190 352 191
230 81 72
270 153 76
270 184 74
270 103 28
260 291 73
250 293 72
230 446 116
240 276 85
310 410 122
150 194 62
150 449 169
160 117 82
180 111 77
200 53 11
240 118 43
190 223 69
240 158 31
220 510 132
230 220 53
220 91 31
140 91 35
120 18 1
120 327 108
130 272 110
140 105 88
140 131 86
130 26 13
140 60 4
120 449 184
130 485 151
140 124 55
120 142 15
110 119 13
120 80 26
100 525 204
090 119 64
140 121 90
130 135 97
110 400 18
120 290 95
120 191 66
110 45 19
120 176 70
120 190 60
110 267 53
120 193 41

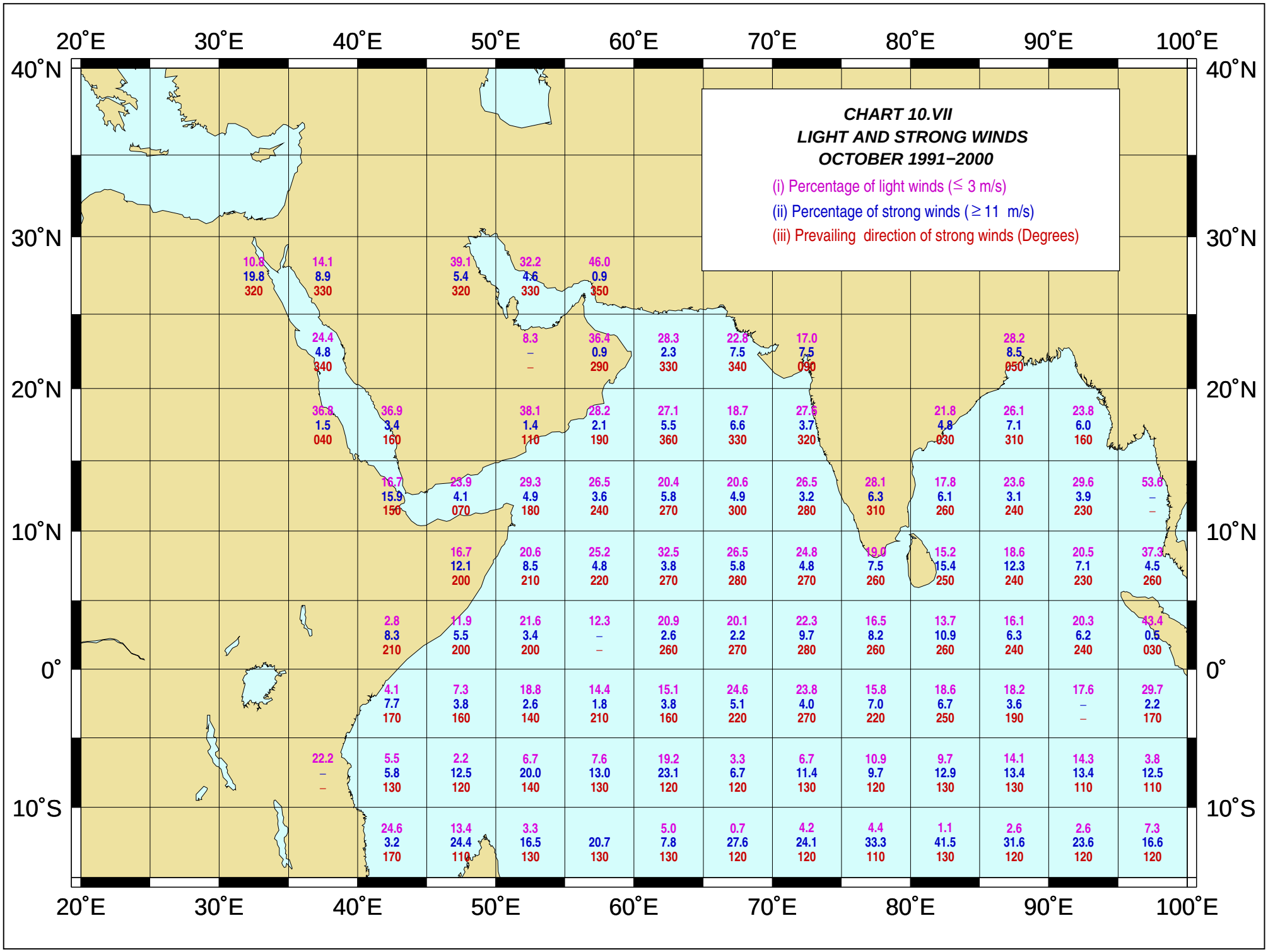


CHART 10.VII
LIGHT AND STRONG WINDS
OCTOBER 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
10.8 19.8 320
14.1 8.9 330
39.1 5.4 320
32.2 4.6 330
46.0 0.9 350
24.4 4.8 340
8.3 – –
36.4 0.9 290
28.3 2.3 330
22.8 7.5 340
17.0 7.5 090
28.2 8.5 050
36.8 1.5 040
36.9 3.4 160
38.1 1.4 110
28.2 2.1 190
27.1 5.5 360
18.7 6.6 330
27.6 3.7 320
21.8 4.8 030
26.1 7.1 310
23.8 6.0 160
16.7 15.9 150
23.9 4.1 070
29.3 4.9 180
26.5 3.6 240
20.4 5.8 270
20.6 4.9 300
26.5 3.2 280
28.1 6.3 310
17.8 6.1 260
23.6 3.1 240
29.6 3.9 230
53.6 – –
16.7 12.1 200
20.6 8.5 210
25.2 4.8 220
32.5 3.8 270
26.5 5.8 280
24.8 4.8 270
19.0 7.5 260
15.2 15.4 250
18.6 12.3 240
20.5 7.1 230
37.3 4.5 260
2.8 8.3 210
11.9 5.5 200
21.6 3.4 200
12.3 – –
20.9 2.6 260
20.1 2.2 270
22.3 9.7 280
16.5 8.2 260
13.7 10.9 260
16.1 6.3 240
20.3 6.2 240
43.4 0.5 030
4.1 7.7 170
7.3 3.8 160
18.8 2.6 140
14.4 1.8 210
15.1 3.8 160
24.6 5.1 220
23.8 4.0 270
15.8 7.0 220
18.6 6.7 250
18.2 3.6 190
17.6 – –
29.7 2.2 170
22.2 – –
5.5 5.8 130
2.2 12.5 120
6.7 20.0 140
7.6 13.0 130
19.2 23.1 120
3.3 6.7 120
6.7 11.4 130
10.9 9.7 120
9.7 12.9 130
14.1 13.4 130
14.3 13.4 110
3.8 12.5 110
24.6 3.2 170
13.4 24.4 110
3.3 16.5 130
20.7 130
5.0 7.8 130
0.7 27.6 120
4.2 24.1 120
4.4 33.3 110
1.1 41.5 130
2.6 31.6 120
2.6 23.6 120
7.3 16.6 120

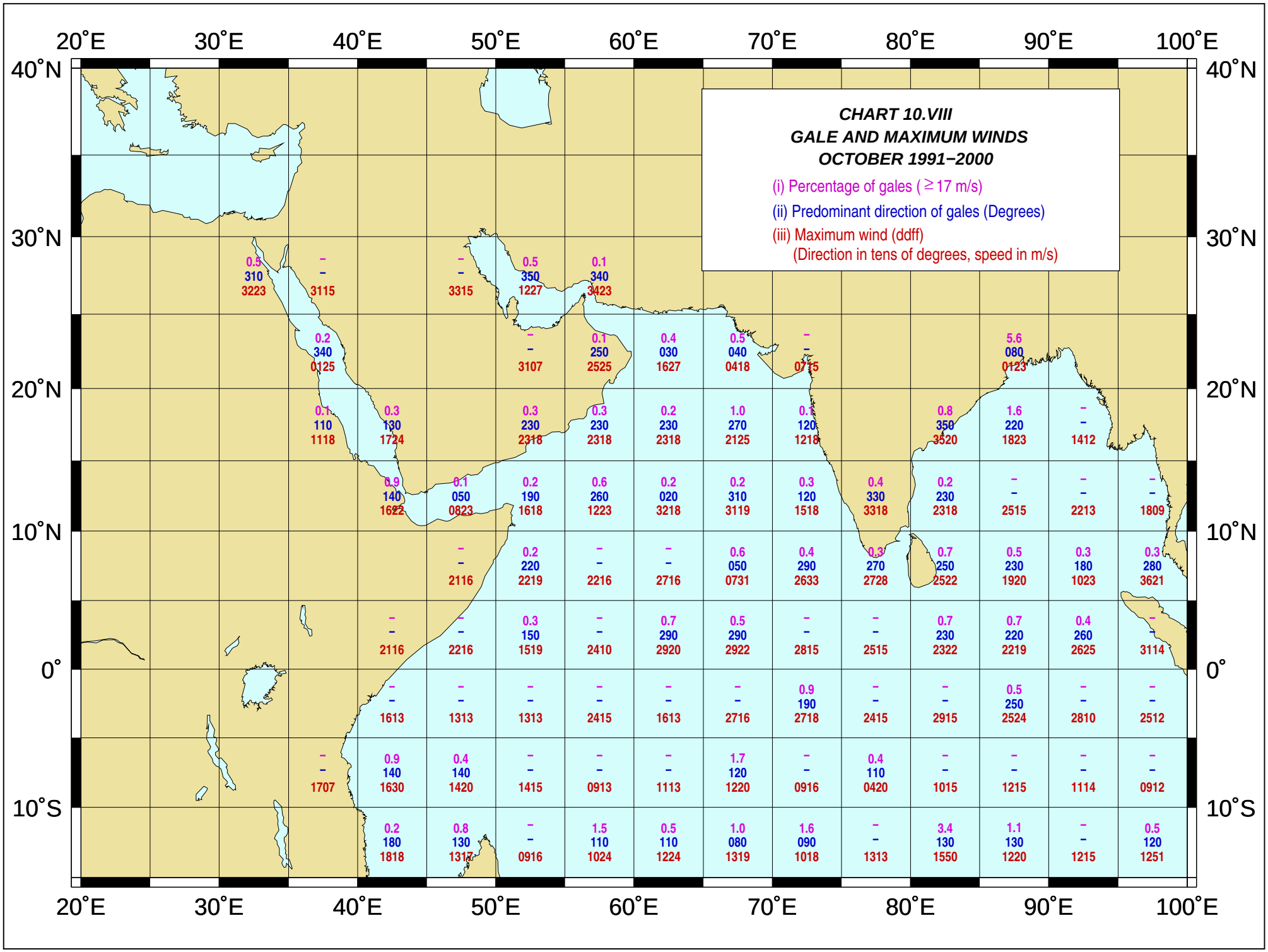


CHART 10.VIII
GALE AND MAXIMUM WINDS
OCTOBER 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.5 310 3223
– – 3115
– – 3315
0.5 350 1227
0.1 340 3423
0.2 340 0125
– – 3107
0.1 250 2525
0.4 030 1627
0.5 040 0418
– – 0715
5.6 080 0123
0.1 110 1118
0.3 130 1724
0.3 230 2318
0.3 230 2318
0.2 230 2318
1.0 270 2125
0.3 120 1218
0.8 350 3520
1.6 220 1823
– – 1412
0.9 140 1622
0.1 050 0823
0.2 190 1618
0.6 260 1223
0.2 020 3218
0.2 310 3119
0.3 120 1518
0.4 330 3318
0.2 230 2318
– – 2515
– – 2213
– – 1809
– – 2116
0.2 220 2219
– – 2216
– – 2716
0.6 050 0731
0.4 290 2633
0.3 270 2728
0.7 250 2522
0.5 230 1920
0.3 180 1023
0.3 280 3621
– – 2116
– – 2216
0.3 150 1519
– – 2410
0.7 290 2920
0.5 290 2922
– – 2815
– – 2515
0.7 230 2322
0.7 220 2219
0.4 260 2625
– – 3114
– – 1613
– – 1313
– – 1313
– – 2415
– – 1613
– – 2716
0.9 190 2718
– – 2415
– – 2915
0.5 250 2524
– – 2810
– – 2512
– – 1707
0.9 140 1630
0.4 140 1420
– – 1415
– – 0913
– – 1113
1.7 120 1220
– – 0916
0.4 110 0420
– – 1015
– – 1215
– – 1114
– – 0912
0.2 180 1818
0.8 130 1317
– – 0916
1.5 110 1024
0.5 110 1224
1.0 080 1319
1.6 090 1018
– – 1313
3.4 130 1550
1.1 130 1220
– – 1215
0.5 120 1251

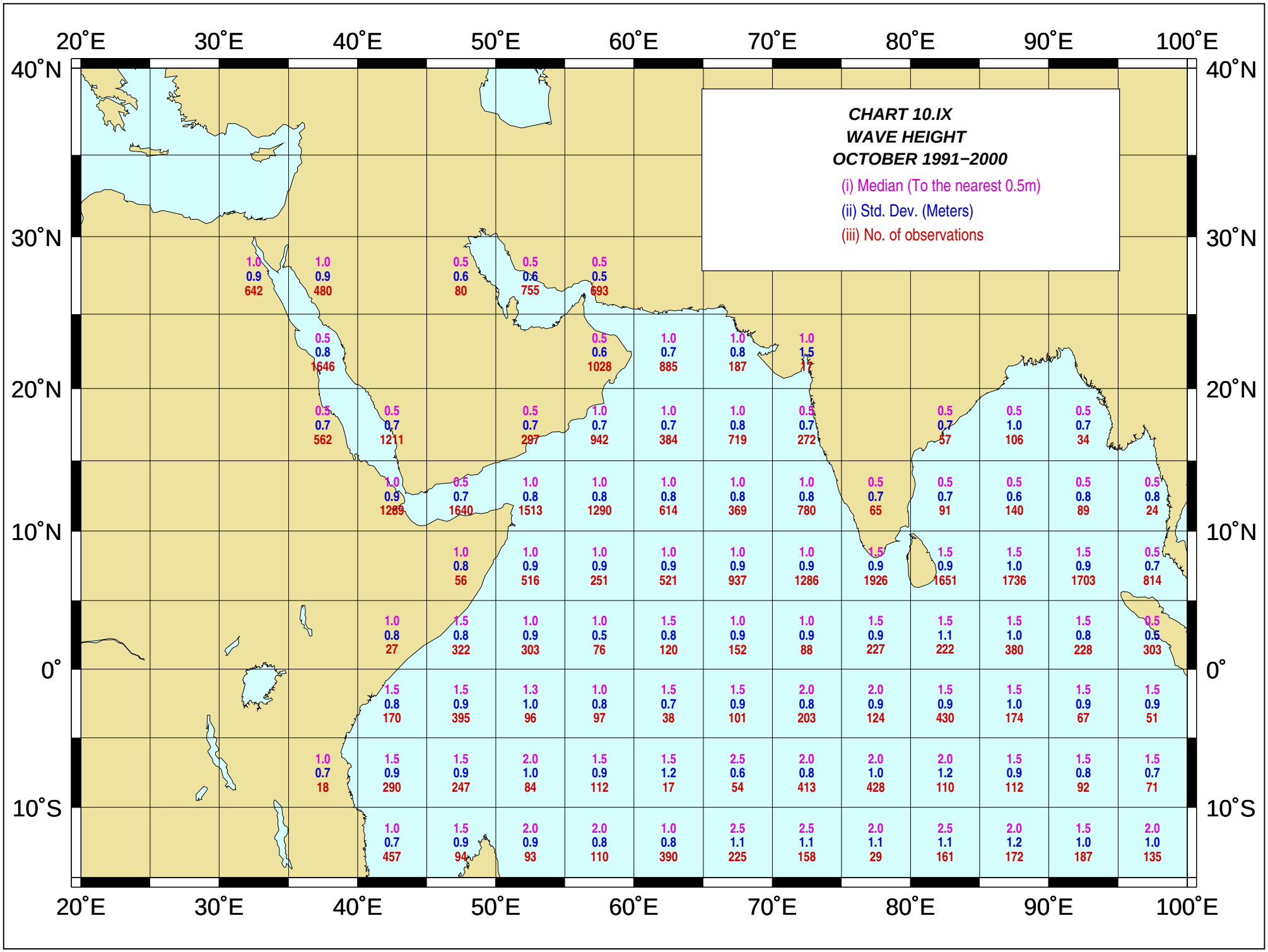


CHART 10.IX
WAVE HEIGHT
OCTOBER 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.9 642
1.0 0.9 480
0.5 0.6 80
0.5 0.6 755
0.5 0.5 693
0.5 0.8 1646
0.5 0.6 1028
1.0 0.7 885
1.0 0.8 187
1.0 1.5 11
0.5 0.7 562
0.5 0.7 1211
0.5 0.7 297
1.0 0.7 942
1.0 0.7 384
1.0 0.8 719
0.5 0.7 272
0.5 0.7 57
0.5 1.0 106
0.5 0.7 34
1.0 0.9 1269
0.5 0.7 1640
1.0 0.8 1513
1.0 0.8 1290
1.0 0.8 614
1.0 0.8 369
1.0 0.8 780
0.5 0.7 65
0.5 0.7 91
0.5 0.6 140
0.5 0.8 89
0.5 0.8 24
1.0 0.8 56
1.0 0.9 516
1.0 0.9 251
1.0 0.9 521
1.0 0.9 937
1.0 0.9 1286
1.5 0.9 1926
1.5 0.9 1651
1.5 1.0 1736
1.5 0.9 1703
0.5 0.7 814
1.0 0.8 27
1.5 0.8 322
1.0 0.9 303
1.0 0.5 76
1.5 0.8 120
1.0 0.9 152
1.0 0.9 88
1.5 0.9 227
1.5 1.1 222
1.5 1.0 380
1.5 0.8 228
0.5 0.5 303
1.5 0.8 170
1.5 0.9 395
1.3 1.0 96
1.0 0.8 97
1.5 0.7 38
1.5 0.9 101
2.0 0.8 203
2.0 0.9 124
1.5 0.9 430
1.5 1.0 174
1.5 0.9 67
1.5 0.9 51
1.0 0.7 18
1.5 0.9 290
1.5 0.9 247
2.0 1.0 84
1.5 0.9 112
1.5 1.2 17
2.5 0.6 54
2.0 0.8 413
2.0 1.0 428
2.0 1.2 110
1.5 0.9 112
1.5 0.8 92
1.5 0.7 71
1.0 0.7 457
1.5 0.9 94
2.0 0.9 93
2.0 0.8 110
1.0 0.8 390
2.5 1.1 225
2.5 1.1 158
2.0 1.1 29
2.5 1.1 161
2.0 1.2 172
1.5 1.0 187
2.0 1.0 135

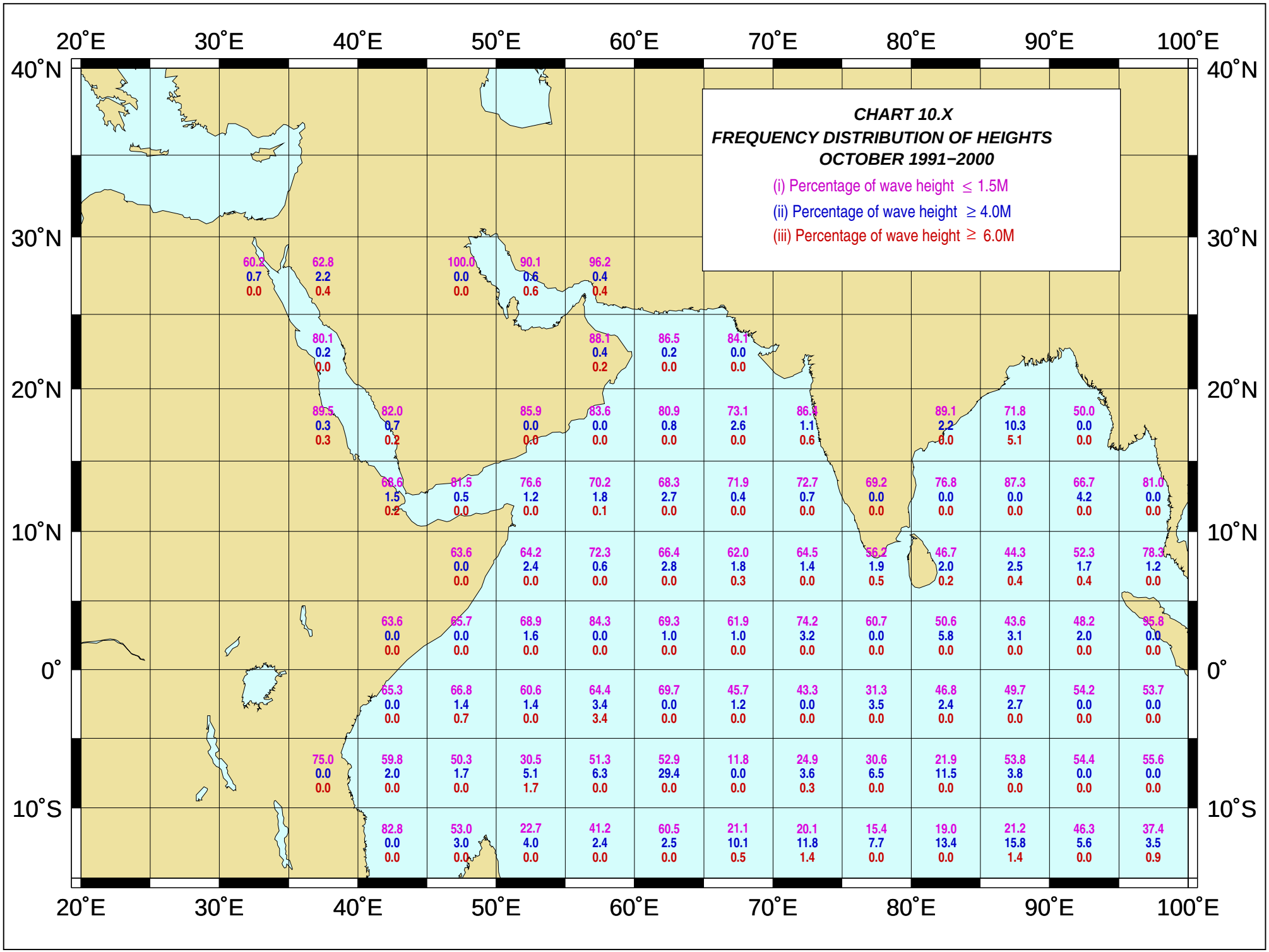


CHART 10.X
FREQUENCY DISTRIBUTION OF HEIGHTS
OCTOBER 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
60.2 0.7 0.0
62.8 2.2 0.4
100.0 0.0 0.0
90.1 0.6 0.6
96.2 0.4 0.4
80.1 0.2 0.0
88.1 0.4 0.2
86.5 0.2 0.0
84.1 0.0 0.0
89.5 0.3 0.3
82.0 0.7 0.2
85.9 0.0 0.0
83.6 0.0 0.0
80.9 0.8 0.0
73.1 2.6 0.0
89.1 2.2 0.0
71.8 10.3 5.1
50.0 0.0 0.0
68.6 1.5 0.2
81.5 0.5 0.0
76.6 1.2 0.0
70.2 1.8 0.1
68.3 2.7 0.0
71.9 0.4 0.0
72.7 0.7 0.0
69.2 0.0 0.0
76.8 0.0 0.0
87.3 0.0 0.0
66.7 4.2 0.0
81.0 0.0 0.0
63.6 0.0 0.0
64.2 2.4 0.0
72.3 0.6 0.0
66.4 2.8 0.0
62.0 1.8 0.3
64.5 1.4 0.0
56.2 1.9 0.5
46.7 2.0 0.2
44.3 2.5 0.4
52.3 1.7 0.4
78.3 1.2 0.0
63.6 0.0 0.0
65.7 0.0 0.0
68.9 1.6 0.0
84.3 0.0 0.0
69.3 1.0 0.0
61.9 1.0 0.0
74.2 3.2 0.0
60.7 0.0 0.0
50.6 5.8 0.0
43.6 3.1 0.0
48.2 2.0 0.0
95.8 0.0 0.0
65.3 0.0 0.0
66.8 1.4 0.7
60.6 1.4 0.0
64.4 3.4 3.4
69.7 0.0 0.0
45.7 1.2 0.0
43.3 0.0 0.0
31.3 3.5 0.0
46.8 2.4 0.0
49.7 2.7 0.0
54.2 0.0 0.0
53.7 0.0 0.0
75.0 0.0 0.0
59.8 2.0 0.0
50.3 1.7 0.0
30.5 5.1 1.7
51.3 6.3 0.0
52.9 29.4 0.0
11.8 0.0 0.0
24.9 3.6 0.3
30.6 6.5 0.0
21.9 11.5 0.0
53.8 3.8 0.0
54.4 0.0 0.0
55.6 0.0 0.0
82.8 0.0 0.0
53.0 3.0 0.0
22.7 4.0 0.0
41.2 2.4 0.0
60.5 2.5 0.0
21.1 10.1 0.5
20.1 11.8 1.4
15.4 7.7 0.0
19.0 13.4 0.0
21.2 15.8 1.4
46.3 5.6 0.0
37.4 3.5 0.9

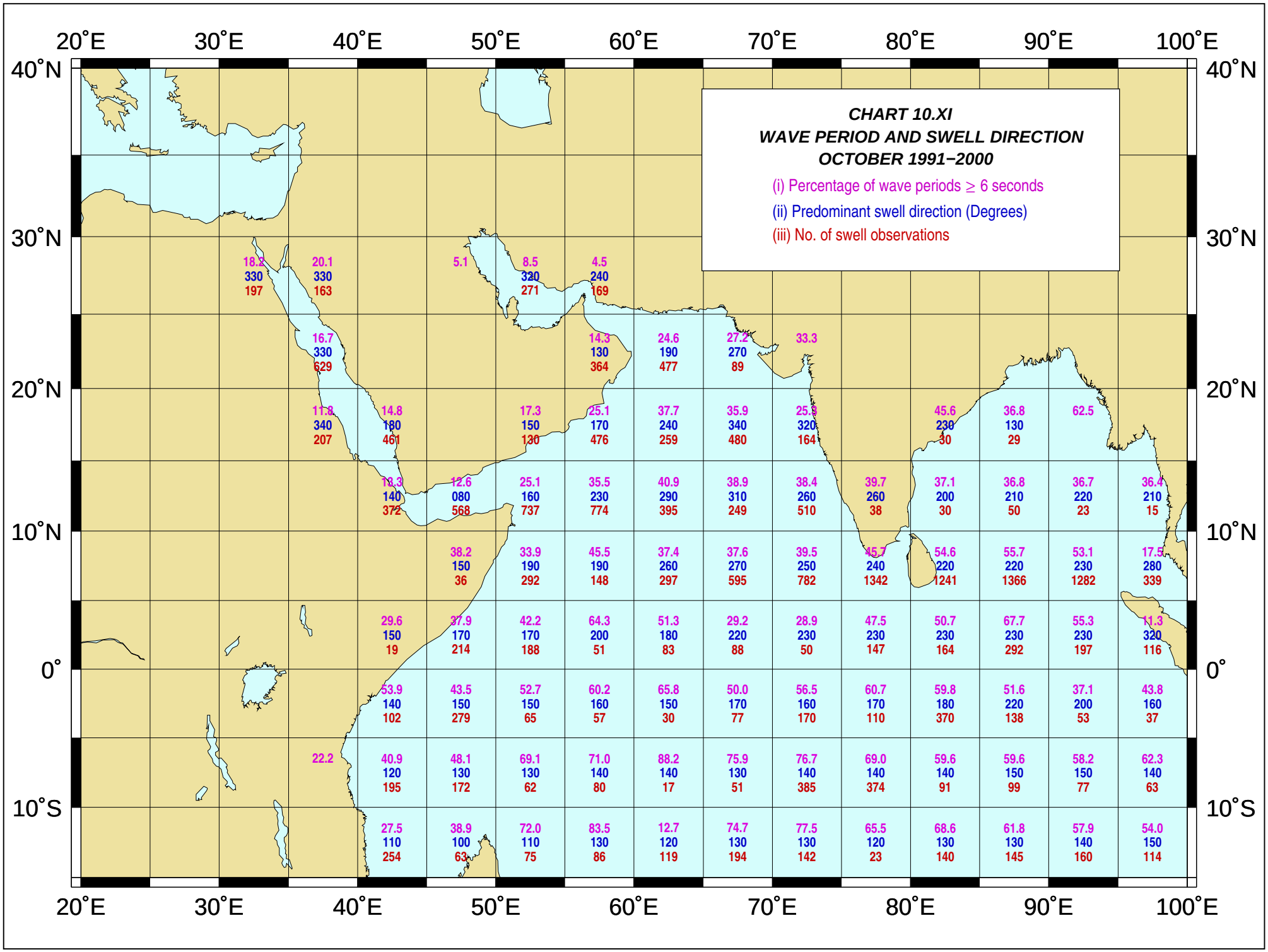


CHART 10.XI
WAVE PERIOD AND SWELL DIRECTION
OCTOBER 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
18.2 330 197
20.1 330 163
5.1
8.5 320 271
4.5 240 169
16.7 330 629
14.3 130 364
24.6 190 477
27.2 270 89
33.3
11.8 340 207
14.8 180 461
17.3 150 130
25.1 170 476
37.7 240 259
35.9 340 480
25.3 320 164
45.6 230 30
36.8 130 29
62.5
10.3 140 372
12.6 080 568
25.1 160 737
35.5 230 774
40.9 290 395
38.9 310 249
38.4 260 510
39.7 260 38
37.1 200 30
36.8 210 50
36.7 220 23
36.4 210 15
38.2 150 36
33.9 190 292
45.5 190 148
37.4 260 297
37.6 270 595
39.5 250 782
45.7 240 1342
54.6 220 1241
55.7 220 1366
53.1 230 1282
17.5 280 339
29.6 150 19
37.9 170 214
42.2 170 188
64.3 200 51
51.3 180 83
29.2 220 88
28.9 230 50
47.5 230 147
50.7 230 164
67.7 230 292
55.3 230 197
11.3 320 116
53.9 140 102
43.5 150 279
52.7 150 65
60.2 160 57
65.8 150 30
50.0 170 77
56.5 160 170
60.7 170 110
59.8 180 370
51.6 220 138
37.1 200 53
43.8 160 37
22.2
40.9 120 195
48.1 130 172
69.1 130 62
71.0 140 80
88.2 140 17
75.9 130 51
76.7 140 385
69.0 140 374
59.6 140 91
59.6 150 99
58.2 150 77
62.3 140 63
27.5 110 254
38.9 100 63
72.0 110 75
83.5 130 86
12.7 120 119
74.7 130 194
77.5 130 142
65.5 120 23
68.6 130 140
61.8 130 145
57.9 140 160
54.0 150 114

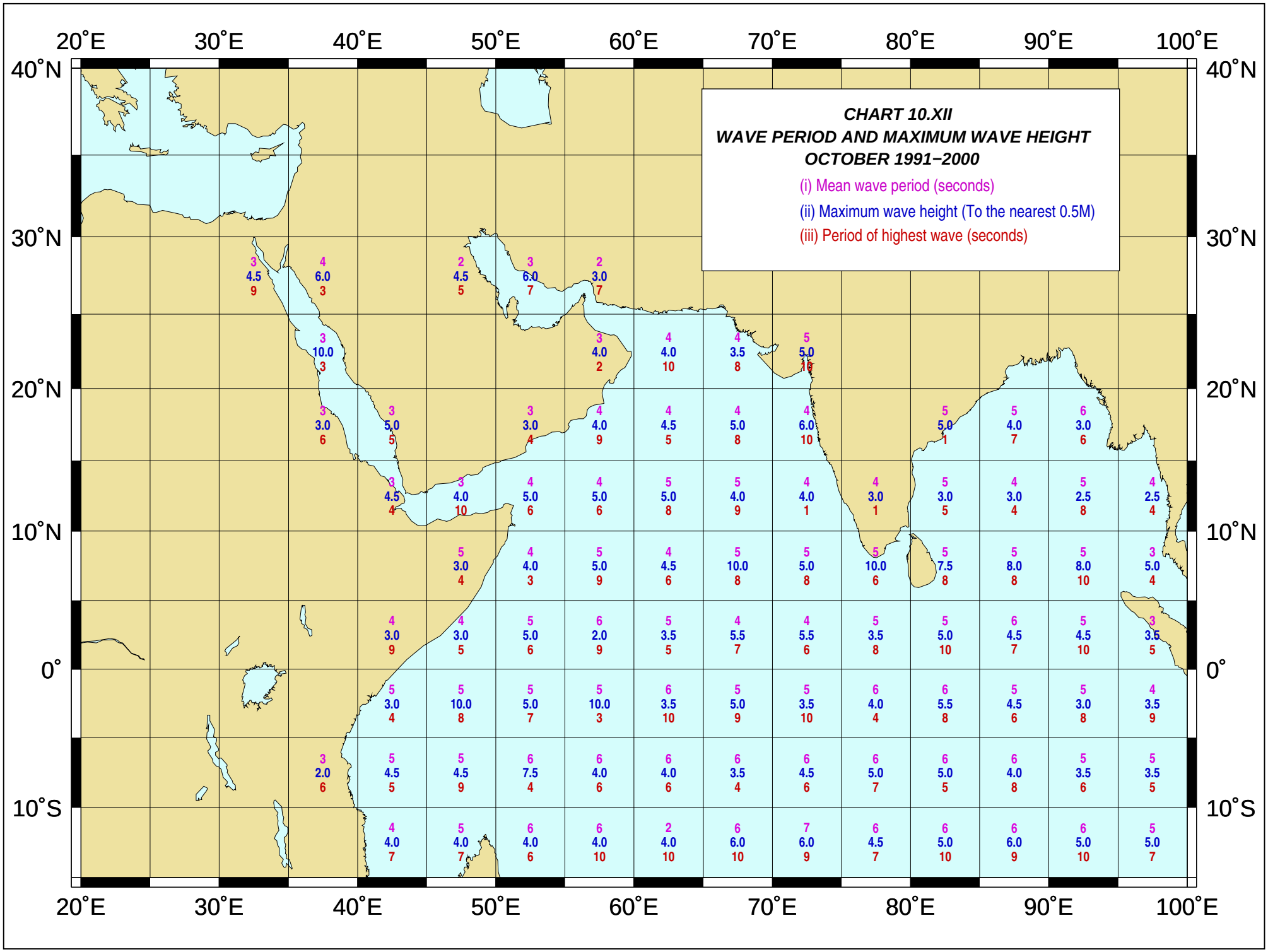


CHART 10.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
OCTOBER 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S

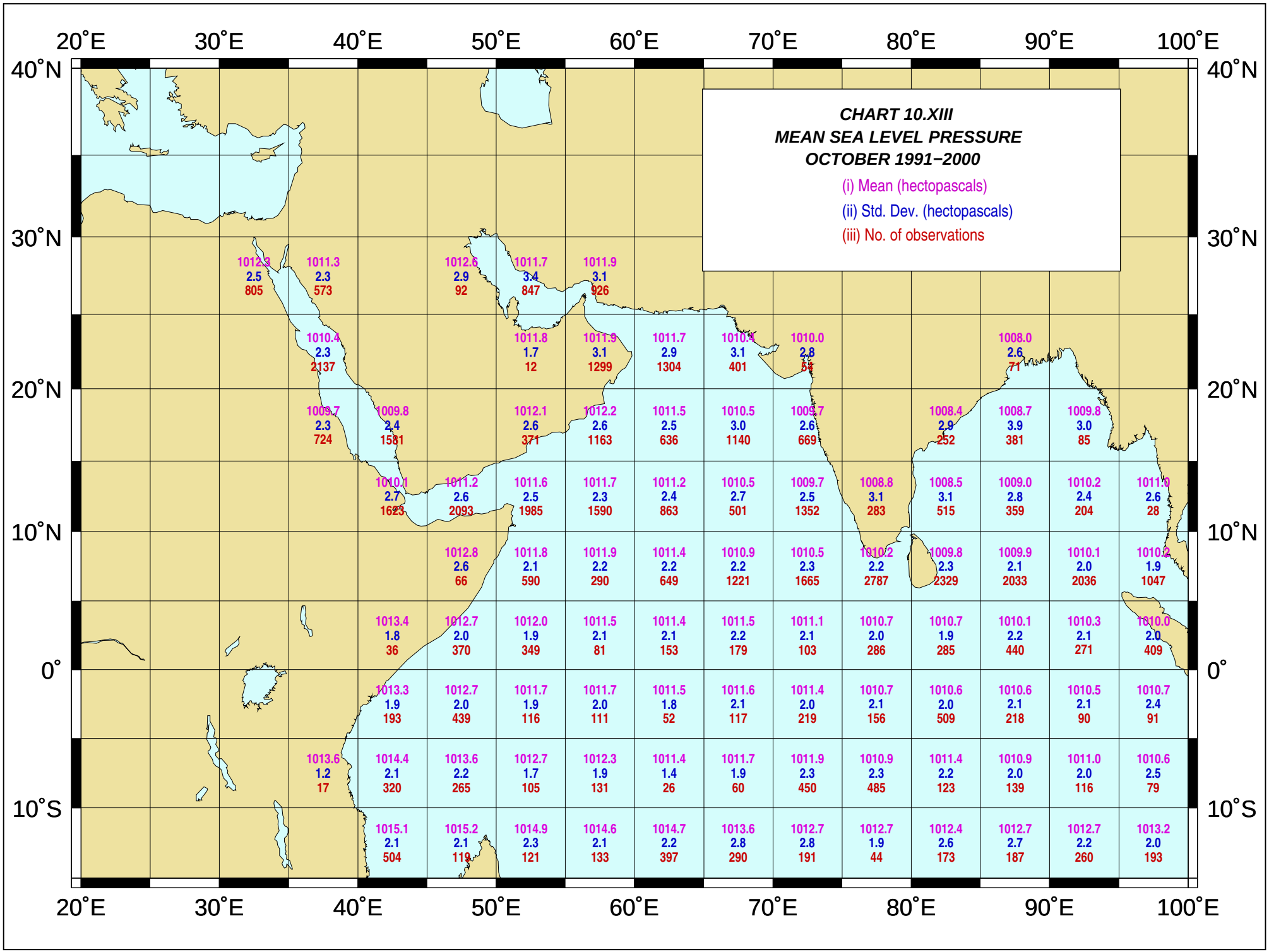


CHART 10.XIII
MEAN SEA LEVEL PRESSURE
OCTOBER 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1012.3 2.5 805
1011.3 2.3 573
1012.6 2.9 92
1011.7 3.4 847
1011.9 3.1 926
1010.4 2.3 2137
1011.8 1.7 12
1011.9 3.1 1299
1011.7 2.9 1304
1010.4 3.1 401
1010.0 2.8
1008.0 2.6 71
1009.7 2.3 724
1009.8 2.4 1581
1012.1 2.6 371
1012.2 2.6 1163
1011.5 2.5 636
1010.5 3.0 1140
1009.7 2.6 669
1008.4 2.9 252
1008.7 3.9 381
1009.8 3.0 85
1010.1 2.7 1623
1011.2 2.6 2093
1011.6 2.5 1985
1011.7 2.3 1590
1011.2 2.4 863
1010.5 2.7 501
1009.7 2.5 1352
1008.8 3.1 283
1008.5 3.1 515
1009.0 2.8 359
1010.2 2.4 204
1011.0 2.6 28
1012.8 2.6 66
1011.8 2.1 590
1011.9 2.2 290
1011.4 2.2 649
1010.9 2.2 1221
1010.5 2.3 1665
1010.2 2.2 2787
1009.8 2.3 2329
1009.9 2.1 2033
1010.1 2.0 2036
1010.2 1.9 1047
1013.4 1.8 36
1012.7 2.0 370
1012.0 1.9 349
1011.5 2.1 81
1011.4 2.1 153
1011.5 2.2 179
1011.1 2.1 103
1010.7 2.0 286
1010.7 1.9 285
1010.1 2.2 440
1010.3 2.1 271
1010.0 2.0 409
1013.3 1.9 193
1012.7 2.0 439
1011.7 1.9 116
1011.7 2.0 111
1011.5 1.8 52
1011.6 2.1 117
1011.4 2.0 219
1010.7 2.1 156
1010.6 2.0 509
1010.6 2.1 218
1010.5 2.1 90
1010.7 2.4 91
1013.6 1.2 17
1014.4 2.1 320
1013.6 2.2 265
1012.7 1.7 105
1012.3 1.9 131
1011.4 1.4 26
1011.7 1.9 60
1011.9 2.3 450
1010.9 2.3 485
1011.4 2.2 123
1010.9 2.0 139
1011.0 2.0 116
1010.6 2.5 79
1015.1 2.1 504
1015.2 2.1 119
1014.9 2.3 121
1014.6 2.1 133
1014.7 2.2 397
1013.6 2.8 290
1012.7 2.8 191
1012.7 1.9 44
1012.4 2.6 173
1012.7 2.7 187
1012.7 2.2 260
1013.2 2.0 193

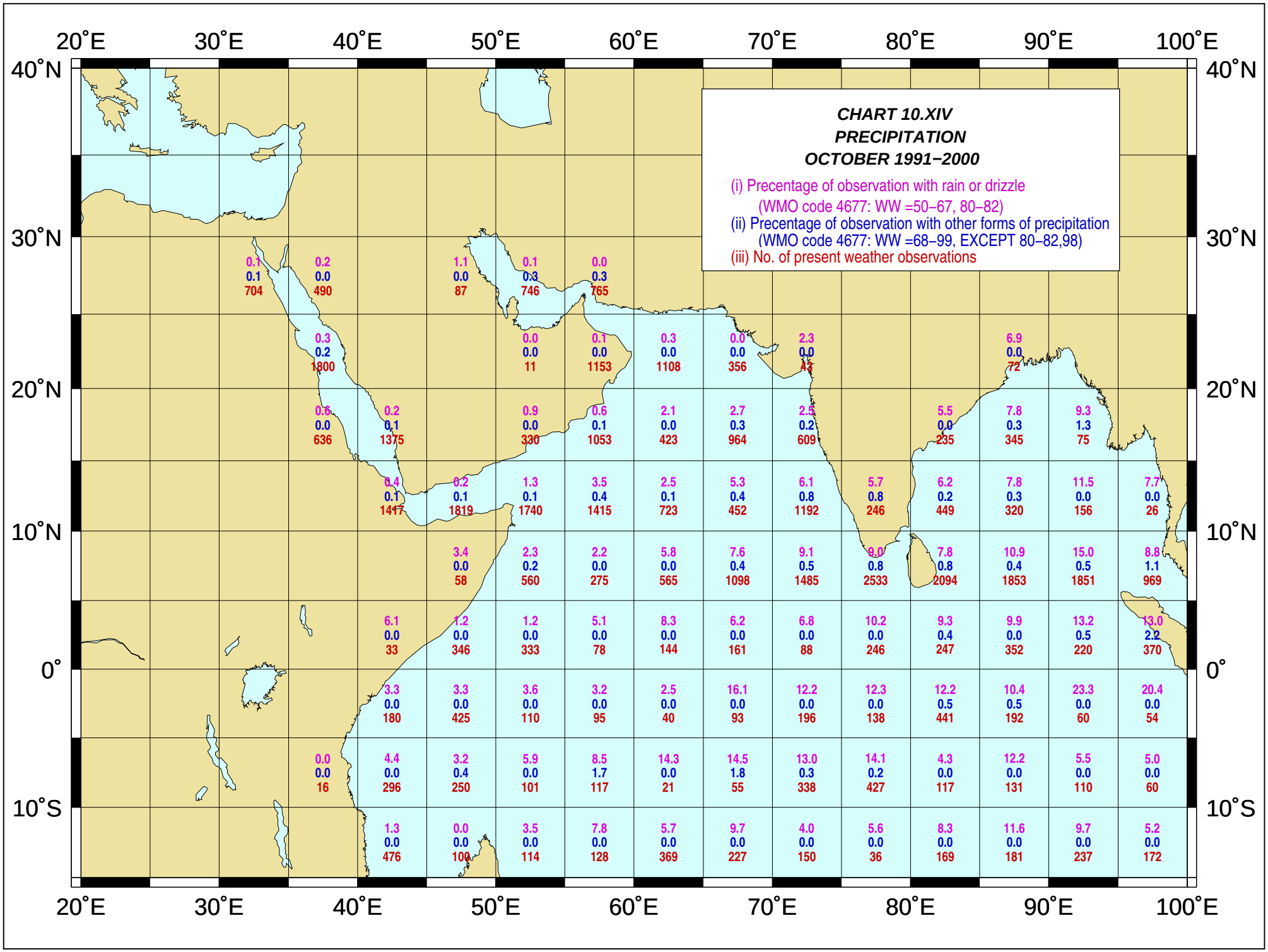


CHART 10.XIV
PRECIPITATION
OCTOBER 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.1 0.1 704
0.2 0.0 490
1.1 0.0 87
0.1 0.3 746
0.0 0.3 765
0.3 0.2 1800
0.0 0.0 11
0.1 0.0 1153
0.3 0.0 1108
0.0 0.0 356
2.3 0.0 42
6.9 0.0 72
0.6 0.0 636
0.2 0.1 1375
0.9 0.0 330
0.6 0.1 1053
2.1 0.0 423
2.7 0.3 964
2.3 0.2 609
5.5 0.0 235
7.8 0.3 345
9.3 1.3 75
0.4 0.1 1417
0.2 0.1 1819
1.3 0.1 1740
3.5 0.4 1415
2.5 0.1 723
5.3 0.4 452
6.1 0.8 1192
5.7 0.8 246
6.2 0.2 449
7.8 0.3 320
11.5 0.0 156
7.7 0.0 26
3.4 0.0 58
2.3 0.2 560
2.2 0.0 275
5.8 0.0 565
7.6 0.4 1098
9.1 0.5 1485
9.0 0.8 2533
7.8 0.8 2094
10.9 0.4 1853
15.0 0.5 1851
8.8 1.1 969
6.1 0.0 33
1.2 0.0 346
1.2 0.0 333
5.1 0.0 78
8.3 0.0 144
6.2 0.0 161
6.8 0.0 88
10.2 0.0 246
9.3 0.4 247
9.9 0.0 352
13.2 0.5 220
13.0 2.2 370
3.3 0.0 180
3.3 0.0 425
3.6 0.0 110
3.2 0.0 95
2.5 0.0 40
16.1 0.0 93
12.2 0.0 196
12.3 0.0 138
12.2 0.5 441
10.4 0.5 192
23.3 0.0 60
20.4 0.0 54
0.0 0.0 16
4.4 0.0 296
3.2 0.4 250
5.9 0.0 101
8.5 1.7 117
14.3 0.0 21
14.5 1.8 55
13.0 0.3 338
14.1 0.2 427
4.3 0.0 117
12.2 0.0 131
5.5 0.0 110
5.0 0.0 60
1.3 0.0 476
0.0 0.0 100
3.5 0.0 114
7.8 0.0 128
5.7 0.0 369
9.7 0.0 227
4.0 0.0 150
5.6 0.0 36
8.3 0.0 169
11.6 0.0 181
9.7 0.0 237
5.2 0.0 172

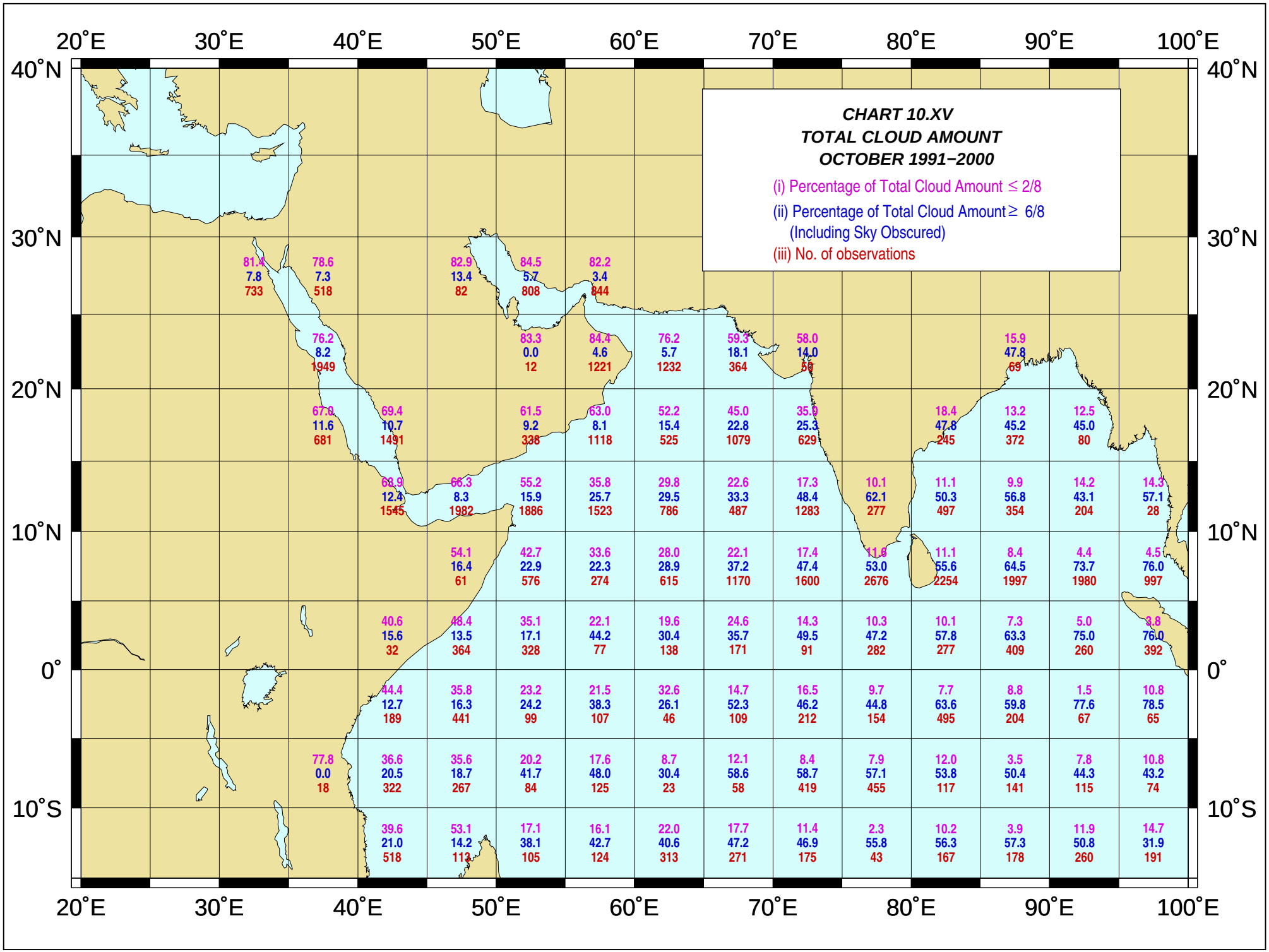


CHART 10.XV
TOTAL CLOUD AMOUNT
OCTOBER 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
81.4 7.8 733
78.6 7.3 518
82.9 13.4 82
84.5 5.7 808
82.2 3.4 844
76.2 8.2 1949
83.3 0.0 12
84.4 4.6 1221
76.2 5.7 1232
59.3 18.1 364
58.0 14.0 56
15.9 47.8 69
67.9 11.6 681
69.4 10.7 1491
61.5 9.2 338
63.0 8.1 1118
52.2 15.4 525
45.0 22.8 1079
35.9 25.3 629
18.4 47.8 245
13.2 45.2 372
12.5 45.0 80
60.9 12.4 1545
66.3 8.3 1982
55.2 15.9 1886
35.8 25.7 1523
29.8 29.5 786
22.6 33.3 487
17.3 48.4 1283
10.1 62.1 277
11.1 50.3 497
9.9 56.8 354
14.2 43.1 204
14.3 57.1 28
54.1 16.4 61
42.7 22.9 576
33.6 22.3 274
28.0 28.9 615
22.1 37.2 1170
17.4 47.4 1600
11.9 53.0 2676
11.1 55.6 2254
8.4 64.5 1997
4.4 73.7 1980
4.5 76.0 997
40.6 15.6 32
48.4 13.5 364
35.1 17.1 328
22.1 44.2 77
19.6 30.4 138
24.6 35.7 171
14.3 49.5 91
10.3 47.2 282
10.1 57.8 277
7.3 63.3 409
5.0 75.0 260
3.8 76.0 392
44.4 12.7 189
35.8 16.3 441
23.2 24.2 99
21.5 38.3 107
32.6 26.1 46
14.7 52.3 109
16.5 46.2 212
9.7 44.8 154
7.7 63.6 495
8.8 59.8 204
1.5 77.6 67
10.8 78.5 65
77.8 0.0 18
36.6 20.5 322
35.6 18.7 267
20.2 41.7 84
17.6 48.0 125
8.7 30.4 23
12.1 58.6 58
8.4 58.7 419
7.9 57.1 455
12.0 53.8 117
3.5 50.4 141
7.8 44.3 115
10.8 43.2 74
39.6 21.0 518
53.1 14.2 113
17.1 38.1 105
16.1 42.7 124
22.0 40.6 313
17.7 47.2 271
11.4 46.9 175
2.3 55.8 43
10.2 56.3 167
3.9 57.3 178
11.9 50.8 260
14.7 31.9 191

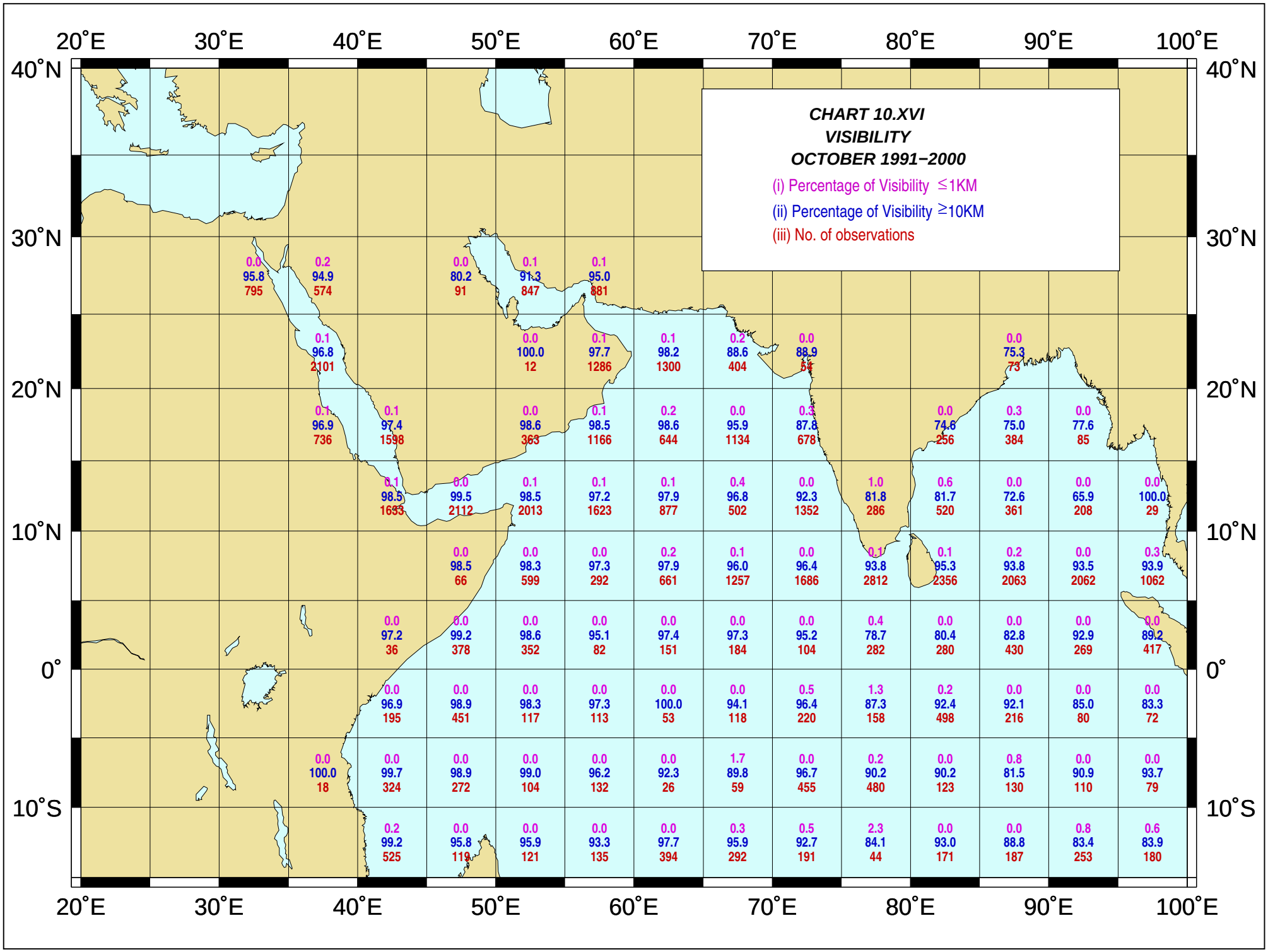


CHART 10.XVI
VISIBILITY
OCTOBER 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.0 95.8 795
0.2 94.9 574
0.0 80.2 91
0.1 91.3 847
0.1 95.0 881
0.1 96.8 2101
0.0 100.0 12
0.1 97.7 1286
0.1 98.2 1300
0.2 88.6 404
0.0 88.9 54
0.0 75.3 73
0.1 96.9 736
0.1 97.4 1598
0.0 98.6 363
0.1 98.5 1166
0.2 98.6 644
0.0 95.9 1134
0.3 87.8 678
0.0 74.6 256
0.3 75.0 384
0.0 77.6 85
0.1 98.5 1693
0.0 99.5 2112
0.1 98.5 2013
0.1 97.2 1623
0.1 97.9 877
0.4 96.8 502
0.0 92.3 1352
1.0 81.8 286
0.6 81.7 520
0.0 72.6 361
0.0 65.9 208
0.0 100.0 29
0.0 98.5 66
0.0 98.3 599
0.0 97.3 292
0.2 97.9 661
0.1 96.0 1257
0.0 96.4 1686
0.1 93.8 2812
0.1 95.3 2356
0.2 93.8 2063
0.0 93.5 2062
0.3 93.9 1062
0.0 97.2 36
0.0 99.2 378
0.0 98.6 352
0.0 95.1 82
0.0 97.4 151
0.0 97.3 184
0.0 95.2 104
0.4 78.7 282
0.0 80.4 280
0.0 82.8 430
0.0 92.9 269
0.0 89.2 417
0.0 96.9 195
0.0 98.9 451
0.0 98.3 117
0.0 97.3 113
0.0 100.0 53
0.0 94.1 118
0.5 96.4 220
1.3 87.3 158
0.2 92.4 498
0.0 92.1 216
0.0 85.0 80
0.0 83.3 72
0.0 100.0 18
0.0 99.7 324
0.0 98.9 272
0.0 99.0 104
0.0 96.2 132
0.0 92.3 26
1.7 89.8 59
0.0 96.7 455
0.2 90.2 480
0.0 90.2 123
0.8 81.5 130
0.0 90.9 110
0.0 93.7 79
0.2 99.2 525
0.0 95.8 119
0.0 95.9 121
0.0 93.3 135
0.0 97.7 394
0.3 95.9 292
0.5 92.7 191
2.3 84.1 44
0.0 93.0 171
0.0 88.8 187
0.8 83.4 253
0.6 83.9 180

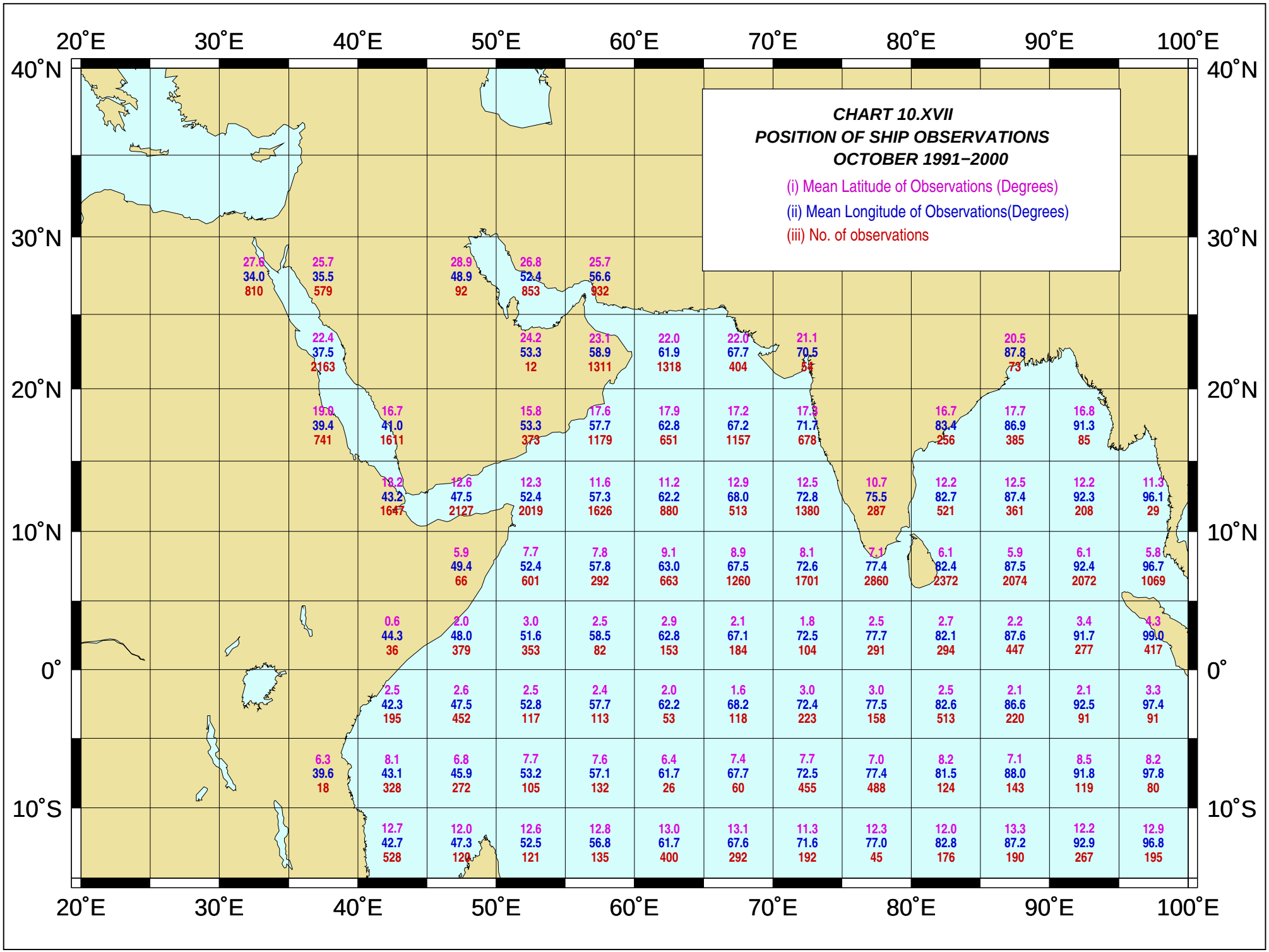


CHART 10.XVII
POSITION OF SHIP OBSERVATIONS
OCTOBER 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.6 34.0 810
25.7 35.5 579
28.9 48.9 92
26.8 52.4 853
25.7 56.6 932
22.4 37.5 2163
24.2 53.3 12
23.1 58.9 1311
22.0 61.9 1318
22.0 67.7 404
21.1 70.5
20.5 87.8 73
19.0 39.4 741
16.7 41.0 1611
15.8 53.3 373
17.6 57.7 1179
17.9 62.8 651
17.2 67.2 1157
17.3 71.7 678
16.7 83.4 256
17.7 86.9 385
16.8 91.3 85
12.6 47.5 2127
12.3 52.4 2019
11.6 57.3 1626
11.2 62.2 880
12.9 68.0 513
12.5 72.8 1380
10.7 75.5 287
12.2 82.7 521
12.5 87.4 361
12.2 92.3 208
11.3 96.1 29
5.9 49.4 66
7.7 52.4 601
7.8 57.8 292
9.1 63.0 663
8.9 67.5 1260
8.1 72.6 1701
7.1 77.4 2860
6.1 82.4 2372
5.9 87.5 2074
6.1 92.4 2072
5.8 96.7 1069
0.6 44.3 36
2.0 48.0 379
3.0 51.6 353
2.5 58.5 82
2.9 62.8 153
2.1 67.1 184
1.8 72.5 104
2.5 77.7 291
2.7 82.1 294
2.2 87.6 447
3.4 91.7 277
4.3 99.0 417
2.5 42.3 195
2.6 47.5 452
2.5 52.8 117
2.4 57.7 113
2.0 62.2 53
1.6 68.2 118
3.0 72.4 223
3.0 77.5 158
2.5 82.6 513
2.1 86.6 220
2.1 92.5 91
3.3 97.4 91
6.3 39.6 18
8.1 43.1 328
6.8 45.9 272
7.7 53.2 105
7.6 57.1 132
6.4 61.7 26
7.4 67.7 60
7.7 72.5 455
7.0 77.4 488
8.2 81.5 124
7.1 88.0 143
8.5 91.8 119
8.2 97.8 80
12.7 42.7 528
12.0 47.3 120
12.6 52.5 121
12.8 56.8 135
13.0 61.7 400
13.1 67.6 292
11.3 71.6 192
12.3 77.0 45
12.0 82.8 176
13.3 87.2 190
12.2 92.9 267
12.9 96.8 195

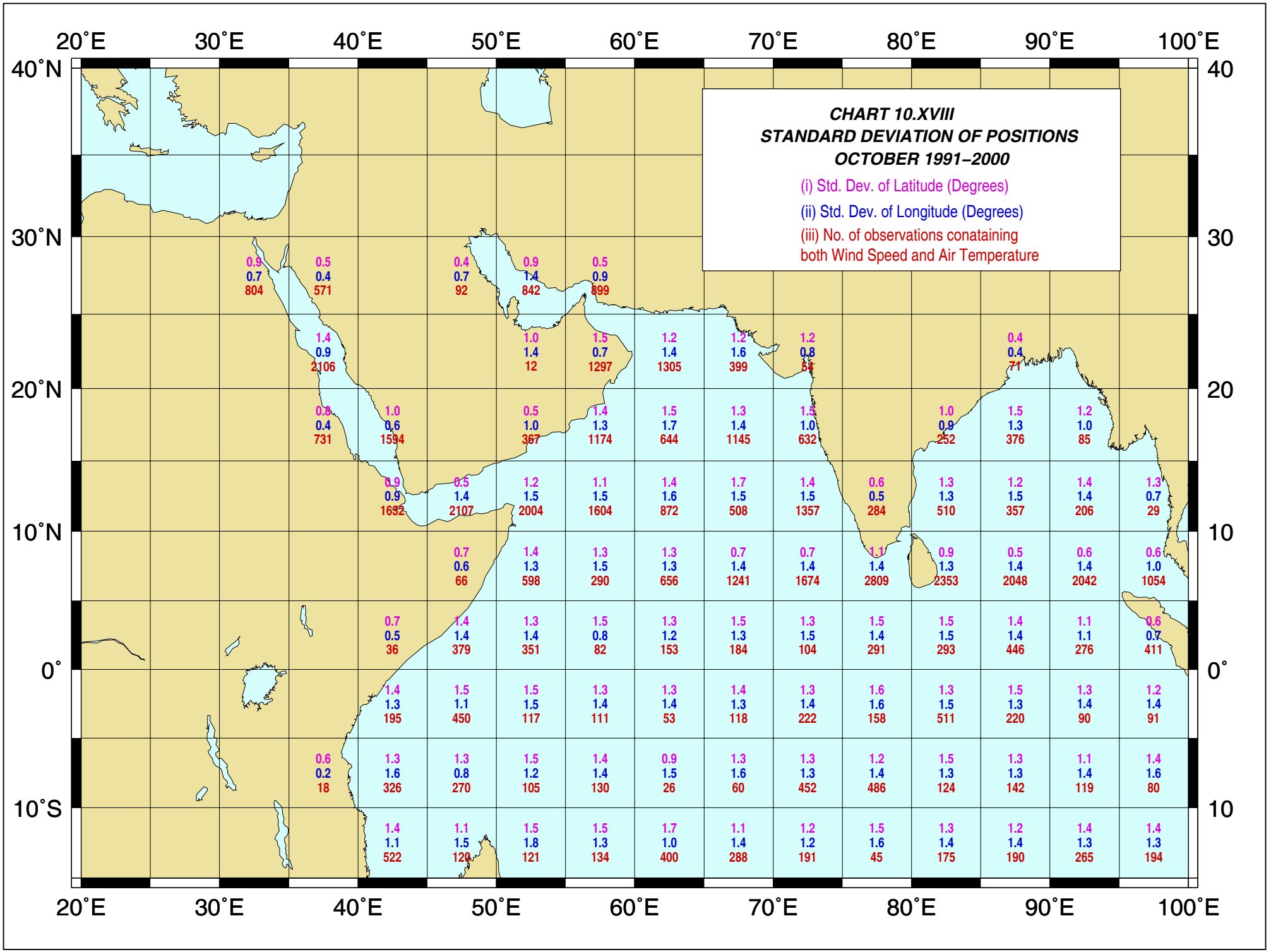
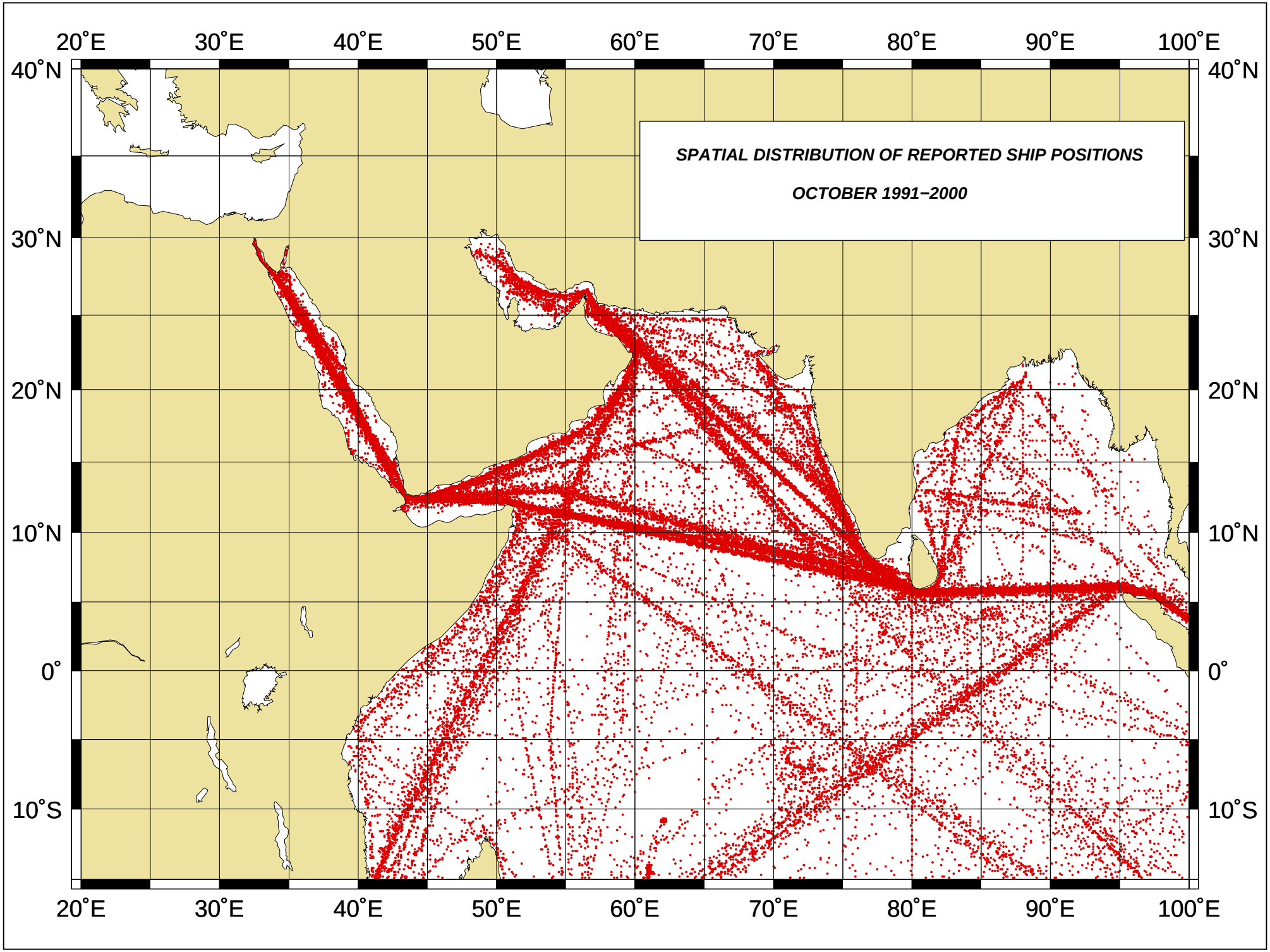
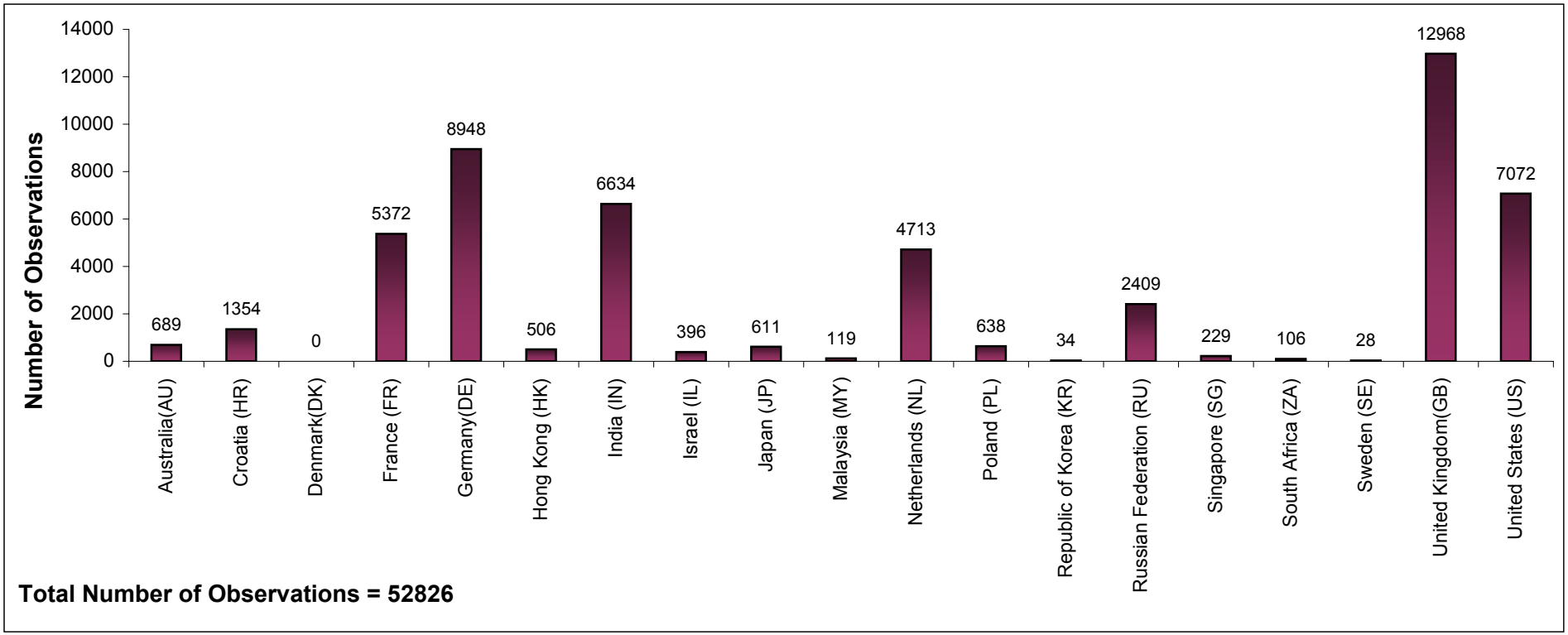


CHART 10.XVIII
STANDARD DEVIATION OF POSITIONS
OCTOBER 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations conatining
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.9 0.7 804
0.5 0.4 571
0.4 0.7 92
0.9 1.4 842
0.5 0.9 899
1.4 0.9 2106
1.0 1.4 12
1.5 0.7 1297
1.2 1.4 1305
1.2 1.6 399
1.2 0.8 54
0.4 0.4 71
0.8 0.4 731
1.0 0.6 1594
0.5 1.0 367
1.4 1.3 1174
1.5 1.7 644
1.3 1.4 1145
1.5 1.0 632
1.0 0.9 252
1.5 1.3 376
1.2 1.0 85
0.9 0.9 1652
0.5 1.4 2107
1.2 1.5 2004
1.1 1.5 1604
1.4 1.6 872
1.7 1.5 508
1.4 1.5 1357
0.6 0.5 284
1.3 1.3 510
1.2 1.5 357
1.4 1.4 206
1.3 0.7 29
0.7 0.6 66
1.4 1.3 598
1.3 1.5 290
1.3 1.3 656
0.7 1.4 1241
0.7 1.4 1674
1.1 1.4 2809
0.9 1.3 2353
0.5 1.4 2048
0.6 1.4 2042
0.6 1.0 1054
0.7 0.5 36
1.4 1.4 379
1.3 1.4 351
1.5 0.8 82
1.3 1.2 153
1.5 1.3 184
1.3 1.5 104
1.5 1.4 291
1.5 1.5 293
1.4 1.4 446
1.1 1.1 276
0.6 0.7 411
1.4 1.3 195
1.5 1.1 450
1.5 1.5 117
1.3 1.4 111
1.3 1.4 53
1.4 1.3 118
1.3 1.4 222
1.6 1.6 158
1.3 1.5 511
1.5 1.3 220
1.3 1.4 90
1.2 1.4 91
0.6 0.2 18
1.3 1.6 326
1.3 0.8 270
1.5 1.2 105
1.4 1.4 130
0.9 1.5 26
1.3 1.6 60
1.3 1.3 452
1.2 1.4 486
1.5 1.3 124
1.3 1.3 142
1.1 1.4 119
1.4 1.6 80
1.4 1.1 522
1.1 1.5 120
1.5 1.8 121
1.5 1.3 134
1.7 1.0 400
1.1 1.4 288
1.2 1.2 191
1.5 1.6 45
1.3 1.4 175
1.2 1.4 190
1.4 1.3 265
1.4 1.3 194


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
OCTOBER 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

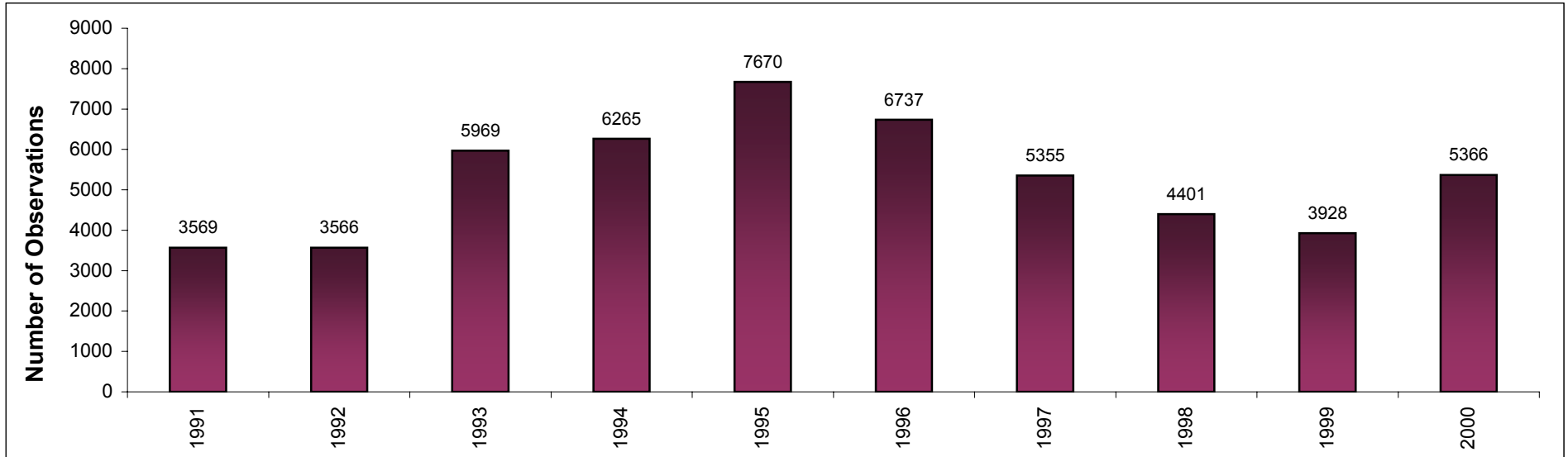
OCTOBER : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52826

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations =52826

Marine Climatological Summary Charts 1991-2000

CHARTS OF NOVEMBER 1991 - 2000

CHART - I : AIR TEMPERATURE
CHART - II : SEA SURFACE TEMPERATURE
CHART - III : DEW POINT TEMPERATURE
CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED
CHART - VI : WIND DIRECTION
CHART - VII : LIGHT AND STRONG WINDS
CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT
CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS
CHART - XI : WAVE PERIOD AND SWELL DIRECTION
CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION
OF NUMBER OF OBSERVATIONS

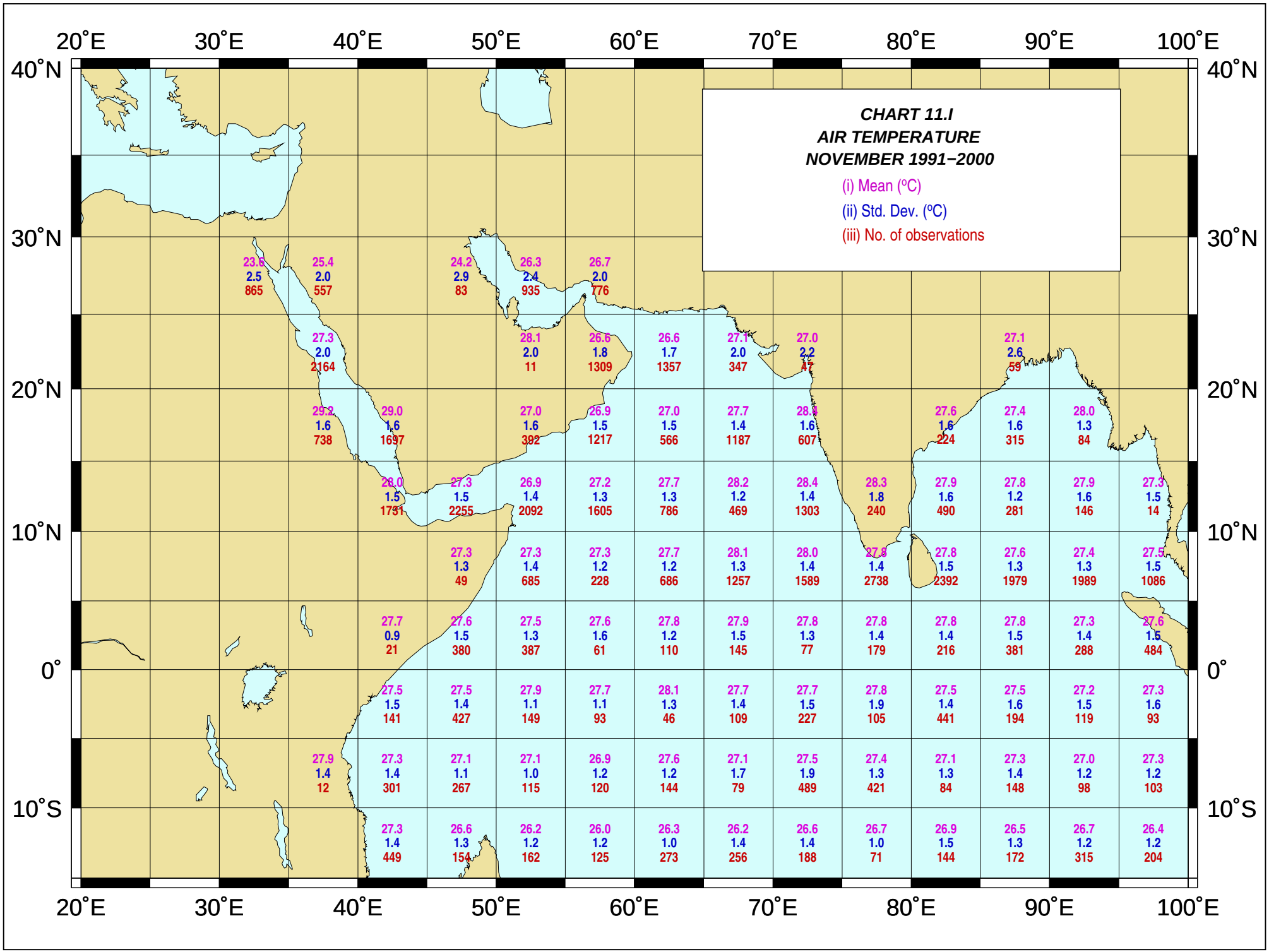


CHART 11.I
AIR TEMPERATURE
NOVEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
23.6 2.5 865
25.4 2.0 557
24.2 2.9 83
26.3 2.4 935
26.7 2.0 776
27.3 2.0 2164
28.1 2.0 11
26.6 1.8 1309
26.6 1.7 1357
27.1 2.0 347
27.0 2.2 47
27.1 2.6 59
29.2 1.6 738
29.0 1.6 1697
27.0 1.6 392
26.9 1.5 1217
27.0 1.5 566
27.7 1.4 1187
28.3 1.6 607
27.6 1.6 224
27.4 1.6 315
28.0 1.3 84
28.0 1.5 1751
27.3 1.5 2255
26.9 1.4 2092
27.2 1.3 1605
27.7 1.3 786
28.2 1.2 469
28.4 1.4 1303
28.3 1.8 240
27.9 1.6 490
27.8 1.2 281
27.9 1.6 146
27.3 1.5 14
27.3 1.3 49
27.3 1.4 685
27.3 1.2 228
27.7 1.2 686
28.1 1.3 1257
28.0 1.4 1589
27.9 1.4 2738
27.8 1.5 2392
27.6 1.3 1979
27.4 1.3 1989
27.5 1.5 1086
27.7 0.9 21
27.6 1.5 380
27.5 1.3 387
27.6 1.6 61
27.8 1.2 110
27.9 1.5 145
27.8 1.3 77
27.8 1.4 179
27.8 1.4 216
27.8 1.5 381
27.3 1.4 288
27.6 1.5 484
27.5 1.5 141
27.5 1.4 427
27.9 1.1 149
27.7 1.1 93
28.1 1.3 46
27.7 1.4 109
27.7 1.5 227
27.8 1.9 105
27.5 1.4 441
27.5 1.6 194
27.2 1.5 119
27.3 1.6 93
27.9 1.4 12
27.3 1.4 301
27.1 1.1 267
27.1 1.0 115
26.9 1.2 120
27.6 1.2 144
27.1 1.7 79
27.5 1.9 489
27.4 1.3 421
27.1 1.3 84
27.3 1.4 148
27.0 1.2 98
27.3 1.2 103
27.3 1.4 449
26.6 1.3 154
26.2 1.2 162
26.0 1.2 125
26.3 1.0 273
26.2 1.4 256
26.6 1.4 188
26.7 1.0 71
26.9 1.5 144
26.5 1.3 172
26.7 1.2 315
26.4 1.2 204

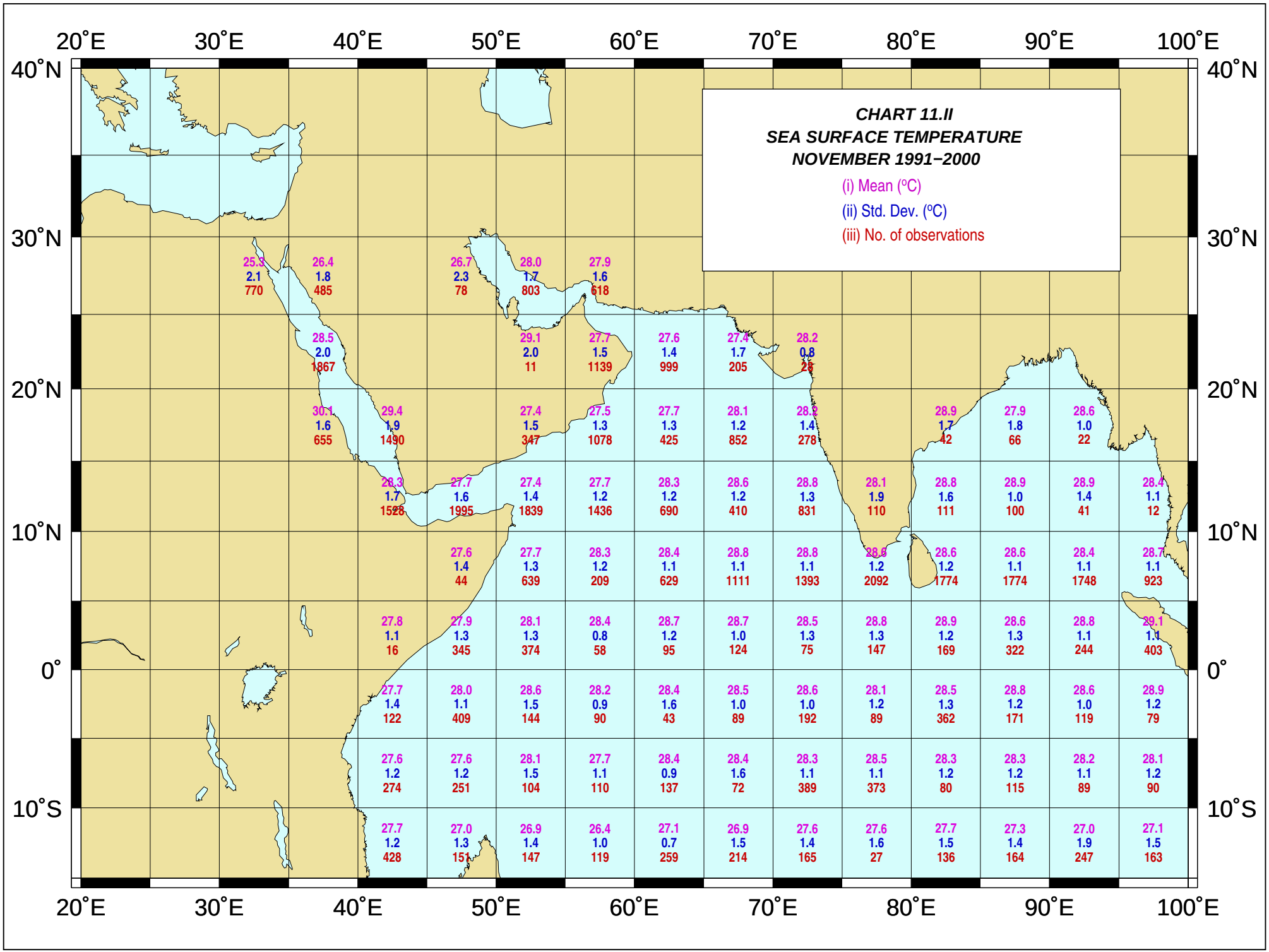


CHART 11.II
SEA SURFACE TEMPERATURE
NOVEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
25.3 2.1 770
26.4 1.8 485
26.7 2.3 78
28.0 1.7 803
27.9 1.6 618
28.5 2.0 1867
29.1 2.0 11
27.7 1.5 1139
27.6 1.4 999
27.4 1.7 205
28.2 0.8 26
30.1 1.6 655
29.4 1.9 1490
27.4 1.5 347
27.5 1.3 1078
27.7 1.3 425
28.1 1.2 852
28.2 1.4 278
28.9 1.7 42
27.9 1.8 66
28.6 1.0 22
28.3 1.7 1528
27.7 1.6 1995
27.4 1.4 1839
27.7 1.2 1436
28.3 1.2 690
28.6 1.2 410
28.8 1.3 831
28.1 1.9 110
28.8 1.6 111
28.9 1.0 100
28.9 1.4 41
28.4 1.1 12
27.6 1.4 44
27.7 1.3 639
28.3 1.2 209
28.4 1.1 629
28.8 1.1 1111
28.8 1.1 1393
28.6 1.2 2092
28.6 1.2 1774
28.6 1.1 1774
28.4 1.1 1748
28.7 1.1 923
27.8 1.1 16
27.9 1.3 345
28.1 1.3 374
28.4 0.8 58
28.7 1.2 95
28.7 1.0 124
28.5 1.3 75
28.8 1.3 147
28.9 1.2 169
28.6 1.3 322
28.8 1.1 244
29.1 1.1 403
27.7 1.4 122
28.0 1.1 409
28.6 1.5 144
28.2 0.9 90
28.4 1.6 43
28.5 1.0 89
28.6 1.0 192
28.1 1.2 89
28.5 1.3 362
28.8 1.2 171
28.6 1.0 119
28.9 1.2 79
27.6 1.2 274
27.6 1.2 251
28.1 1.5 104
27.7 1.1 110
28.4 0.9 137
28.4 1.6 72
28.3 1.1 389
28.5 1.1 373
28.3 1.2 80
28.3 1.2 115
28.2 1.1 89
28.1 1.2 90
27.7 1.2 428
27.0 1.3 151
26.9 1.4 147
26.4 1.0 119
27.1 0.7 259
26.9 1.5 214
27.6 1.4 165
27.6 1.6 27
27.7 1.5 136
27.3 1.4 164
27.0 1.9 247
27.1 1.5 163

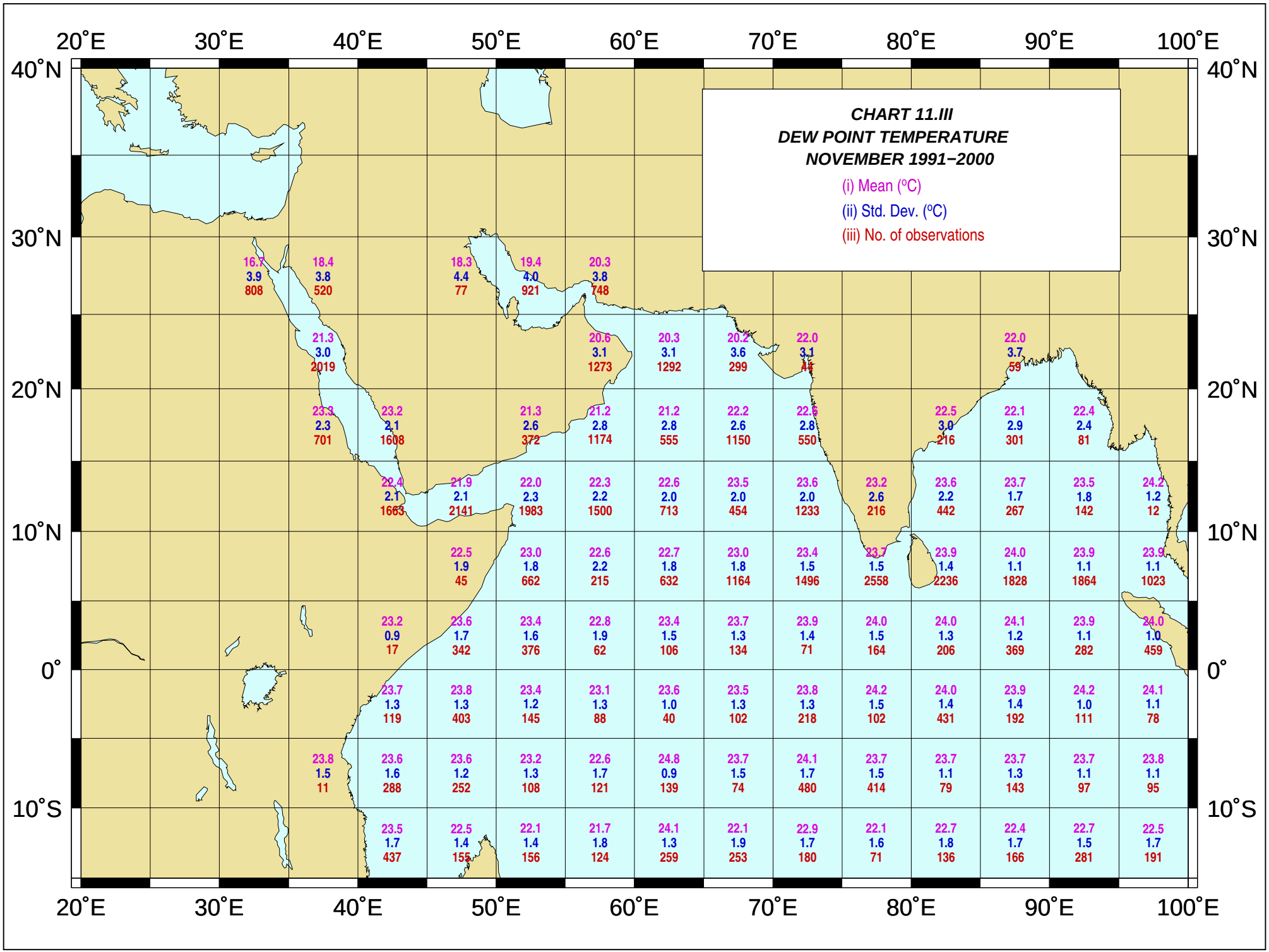


CHART 11.III
DEW POINT TEMPERATURE
NOVEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
16.7 3.9 808
18.4 3.8 520
18.3 4.4 77
19.4 4.0 921
20.3 3.8 748
21.3 3.0 2019
20.6 3.1 1273
20.3 3.1 1292
20.2 3.6 299
22.0 3.1 44
22.0 3.7 59
23.3 2.3 701
23.2 2.1 1608
21.3 2.6 372
21.2 2.8 1174
21.2 2.8 555
22.2 2.6 1150
22.3 2.8 550
22.5 3.0 216
22.1 2.9 301
22.4 2.4 81
22.4 2.1 1663
21.9 2.1 2141
22.0 2.3 1983
22.3 2.2 1500
22.6 2.0 713
23.5 2.0 454
23.6 2.0 1233
23.2 2.6 216
23.6 2.2 442
23.7 1.7 267
23.5 1.8 142
24.2 1.2 12
22.5 1.9 45
23.0 1.8 662
22.6 2.2 215
22.7 1.8 632
23.0 1.8 1164
23.4 1.5 1496
23.7 1.5 2558
23.9 1.4 2236
24.0 1.1 1828
23.9 1.1 1864
23.9 1.1 1023
23.2 0.9 17
23.6 1.7 342
23.4 1.6 376
22.8 1.9 62
23.4 1.5 106
23.7 1.3 134
23.9 1.4 71
24.0 1.5 164
24.0 1.3 206
24.1 1.2 369
23.9 1.1 282
24.0 1.0 459
23.7 1.3 119
23.8 1.3 403
23.4 1.2 145
23.1 1.3 88
23.6 1.0 40
23.5 1.3 102
23.8 1.3 218
24.2 1.5 102
24.0 1.4 431
23.9 1.4 192
24.2 1.0 111
24.1 1.1 78
23.8 1.5 11
23.6 1.6 288
23.6 1.2 252
23.2 1.3 108
22.6 1.7 121
24.8 0.9 139
23.7 1.5 74
24.1 1.7 480
23.7 1.5 414
23.7 1.1 79
23.7 1.3 143
23.7 1.1 97
23.8 1.1 95
23.5 1.7 437
22.5 1.4 155
22.1 1.4 156
21.7 1.8 124
24.1 1.3 259
22.1 1.9 253
22.9 1.7 180
22.1 1.6 71
22.7 1.8 136
22.4 1.7 166
22.7 1.5 281
22.5 1.7 191

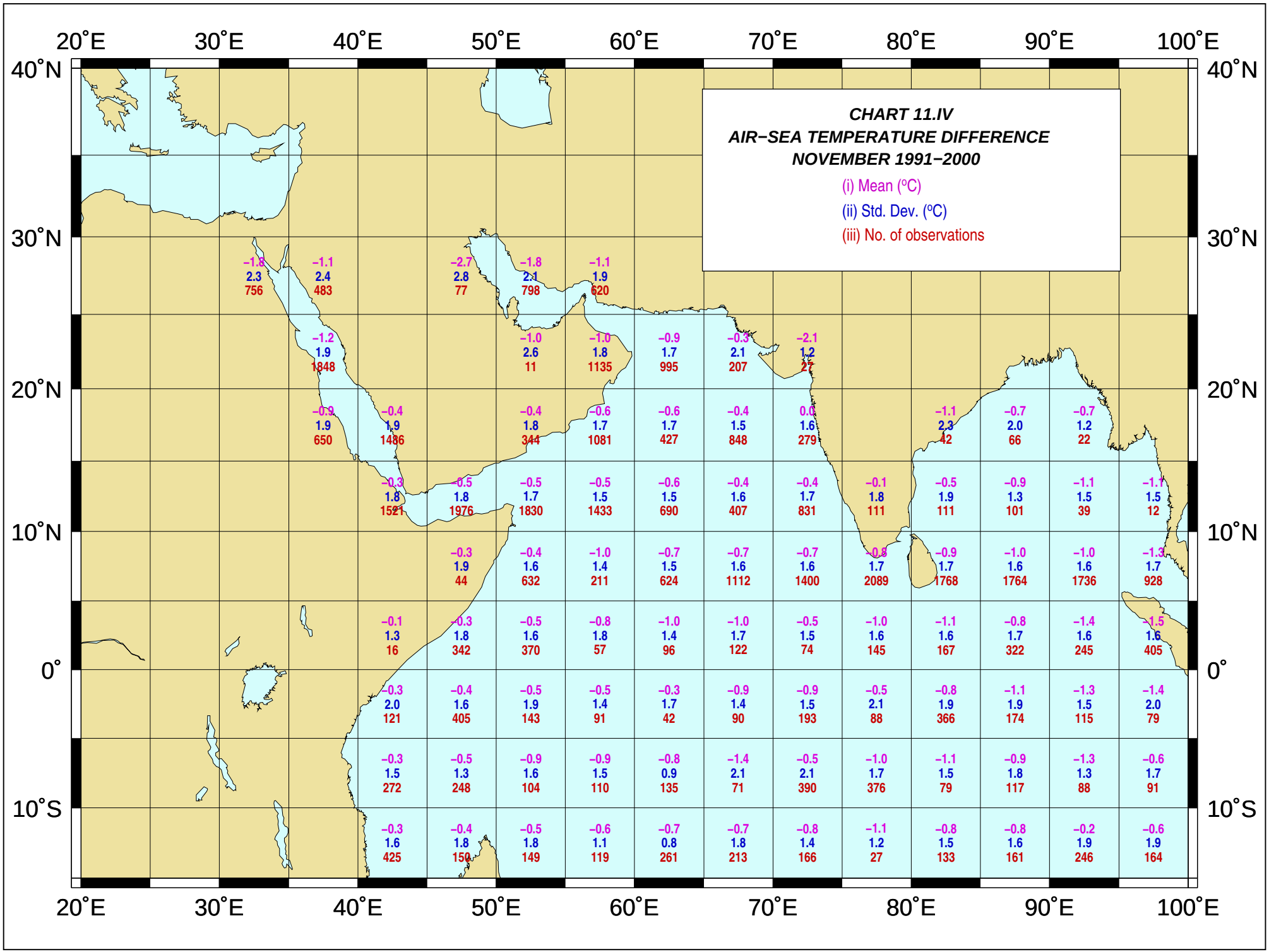


CHART 11.IV
AIR–SEA TEMPERATURE DIFFERENCE
NOVEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
−1.8 2.3 756
−1.1 2.4 483
−2.7 2.8 77
−1.8 2.1 798
−1.1 1.9 620
−1.2 1.9 1848
−1.0 2.6 11
−1.0 1.8 1135
−0.9 1.7 995
−0.3 2.1 207
−2.1 1.2 27
−0.9 1.9 650
−0.4 1.9 1486
−0.4 1.8 344
−0.6 1.7 1081
−0.6 1.7 427
−0.4 1.5 848
0.0 1.6 279
−1.1 2.3 42
−0.7 2.0 66
−0.7 1.2 22
−0.3 1.8 1521
−0.5 1.8 1976
−0.5 1.7 1830
−0.5 1.5 1433
−0.6 1.5 690
−0.4 1.6 407
−0.4 1.7 831
−0.1 1.8 111
−0.5 1.9 111
−0.9 1.3 101
−1.1 1.5 39
−1.7 1.5 12
−0.3 1.9 44
−0.4 1.6 632
−1.0 1.4 211
−0.7 1.5 624
−0.7 1.6 1112
−0.7 1.6 1400
−0.8 1.7 2089
−0.9 1.7 1768
−1.0 1.6 1764
−1.0 1.6 1736
−1.3 1.7 928
−0.1 1.3 16
−0.3 1.8 342
−0.5 1.6 370
−0.8 1.8 57
−1.0 1.4 96
−1.0 1.7 122
−0.5 1.5 74
−1.0 1.6 145
−1.1 1.6 167
−0.8 1.7 322
−1.4 1.6 245
−1.5 1.6 405
−0.3 2.0 121
−0.4 1.6 405
−0.5 1.9 143
−0.5 1.4 91
−0.3 1.7 42
−0.9 1.4 90
−0.9 1.5 193
−0.5 2.1 88
−0.8 1.9 366
−1.1 1.9 174
−1.3 1.5 115
−1.4 2.0 79
−0.3 1.5 272
−0.5 1.3 248
−0.9 1.6 104
−0.9 1.5 110
−0.8 0.9 135
−1.4 2.1 71
−0.5 2.1 390
−1.0 1.7 376
−1.1 1.5 79
−0.9 1.8 117
−1.3 1.3 88
−0.6 1.7 91
−0.3 1.6 425
−0.4 1.8 150
−0.5 1.8 149
−0.6 1.1 119
−0.7 0.8 261
−0.7 1.8 213
−0.8 1.4 166
−1.1 1.2 27
−0.8 1.5 133
−0.8 1.6 161
−0.2 1.9 246
−0.6 1.9 164

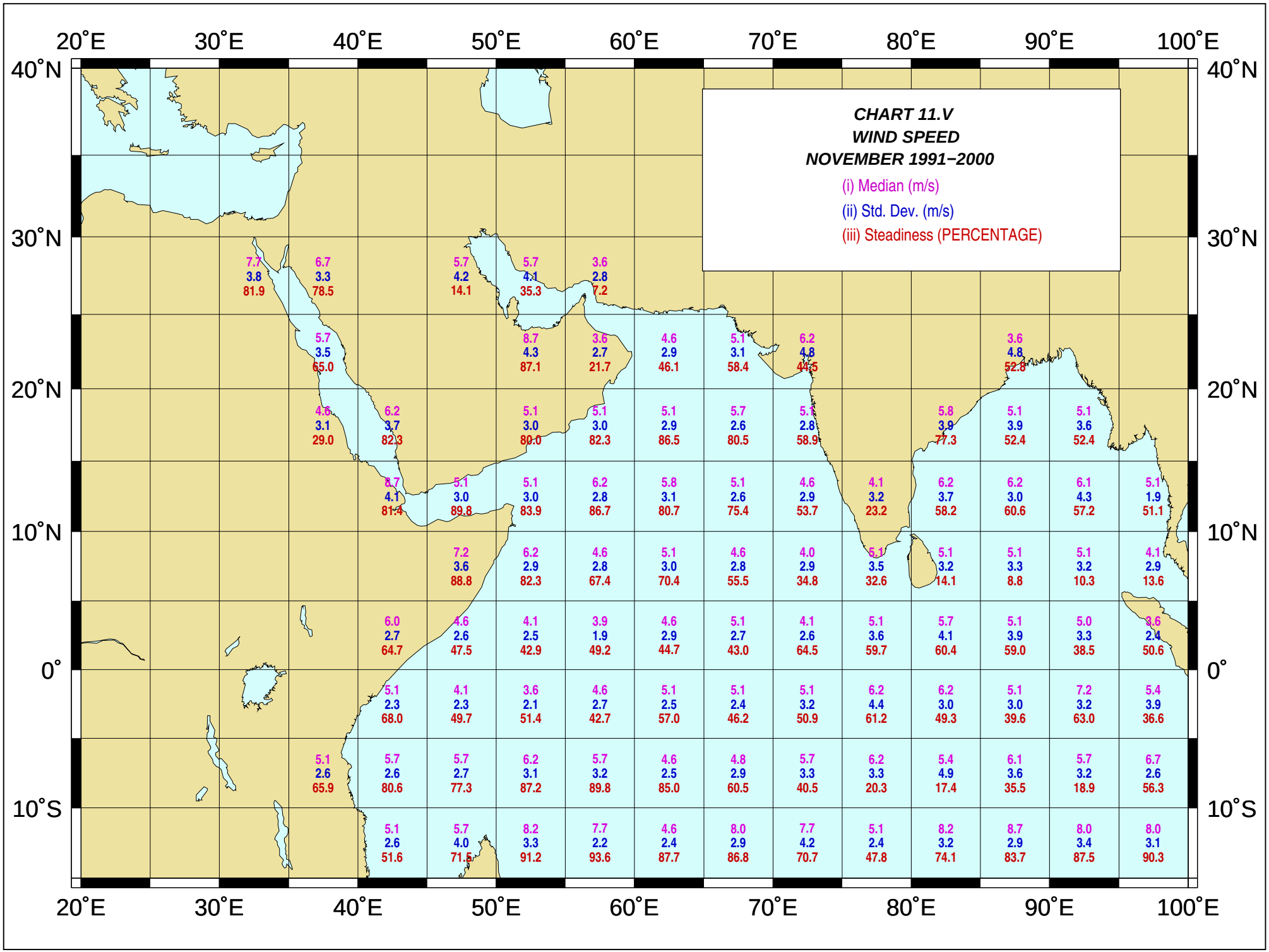


CHART 11.V
WIND SPEED
NOVEMBER 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 3.8 81.9
6.7 3.3 78.5
5.7 4.2 14.1
5.7 4.1 35.3
3.6 2.8 7.2
5.7 3.5 65.0
8.7 4.3 87.1
3.6 2.7 21.7
4.6 2.9 46.1
5.1 3.1 58.4
6.2 4.8 44.5
3.6 4.8 52.8
4.6 3.1 29.0
6.2 3.7 82.3
5.1 3.0 80.0
5.1 3.0 82.3
5.1 2.9 86.5
5.7 2.6 80.5
5.1 2.8 58.9
5.8 3.9 77.3
5.1 3.9 52.4
5.1 3.6 52.4
8.7 4.1 81.4
5.1 3.0 89.8
5.1 3.0 83.9
6.2 2.8 86.7
5.8 3.1 80.7
5.1 2.6 75.4
4.6 2.9 53.7
4.1 3.2 23.2
6.2 3.7 58.2
6.2 3.0 60.6
6.1 4.3 57.2
5.1 1.9 51.1
7.2 3.6 88.8
6.2 2.9 82.3
4.6 2.8 67.4
5.1 3.0 70.4
4.6 2.8 55.5
4.0 2.9 34.8
5.1 3.5 32.6
5.1 3.2 14.1
5.1 3.3 8.8
5.1 3.2 10.3
4.1 2.9 13.6
6.0 2.7 64.7
4.6 2.6 47.5
4.1 2.5 42.9
3.9 1.9 49.2
4.6 2.9 44.7
5.1 2.7 43.0
4.1 2.6 64.5
5.1 3.6 59.7
5.7 4.1 60.4
5.1 3.9 59.0
5.0 3.3 38.5
3.6 2.4 50.6
5.1 2.3 68.0
4.1 2.3 49.7
3.6 2.1 51.4
4.6 2.7 42.7
5.1 2.5 57.0
5.1 2.4 46.2
5.1 3.2 50.9
6.2 4.4 61.2
6.2 3.0 49.3
5.1 3.0 39.6
7.2 3.2 63.0
5.4 3.9 36.6
5.1 2.6 65.9
5.7 2.6 80.6
5.7 2.7 77.3
6.2 3.1 87.2
5.7 3.2 89.8
4.6 2.5 85.0
4.8 2.9 60.5
5.7 3.3 40.5
6.2 3.3 20.3
5.4 4.9 17.4
6.1 3.6 35.5
5.7 3.2 18.9
6.7 2.6 56.3
5.1 2.6 51.6
5.7 4.0 71.5
8.2 3.3 91.2
7.7 2.2 93.6
4.6 2.4 87.7
8.0 2.9 86.8
7.7 4.2 70.7
5.1 2.4 47.8
8.2 3.2 74.1
8.7 2.9 83.7
8.0 3.4 87.5
8.0 3.1 90.3

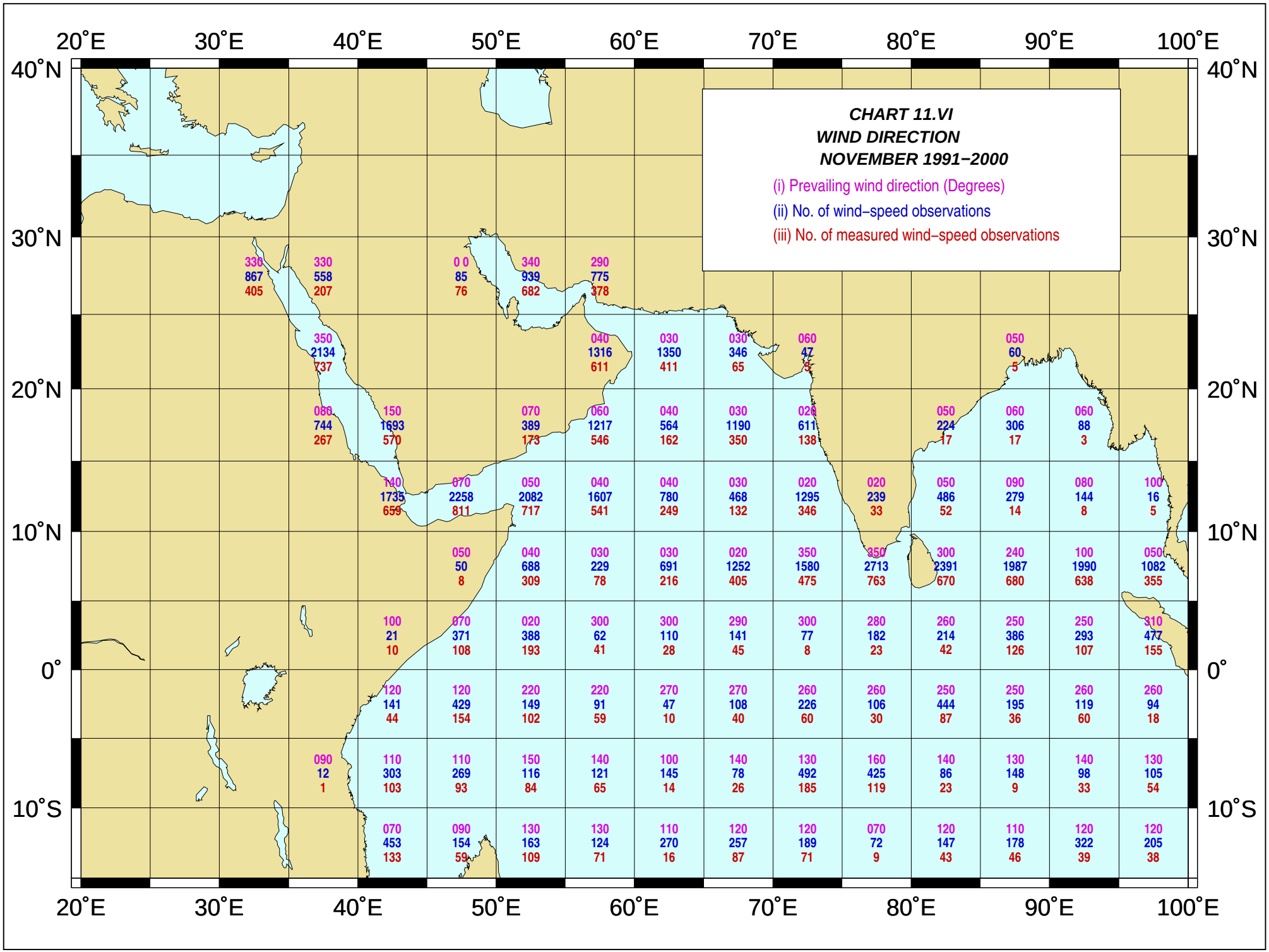


CHART 11.VI
WIND DIRECTION
NOVEMBER 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
330 867 405
330 558 207
0 0 85 76
340 939 682
290 775 378
350 2134 737
040 1316 611
030 1350 411
030 346 65
060 47 5
050 60 5
080 744 267
150 1693 570
070 389 173
060 1217 546
040 564 162
030 1190 350
020 611 138
050 224 17
060 306 17
060 88 3
140 1735 659
070 2258 811
050 2082 717
040 1607 541
040 780 249
030 468 132
020 1295 346
020 239 33
050 486 52
090 279 14
080 144 8
100 16 5
050 50 8
040 688 309
030 229 78
030 691 216
020 1252 405
350 1580 475
350 2713 763
300 2391 670
240 1987 680
100 1990 638
050 1082 355
100 21 10
070 371 108
020 388 193
300 62 41
300 110 28
290 141 45
300 77 8
280 182 23
260 214 42
250 386 126
250 293 107
310 477 155
120 141 44
120 429 154
220 149 102
220 91 59
270 47 10
270 108 40
260 226 60
260 106 30
250 444 87
250 195 36
260 119 60
260 94 18
090 12 1
110 303 103
110 269 93
150 116 84
140 121 65
100 145 14
140 78 26
130 492 185
160 425 119
140 86 23
130 148 9
140 98 33
130 105 54
070 453 133
090 154 59
130 163 109
130 124 71
110 270 16
120 257 87
120 189 71
070 72 9
120 147 43
110 178 46
120 322 39
120 205 38

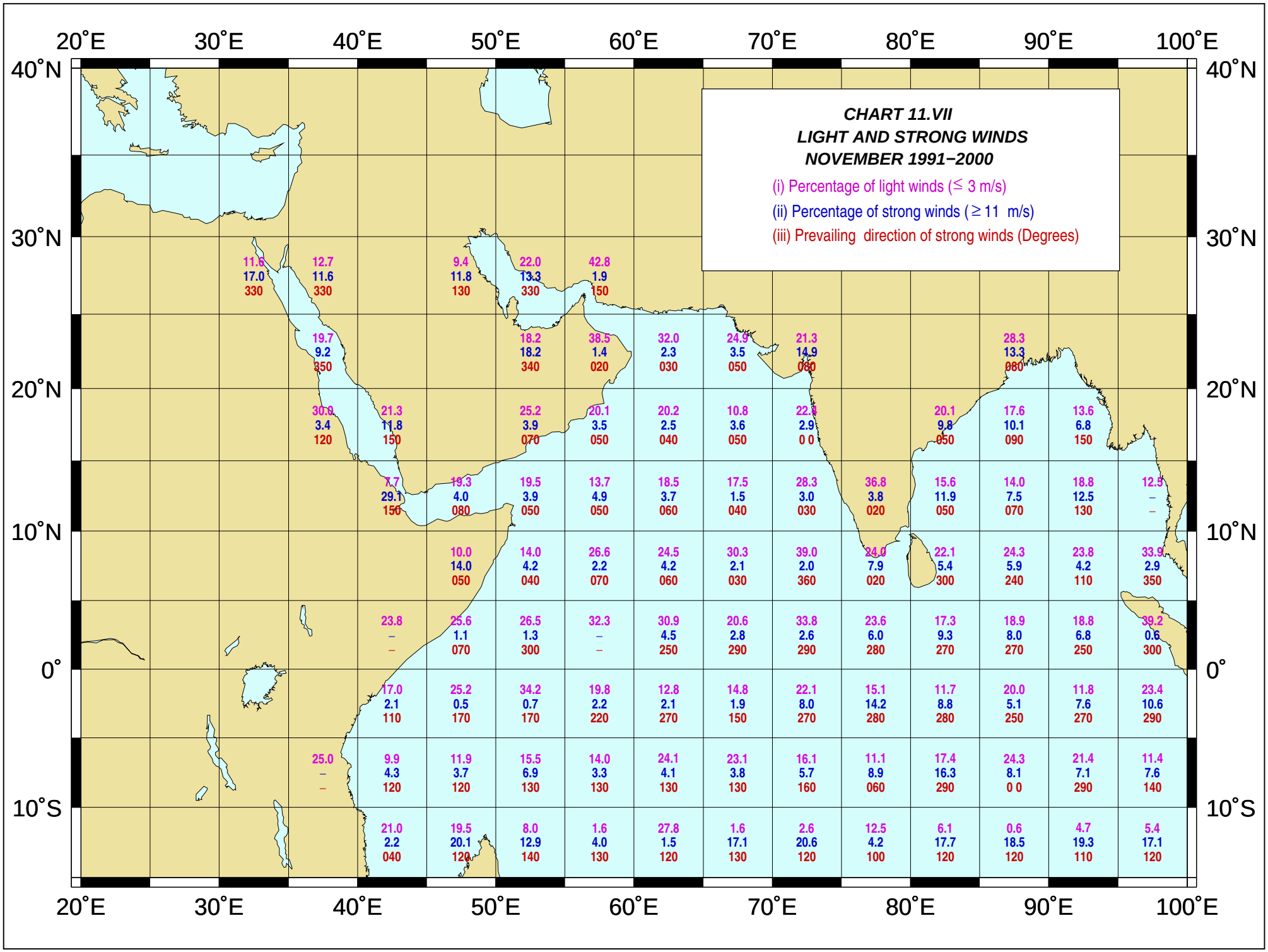


CHART 11.VII
LIGHT AND STRONG WINDS
NOVEMBER 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
11.6 17.0 330
12.7 11.6 330
9.4 11.8 130
22.0 13.3 330
42.8 1.9 150
19.7 9.2 350
18.2 18.2 340
38.5 1.4 020
32.0 2.3 030
24.9 3.5 050
21.3 14.9 060
28.3 13.3 080
30.0 3.4 120
21.3 11.8 150
25.2 3.9 070
20.1 3.5 050
20.2 2.5 040
10.8 3.6 050
22.9 2.9 0 0
20.1 9.8 050
17.6 10.1 090
13.6 6.8 150
7.7 29.1 150
19.3 4.0 080
19.5 3.9 050
13.7 4.9 050
18.5 3.7 060
17.5 1.5 040
28.3 3.0 030
36.8 3.8 020
15.6 11.9 050
14.0 7.5 070
18.8 12.5 130
12.5 – –
10.0 14.0 050
14.0 4.2 040
26.6 2.2 070
24.5 4.2 060
30.3 2.1 030
39.0 2.0 360
24.0 7.9 020
22.1 5.4 300
24.3 5.9 240
23.8 4.2 110
33.9 2.9 350
23.8 – –
25.6 1.1 070
26.5 1.3 300
32.3 – –
30.9 4.5 250
20.6 2.8 290
33.8 2.6 290
23.6 6.0 280
17.3 9.3 270
18.9 8.0 270
18.8 6.8 250
39.2 0.6 300
17.0 2.1 110
25.2 0.5 170
34.2 0.7 170
19.8 2.2 220
12.8 2.1 270
14.8 1.9 150
22.1 8.0 270
15.1 14.2 280
11.7 8.8 280
20.0 5.1 250
11.8 7.6 270
23.4 10.6 290
25.0 – –
9.9 4.3 120
11.9 3.7 120
15.5 6.9 130
14.0 3.3 130
24.1 4.1 130
23.1 3.8 130
16.1 5.7 160
11.1 8.9 060
17.4 16.3 290
24.3 8.1 0 0
21.4 7.1 290
11.4 7.6 140
21.0 2.2 040
19.5 20.1 120
8.0 12.9 140
1.6 4.0 130
27.8 1.5 120
1.6 17.1 130
2.6 20.6 120
12.5 4.2 100
6.1 17.7 120
0.6 18.5 120
4.7 19.3 110
5.4 17.1 120

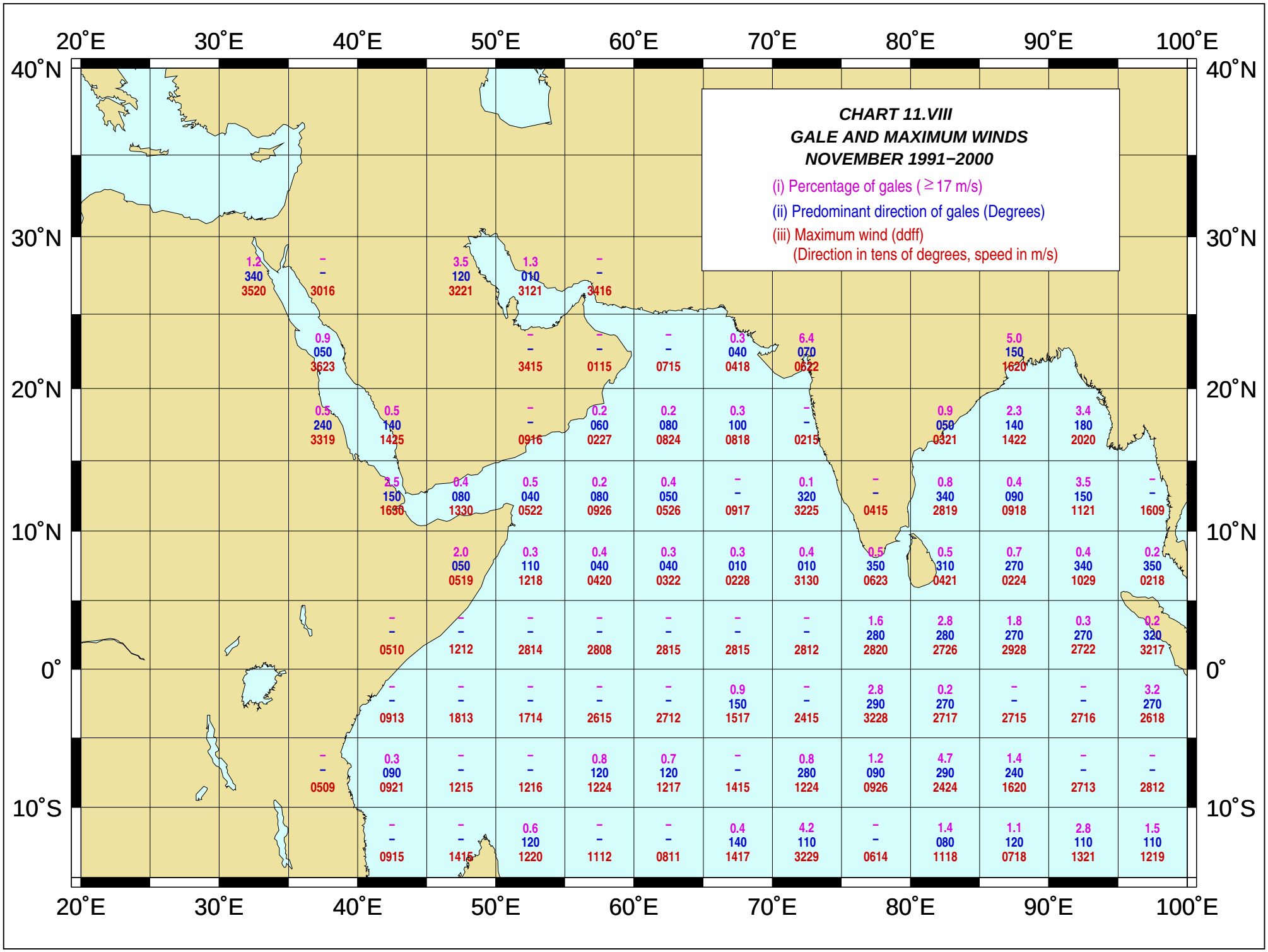


CHART 11.VIII
GALE AND MAXIMUM WINDS
NOVEMBER 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.2 340 3520
– – 3016
3.5 120 3221
1.3 010 3121
– – 3416
0.9 050 3623
– – 3415
– – 0115
– – 0715
0.3 040 0418
6.4 070 0622
5.0 150 1620
0.5 240 3319
0.5 140 1425
– – 0916
0.2 060 0227
0.2 080 0824
0.3 100 0818
– – 0215
0.9 050 0321
2.3 140 1422
3.4 180 2020
2.5 150 1636
0.4 080 1330
0.5 040 0522
0.2 080 0926
0.4 050 0526
– – 0917
0.1 320 3225
– – 0415
0.8 340 2819
0.4 090 0918
3.5 150 1121
– – 1609
2.0 050 0519
0.3 110 1218
0.4 040 0420
0.3 040 0322
0.3 010 0228
0.4 010 3130
0.5 350 0623
0.5 310 0421
0.7 270 0224
0.4 340 1029
0.2 350 0218
– – 0510
– – 1212
– – 2814
– – 2808
– – 2815
– – 2815
– – 2812
1.6 280 2820
2.8 280 2726
1.8 270 2928
0.3 270 2722
0.2 320 3217
– – 0913
– – 1813
– – 1714
– – 2615
– – 2712
0.9 150 1517
– – 2415
2.8 290 3228
0.2 270 2717
– – 2715
– – 2716
3.2 270 2618
– – 0509
0.3 090 0921
– – 1215
– – 1216
0.8 120 1224
0.7 120 1217
– – 1415
0.8 280 1224
1.2 090 0926
4.7 290 2424
1.4 240 1620
– – 2713
– – 2812
– – 0915
– – 1415
0.6 120 1220
– – 1112
– – 0811
0.4 140 1417
4.2 110 3229
– – 0614
1.4 080 1118
1.1 120 0718
2.8 110 1321
1.5 110 1219

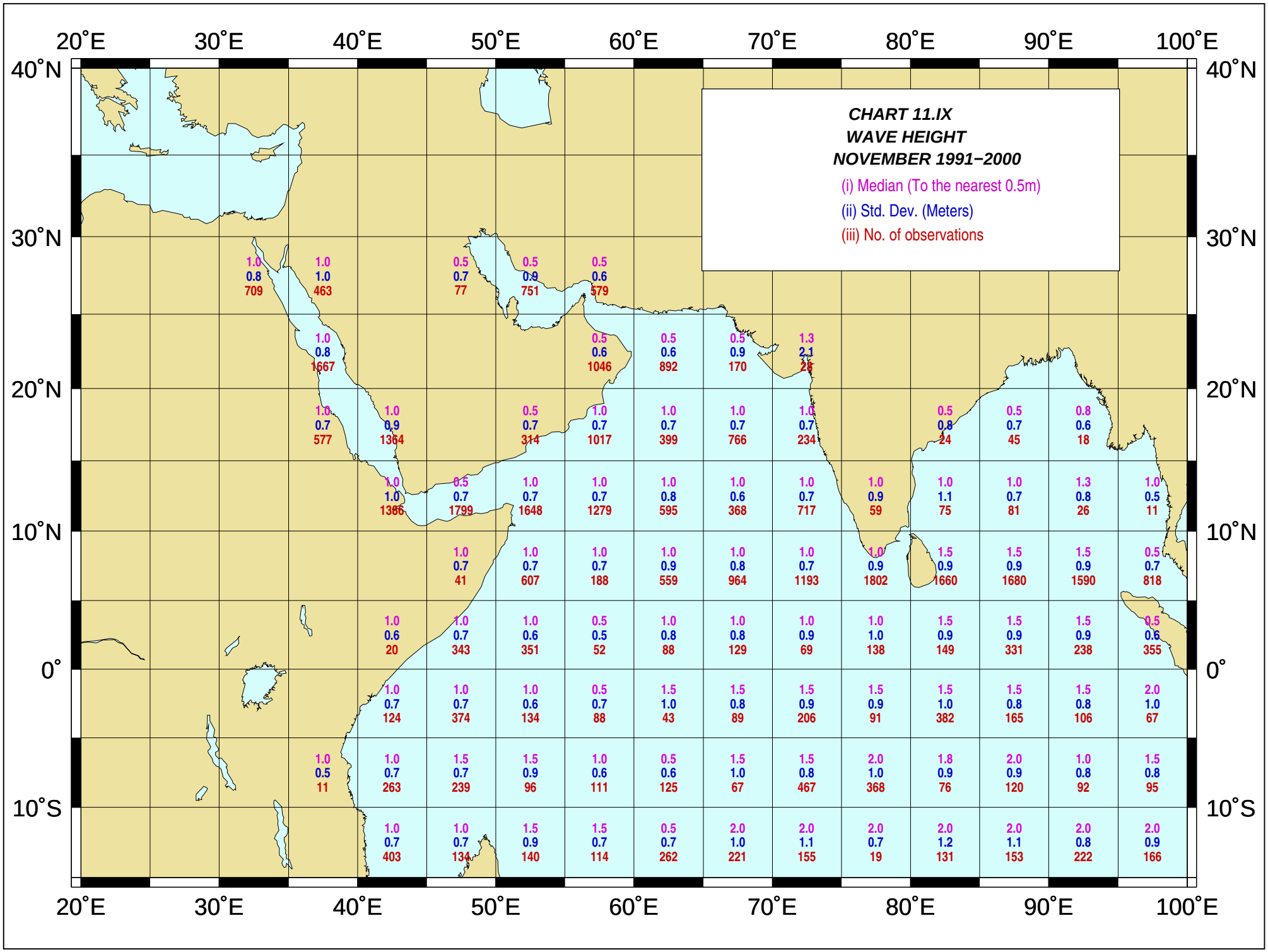


CHART 11.IX
WAVE HEIGHT
NOVEMBER 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.8 709
1.0 1.0 463
0.5 0.7 77
0.5 0.9 751
0.5 0.6 579
1.0 0.8 1667
0.5 0.6 1046
0.5 0.6 892
0.5 0.9 170
1.3 2.1 26
1.0 0.7 577
1.0 0.9 1364
0.5 0.7 314
1.0 0.7 1017
1.0 0.7 399
1.0 0.7 766
1.0 0.7 234
0.5 0.8 24
0.5 0.7 45
0.8 0.6 18
1.0 1.0 1366
0.5 0.7 1799
1.0 0.7 1648
1.0 0.7 1279
1.0 0.8 595
1.0 0.6 368
1.0 0.7 717
1.0 0.9 59
1.0 1.1 75
1.0 0.7 81
1.3 0.8 26
1.0 0.5 11
1.0 0.7 41
1.0 0.7 607
1.0 0.7 188
1.0 0.9 559
1.0 0.8 964
1.0 0.7 1193
1.0 0.9 1802
1.5 0.9 1660
1.5 0.9 1680
1.5 0.9 1590
0.5 0.7 818
1.0 0.6 20
1.0 0.7 343
1.0 0.6 351
0.5 0.5 52
1.0 0.8 88
1.0 0.8 129
1.0 0.9 69
1.0 1.0 138
1.5 0.9 149
1.5 0.9 331
1.5 0.9 238
0.5 0.6 355
1.0 0.7 124
1.0 0.7 374
1.0 0.6 134
0.5 0.7 88
1.5 1.0 43
1.5 0.8 89
1.5 0.9 206
1.5 0.9 91
1.5 1.0 382
1.5 0.8 165
1.5 0.8 106
2.0 1.0 67
1.0 0.5 11
1.0 0.7 263
1.5 0.7 239
1.5 0.9 96
1.0 0.6 111
0.5 0.6 125
1.5 1.0 67
1.5 0.8 467
2.0 1.0 368
1.8 0.9 76
2.0 0.9 120
1.0 0.8 92
1.5 0.8 95
1.0 0.7 403
1.0 0.7 134
1.5 0.9 140
1.5 0.7 114
0.5 0.7 262
2.0 1.0 221
2.0 1.1 155
2.0 0.7 19
2.0 1.2 131
2.0 1.1 153
2.0 0.8 222
2.0 0.9 166

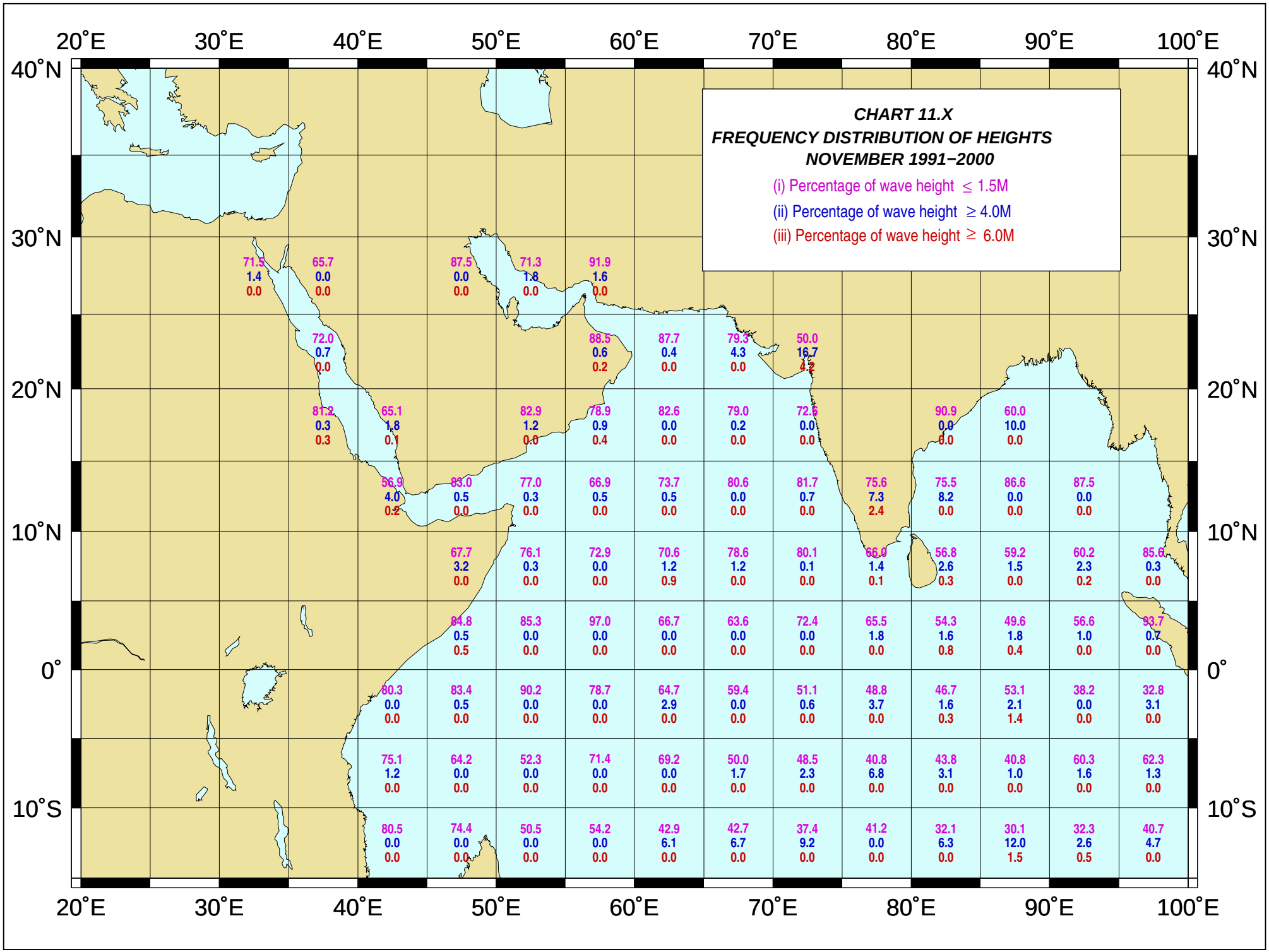


CHART 11.X
FREQUENCY DISTRIBUTION OF HEIGHTS
NOVEMBER 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
71.5 1.4 0.0
65.7 0.0 0.0
87.5 0.0 0.0
71.3 1.8 0.0
91.9 1.6 0.0
72.0 0.7 0.0
88.5 0.6 0.2
87.7 0.4 0.0
79.3 4.3 0.0
50.0 16.7 4.2
81.2 0.3 0.3
65.1 1.8 0.1
82.9 1.2 0.0
78.9 0.9 0.4
82.6 0.0 0.0
79.0 0.2 0.0
72.6 0.0 0.0
90.9 0.0 0.0
60.0 10.0 0.0
56.9 4.0 0.2
83.0 0.5 0.0
77.0 0.3 0.0
66.9 0.5 0.0
73.7 0.5 0.0
80.6 0.0 0.0
81.7 0.7 0.0
75.6 7.3 2.4
75.5 8.2 0.0
86.6 0.0 0.0
87.5 0.0 0.0
67.7 3.2 0.0
76.1 0.3 0.0
72.9 0.0 0.0
70.6 1.2 0.9
78.6 1.2 0.0
80.1 0.1 0.0
66.0 1.4 0.1
56.8 2.6 0.3
59.2 1.5 0.0
60.2 2.3 0.2
85.6 0.3 0.0
84.8 0.5 0.5
85.3 0.0 0.0
97.0 0.0 0.0
66.7 0.0 0.0
63.6 0.0 0.0
72.4 0.0 0.0
65.5 1.8 0.0
54.3 1.6 0.8
49.6 1.8 0.4
56.6 1.0 0.0
93.7 0.7 0.0
80.3 0.0 0.0
83.4 0.5 0.0
90.2 0.0 0.0
78.7 0.0 0.0
64.7 2.9 0.0
59.4 0.0 0.0
51.1 0.6 0.0
48.8 3.7 0.0
46.7 1.6 0.3
53.1 2.1 1.4
38.2 0.0 0.0
32.8 3.1 0.0
75.1 1.2 0.0
64.2 0.0 0.0
52.3 0.0 0.0
71.4 0.0 0.0
69.2 0.0 0.0
50.0 1.7 0.0
48.5 2.3 0.0
40.8 6.8 0.0
43.8 3.1 0.0
40.8 1.0 0.0
60.3 1.6 0.0
62.3 1.3 0.0
80.5 0.0 0.0
74.4 0.0 0.0
50.5 0.0 0.0
54.2 0.0 0.0
42.9 6.1 0.0
42.7 6.7 0.0
37.4 9.2 0.0
41.2 0.0 0.0
32.1 6.3 0.0
30.1 12.0 1.5
32.3 2.6 0.5
40.7 4.7 0.0

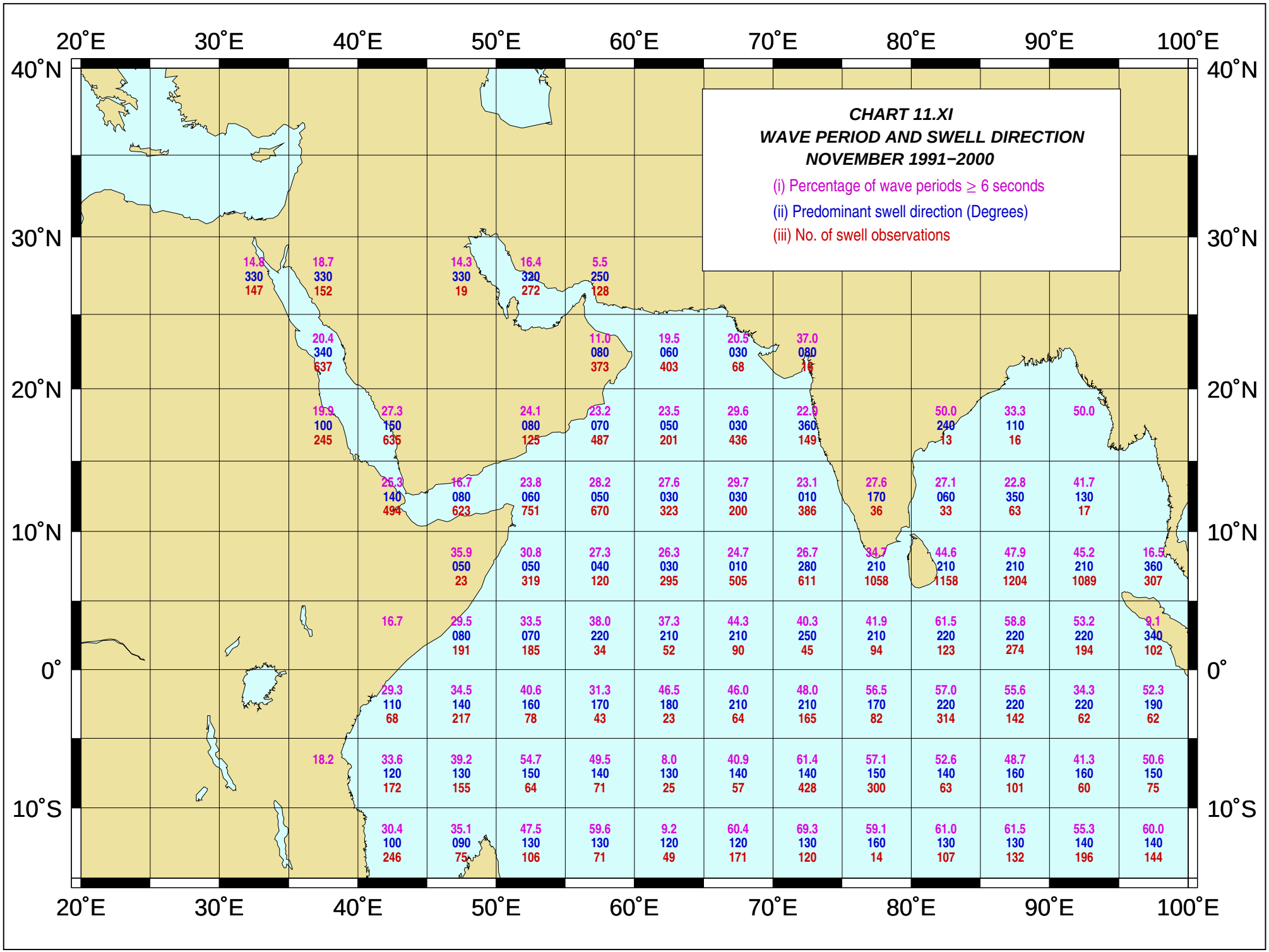


CHART 11.XI
WAVE PERIOD AND SWELL DIRECTION
NOVEMBER 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
14.8 330 147
18.7 330 152
14.3 330 19
16.4 320 272
5.5 250 128
20.4 340 637
11.0 080 373
19.5 060 403
20.5 030 68
37.0 080 16
19.9 100 245
27.3 150 635
24.1 080 125
23.2 070 487
23.5 050 201
29.6 030 436
22.9 360 149
50.0 240 13
33.3 110 16
50.0
25.3 140 494
16.7 080 623
23.8 060 751
28.2 050 670
27.6 030 323
29.7 030 200
23.1 010 386
27.6 170 36
27.1 060 33
22.8 350 63
41.7 130 17
35.9 050 23
30.8 050 319
27.3 040 120
26.3 030 295
24.7 010 505
26.7 280 611
34.7 210 1058
44.6 210 1158
47.9 210 1204
45.2 210 1089
16.5 360 307
16.7
29.5 080 191
33.5 070 185
38.0 220 34
37.3 210 52
44.3 210 90
40.3 250 45
41.9 210 94
61.5 220 123
58.8 220 274
53.2 220 194
9.1 340 102
29.3 110 68
34.5 140 217
40.6 160 78
31.3 170 43
46.5 180 23
46.0 210 64
48.0 210 165
56.5 170 82
57.0 220 314
55.6 220 142
34.3 220 62
52.3 190 62
18.2
33.6 120 172
39.2 130 155
54.7 150 64
49.5 140 71
8.0 130 25
40.9 140 57
61.4 140 428
57.1 150 300
52.6 140 63
48.7 160 101
41.3 160 60
50.6 150 75
30.4 100 246
35.1 090 75
47.5 130 106
59.6 130 71
9.2 120 49
60.4 120 171
69.3 130 120
59.1 160 14
61.0 130 107
61.5 130 132
55.3 140 196
60.0 140 144

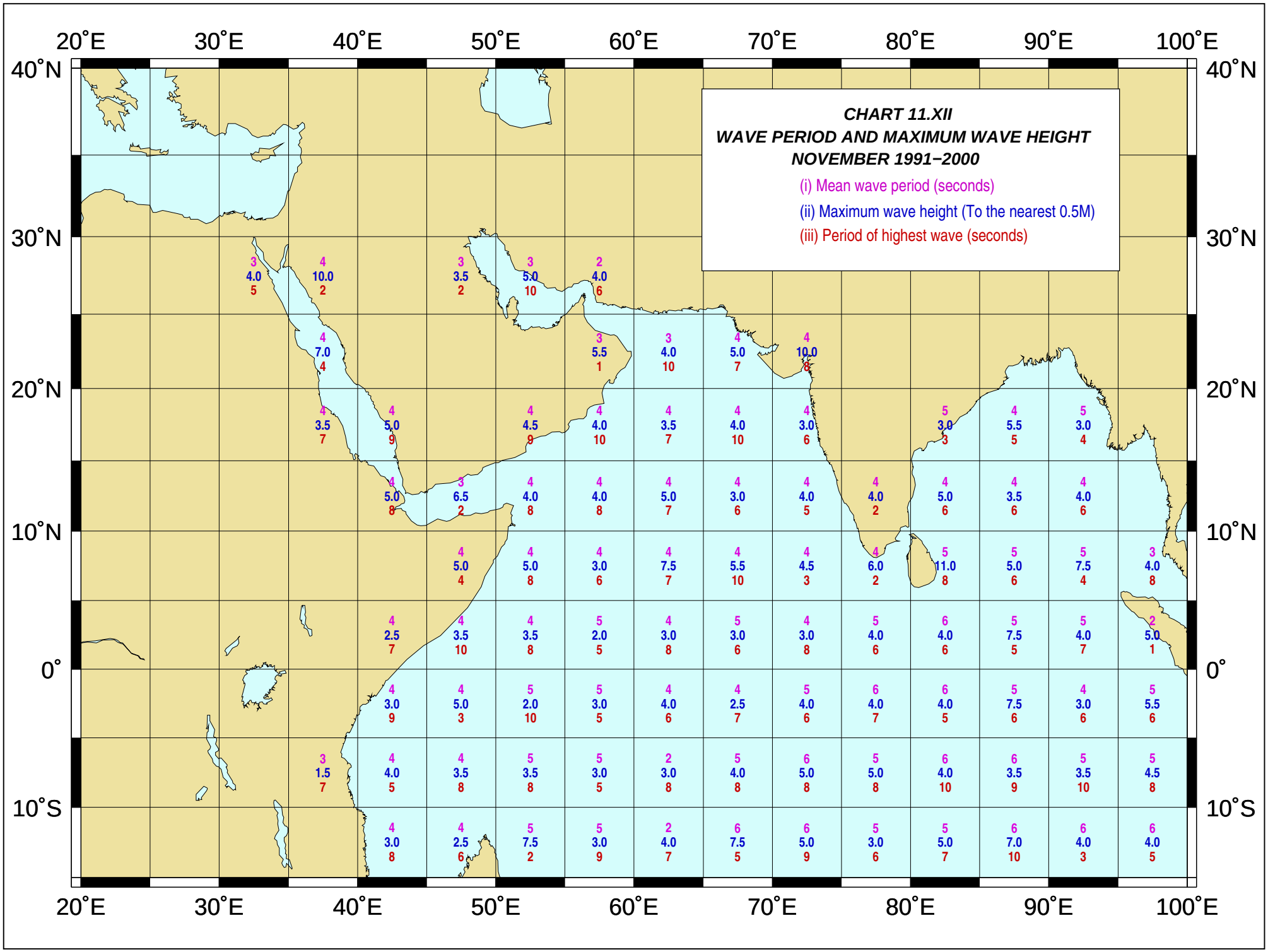


CHART 11.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
NOVEMBER 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
3 4.0 5
4 10.0 2
3 3.5 2
3 5.0 10
2 4.0 6
4 7.0 4
3 5.5 1
3 4.0 10
4 5.0 7
4 10.0 8
4 3.5 7
4 5.0 9
4 4.5 9
4 4.0 10
4 3.5 7
4 4.0 10
4 3.0 6
5 3.0 3
4 5.5 5
5 3.0 4
4 5.0 8
3 6.5 2
4 4.0 8
4 4.0 8
4 5.0 7
4 3.0 6
4 4.0 5
4 4.0 2
4 5.0 6
4 3.5 6
4 4.0 6
4 5.0 4
4 5.0 8
4 3.0 6
4 7.5 7
4 5.5 10
4 4.5 3
4 6.0 2
5 11.0 8
5 5.0 6
5 7.5 4
3 4.0 8
4 2.5 7
4 3.5 10
4 3.5 8
5 2.0 5
4 3.0 8
5 3.0 6
4 3.0 8
5 4.0 6
6 4.0 6
5 7.5 5
5 4.0 7
2 5.0 1
4 3.0 9
4 5.0 3
5 2.0 10
5 3.0 5
4 4.0 6
4 2.5 7
5 4.0 6
6 4.0 7
6 4.0 5
5 7.5 6
4 3.0 6
5 5.5 6
3 1.5 7
4 4.0 5
4 3.5 8
5 3.5 8
5 3.0 5
2 3.0 8
5 4.0 8
6 5.0 8
5 5.0 8
6 4.0 10
6 3.5 9
5 3.5 10
5 4.5 8
4 3.0 8
4 2.5 6
5 7.5 2
5 3.0 9
2 4.0 7
6 7.5 5
6 5.0 9
5 3.0 6
5 5.0 7
6 7.0 10
6 4.0 3
6 4.0 5

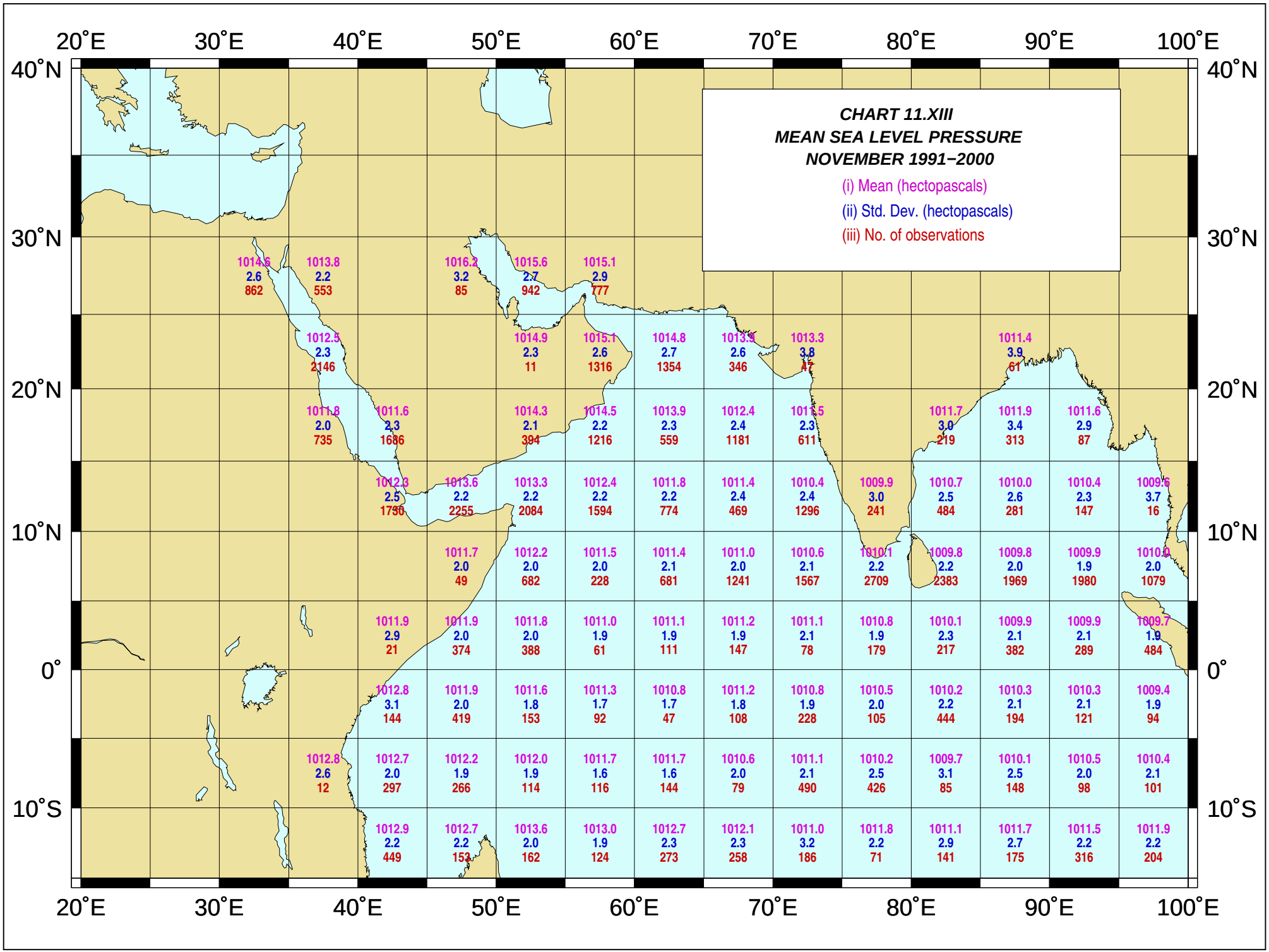


CHART 11.XIII
MEAN SEA LEVEL PRESSURE
NOVEMBER 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1014.5 2.6 862
1013.8 2.2 553
1016.2 3.2 85
1015.6 2.7 942
1015.1 2.9 777
1012.5 2.3 2146
1014.9 2.3 11
1015.1 2.6 1316
1014.8 2.7 1354
1013.9 2.6 346
1013.3 3.8 47
1011.4 3.9 61
1011.8 2.0 735
1011.6 2.3 1686
1014.3 2.1 394
1014.5 2.2 1216
1013.9 2.3 559
1012.4 2.4 1181
1011.5 2.3 611
1011.7 3.0 219
1011.9 3.4 313
1011.6 2.9 87
1012.3 2.5 1736
1013.6 2.2 2255
1013.3 2.2 2084
1012.4 2.2 1594
1011.8 2.2 774
1011.4 2.4 469
1010.4 2.4 1296
1009.9 3.0 241
1010.7 2.5 484
1010.0 2.6 281
1010.4 2.3 147
1009.6 3.7 16
1011.7 2.0 49
1012.2 2.0 682
1011.5 2.0 228
1011.4 2.1 681
1011.0 2.0 1241
1010.6 2.1 1567
1010.1 2.2 2709
1009.8 2.2 2383
1009.8 2.0 1969
1009.9 1.9 1980
1010.0 2.0 1079
1011.9 2.9 21
1011.9 2.0 374
1011.8 2.0 388
1011.0 1.9 61
1011.1 1.9 111
1011.2 1.9 147
1011.1 2.1 78
1010.8 1.9 179
1010.1 2.3 217
1009.9 2.1 382
1009.9 2.1 289
1009.7 1.9 484
1012.8 3.1 144
1011.9 2.0 419
1011.6 1.8 153
1011.3 1.7 92
1010.8 1.7 47
1011.2 1.8 108
1010.8 1.9 228
1010.5 2.0 105
1010.2 2.2 444
1010.3 2.1 194
1010.3 2.1 121
1009.4 1.9 94
1012.8 2.6 12
1012.7 2.0 297
1012.2 1.9 266
1012.0 1.9 114
1011.7 1.6 116
1011.7 1.6 144
1010.6 2.0 79
1011.1 2.1 490
1010.2 2.5 426
1009.7 3.1 85
1010.1 2.5 148
1010.5 2.0 98
1010.4 2.1 101
1012.9 2.2 449
1012.7 2.2 153
1013.6 2.0 162
1013.0 1.9 124
1012.7 2.3 273
1012.1 2.3 258
1011.0 3.2 186
1011.8 2.2 71
1011.1 2.9 141
1011.7 2.7 175
1011.5 2.2 316
1011.9 2.2 204

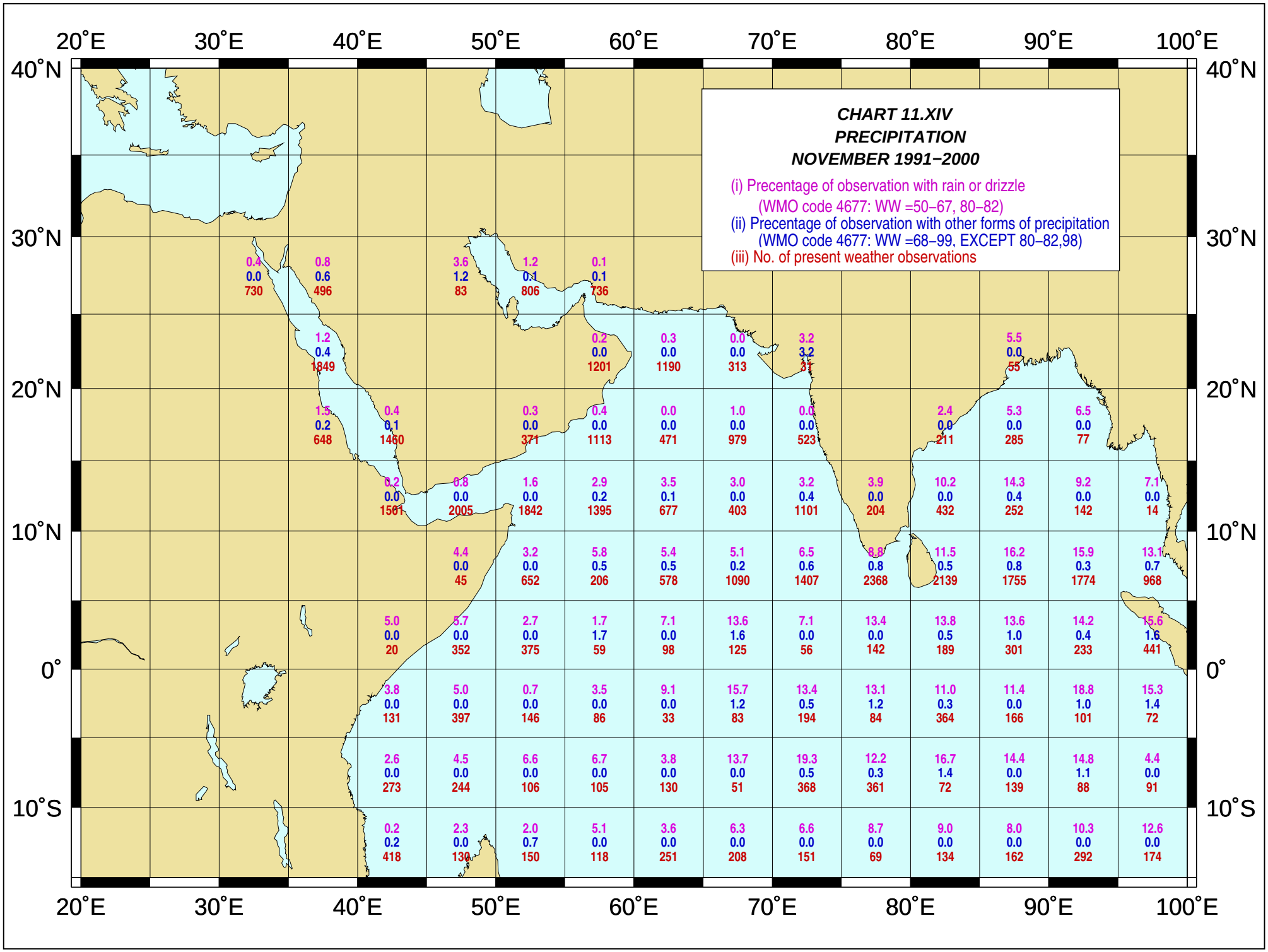


CHART 11.XIV
PRECIPITATION
NOVEMBER 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.4 0.0 730
0.8 0.6 496
3.6 1.2 83
1.2 0.1 806
0.1 0.1 736
1.2 0.4 1849
0.2 0.0 1201
0.3 0.0 1190
0.0 0.0 313
3.2 3.2 31
5.5 0.0 55
1.5 0.2 648
0.4 0.1 1460
0.3 0.0 371
0.4 0.0 1113
0.0 0.0 471
1.0 0.0 979
0.0 0.0 523
2.4 0.0 211
5.3 0.0 285
6.5 0.0 77
0.2 0.0 1501
0.8 0.0 2005
1.6 0.0 1842
2.9 0.2 1395
3.5 0.1 677
3.0 0.0 403
3.2 0.4 1101
3.9 0.0 204
10.2 0.0 432
14.3 0.4 252
9.2 0.0 142
7.1 0.0 14
4.4 0.0 45
3.2 0.0 652
5.8 0.5 206
5.4 0.5 578
5.1 0.2 1090
6.5 0.6 1407
8.8 0.8 2368
11.5 0.5 2139
16.2 0.8 1755
15.9 0.3 1774
13.1 0.7 968
5.0 0.0 20
5.7 0.0 352
2.7 0.0 375
1.7 1.7 59
7.1 0.0 98
13.6 1.6 125
7.1 0.0 56
13.4 0.0 142
13.8 0.5 189
13.6 1.0 301
14.2 0.4 233
15.6 1.6 441
3.8 0.0 131
5.0 0.0 397
0.7 0.0 146
3.5 0.0 86
9.1 0.0 33
15.7 1.2 83
13.4 0.5 194
13.1 1.2 84
11.0 0.3 364
11.4 0.0 166
18.8 1.0 101
15.3 1.4 72
2.6 0.0 273
4.5 0.0 244
6.6 0.0 106
6.7 0.0 105
3.8 0.0 130
13.7 0.0 51
19.3 0.5 368
12.2 0.3 361
16.7 1.4 72
14.4 0.0 139
14.8 1.1 88
4.4 0.0 91
0.2 0.2 418
2.3 0.0 130
2.0 0.7 150
5.1 0.0 118
3.6 0.0 251
6.3 0.0 208
6.6 0.0 151
8.7 0.0 69
9.0 0.0 134
8.0 0.0 162
10.3 0.0 292
12.6 0.0 174

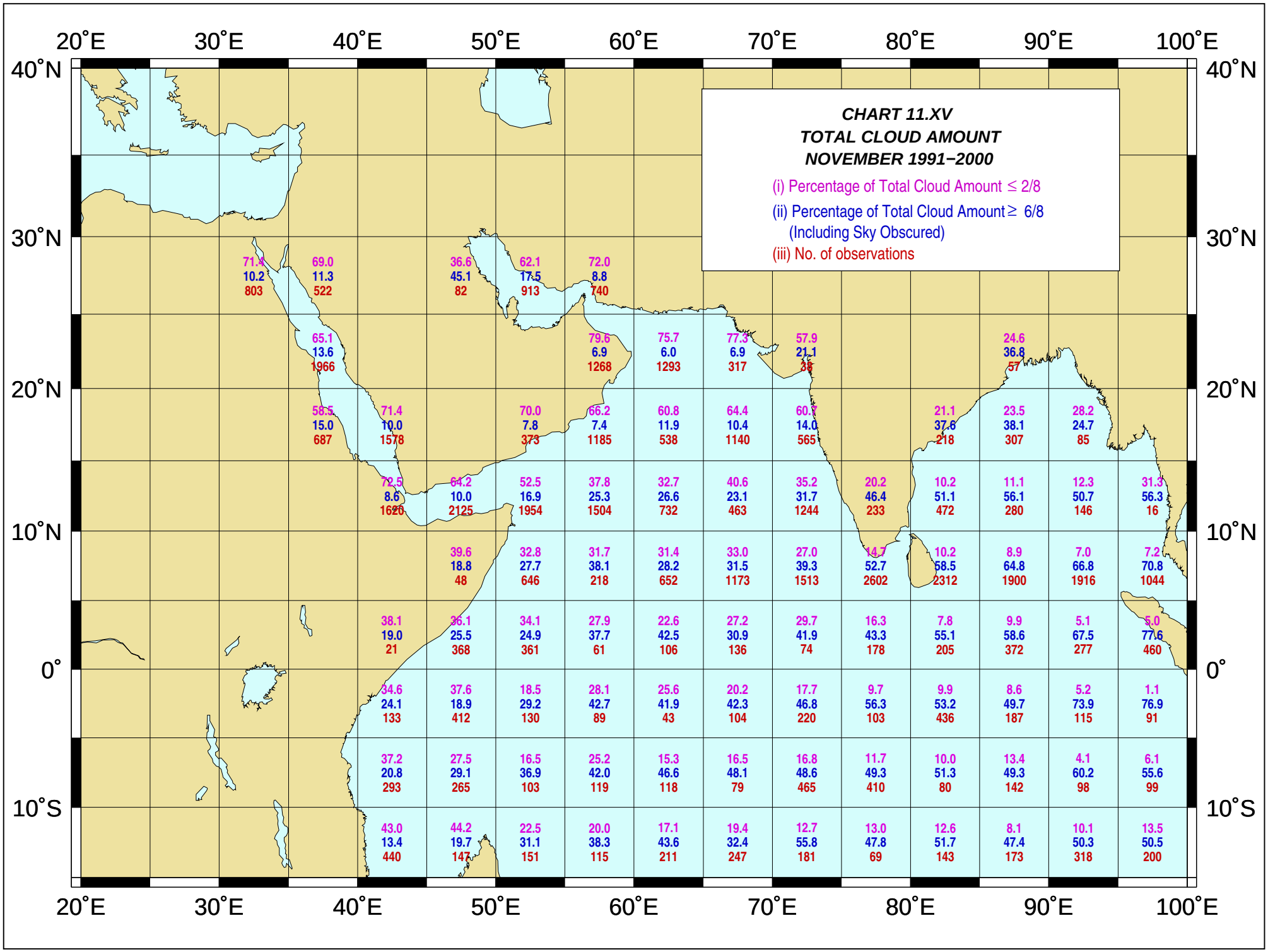


CHART 11.XV
TOTAL CLOUD AMOUNT
NOVEMBER 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
71.4 10.2 803
69.0 11.3 522
36.6 45.1 82
62.1 17.5 913
72.0 8.8 740
65.1 13.6 1966
79.6 6.9 1268
75.7 6.0 1293
77.3 6.9 317
57.9 21.1 38
24.6 36.8 57
58.5 15.0 687
71.4 10.0 1578
70.0 7.8 373
66.2 7.4 1185
60.8 11.9 538
64.4 10.4 1140
60.7 14.0 565
21.1 37.6 218
23.5 38.1 307
28.2 24.7 85
72.5 8.6 1626
64.2 10.0 2125
52.5 16.9 1954
37.8 25.3 1504
32.7 26.6 732
40.6 23.1 463
35.2 31.7 1244
20.2 46.4 233
10.2 51.1 472
11.1 56.1 280
12.3 50.7 146
31.3 56.3 16
39.6 18.8 48
32.8 27.7 646
31.7 38.1 218
31.4 28.2 652
33.0 31.5 1173
27.0 39.3 1513
14.7 52.7 2602
10.2 58.5 2312
8.9 64.8 1900
7.0 66.8 1916
7.2 70.8 1044
38.1 19.0 21
36.1 25.5 368
34.1 24.9 361
27.9 37.7 61
22.6 42.5 106
27.2 30.9 136
29.7 41.9 74
16.3 43.3 178
7.8 55.1 205
9.9 58.6 372
5.1 67.5 277
5.0 77.6 460
34.6 24.1 133
37.6 18.9 412
18.5 29.2 130
28.1 42.7 89
25.6 41.9 43
20.2 42.3 104
17.7 46.8 220
9.7 56.3 103
9.9 53.2 436
8.6 49.7 187
5.2 73.9 115
1.1 76.9 91
37.2 20.8 293
27.5 29.1 265
16.5 36.9 103
25.2 42.0 119
15.3 46.6 118
16.5 48.1 79
16.8 48.6 465
11.7 49.3 410
10.0 51.3 80
13.4 49.3 142
4.1 60.2 98
6.1 55.6 99
43.0 13.4 440
44.2 19.7 147
22.5 31.1 151
20.0 38.3 115
17.1 43.6 211
19.4 32.4 247
12.7 55.8 181
13.0 47.8 69
12.6 51.7 143
8.1 47.4 173
10.1 50.3 318
13.5 50.5 200

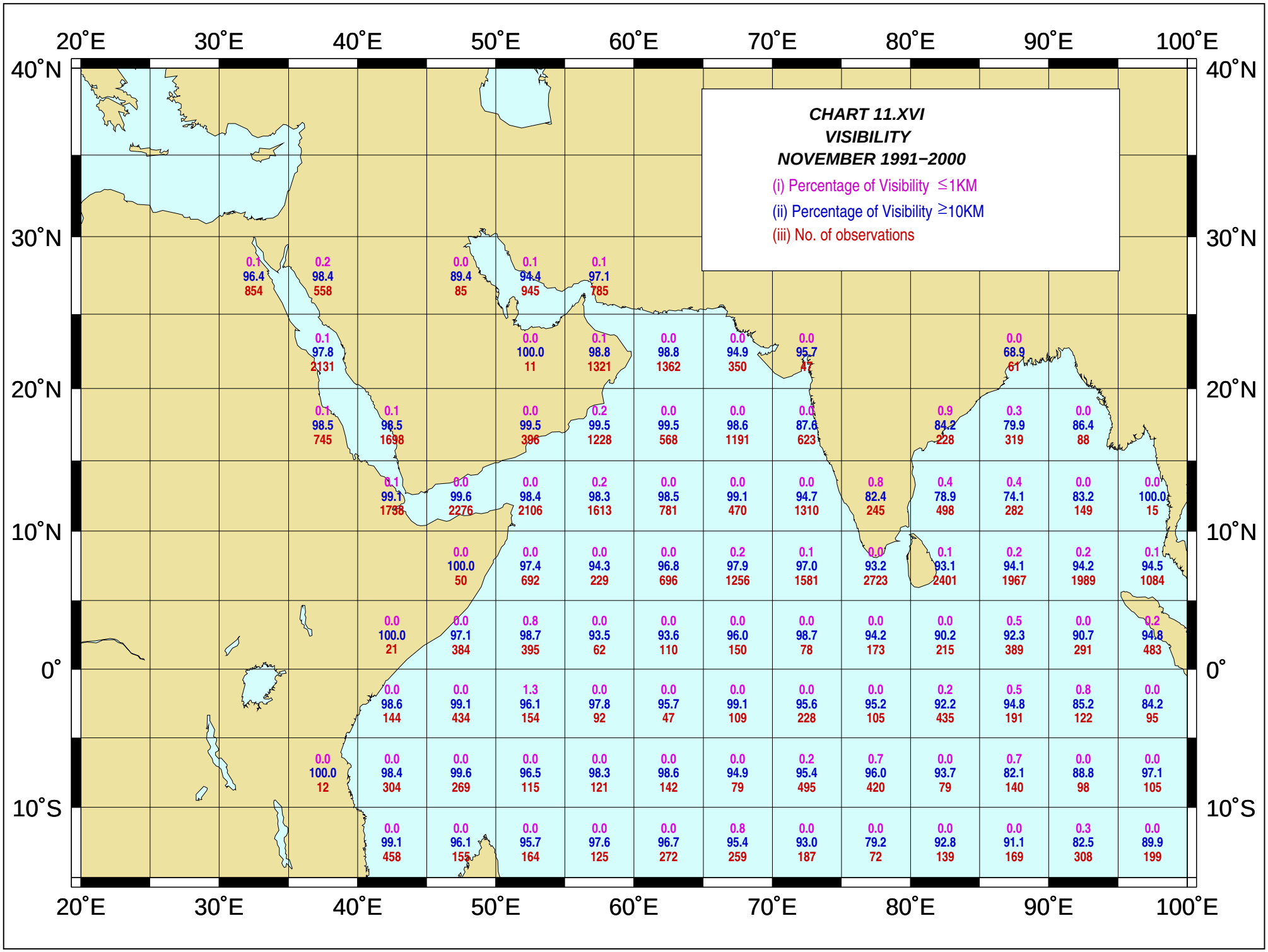


CHART 11.XVI
VISIBILITY
NOVEMBER 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 96.4 854
0.2 98.4 558
0.0 89.4 85
0.1 94.4 945
0.1 97.1 785
0.1 97.8 2131
0.0 100.0 11
0.1 98.8 1321
0.0 98.8 1362
0.0 94.9 350
0.0 95.7 47
0.0 68.9 61
0.1 98.5 745
0.1 98.5 1698
0.0 99.5 396
0.2 99.5 1228
0.0 99.5 568
0.0 98.6 1191
0.0 87.6 623
0.9 84.2 228
0.3 79.9 319
0.0 86.4 88
0.1 99.1 1738
0.0 99.6 2276
0.0 98.4 2106
0.2 98.3 1613
0.0 98.5 781
0.0 99.1 470
0.0 94.7 1310
0.8 82.4 245
0.4 78.9 498
0.4 74.1 282
0.0 83.2 149
0.0 100.0 15
0.0 100.0 50
0.0 97.4 692
0.0 94.3 229
0.0 96.8 696
0.2 97.9 1256
0.1 97.0 1581
0.0 93.2 2723
0.1 93.1 2401
0.2 94.1 1967
0.2 94.2 1989
0.1 94.5 1084
0.0 100.0 21
0.0 97.1 384
0.8 98.7 395
0.0 93.5 62
0.0 93.6 110
0.0 96.0 150
0.0 98.7 78
0.0 94.2 173
0.0 90.2 215
0.5 92.3 389
0.0 90.7 291
0.2 94.8 483
0.0 98.6 144
0.0 99.1 434
1.3 96.1 154
0.0 97.8 92
0.0 95.7 47
0.0 99.1 109
0.0 95.6 228
0.0 95.2 105
0.2 92.2 435
0.5 94.8 191
0.8 85.2 122
0.0 84.2 95
0.0 100.0 12
0.0 98.4 304
0.0 99.6 269
0.0 96.5 115
0.0 98.3 121
0.0 98.6 142
0.0 94.9 79
0.2 95.4 495
0.7 96.0 420
0.0 93.7 79
0.7 82.1 140
0.0 88.8 98
0.0 97.1 105
0.0 99.1 458
0.0 96.1 155
0.0 95.7 164
0.0 97.6 125
0.0 96.7 272
0.8 95.4 259
0.0 93.0 187
0.0 79.2 72
0.0 92.8 139
0.0 91.1 169
0.3 82.5 308
0.0 89.9 199

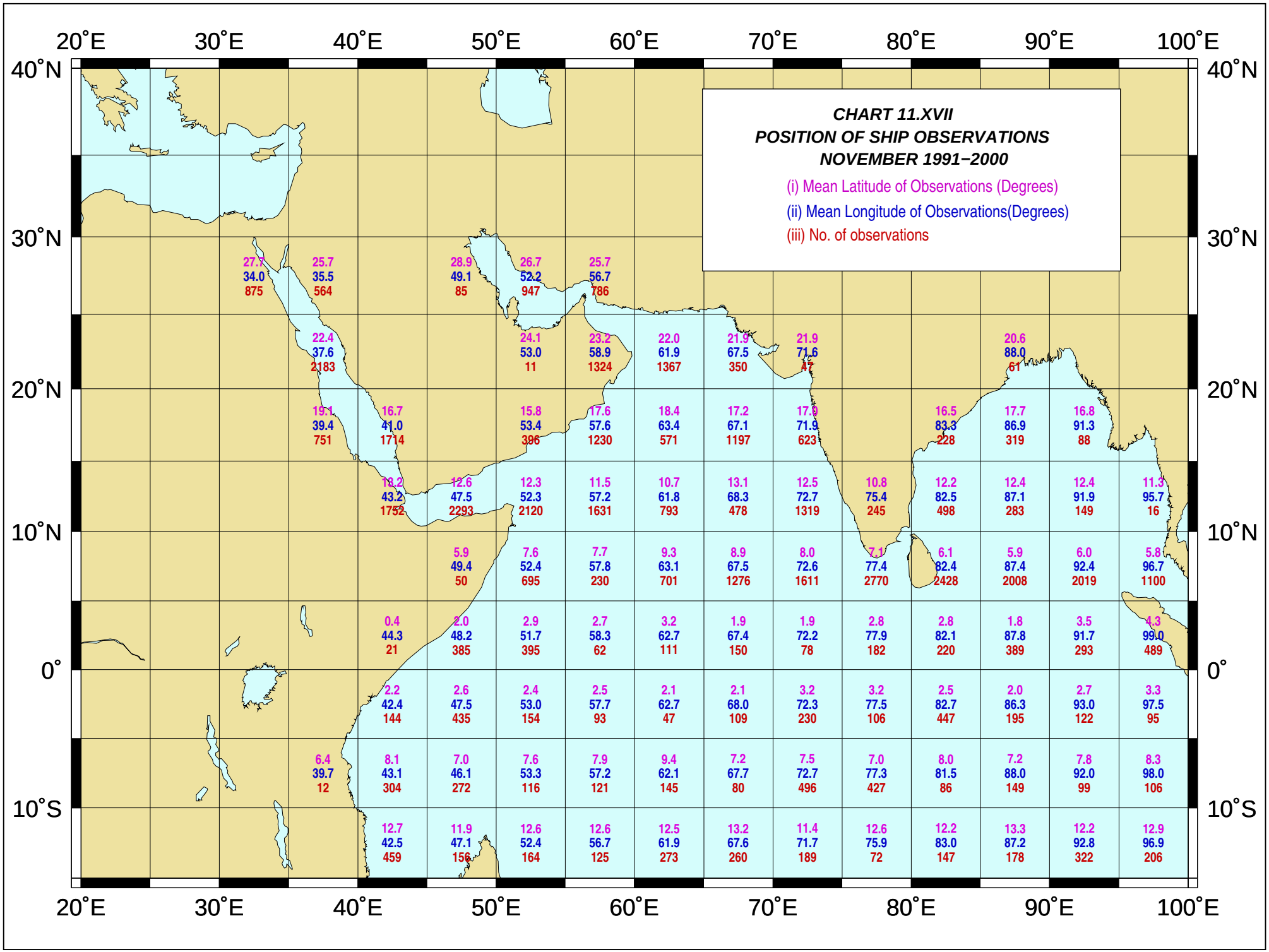


CHART 11.XVII
POSITION OF SHIP OBSERVATIONS
NOVEMBER 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.7 34.0 875
25.7 35.5 564
28.9 49.1 85
26.7 52.2 947
25.7 56.7 786
22.4 37.6 2183
24.1 53.0 11
23.2 58.9 1324
22.0 61.9 1367
21.9 67.5 350
21.9 71.6 47
20.6 88.0 61
19.1 39.4 751
16.7 41.0 1714
15.8 53.4 396
17.6 57.6 1230
18.4 63.4 571
17.2 67.1 1197
17.9 71.9 623
16.5 83.3 228
17.7 86.9 319
16.8 91.3 88
12.6 47.5 2293
12.3 52.3 2120
11.5 57.2 1631
10.7 61.8 793
13.1 68.3 478
12.5 72.7 1319
10.8 75.4 245
12.2 82.5 498
12.4 87.1 283
12.4 91.9 149
11.3 95.7 16
5.9 49.4 50
7.6 52.4 695
7.7 57.8 230
9.3 63.1 701
8.9 67.5 1276
8.0 72.6 1611
7.1 77.4 2770
6.1 82.4 2428
5.9 87.4 2008
6.0 92.4 2019
5.8 96.7 1100
0.4 44.3 21
2.0 48.2 385
2.9 51.7 395
2.7 58.3 62
3.2 62.7 111
1.9 67.4 150
1.9 72.2 78
2.8 77.9 182
2.8 82.1 220
1.8 87.8 389
3.5 91.7 293
4.3 99.0 489
2.2 42.4 144
2.6 47.5 435
2.4 53.0 154
2.5 57.7 93
2.1 62.7 47
2.1 68.0 109
3.2 72.3 230
3.2 77.5 106
2.5 82.7 447
2.0 86.3 195
2.7 93.0 122
3.3 97.5 95
6.4 39.7 12
8.1 43.1 304
7.0 46.1 272
7.6 53.3 116
7.9 57.2 121
9.4 62.1 145
7.2 67.7 80
7.5 72.7 496
7.0 77.3 427
8.0 81.5 86
7.2 88.0 149
7.8 92.0 99
8.3 98.0 106
12.7 42.5 459
11.9 47.1 156
12.6 52.4 164
12.6 56.7 125
12.5 61.9 273
13.2 67.6 260
11.4 71.7 189
12.6 75.9 72
12.2 83.0 147
13.3 87.2 178
12.2 92.8 322
12.9 96.9 206

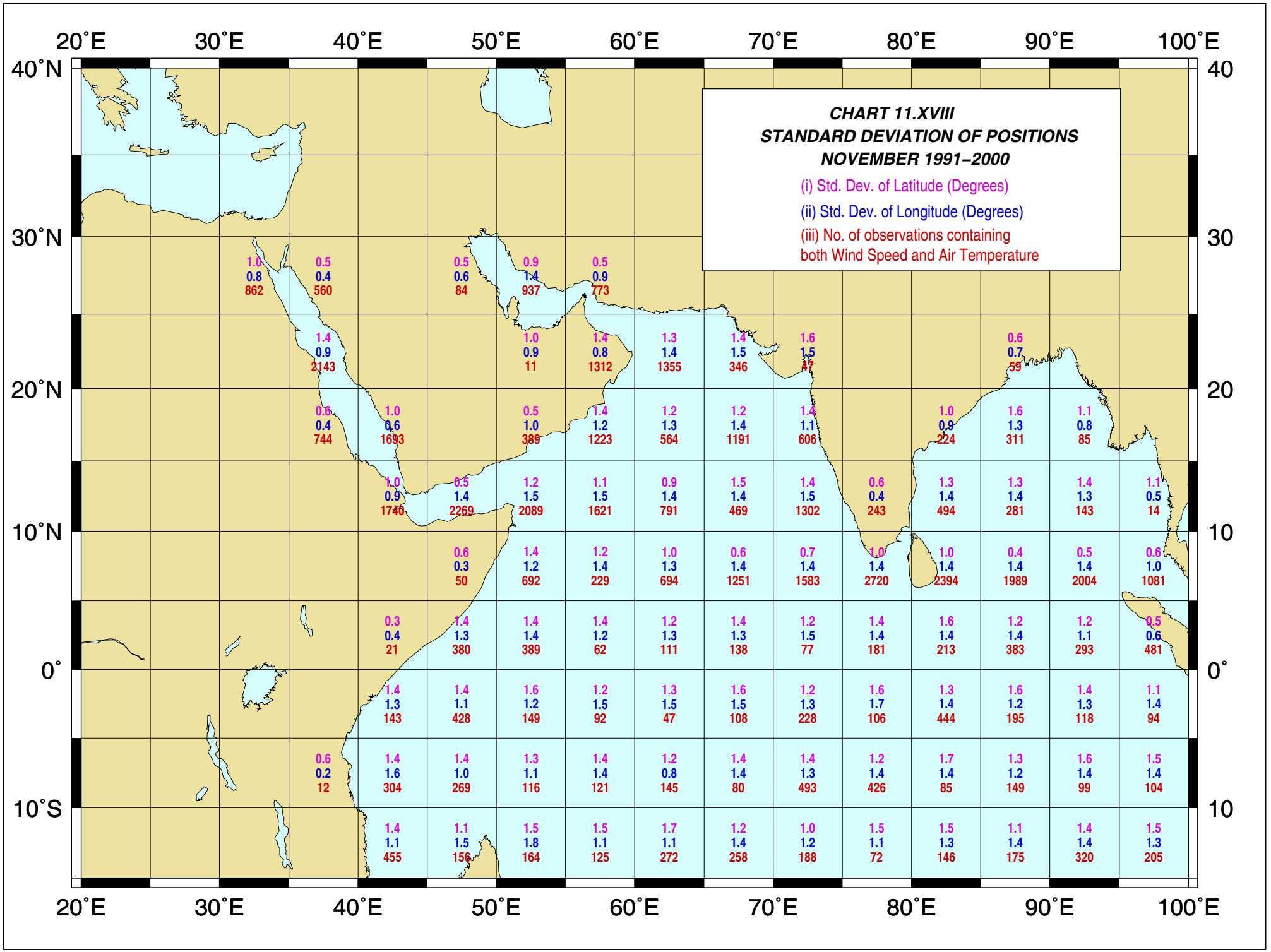
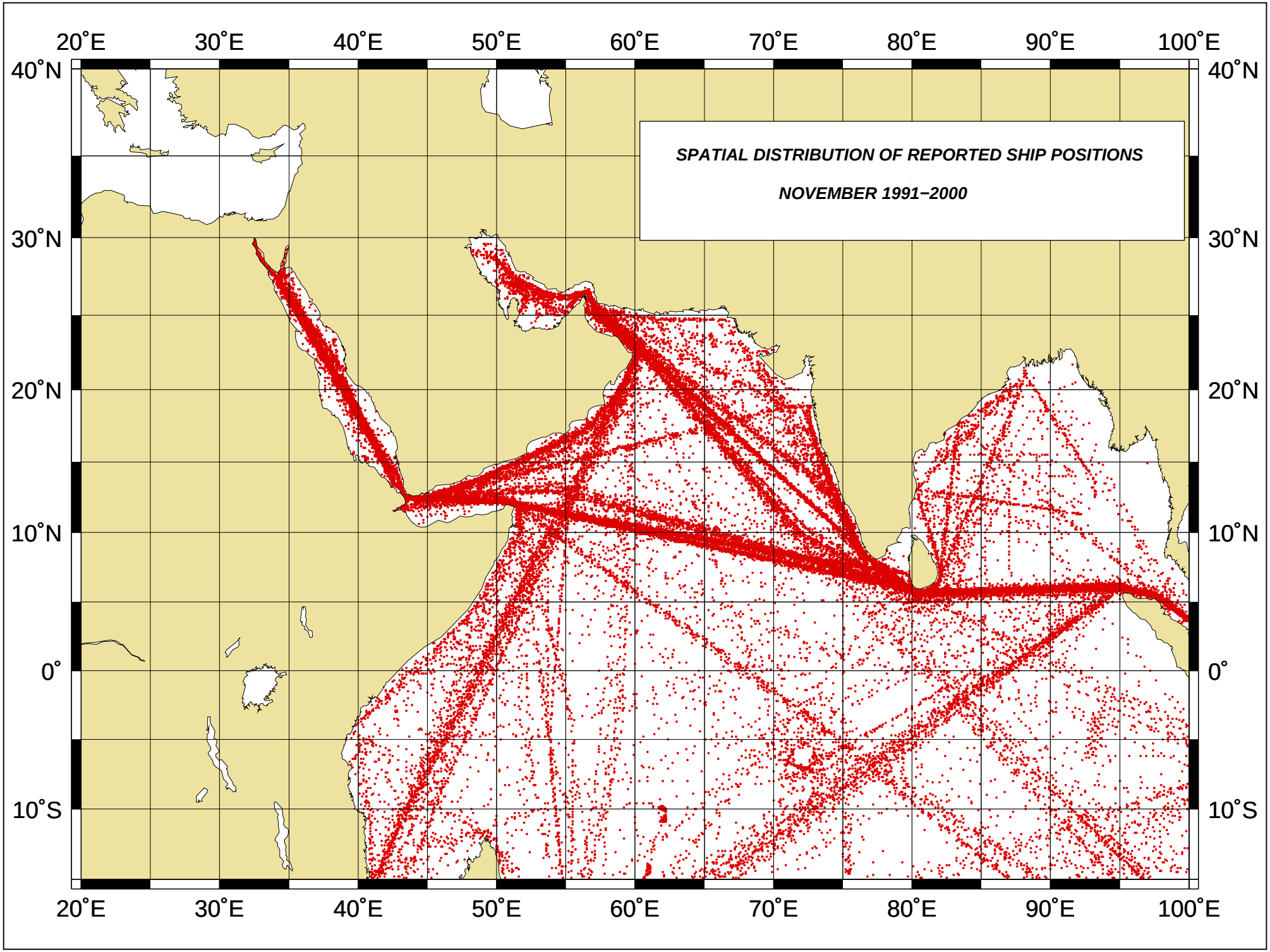
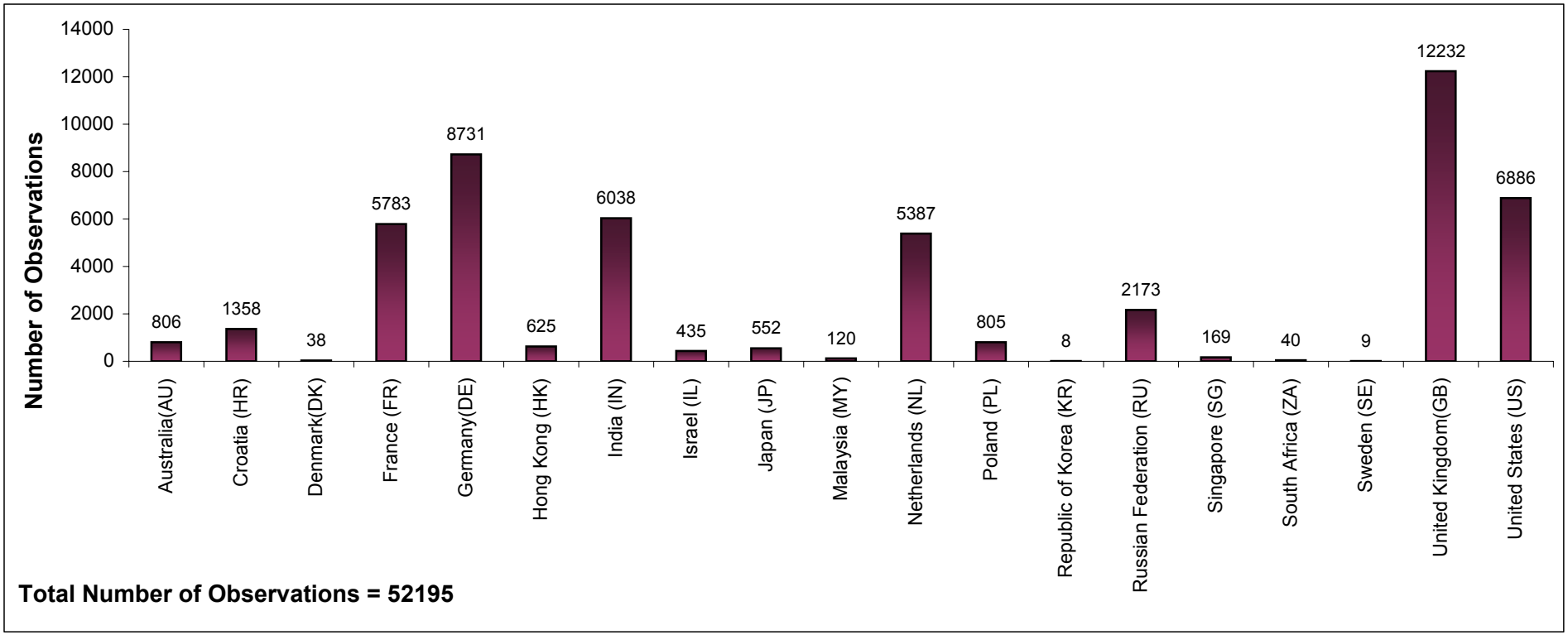


CHART 11.XVIII
STANDARD DEVIATION OF POSITIONS
NOVEMBER 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.8 862
0.5 0.4 560
0.5 0.6 84
0.9 1.4 937
0.5 0.9 773
1.4 0.9 2143
1.0 0.9 11
1.4 0.8 1312
1.3 1.4 1355
1.4 1.5 346
1.6 1.5 47
0.6 0.7 59
0.6 0.4 744
1.0 0.6 1693
0.5 1.0 389
1.4 1.2 1223
1.2 1.3 564
1.2 1.4 1191
1.4 1.1 606
1.0 0.9 224
1.6 1.3 311
1.1 0.8 85
1.0 0.9 1740
0.5 1.4 2269
1.2 1.5 2089
1.1 1.5 1621
0.9 1.4 791
1.5 1.4 469
1.4 1.5 1302
0.6 0.4 243
1.3 1.4 494
1.3 1.4 281
1.4 1.3 143
1.1 0.5 14
0.6 0.3 50
1.4 1.2 692
1.2 1.4 229
1.0 1.3 694
0.6 1.4 1251
0.7 1.4 1583
1.0 1.4 2720
1.0 1.4 2394
0.4 1.4 1989
0.5 1.4 2004
0.6 1.0 1081
0.3 0.4 21
1.4 1.3 380
1.4 1.4 389
1.4 1.2 62
1.2 1.3 111
1.4 1.3 138
1.2 1.5 77
1.4 1.4 181
1.6 1.4 213
1.2 1.4 383
1.2 1.1 293
0.5 0.6 481
1.4 1.3 143
1.4 1.1 428
1.6 1.2 149
1.2 1.5 92
1.3 1.5 47
1.6 1.5 108
1.2 1.3 228
1.6 1.7 106
1.3 1.4 444
1.6 1.2 195
1.4 1.3 118
1.1 1.4 94
0.6 0.2 12
1.4 1.6 304
1.4 1.0 269
1.3 1.1 116
1.4 1.4 121
1.2 0.8 145
1.4 1.4 80
1.4 1.3 493
1.2 1.4 426
1.7 1.4 85
1.3 1.2 149
1.6 1.4 99
1.5 1.4 104
1.4 1.1 455
1.1 1.5 156
1.5 1.8 164
1.5 1.1 125
1.7 1.1 272
1.2 1.4 258
1.0 1.2 188
1.5 1.1 72
1.5 1.3 146
1.1 1.4 175
1.4 1.4 320
1.5 1.3 205


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
NOVEMBER 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

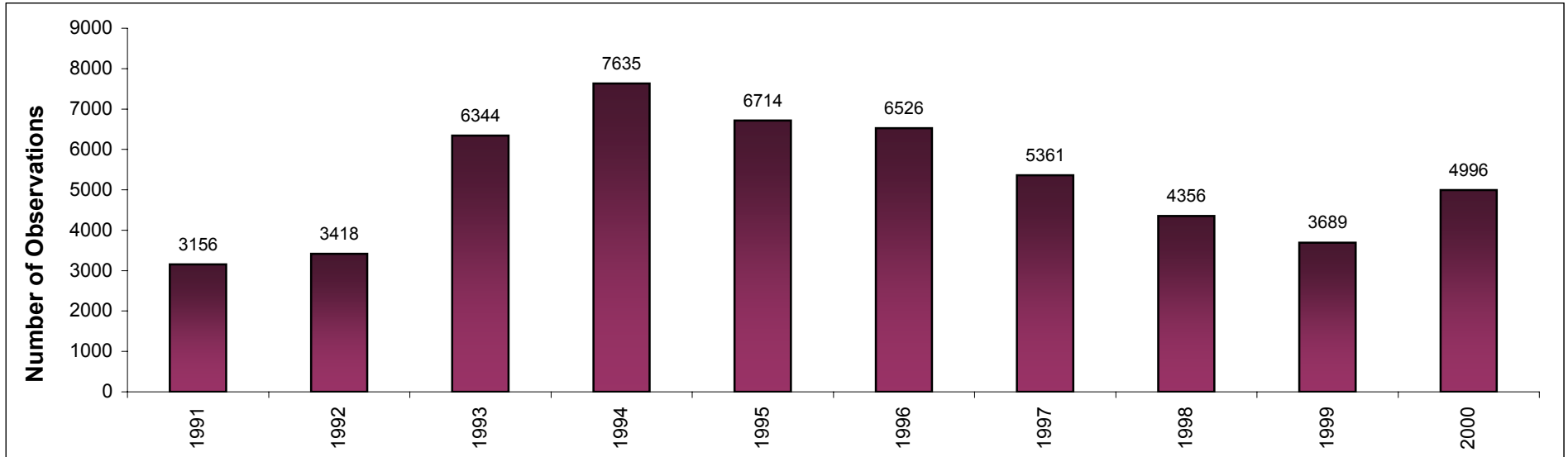
NOVEMBER : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52195

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 52195

Marine Climatological Summary Charts 1991-2000

CHARTS OF DECEMBER 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

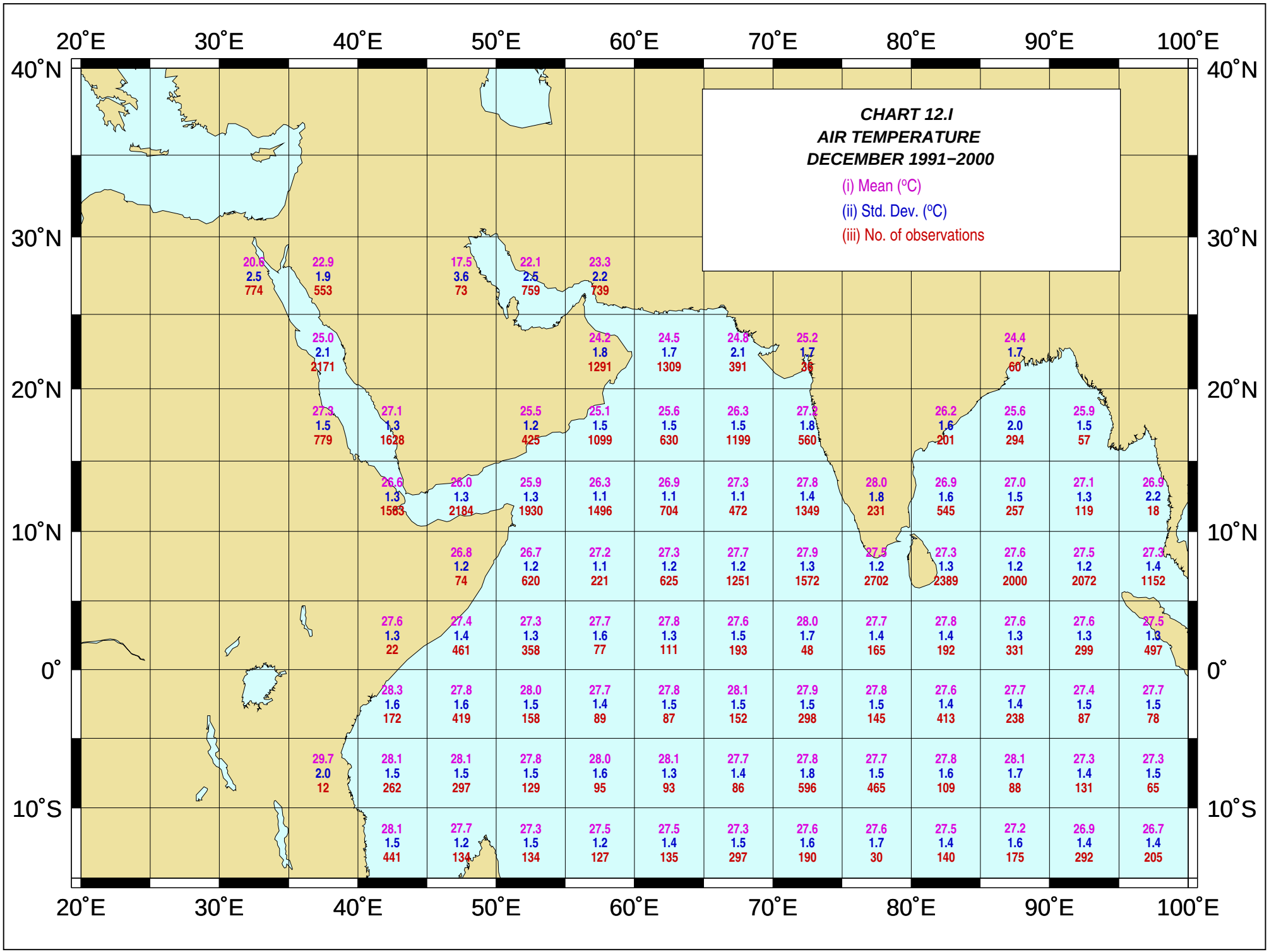


CHART 12.I
AIR TEMPERATURE
DECEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
20.6 2.5 774
22.9 1.9 553
17.5 3.6 73
22.1 2.5 759
23.3 2.2 739
25.0 2.1 2171
24.2 1.8 1291
24.5 1.7 1309
24.8 2.1 391
25.2 1.7 36
24.4 1.7 60
27.3 1.5 779
27.1 1.3 1628
25.5 1.2 425
25.1 1.5 1099
25.6 1.5 630
26.3 1.5 1199
27.2 1.8 560
26.2 1.6 201
25.6 2.0 294
25.9 1.5 57
26.6 1.3 1563
26.0 1.3 2184
25.9 1.3 1930
26.3 1.1 1496
26.9 1.1 704
27.3 1.1 472
27.8 1.4 1349
28.0 1.8 231
26.9 1.6 545
27.0 1.5 257
27.1 1.3 119
26.9 2.2 18
26.8 1.2 74
26.7 1.2 620
27.2 1.1 221
27.3 1.2 625
27.7 1.2 1251
27.9 1.3 1572
27.9 1.2 2702
27.3 1.3 2389
27.6 1.2 2000
27.5 1.2 2072
27.3 1.4 1152
27.6 1.3 22
27.4 1.4 461
27.3 1.3 358
27.7 1.6 77
27.8 1.3 111
27.6 1.5 193
28.0 1.7 48
27.7 1.4 165
27.8 1.4 192
27.6 1.3 331
27.6 1.3 299
27.5 1.3 497
28.3 1.6 172
27.8 1.6 419
28.0 1.5 158
27.7 1.4 89
27.8 1.5 87
28.1 1.5 152
27.9 1.5 298
27.8 1.5 145
27.6 1.4 413
27.7 1.4 238
27.4 1.5 87
27.7 1.5 78
29.7 2.0 12
28.1 1.5 262
28.1 1.5 297
27.8 1.5 129
28.0 1.6 95
28.1 1.3 93
27.7 1.4 86
27.8 1.8 596
27.7 1.5 465
27.8 1.6 109
28.1 1.7 88
27.3 1.4 131
27.3 1.5 65
28.1 1.5 441
27.7 1.2 134
27.3 1.5 134
27.5 1.2 127
27.5 1.4 135
27.3 1.5 297
27.6 1.6 190
27.6 1.7 30
27.5 1.4 140
27.2 1.6 175
26.9 1.4 292
26.7 1.4 205

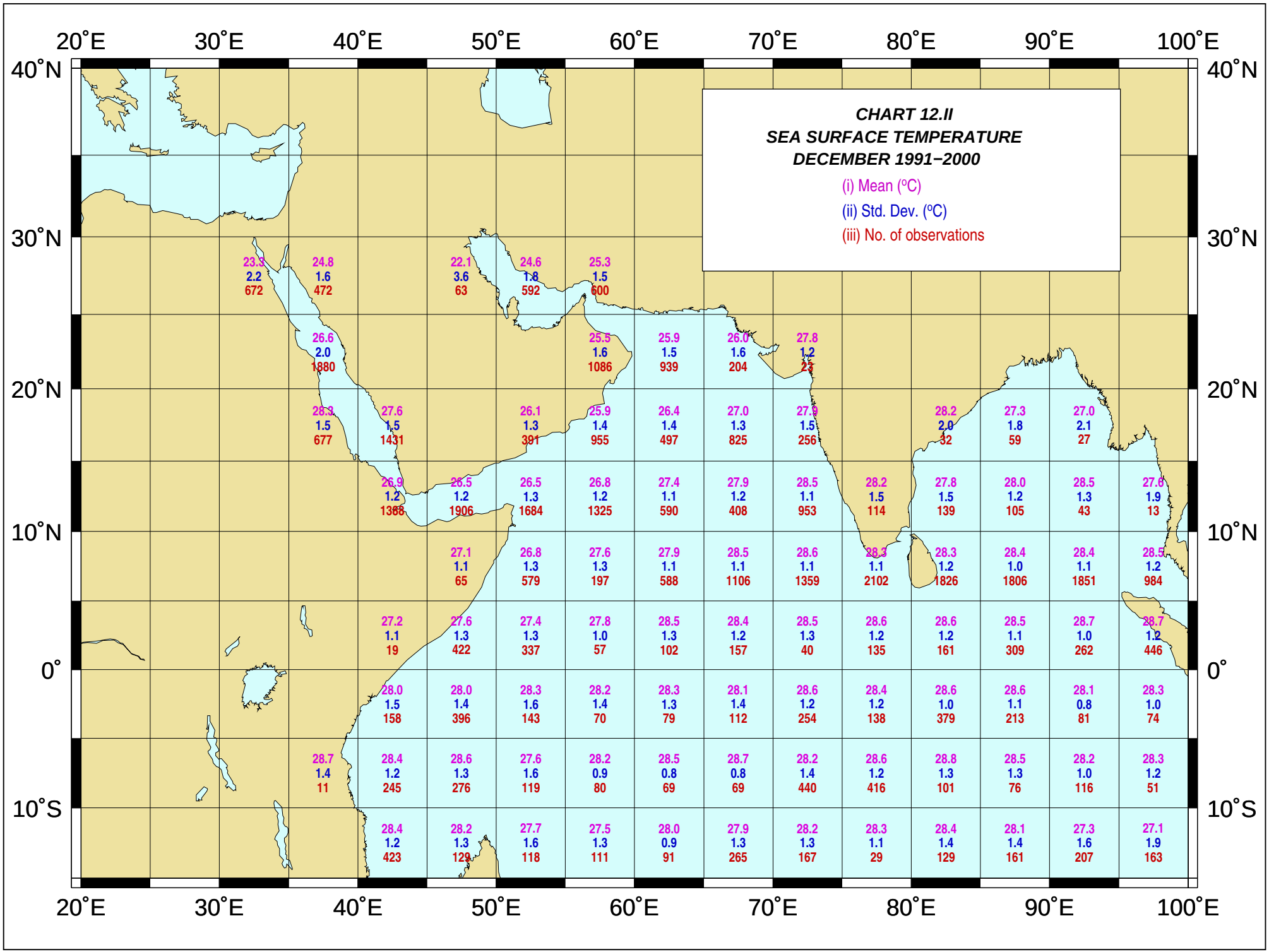


CHART 12.II
SEA SURFACE TEMPERATURE
DECEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
23.3 2.2 672
24.8 1.6 472
22.1 3.6 63
24.6 1.8 592
25.3 1.5 600
26.6 2.0 1880
25.5 1.6 1086
25.9 1.5 939
26.0 1.6 204
27.8 1.2 23
28.3 1.5 677
27.6 1.5 1431
26.1 1.3 391
25.9 1.4 955
26.4 1.4 497
27.0 1.3 825
27.9 1.5 256
28.2 2.0 32
27.3 1.8 59
27.0 2.1 27
26.9 1.2 1366
26.5 1.2 1906
26.5 1.3 1684
26.8 1.2 1325
27.4 1.1 590
27.9 1.2 408
28.5 1.1 953
28.2 1.5 114
27.8 1.5 139
28.0 1.2 105
28.5 1.3 43
27.6 1.9 13
27.1 1.1 65
26.8 1.3 579
27.6 1.3 197
27.9 1.1 588
28.5 1.1 1106
28.6 1.1 1359
28.3 1.1 2102
28.3 1.2 1826
28.4 1.0 1806
28.4 1.1 1851
28.5 1.2 984
27.2 1.1 19
27.6 1.3 422
27.4 1.3 337
27.8 1.0 57
28.5 1.3 102
28.4 1.2 157
28.5 1.3 40
28.6 1.2 135
28.6 1.2 161
28.5 1.1 309
28.7 1.0 262
28.7 1.2 446
28.0 1.5 158
28.0 1.4 396
28.3 1.6 143
28.2 1.4 70
28.3 1.3 79
28.1 1.4 112
28.6 1.2 254
28.4 1.2 138
28.6 1.0 379
28.6 1.1 213
28.1 0.8 81
28.3 1.0 74
28.7 1.4 11
28.4 1.2 245
28.6 1.3 276
27.6 1.6 119
28.2 0.9 80
28.5 0.8 69
28.7 0.8 69
28.2 1.4 440
28.6 1.2 416
28.8 1.3 101
28.5 1.3 76
28.2 1.0 116
28.3 1.2 51
28.4 1.2 423
28.2 1.3 129
27.7 1.6 118
27.5 1.3 111
28.0 0.9 91
27.9 1.3 265
28.2 1.3 167
28.3 1.1 29
28.4 1.4 129
28.1 1.4 161
27.3 1.6 207
27.1 1.9 163

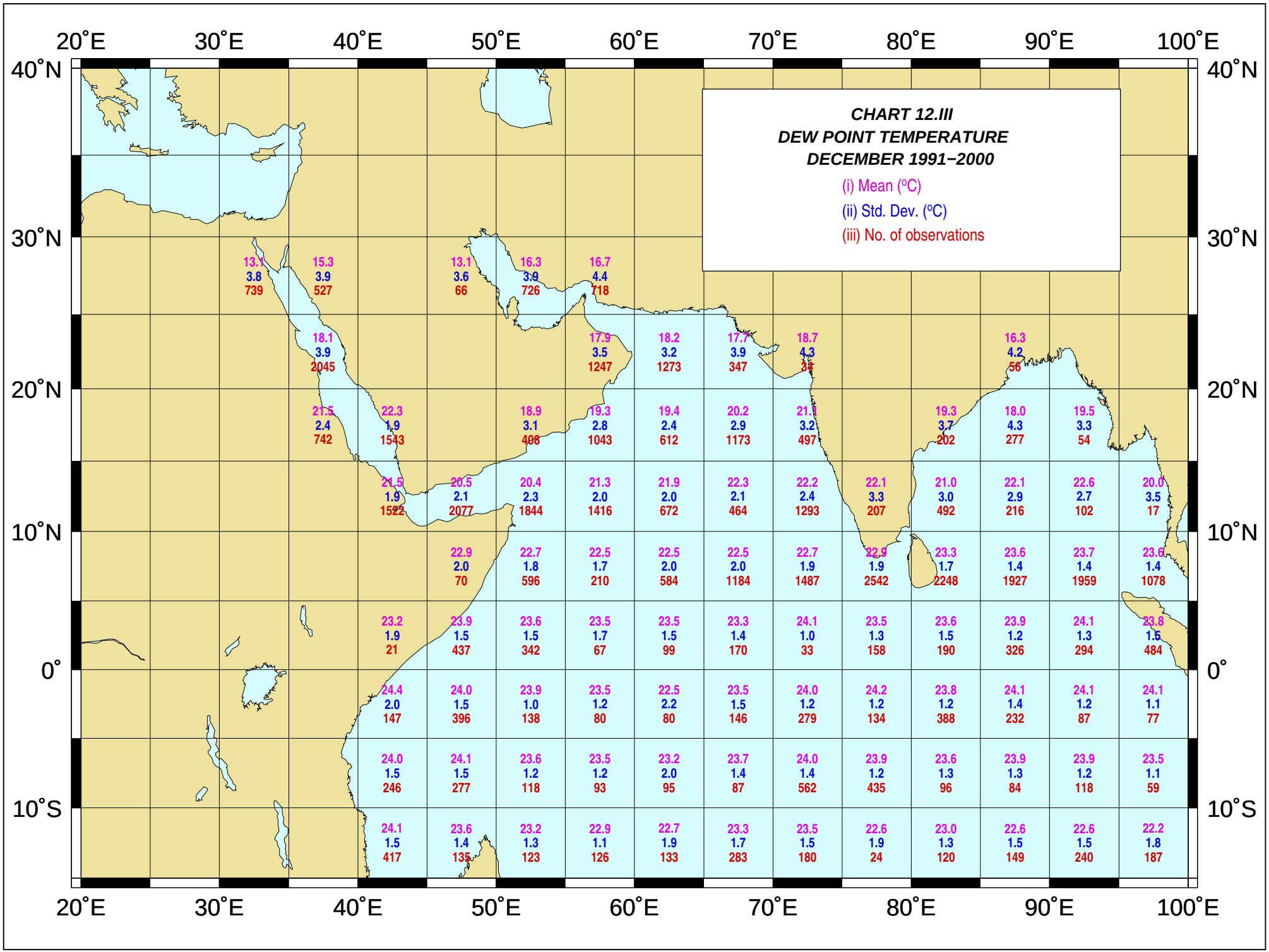


CHART 12.III
DEW POINT TEMPERATURE
DECEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
13.1 3.8 739
15.3 3.9 527
13.1 3.6 66
16.3 3.9 726
16.7 4.4 718
18.1 3.9 2045
17.9 3.5 1247
18.2 3.2 1273
17.7 3.9 347
18.7 4.3 56
16.3 4.2 56
21.5 2.4 742
22.3 1.9 1543
18.9 3.1 408
19.3 2.8 1043
19.4 2.4 612
20.2 2.9 1173
19.3 3.7 202
18.0 4.3 277
19.5 3.3 54
21.5 1.9 1522
20.5 2.1 2077
20.4 2.3 1844
21.3 2.0 1416
21.9 2.0 672
22.3 2.1 464
22.2 2.4 1293
22.1 3.3 207
21.0 3.0 492
22.1 2.9 216
22.6 2.7 102
20.0 3.5 17
22.9 2.0 70
22.7 1.8 596
22.5 1.7 210
22.5 2.0 584
22.5 2.0 1184
22.7 1.9 1487
22.9 1.9 2542
23.3 1.7 2248
23.6 1.4 1927
23.7 1.4 1959
23.6 1.4 1078
23.2 1.9 21
23.9 1.5 437
23.6 1.5 342
23.5 1.7 67
23.5 1.5 99
23.3 1.4 170
24.1 1.0 33
23.5 1.3 158
23.6 1.5 190
23.9 1.2 326
24.1 1.3 294
23.8 1.5 484
24.4 2.0 147
24.0 1.5 396
23.9 1.0 138
23.5 1.2 80
22.5 2.2 80
23.5 1.5 146
24.0 1.2 279
24.2 1.2 134
23.8 1.2 388
24.1 1.4 232
24.1 1.2 87
24.1 1.1 77
24.0 1.5 246
24.1 1.5 277
23.6 1.2 118
23.5 1.2 93
23.2 2.0 95
23.7 1.4 87
24.0 1.4 562
23.9 1.2 435
23.6 1.3 96
23.9 1.3 84
23.9 1.2 118
23.5 1.1 59
24.1 1.5 417
23.6 1.4 135
23.2 1.3 123
22.9 1.1 126
22.7 1.9 133
23.3 1.7 283
23.5 1.5 180
22.6 1.9 24
23.0 1.3 120
22.6 1.5 149
22.6 1.5 240
22.2 1.8 187

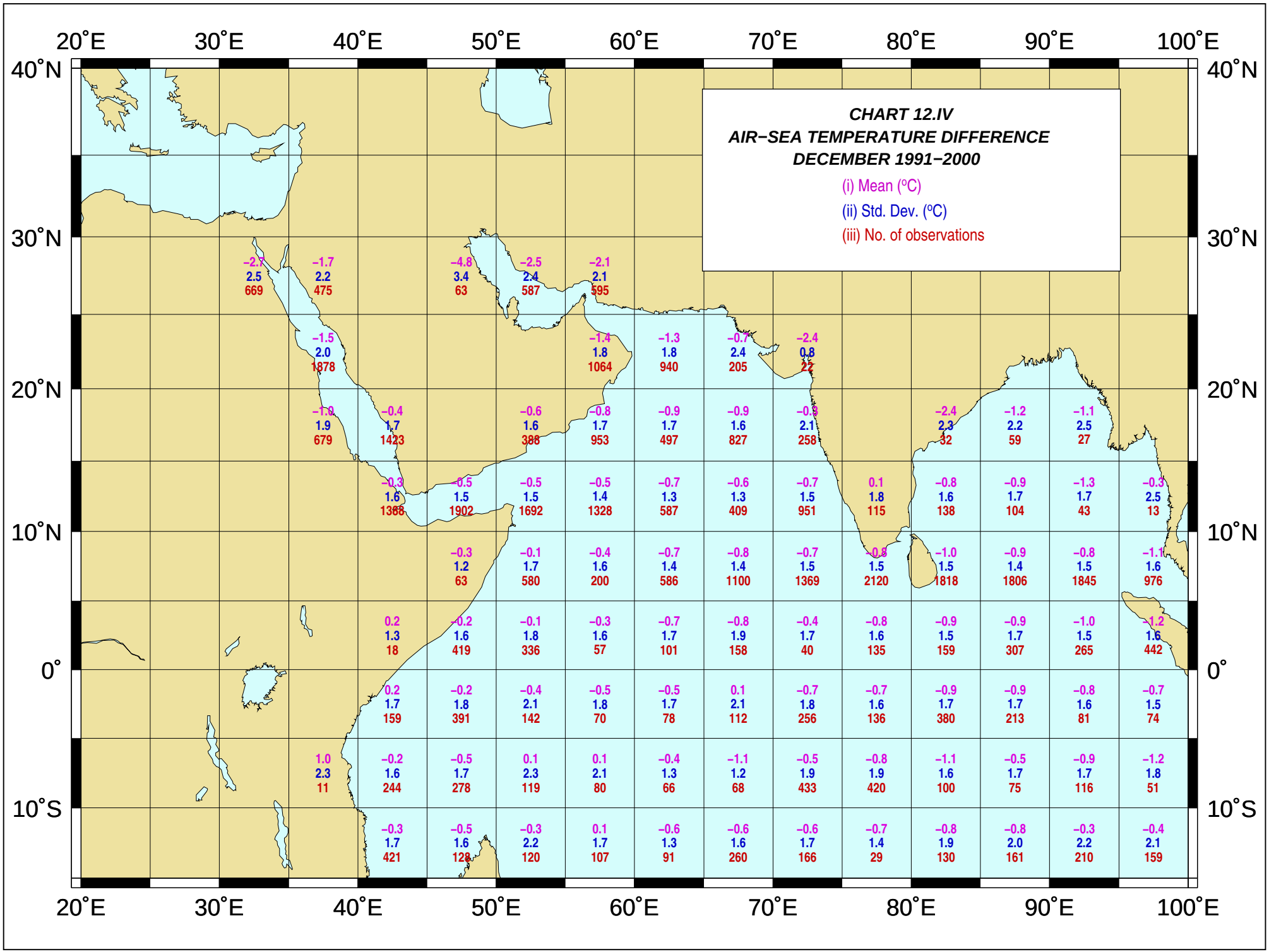


CHART 12.IV
AIR–SEA TEMPERATURE DIFFERENCE
DECEMBER 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
−2.7 2.5 669
−1.7 2.2 475
−4.8 3.4 63
−2.5 2.4 587
−2.1 2.1 595
−1.5 2.0 1878
−1.4 1.8 1064
−1.3 1.8 940
−0.7 2.4 205
−2.4 0.8 22
−1.9 1.9 679
−0.4 1.7 1423
−0.6 1.6 388
−0.8 1.7 953
−0.9 1.7 497
−0.9 1.6 827
−0.9 2.1 258
−2.4 2.3 32
−1.2 2.2 59
−1.1 2.5 27
−0.3 1.6 1368
−0.5 1.5 1902
−0.5 1.5 1692
−0.5 1.4 1328
−0.7 1.3 587
−0.6 1.3 409
−0.7 1.5 951
0.1 1.8 115
−0.8 1.6 138
−0.9 1.7 104
−1.3 1.7 43
−0.3 2.5 13
−0.3 1.2 63
−0.1 1.7 580
−0.4 1.6 200
−0.7 1.4 586
−0.8 1.4 1100
−0.7 1.5 1369
−0.8 1.5 2120
−1.0 1.5 1818
−0.9 1.4 1806
−0.8 1.5 1845
−1.1 1.6 976
0.2 1.3 18
−0.2 1.6 419
−0.1 1.8 336
−0.3 1.6 57
−0.7 1.7 101
−0.8 1.9 158
−0.4 1.7 40
−0.8 1.6 135
−0.9 1.5 159
−0.9 1.7 307
−1.0 1.5 265
−1.2 1.6 442
0.2 1.7 159
−0.2 1.8 391
−0.4 2.1 142
−0.5 1.8 70
−0.5 1.7 78
0.1 2.1 112
−0.7 1.8 256
−0.7 1.6 136
−0.9 1.7 380
−0.9 1.7 213
−0.8 1.6 81
−0.7 1.5 74
1.0 2.3 11
−0.2 1.6 244
−0.5 1.7 278
0.1 2.3 119
0.1 2.1 80
−0.4 1.3 66
−1.1 1.2 68
−0.5 1.9 433
−0.8 1.9 420
−1.1 1.6 100
−0.5 1.7 75
−0.9 1.7 116
−1.2 1.8 51
−0.3 1.7 421
−0.5 1.6 128
−0.3 2.2 120
0.1 1.7 107
−0.6 1.3 91
−0.6 1.6 260
−0.6 1.7 166
−0.7 1.4 29
−0.8 1.9 130
−0.8 2.0 161
−0.3 2.2 210
−0.4 2.1 159

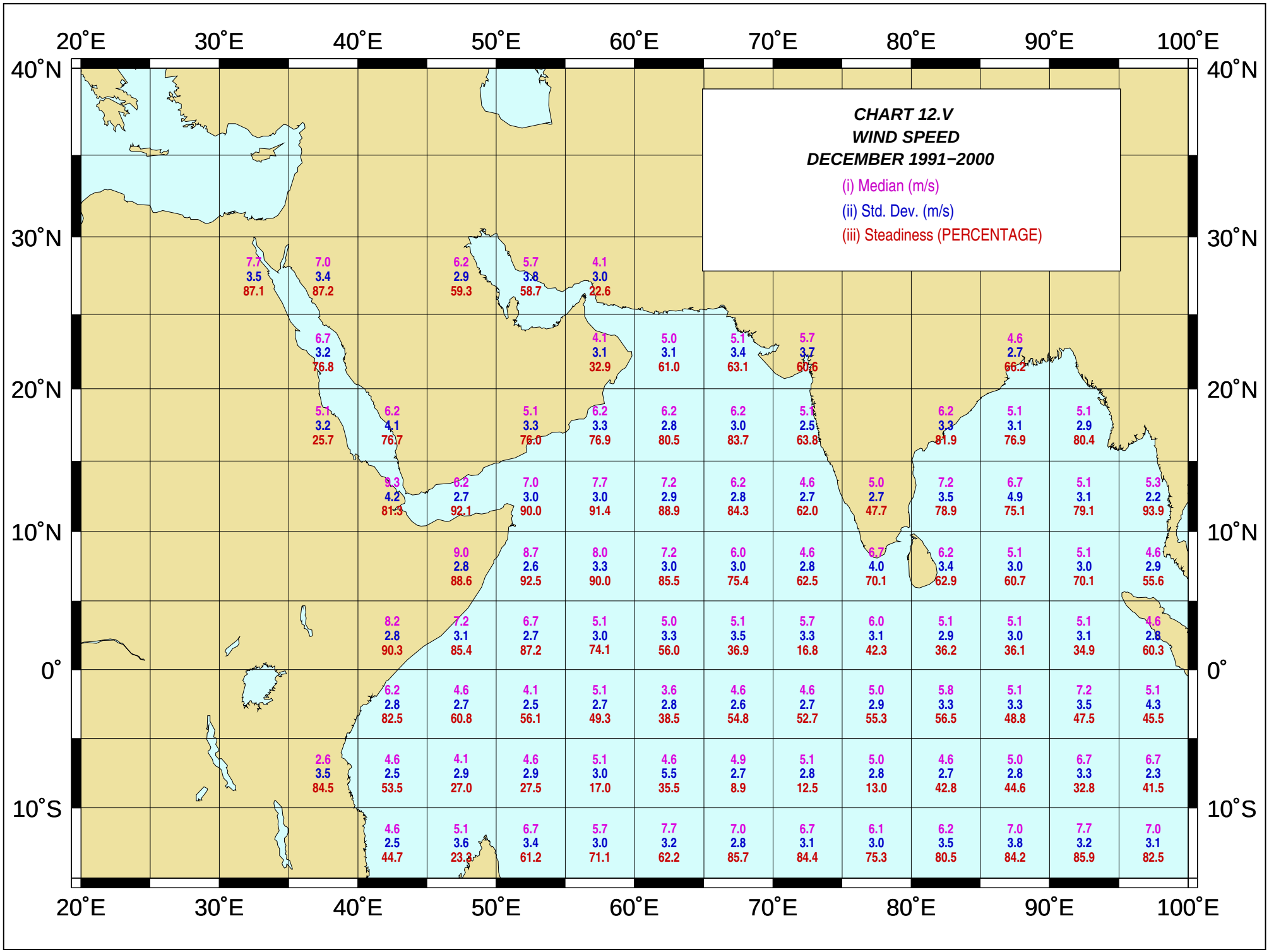


CHART 12.V
WIND SPEED
DECEMBER 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 3.5 87.1
7.0 3.4 87.2
6.2 2.9 59.3
5.7 3.8 58.7
4.1 3.0 22.6
6.7 3.2 76.8
4.1 3.1 32.9
5.0 3.1 61.0
5.1 3.4 63.1
5.7 3.7 60.6
4.6 2.7 66.2
5.1 3.2 25.7
6.2 4.1 76.7
5.1 3.3 76.0
6.2 3.3 76.9
6.2 2.8 80.5
6.2 3.0 83.7
5.1 2.5 63.8
6.2 3.3 81.9
5.1 3.1 76.9
5.1 2.9 80.4
9.3 4.2 81.3
6.2 2.7 92.1
7.0 3.0 90.0
7.7 3.0 91.4
7.2 2.9 88.9
6.2 2.8 84.3
4.6 2.7 62.0
5.0 2.7 47.7
7.2 3.5 78.9
6.7 4.9 75.1
5.1 3.1 79.1
5.3 2.2 93.9
9.0 2.8 88.6
8.7 2.6 92.5
8.0 3.3 90.0
7.2 3.0 85.5
6.0 3.0 75.4
4.6 2.8 62.5
6.7 4.0 70.1
6.2 3.4 62.9
5.1 3.0 60.7
5.1 3.0 70.1
4.6 2.9 55.6
8.2 2.8 90.3
7.2 3.1 85.4
6.7 2.7 87.2
5.1 3.0 74.1
5.0 3.3 56.0
5.1 3.5 36.9
5.7 3.3 16.8
6.0 3.1 42.3
5.1 2.9 36.2
5.1 3.0 36.1
5.1 3.1 34.9
4.6 2.8 60.3
6.2 2.8 82.5
4.6 2.7 60.8
4.1 2.5 56.1
5.1 2.7 49.3
3.6 2.8 38.5
4.6 2.6 54.8
4.6 2.7 52.7
5.0 2.9 55.3
5.8 3.3 56.5
5.1 3.3 48.8
7.2 3.5 47.5
5.1 4.3 45.5
2.6 3.5 84.5
4.6 2.5 53.5
4.1 2.9 27.0
4.6 2.9 27.5
5.1 3.0 17.0
4.6 5.5 35.5
4.9 2.7 8.9
5.1 2.8 12.5
5.0 2.8 13.0
4.6 2.7 42.8
5.0 2.8 44.6
6.7 3.3 32.8
6.7 2.3 41.5
4.6 2.5 44.7
5.1 3.6 23.3
6.7 3.4 61.2
5.7 3.0 71.1
7.7 3.2 62.2
7.0 2.8 85.7
6.7 3.1 84.4
6.1 3.0 75.3
6.2 3.5 80.5
7.0 3.8 84.2
7.7 3.2 85.9
7.0 3.1 82.5

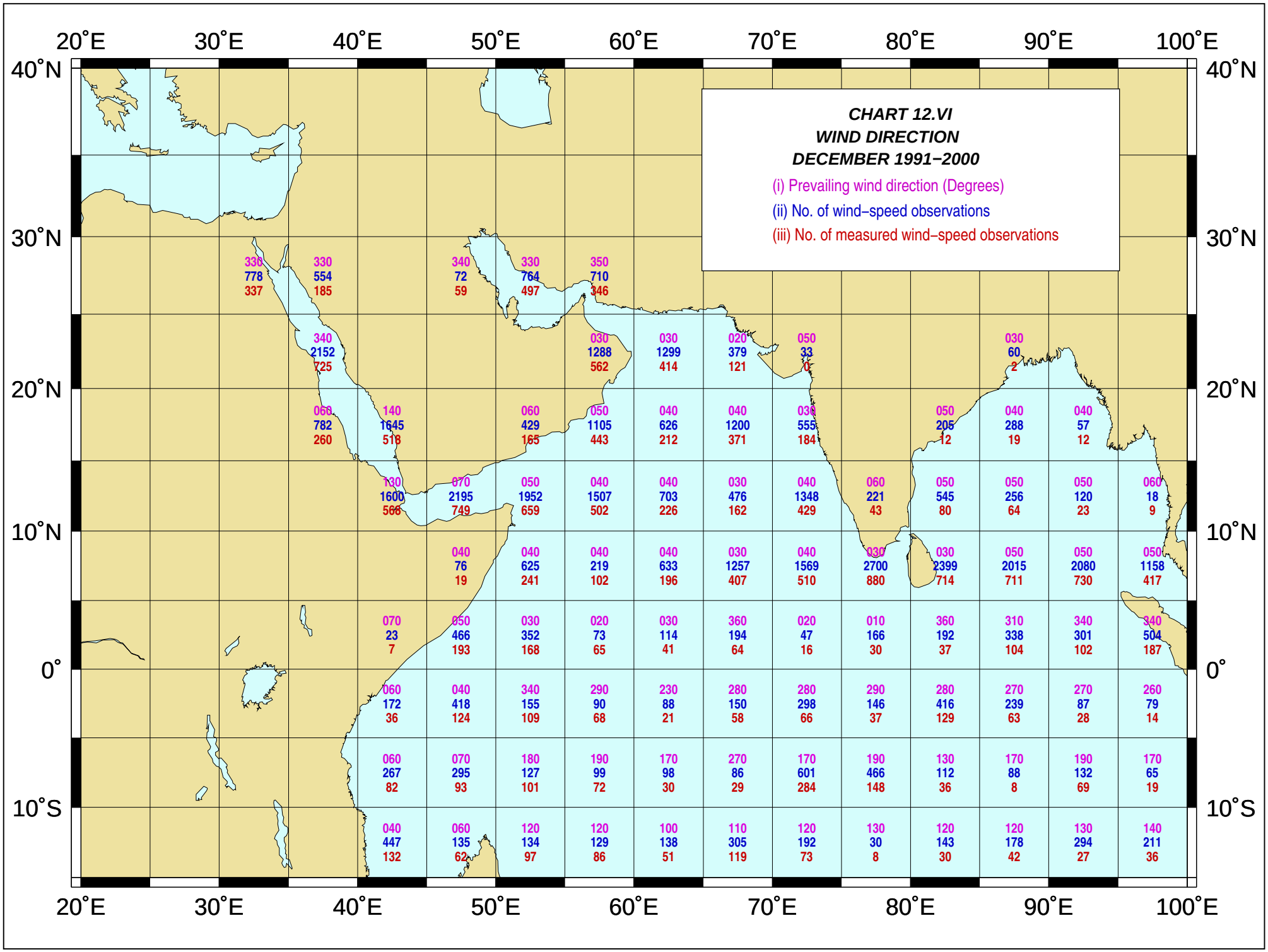


CHART 12.VI
WIND DIRECTION
DECEMBER 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
330 778 337
330 554 185
340 72 59
330 764 497
350 710 346
340 2152 725
030 1288 562
030 1299 414
020 379 121
050 33 0
030 60 2
060 782 260
140 1645 518
060 429 165
050 1105 443
040 626 212
040 1200 371
030 555 184
050 205 12
040 288 19
040 57 12
130 1600 566
070 2195 749
050 1952 659
040 1507 502
040 703 226
030 476 162
040 1348 429
060 221 43
050 545 80
050 256 64
050 120 23
060 18 9
040 76 19
040 625 241
040 219 102
040 633 196
030 1257 407
040 1569 510
030 2700 880
030 2399 714
050 2015 711
050 2080 730
050 1158 417
070 23 7
050 466 193
030 352 168
020 73 65
030 114 41
360 194 64
020 47 16
010 166 30
360 192 37
310 338 104
340 301 102
340 504 187
060 172 36
040 418 124
340 155 109
290 90 68
230 88 21
280 150 58
280 298 66
290 146 37
280 416 129
270 239 63
270 87 28
260 79 14
060 267 82
070 295 93
180 127 101
190 99 72
170 98 30
270 86 29
170 601 284
190 466 148
130 112 36
170 88 8
190 132 69
170 65 19
040 447 132
060 135 62
120 134 97
120 129 86
100 138 51
110 305 119
120 192 73
130 30 8
120 143 30
120 178 42
130 294 27
140 211 36

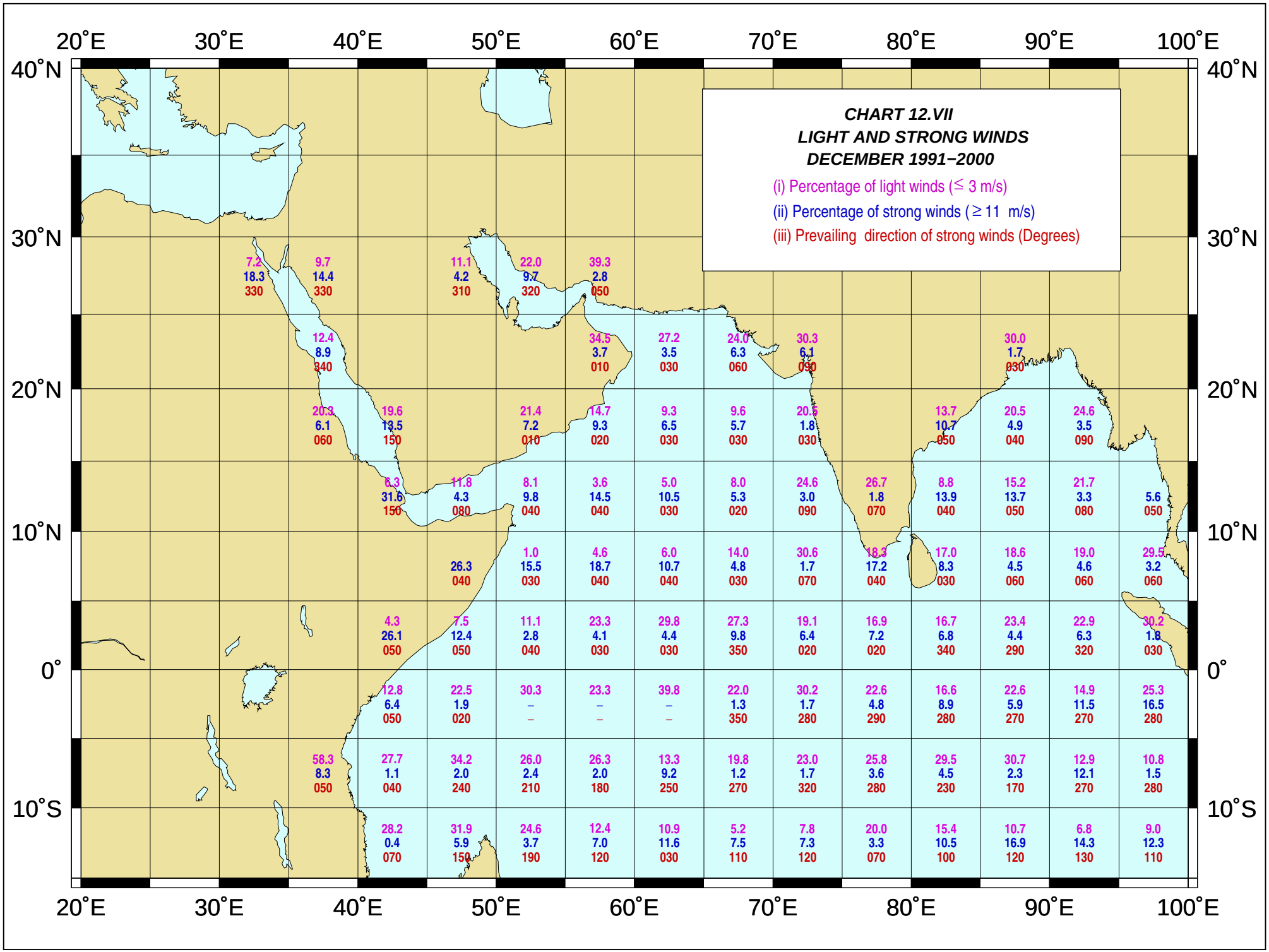


CHART 12.VII
LIGHT AND STRONG WINDS
DECEMBER 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
7.2 18.3 330
9.7 14.4 330
11.1 4.2 310
22.0 9.7 320
39.3 2.8 050
12.4 8.9 340
34.5 3.7 010
27.2 3.5 030
24.0 6.3 060
30.3 6.1 090
30.0 1.7 030
20.3 6.1 060
19.6 13.5 150
21.4 7.2 010
14.7 9.3 020
9.3 6.5 030
9.6 5.7 030
20.5 1.8 030
13.7 10.7 050
20.5 4.9 040
24.6 3.5 090
6.3 31.6 150
11.8 4.3 080
8.1 9.8 040
3.6 14.5 040
5.0 10.5 030
8.0 5.3 020
24.6 3.0 090
26.7 1.8 070
8.8 13.9 040
15.2 13.7 050
21.7 3.3 080
5.6 050
26.3 040
1.0 15.5 030
4.6 18.7 040
6.0 10.7 040
14.0 4.8 030
30.6 1.7 070
18.3 17.2 040
17.0 8.3 030
18.6 4.5 060
19.0 4.6 060
29.5 3.2 060
4.3 26.1 050
7.5 12.4 050
11.1 2.8 040
23.3 4.1 030
29.8 4.4 030
27.3 9.8 350
19.1 6.4 020
16.9 7.2 020
16.7 6.8 340
23.4 4.4 290
22.9 6.3 320
30.2 1.8 030
12.8 6.4 050
22.5 1.9 020
30.3 – –
23.3 – –
39.8 – –
22.0 1.3 350
30.2 1.7 280
22.6 4.8 290
16.6 8.9 280
22.6 5.9 270
14.9 11.5 270
25.3 16.5 280
58.3 8.3 050
27.7 1.1 040
34.2 2.0 240
26.0 2.4 210
26.3 2.0 180
13.3 9.2 250
19.8 1.2 270
23.0 1.7 320
25.8 3.6 280
29.5 4.5 230
30.7 2.3 170
12.9 12.1 270
10.8 1.5 280
28.2 0.4 070
31.9 5.9 150
24.6 3.7 190
12.4 7.0 120
10.9 11.6 030
5.2 7.5 110
7.8 7.3 120
20.0 3.3 070
15.4 10.5 100
10.7 16.9 120
6.8 14.3 130
9.0 12.3 110

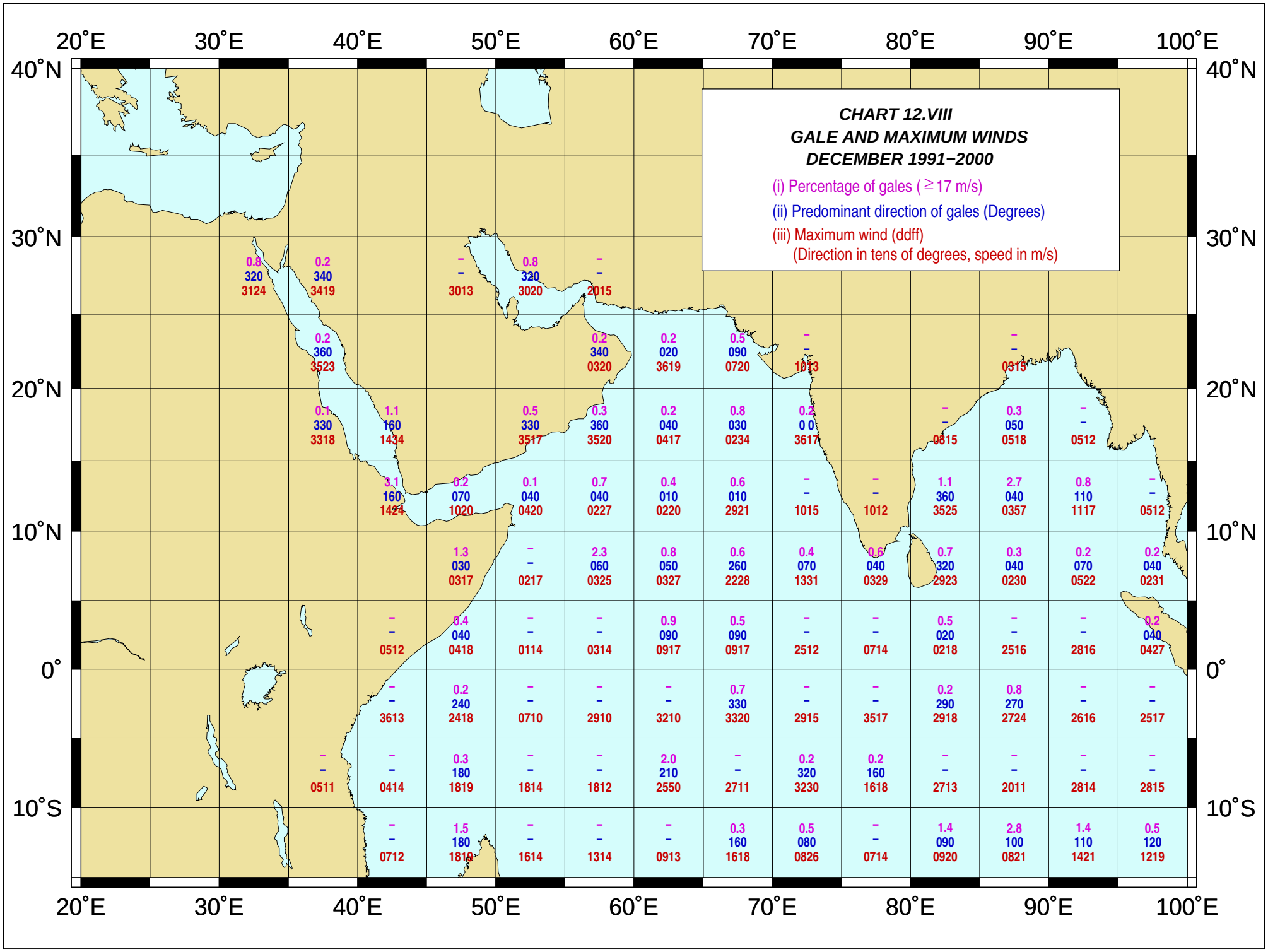


CHART 12.VIII
GALE AND MAXIMUM WINDS
DECEMBER 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.8 320 3124
0.2 340 3419
– – 3013
0.8 320 3020
– – 2015
0.2 360 3523
0.2 340 0320
0.2 020 3619
0.5 090 0720
– – 1013
– – 0315
0.1 330 3318
1.1 160 1434
0.5 330 3517
0.3 360 3520
0.2 040 0417
0.8 030 0234
0.2 0 0 3617
– – 0815
0.3 050 0518
– – 0512
3.1 160 1424
0.2 070 1020
0.1 040 0420
0.7 040 0227
0.4 010 0220
0.6 010 2921
– – 1015
– – 1012
1.1 360 3525
2.7 040 0357
0.8 110 1117
– – 0512
1.3 030 0317
– – 0217
2.3 060 0325
0.8 050 0327
0.6 260 2228
0.4 070 1331
0.6 040 0329
0.7 320 2923
0.3 040 0230
0.2 070 0522
0.2 040 0231
– – 0512
0.4 040 0418
– – 0114
– – 0314
0.9 090 0917
0.5 090 0917
– – 2512
– – 0714
0.5 020 0218
– – 2516
– – 2816
0.2 040 0427
– – 3613
0.2 240 2418
– – 0710
– – 2910
– – 3210
0.7 330 3320
– – 2915
– – 3517
0.2 290 2918
0.8 270 2724
– – 2616
– – 2517
– – 0511
– – 0414
0.3 180 1819
– – 1814
– – 1812
2.0 210 2550
– – 2711
0.2 320 3230
0.2 160 1618
– – 2713
– – 2011
– – 2814
– – 2815
– – 0712
1.5 180 1810
– – 1614
– – 1314
– – 0913
0.3 160 1618
0.5 080 0826
– – 0714
1.4 090 0920
2.8 100 0821
1.4 110 1421
0.5 120 1219

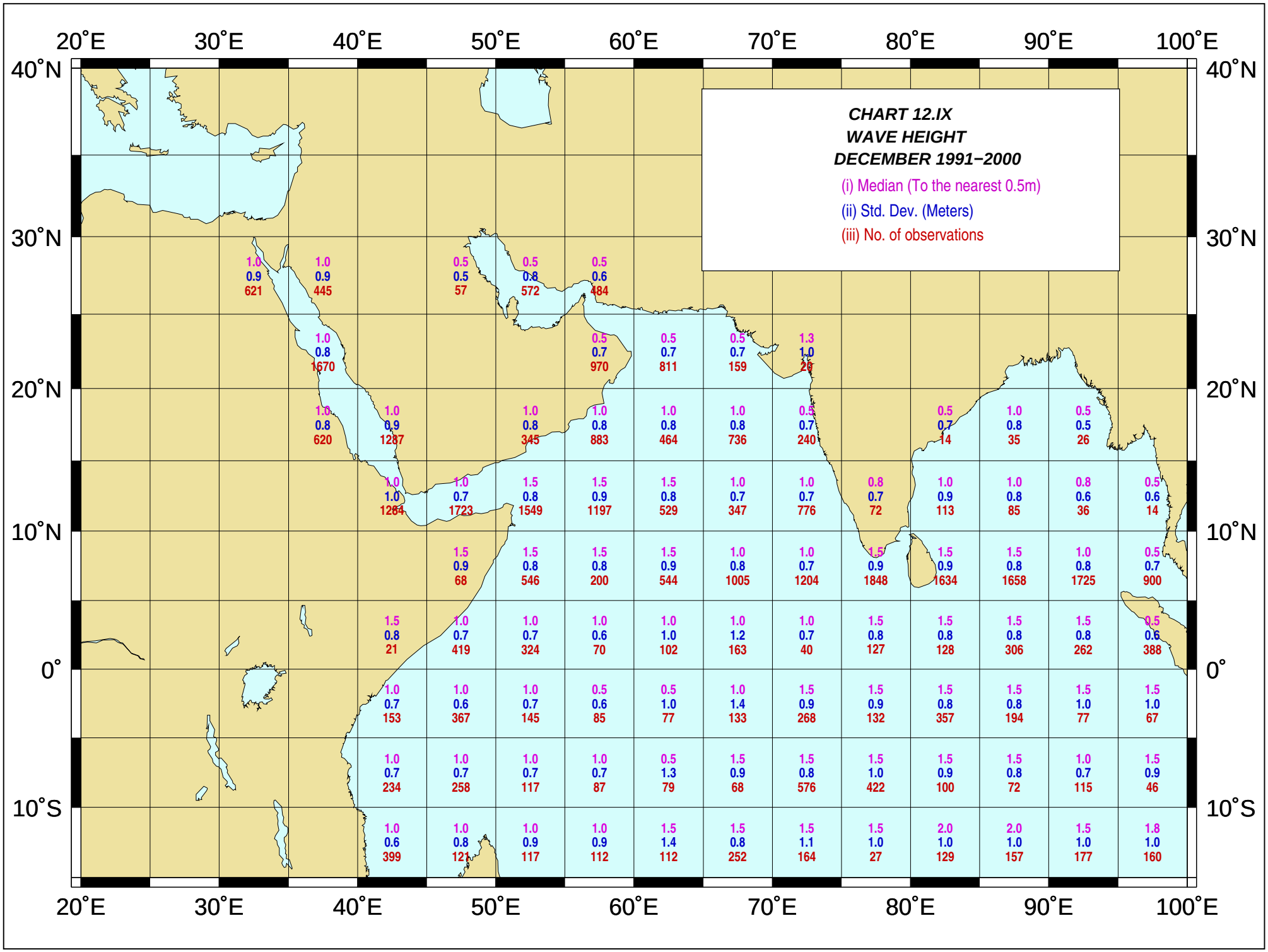


CHART 12.IX
WAVE HEIGHT
DECEMBER 1991−2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.9 621
1.0 0.9 445
0.5 0.5 57
0.5 0.8 572
0.5 0.6 484
1.0 0.8 1670
0.5 0.7 970
0.5 0.7 811
0.5 0.7 159
1.3 1.0 26
1.0 0.8 620
1.0 0.9 1287
1.0 0.8 345
1.0 0.8 883
1.0 0.8 464
1.0 0.8 736
0.5 0.7 240
0.5 0.7 14
1.0 0.8 35
0.5 0.5 26
1.0 1.0 1264
1.0 0.7 1723
1.5 0.8 1549
1.5 0.9 1197
1.5 0.8 529
1.0 0.7 347
1.0 0.7 776
0.8 0.7 72
1.0 0.9 113
1.0 0.8 85
0.8 0.6 36
0.5 0.6 14
1.5 0.9 68
1.5 0.8 546
1.5 0.8 200
1.5 0.9 544
1.0 0.8 1005
1.0 0.7 1204
1.5 0.9 1848
1.5 0.9 1634
1.5 0.8 1658
1.0 0.8 1725
0.5 0.7 900
1.5 0.8 21
1.0 0.7 419
1.0 0.7 324
1.0 0.6 70
1.0 1.0 102
1.0 1.2 163
1.0 0.7 40
1.5 0.8 127
1.5 0.8 128
1.5 0.8 306
1.5 0.8 262
0.5 0.6 388
1.0 0.7 153
1.0 0.6 367
1.0 0.7 145
0.5 0.6 85
0.5 1.0 77
1.0 1.4 133
1.5 0.9 268
1.5 0.9 132
1.5 0.8 357
1.5 0.8 194
1.5 1.0 77
1.5 1.0 67
1.0 0.7 234
1.0 0.7 258
1.0 0.7 117
1.0 0.7 87
0.5 1.3 79
1.5 0.9 68
1.5 0.8 576
1.5 1.0 422
1.5 0.9 100
1.5 0.8 72
1.0 0.7 115
1.5 0.9 46
1.0 0.6 399
1.0 0.8 121
1.0 0.9 117
1.0 0.9 112
1.5 1.4 112
1.5 0.8 252
1.5 1.1 164
1.5 1.0 27
2.0 1.0 129
2.0 1.0 157
1.5 1.0 177
1.8 1.0 160

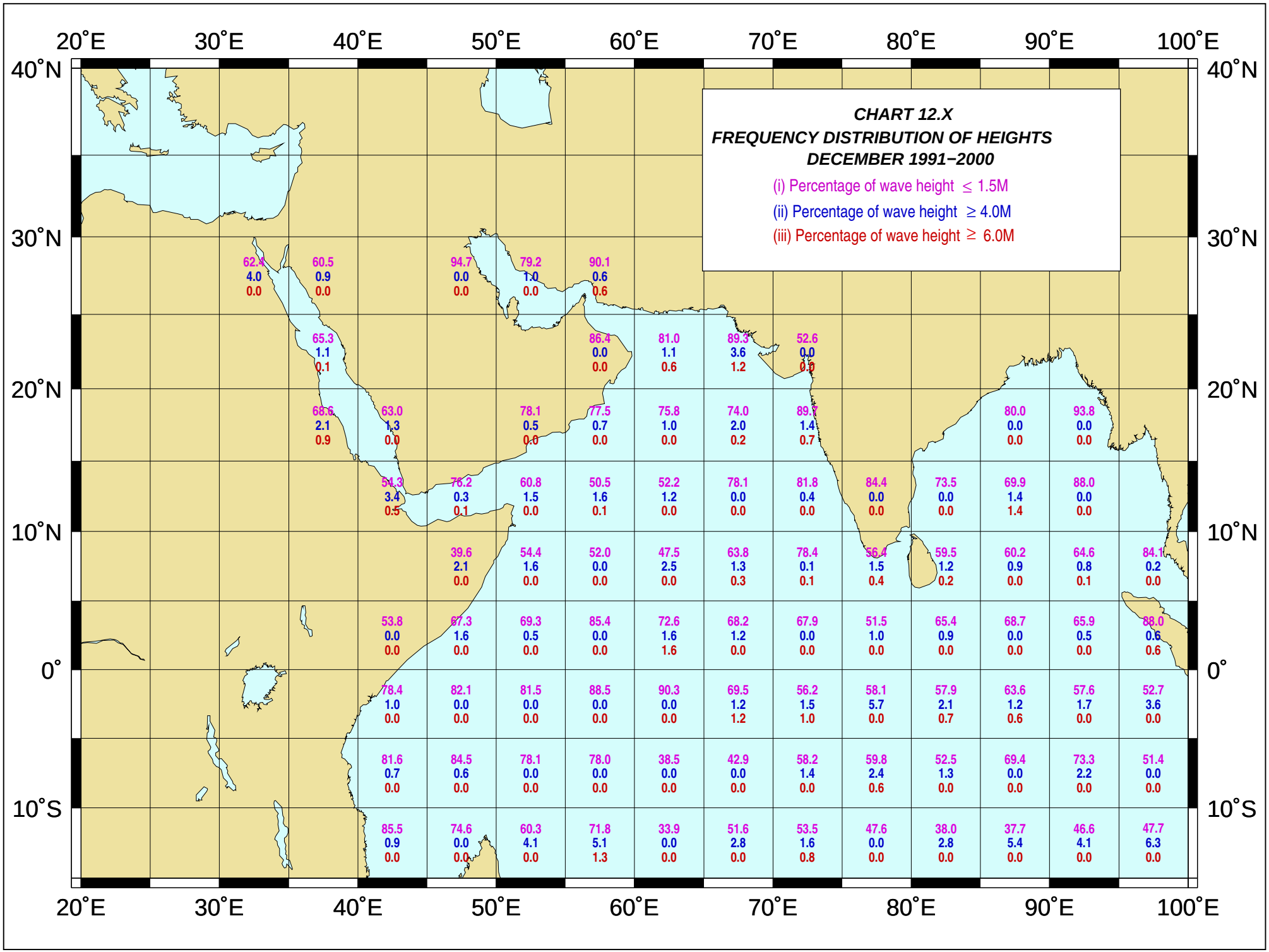


CHART 12.X
FREQUENCY DISTRIBUTION OF HEIGHTS
DECEMBER 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
62.4 4.0 0.0
60.5 0.9 0.0
94.7 0.0 0.0
79.2 1.0 0.0
90.1 0.6 0.6
65.3 1.1 0.1
86.4 0.0 0.0
81.0 1.1 0.6
89.3 3.6 1.2
52.6 0.0 0.0
68.6 2.1 0.9
63.0 1.3 0.0
78.1 0.5 0.0
77.5 0.7 0.0
75.8 1.0 0.0
74.0 2.0 0.2
89.7 1.4 0.7
80.0 0.0 0.0
93.8 0.0 0.0
51.3 3.4 0.5
76.2 0.3 0.1
60.8 1.5 0.0
50.5 1.6 0.1
52.2 1.2 0.0
78.1 0.0 0.0
81.8 0.4 0.0
84.4 0.0 0.0
73.5 0.0 0.0
69.9 1.4 1.4
88.0 0.0 0.0
39.6 2.1 0.0
54.4 1.6 0.0
52.0 0.0 0.0
47.5 2.5 0.0
63.8 1.3 0.3
78.4 0.1 0.1
56.4 1.5 0.4
59.5 1.2 0.2
60.2 0.9 0.0
64.6 0.8 0.1
84.1 0.2 0.0
53.8 0.0 0.0
67.3 1.6 0.0
69.3 0.5 0.0
85.4 0.0 0.0
72.6 1.6 1.6
68.2 1.2 0.0
67.9 0.0 0.0
51.5 1.0 0.0
65.4 0.9 0.0
68.7 0.0 0.0
65.9 0.5 0.0
88.0 0.6 0.6
78.4 1.0 0.0
82.1 0.0 0.0
81.5 0.0 0.0
88.5 0.0 0.0
90.3 0.0 0.0
69.5 1.2 1.2
56.2 1.5 1.0
58.1 5.7 0.0
57.9 2.1 0.7
63.6 1.2 0.6
57.6 1.7 0.0
52.7 3.6 0.0
81.6 0.7 0.0
84.5 0.6 0.0
78.1 0.0 0.0
78.0 0.0 0.0
38.5 0.0 0.0
42.9 0.0 0.0
58.2 1.4 0.0
59.8 2.4 0.6
52.5 1.3 0.0
69.4 0.0 0.0
73.3 2.2 0.0
51.4 0.0 0.0
85.5 0.9 0.0
74.6 0.0 0.0
60.3 4.1 0.0
71.8 5.1 1.3
33.9 0.0 0.0
51.6 2.8 0.0
53.5 1.6 0.8
47.6 0.0 0.0
38.0 2.8 0.0
37.7 5.4 0.0
46.6 4.1 0.0
47.7 6.3 0.0

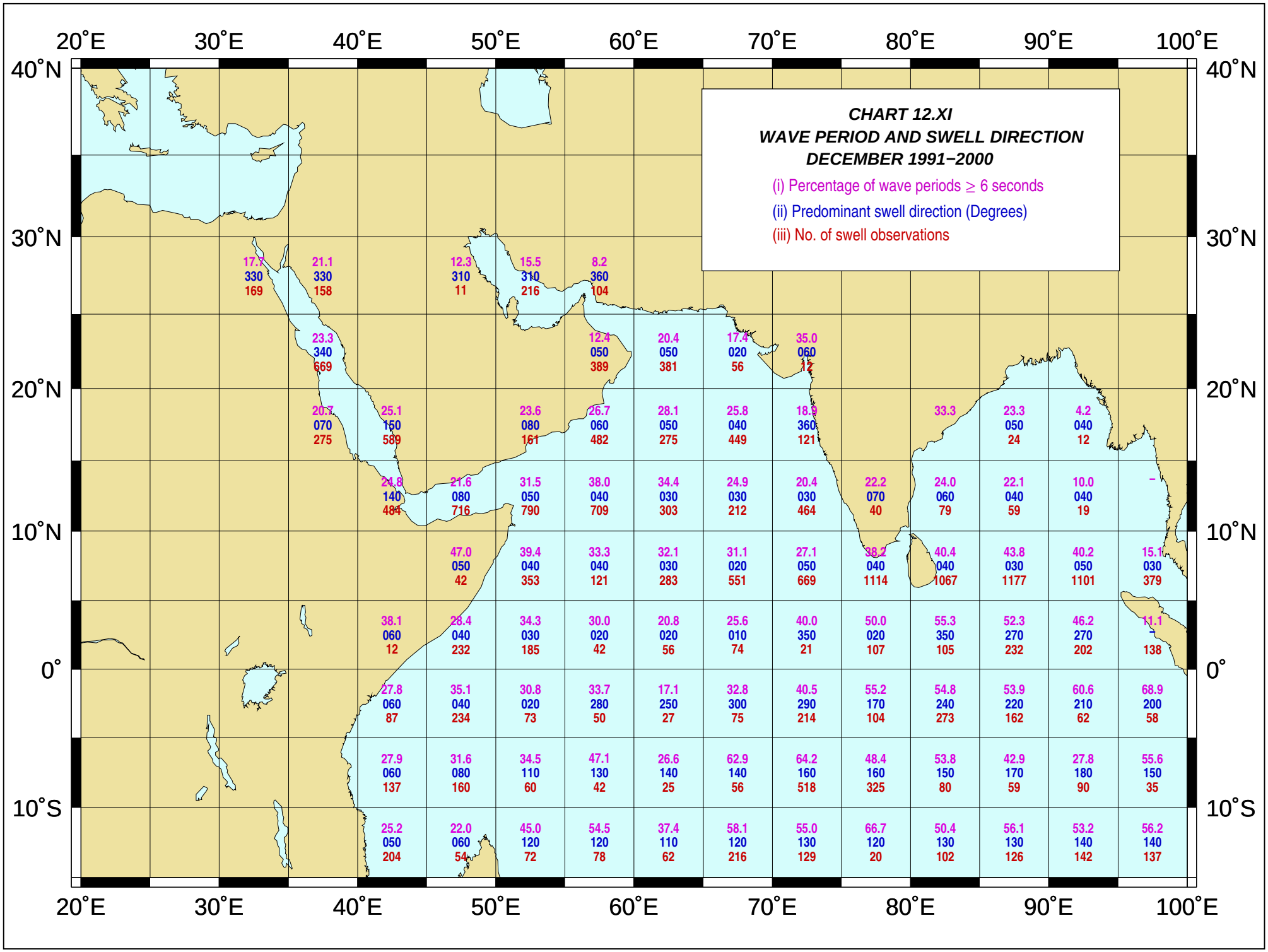


CHART 12.XI
WAVE PERIOD AND SWELL DIRECTION
DECEMBER 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
17.7 330 169
21.1 330 158
12.3 310 11
15.5 310 216
8.2 360 104
23.3 340 669
12.4 050 389
20.4 050 381
17.4 020 56
35.0 060 12
20.7 070 275
25.1 150 589
23.6 080 161
26.7 060 482
28.1 050 275
25.8 040 449
18.9 360 121
33.3
23.3 050 24
4.2 040 12
21.8 140 484
21.6 080 716
31.5 050 790
38.0 040 709
34.4 030 303
24.9 030 212
20.4 030 464
22.2 070 40
24.0 060 79
22.1 040 59
10.0 040 19
47.0 050 42
39.4 040 353
33.3 040 121
32.1 030 283
31.1 020 551
27.1 050 669
38.2 040 1114
40.4 040 1067
43.8 030 1177
40.2 050 1101
15.1 030 379
38.1 060 12
28.4 040 232
34.3 030 185
30.0 020 42
20.8 020 56
25.6 010 74
40.0 350 21
50.0 020 107
55.3 350 105
52.3 270 232
46.2 270 202
11.1 138
27.8 060 87
35.1 040 234
30.8 020 73
33.7 280 50
17.1 250 27
32.8 300 75
40.5 290 214
55.2 170 104
54.8 240 273
53.9 220 162
60.6 210 62
68.9 200 58
27.9 060 137
31.6 080 160
34.5 110 60
47.1 130 42
26.6 140 25
62.9 140 56
64.2 160 518
48.4 160 325
53.8 150 80
42.9 170 59
27.8 180 90
55.6 150 35
25.2 050 204
22.0 060 54
45.0 120 72
54.5 120 78
37.4 110 62
58.1 120 216
55.0 130 129
66.7 120 20
50.4 130 102
56.1 130 126
53.2 140 142
56.2 140 137

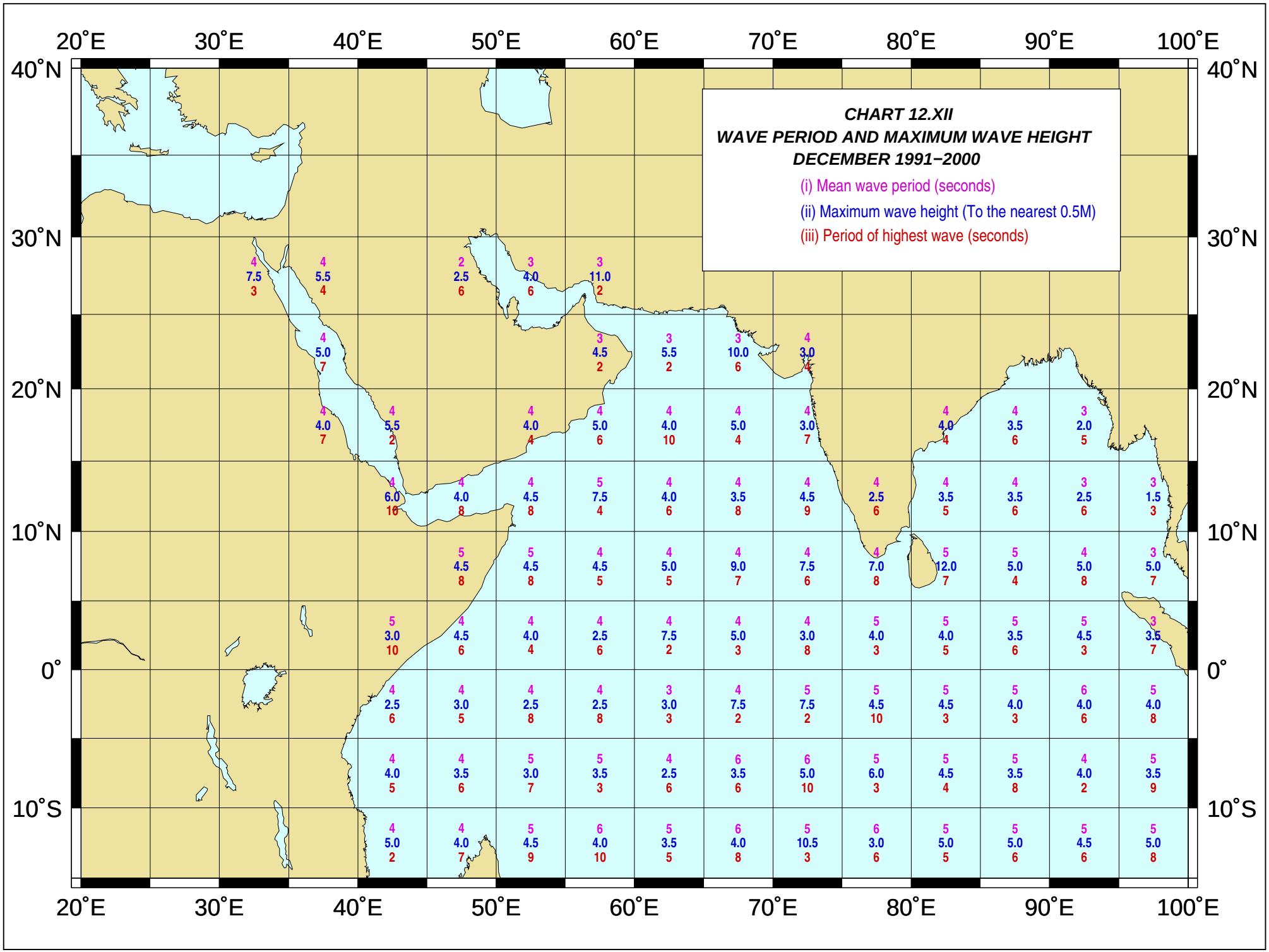


CHART 12.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
DECEMBER 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
4 7.5 3
4 5.5 4
2 2.5 6
3 4.0 6
3 11.0 2
4 5.0 7
3 4.5 2
3 5.5 2
3 10.0 6
4 3.0 4
4 4.0 7
4 5.5 2
4 4.0 4
4 5.0 6
4 4.0 10
4 5.0 4
4 3.0 7
4 4.0 4
4 3.5 6
3 2.0 5
4 6.0 10
4 4.0 8
4 4.5 8
5 7.5 4
4 4.0 6
4 3.5 8
4 4.5 9
4 2.5 6
4 3.5 5
4 3.5 6
3 2.5 6
3 1.5 3
5 4.5 8
5 4.5 8
4 4.5 5
4 5.0 5
4 9.0 7
4 7.5 6
4 7.0 8
5 12.0 7
5 5.0 4
4 5.0 8
3 5.0 7
5 3.0 10
4 4.5 6
4 4.0 4
4 2.5 6
4 7.5 2
4 5.0 3
4 3.0 8
5 4.0 3
5 4.0 5
5 3.5 6
5 4.5 3
3 3.5 7
4 2.5 6
4 3.0 5
4 2.5 8
4 2.5 8
3 3.0 3
4 7.5 2
5 7.5 2
5 4.5 10
5 4.5 3
5 4.0 3
6 4.0 6
5 4.0 8
4 4.0 5
4 3.5 6
5 3.0 7
5 3.5 3
4 2.5 6
6 3.5 6
6 5.0 10
5 6.0 3
5 4.5 4
5 3.5 8
4 4.0 2
5 3.5 9
4 5.0 2
4 4.0 7
5 4.5 9
6 4.0 10
5 3.5 5
6 4.0 8
5 10.5 3
6 3.0 6
5 5.0 5
5 5.0 6
5 4.5 6
5 5.0 8

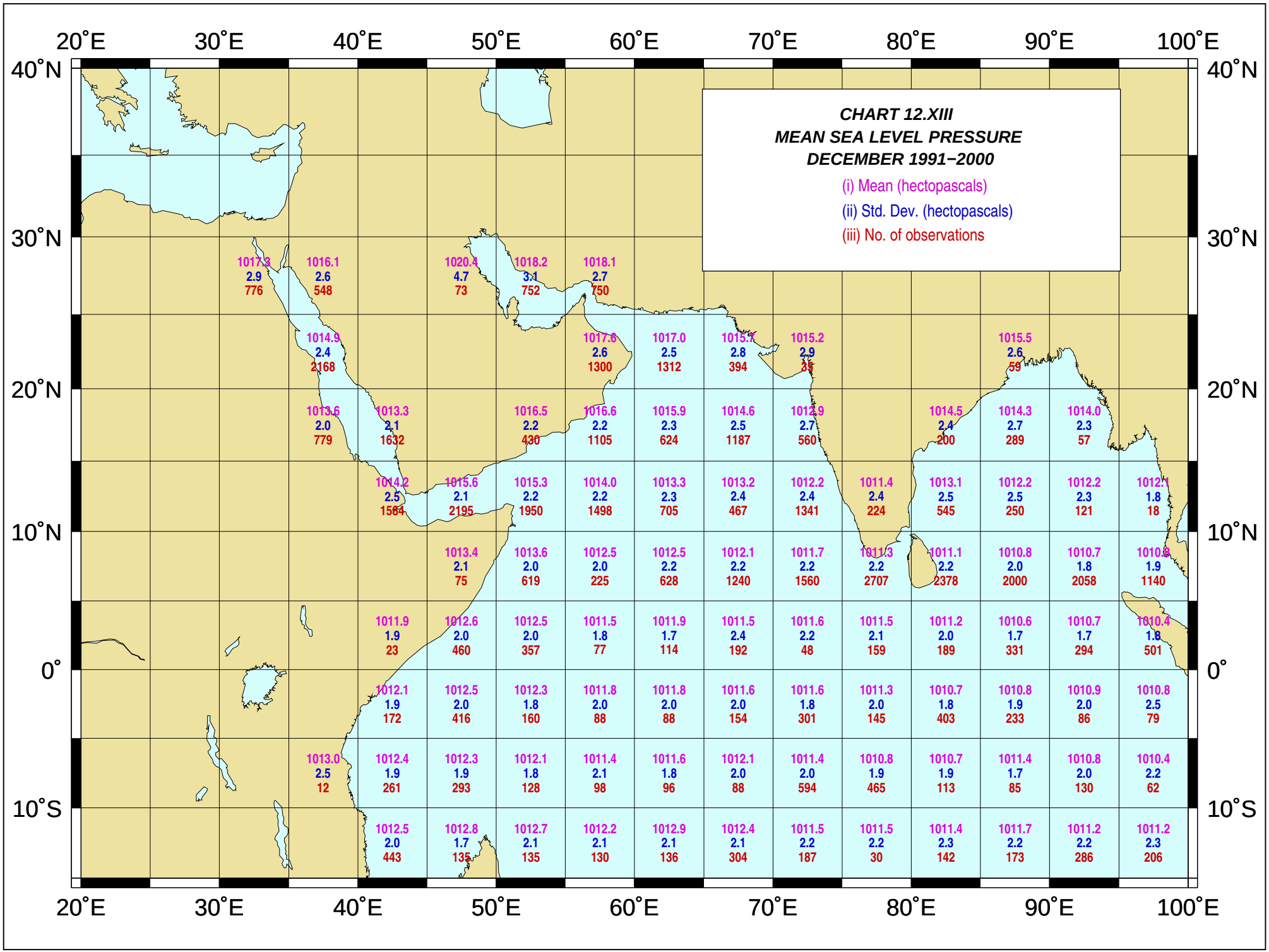


CHART 12.XIII
MEAN SEA LEVEL PRESSURE
DECEMBER 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1017.3 2.9 776
1016.1 2.6 548
1020.4 4.7 73
1018.2 3.1 752
1018.1 2.7 750
1014.9 2.4 2168
1017.6 2.6 1300
1017.0 2.5 1312
1015.7 2.8 394
1015.2 2.9 35
1015.5 2.6 59
1013.6 2.0 779
1013.3 2.1 1632
1016.5 2.2 430
1016.6 2.2 1105
1015.9 2.3 624
1014.6 2.5 1187
1012.9 2.7 560
1014.5 2.4 200
1014.3 2.7 289
1014.0 2.3 57
1014.2 2.5 1564
1015.6 2.1 2195
1015.3 2.2 1950
1014.0 2.2 1498
1013.3 2.3 705
1013.2 2.4 467
1012.2 2.4 1341
1011.4 2.4 224
1013.1 2.5 545
1012.2 2.5 250
1012.2 2.3 121
1012.1 1.8 18
1013.4 2.1 75
1013.6 2.0 619
1012.5 2.0 225
1012.5 2.2 628
1012.1 2.2 1240
1011.7 2.2 1560
1011.3 2.2 2707
1011.1 2.2 2378
1010.8 2.0 2000
1010.7 1.8 2058
1010.8 1.9 1140
1011.9 1.9 23
1012.6 2.0 460
1012.5 2.0 357
1011.5 1.8 77
1011.9 1.7 114
1011.5 2.4 192
1011.6 2.2 48
1011.5 2.1 159
1011.2 2.0 189
1010.6 1.7 331
1010.7 1.7 294
1010.4 1.8 501
1012.1 1.9 172
1012.5 2.0 416
1012.3 1.8 160
1011.8 2.0 88
1011.8 2.0 88
1011.6 2.0 154
1011.6 1.8 301
1011.3 2.0 145
1010.7 1.8 403
1010.8 1.9 233
1010.9 2.0 86
1010.8 2.5 79
1013.0 2.5 12
1012.4 1.9 261
1012.3 1.9 293
1012.1 1.8 128
1011.4 2.1 98
1011.6 1.8 96
1012.1 2.0 88
1011.4 2.0 594
1010.8 1.9 465
1010.7 1.9 113
1011.4 1.7 85
1010.8 2.0 130
1010.4 2.2 62
1012.5 2.0 443
1012.8 1.7 135
1012.7 2.1 135
1012.2 2.1 130
1012.9 2.1 136
1012.4 2.1 304
1011.5 2.2 187
1011.5 2.2 30
1011.4 2.3 142
1011.7 2.2 173
1011.2 2.2 286
1011.2 2.3 206

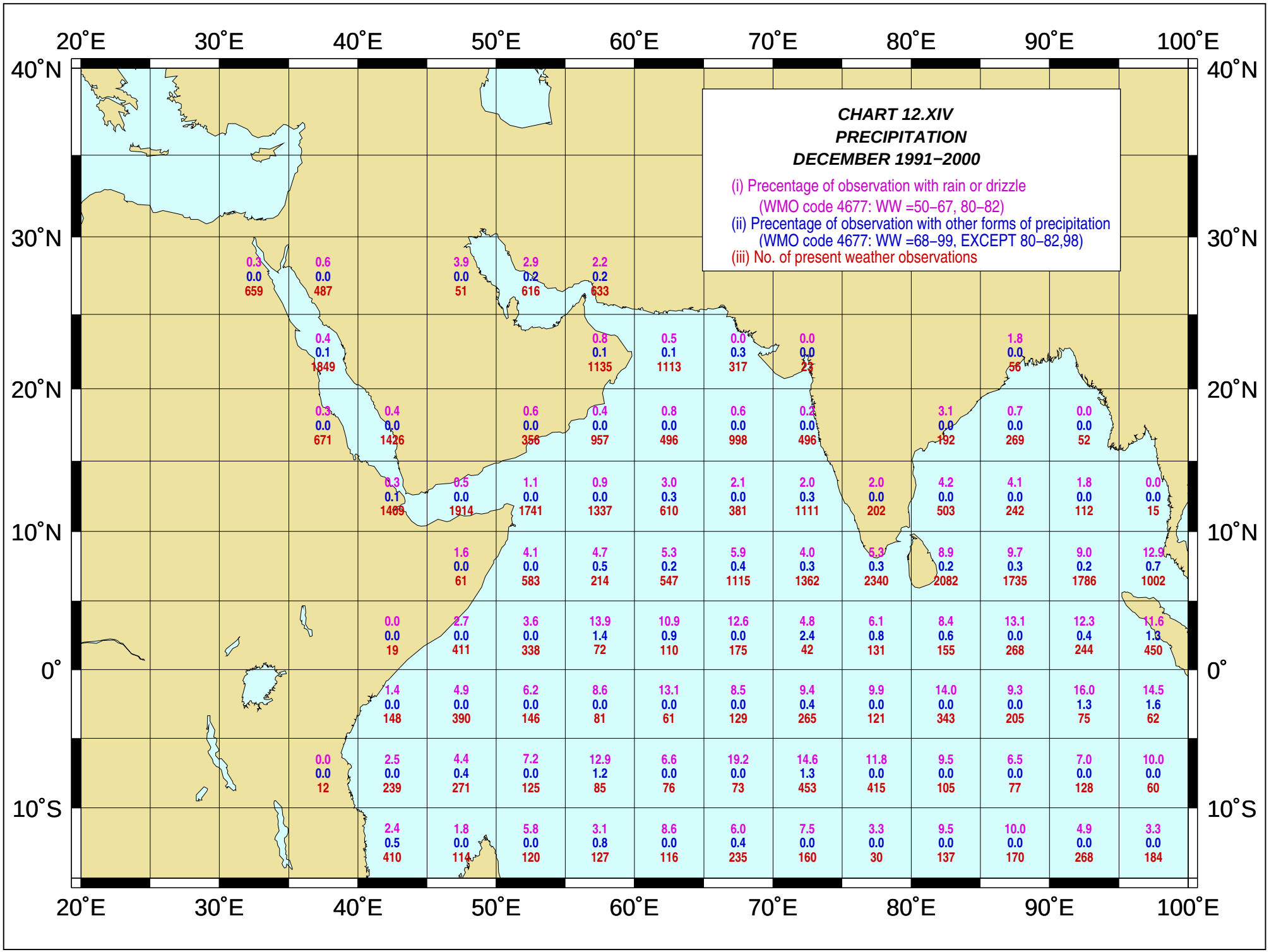


CHART 12.XIV
PRECIPITATION
DECEMBER 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.3 0.0 659
0.6 0.0 487
3.9 0.0 51
2.9 0.2 616
2.2 0.2 633
0.4 0.1 1849
0.8 0.1 1135
0.5 0.1 1113
0.0 0.3 317
0.0 0.0 2
1.8 0.0 56
0.3 0.0 671
0.4 0.0 1426
0.6 0.0 356
0.4 0.0 957
0.8 0.0 496
0.6 0.0 998
0.2 0.0 496
3.1 0.0 192
0.7 0.0 269
0.0 0.0 52
0.3 0.1 1409
0.5 0.0 1914
1.1 0.0 1741
0.9 0.0 1337
3.0 0.3 610
2.1 0.0 381
2.0 0.3 1111
2.0 0.0 202
4.2 0.0 503
4.1 0.0 242
1.8 0.0 112
0.0 0.0 15
1.6 0.0 61
4.1 0.0 583
4.7 0.5 214
5.3 0.2 547
5.9 0.4 1115
4.0 0.3 1362
5.3 0.3 2340
8.9 0.2 2082
9.7 0.3 1735
9.0 0.2 1786
12.9 0.7 1002
0.0 0.0 19
2.7 0.0 411
3.6 0.0 338
13.9 1.4 72
10.9 0.9 110
12.6 0.0 175
4.8 2.4 42
6.1 0.8 131
8.4 0.6 155
13.1 0.0 268
12.3 0.4 244
11.6 1.3 450
1.4 0.0 148
4.9 0.0 390
6.2 0.0 146
8.6 0.0 81
13.1 0.0 61
8.5 0.0 129
9.4 0.4 265
9.9 0.0 121
14.0 0.0 343
9.3 0.0 205
16.0 1.3 75
14.5 1.6 62
0.0 0.0 12
2.5 0.0 239
4.4 0.4 271
7.2 0.0 125
12.9 1.2 85
6.6 0.0 76
19.2 0.0 73
14.6 1.3 453
11.8 0.0 415
9.5 0.0 105
6.5 0.0 77
7.0 0.0 128
10.0 0.0 60
2.4 0.5 410
1.8 0.0 114
5.8 0.0 120
3.1 0.8 127
8.6 0.0 116
6.0 0.4 235
7.5 0.0 160
3.3 0.0 30
9.5 0.0 137
10.0 0.0 170
4.9 0.0 268
3.3 0.0 184

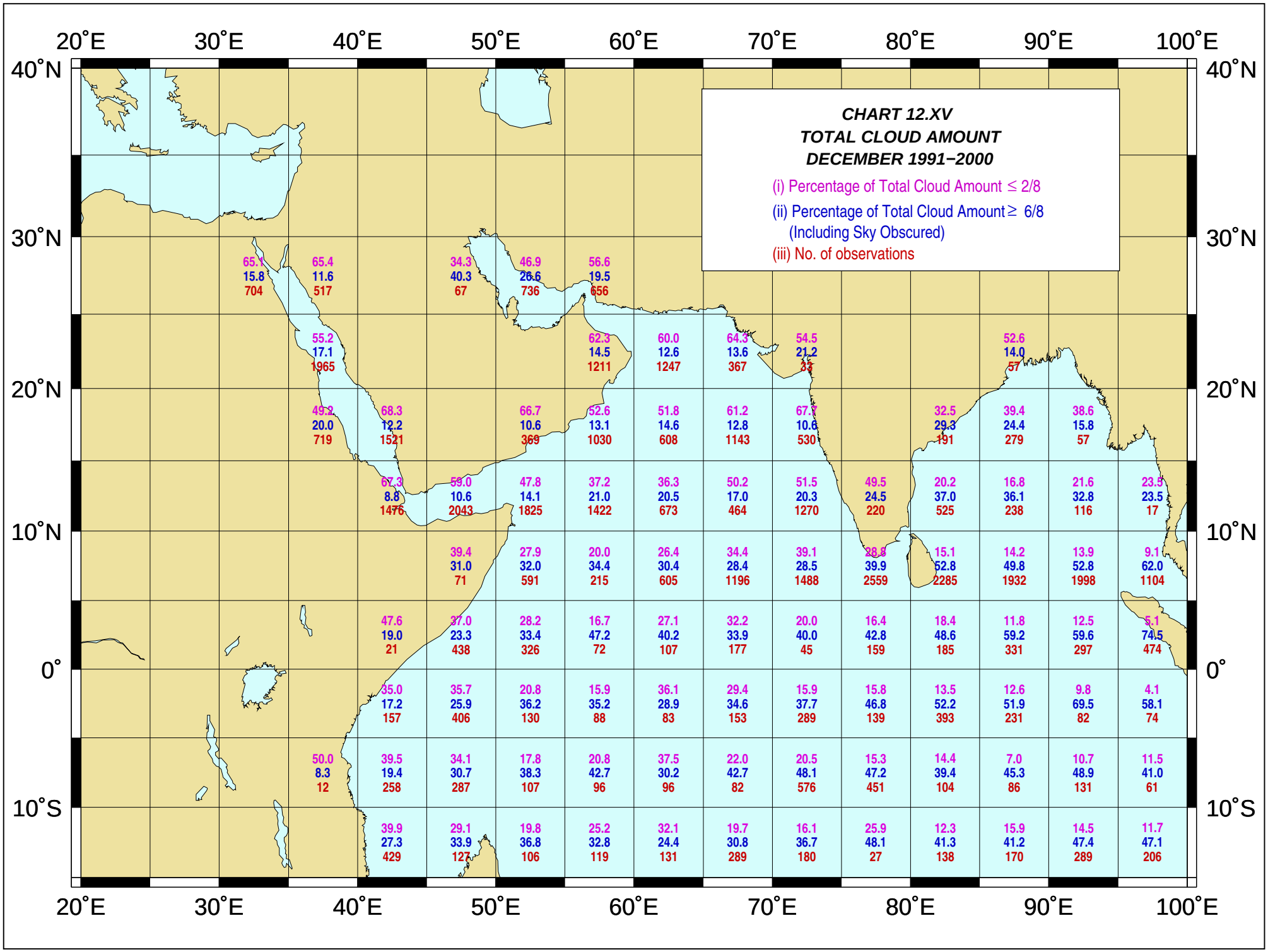


CHART 12.XV
TOTAL CLOUD AMOUNT
DECEMBER 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
65.1 15.8 704
65.4 11.6 517
34.3 40.3 67
46.9 26.6 736
56.6 19.5 656
55.2 17.1 1965
62.3 14.5 1211
60.0 12.6 1247
64.3 13.6 367
54.5 21.2 33
52.6 14.0 57
49.2 20.0 719
68.3 12.2 1521
66.7 10.6 369
52.6 13.1 1030
51.8 14.6 608
61.2 12.8 1143
67.7 10.6 530
32.5 29.3 191
39.4 24.4 279
38.6 15.8 57
67.3 8.8 1476
59.0 10.6 2043
47.8 14.1 1825
37.2 21.0 1422
36.3 20.5 673
50.2 17.0 464
51.5 20.3 1270
49.5 24.5 220
20.2 37.0 525
16.8 36.1 238
21.6 32.8 116
23.5 23.5 17
39.4 31.0 71
27.9 32.0 591
20.0 34.4 215
26.4 30.4 605
34.4 28.4 1196
39.1 28.5 1488
28.9 39.9 2559
15.1 52.8 2285
14.2 49.8 1932
13.9 52.8 1998
9.1 62.0 1104
47.6 19.0 21
37.0 23.3 438
28.2 33.4 326
16.7 47.2 72
27.1 40.2 107
32.2 33.9 177
20.0 40.0 45
16.4 42.8 159
18.4 48.6 185
11.8 59.2 331
12.5 59.6 297
5.1 74.5 474
35.0 17.2 157
35.7 25.9 406
20.8 36.2 130
15.9 35.2 88
36.1 28.9 83
29.4 34.6 153
15.9 37.7 289
15.8 46.8 139
13.5 52.2 393
12.6 51.9 231
9.8 69.5 82
4.1 58.1 74
50.0 8.3 12
39.5 19.4 258
34.1 30.7 287
17.8 38.3 107
20.8 42.7 96
37.5 30.2 96
22.0 42.7 82
20.5 48.1 576
15.3 47.2 451
14.4 39.4 104
7.0 45.3 86
10.7 48.9 131
11.5 41.0 61
39.9 27.3 429
29.1 33.9 127
19.8 36.8 106
25.2 32.8 119
32.1 24.4 131
19.7 30.8 289
16.1 36.7 180
25.9 48.1 27
12.3 41.3 138
15.9 41.2 170
14.5 47.4 289
11.7 47.1 206

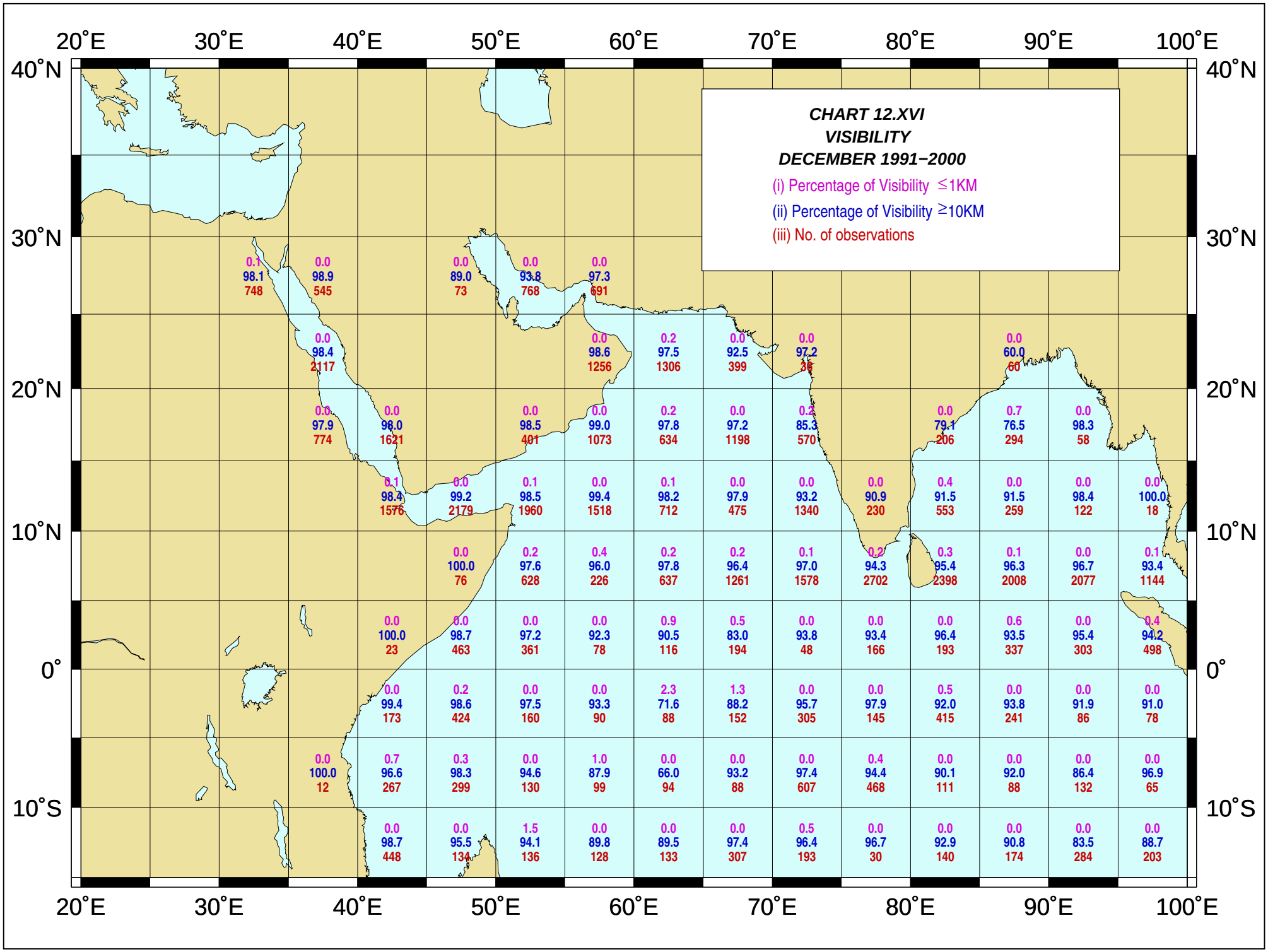


CHART 12.XVI
VISIBILITY
DECEMBER 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
0.1 98.1 748
0.0 98.9 545
0.0 89.0 73
0.0 93.8 768
0.0 97.3 691
0.0 98.4 2117
0.0 98.6 1256
0.2 97.5 1306
0.0 92.5 399
0.0 97.2 36
0.0 60.0 60
0.0 97.9 774
0.0 98.0 1621
0.0 98.5 401
0.0 99.0 1073
0.2 97.8 634
0.0 97.2 1198
0.2 85.3 570
0.0 79.1 206
0.7 76.5 294
0.0 98.3 58
0.1 98.4 1576
0.0 99.2 2179
0.1 98.5 1960
0.0 99.4 1518
0.1 98.2 712
0.0 97.9 475
0.0 93.2 1340
0.0 90.9 230
0.4 91.5 553
0.0 91.5 259
0.0 98.4 122
0.0 100.0 18
0.0 100.0 76
0.2 97.6 628
0.4 96.0 226
0.2 97.8 637
0.2 96.4 1261
0.1 97.0 1578
0.2 94.3 2702
0.3 95.4 2398
0.1 96.3 2008
0.0 96.7 2077
0.1 93.4 1144
0.0 100.0 23
0.0 98.7 463
0.0 97.2 361
0.0 92.3 78
0.9 90.5 116
0.5 83.0 194
0.0 93.8 48
0.0 93.4 166
0.0 96.4 193
0.6 93.5 337
0.0 95.4 303
0.4 94.2 498
0.0 99.4 173
0.2 98.6 424
0.0 97.5 160
0.0 93.3 90
2.3 71.6 88
1.3 88.2 152
0.0 95.7 305
0.0 97.9 145
0.5 92.0 415
0.0 93.8 241
0.0 91.9 86
0.0 91.0 78
0.0 100.0 12
0.7 96.6 267
0.3 98.3 299
0.0 94.6 130
1.0 87.9 99
0.0 66.0 94
0.0 93.2 88
0.0 97.4 607
0.4 94.4 468
0.0 90.1 111
0.0 92.0 88
0.0 86.4 132
0.0 96.9 65
0.0 98.7 448
0.0 95.5 134
1.5 94.1 136
0.0 89.8 128
0.0 89.5 133
0.0 97.4 307
0.5 96.4 193
0.0 96.7 30
0.0 92.9 140
0.0 90.8 174
0.0 83.5 284
0.0 88.7 203

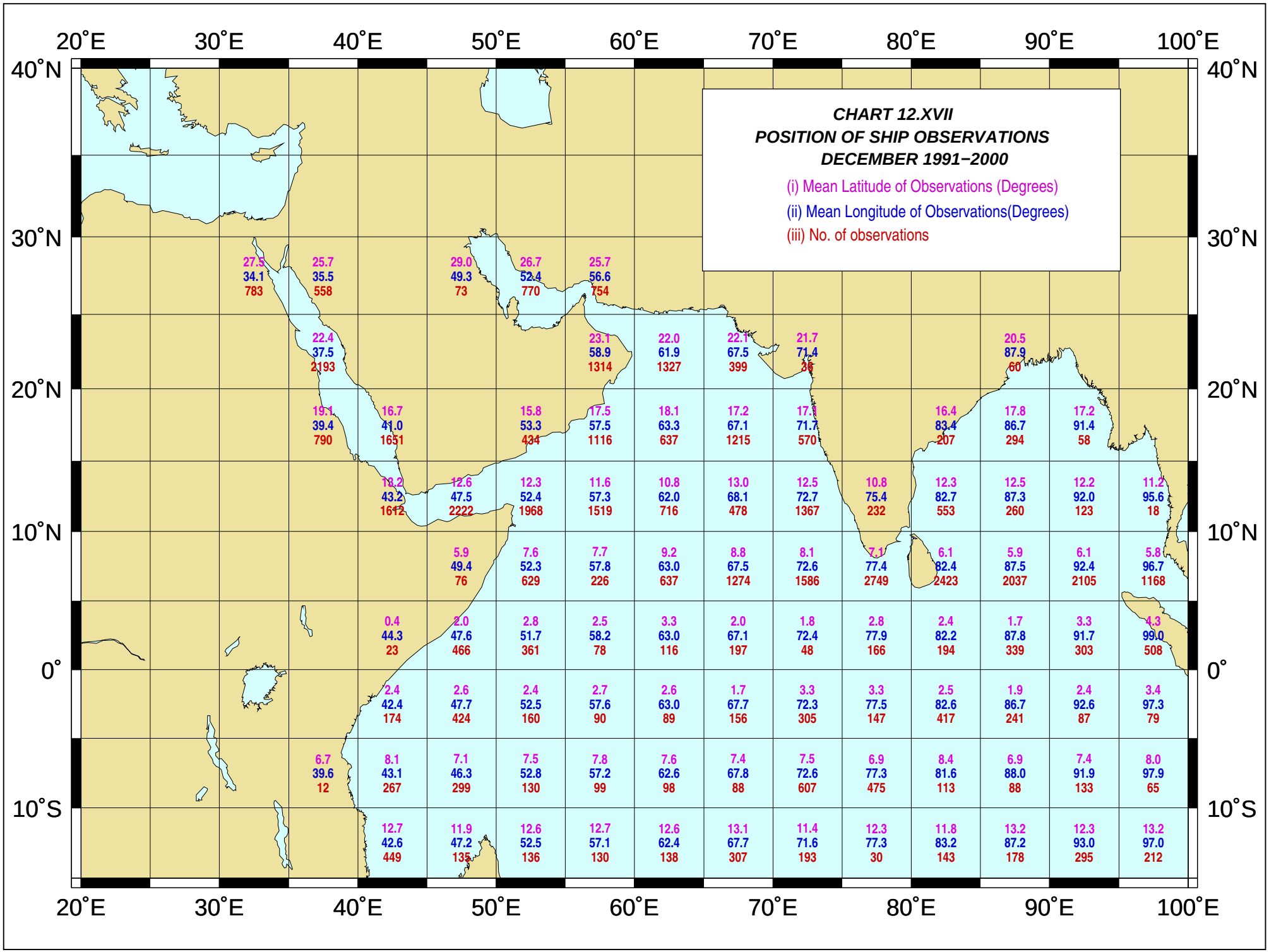


CHART 12.XVII
POSITION OF SHIP OBSERVATIONS
DECEMBER 1991−2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
27.5 34.1 783
25.7 35.5 558
29.0 49.3 73
26.7 52.4 770
25.7 56.6 754
22.4 37.5 2193
23.1 58.9 1314
22.0 61.9 1327
22.1 67.5 399
21.7 71.4 36
20.5 87.9 60
19.1 39.4 790
16.7 41.0 1651
15.8 53.3 434
17.5 57.5 1116
18.1 63.3 637
17.2 67.1 1215
17.1 71.7 570
16.4 83.4 207
17.8 86.7 294
17.2 91.4 58
12.2 43.2 1612
12.6 47.5 2222
12.3 52.4 1968
11.6 57.3 1519
10.8 62.0 716
13.0 68.1 478
12.5 72.7 1367
10.8 75.4 232
12.3 82.7 553
12.5 87.3 260
12.2 92.0 123
11.2 95.6 18
5.9 49.4 76
7.6 52.3 629
7.7 57.8 226
9.2 63.0 637
8.8 67.5 1274
8.1 72.6 1586
7.1 77.4 2749
6.1 82.4 2423
5.9 87.5 2037
6.1 92.4 2105
5.8 96.7 1168
0.4 44.3 23
2.0 47.6 466
2.8 51.7 361
2.5 58.2 78
3.3 63.0 116
2.0 67.1 197
1.8 72.4 48
2.8 77.9 166
2.4 82.2 194
1.7 87.8 339
3.3 91.7 303
4.3 99.0 508
2.4 42.4 174
2.6 47.7 424
2.4 52.5 160
2.7 57.6 90
2.6 63.0 89
1.7 67.7 156
3.3 72.3 305
3.3 77.5 147
2.5 82.6 417
1.9 86.7 241
2.4 92.6 87
3.4 97.3 79
6.7 39.6 12
8.1 43.1 267
7.1 46.3 299
7.5 52.8 130
7.8 57.2 99
7.6 62.6 98
7.4 67.8 88
7.5 72.6 607
6.9 77.3 475
8.4 81.6 113
6.9 88.0 88
7.4 91.9 133
8.0 97.9 65
12.7 42.6 449
11.9 47.2 135
12.6 52.5 136
12.7 57.1 130
12.6 62.4 138
13.1 67.7 307
11.4 71.6 193
12.3 77.3 30
11.8 83.2 143
13.2 87.2 178
12.3 93.0 295
13.2 97.0 212

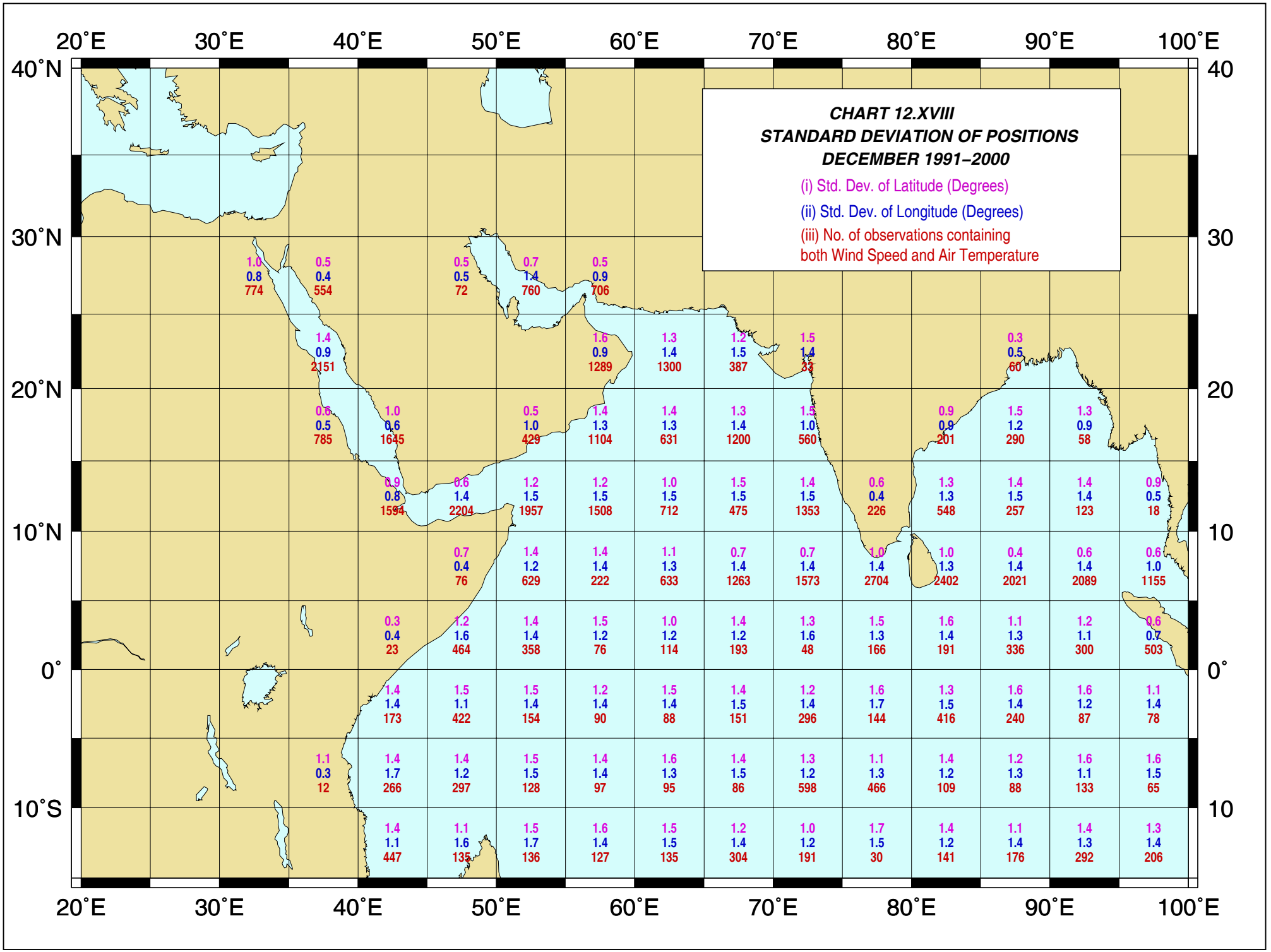
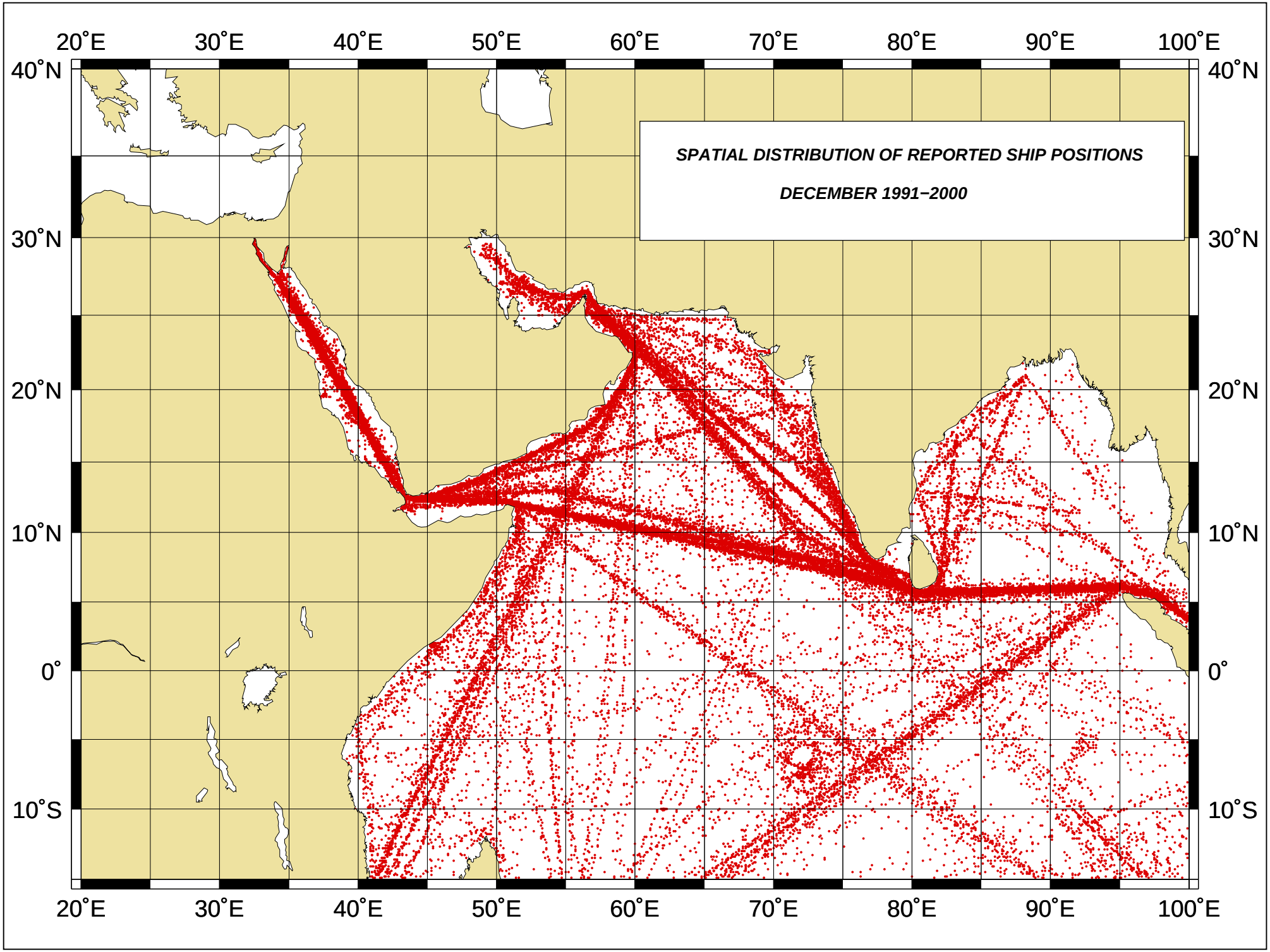
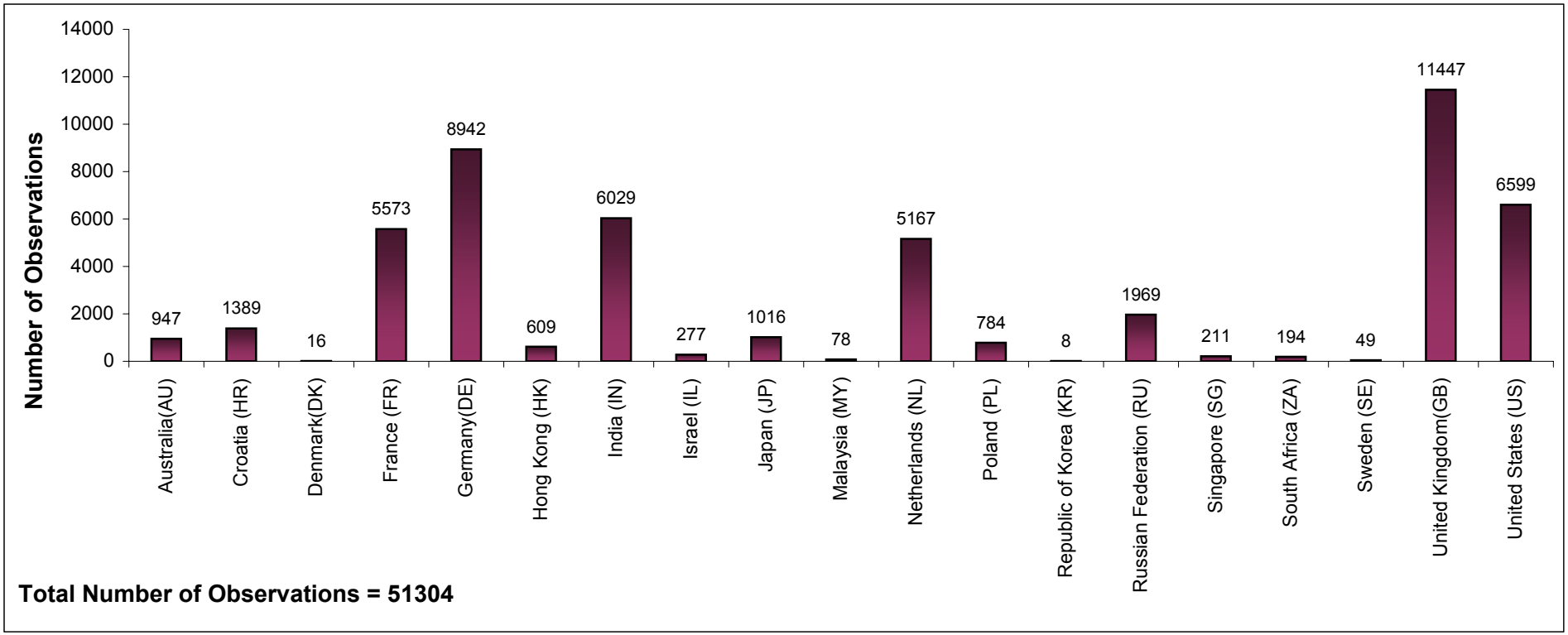


CHART 12.XVIII
STANDARD DEVIATION OF POSITIONS
DECEMBER 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing
both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.8 774
0.5 0.4 554
0.5 0.5 72
0.7 1.4 760
0.5 0.9 706
1.4 0.9 2151
1.6 0.9 1289
1.3 1.4 1300
1.2 1.5 387
1.5 1.4 33
0.3 0.5 60
0.6 0.5 785
1.0 0.6 1645
0.5 1.0 429
1.4 1.3 1104
1.4 1.3 631
1.3 1.4 1200
1.5 1.0 560
0.9 0.9 201
1.5 1.2 290
1.3 0.9 58
0.9 0.8 1594
0.6 1.4 2204
1.2 1.5 1957
1.2 1.5 1508
1.0 1.5 712
1.5 1.5 475
1.4 1.5 1353
0.6 0.4 226
1.3 1.3 548
1.4 1.5 257
1.4 1.4 123
0.9 0.5 18
0.7 0.4 76
1.4 1.2 629
1.4 1.4 222
1.1 1.3 633
0.7 1.4 1263
0.7 1.4 1573
1.0 1.4 2704
1.0 1.3 2402
0.4 1.4 2021
0.6 1.4 2089
0.6 1.0 1155
0.3 0.4 23
1.2 1.6 464
1.4 1.4 358
1.5 1.2 76
1.0 1.2 114
1.4 1.2 193
1.3 1.6 48
1.5 1.3 166
1.6 1.4 191
1.1 1.3 336
1.2 1.1 300
0.6 0.7 503
1.4 1.4 173
1.5 1.1 422
1.5 1.4 154
1.2 1.4 90
1.5 1.4 88
1.4 1.5 151
1.2 1.4 296
1.6 1.7 144
1.3 1.5 416
1.6 1.4 240
1.6 1.2 87
1.1 1.4 78
1.1 0.3 12
1.4 1.7 266
1.4 1.2 297
1.5 1.5 128
1.4 1.4 97
1.6 1.3 95
1.4 1.5 86
1.3 1.2 598
1.1 1.3 466
1.4 1.2 109
1.2 1.3 88
1.6 1.1 133
1.6 1.5 65
1.4 1.1 447
1.1 1.6 135
1.5 1.7 136
1.6 1.4 127
1.5 1.5 135
1.2 1.4 304
1.0 1.2 191
1.7 1.5 30
1.4 1.2 141
1.1 1.4 176
1.4 1.3 292
1.3 1.4 206


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
DECEMBER 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

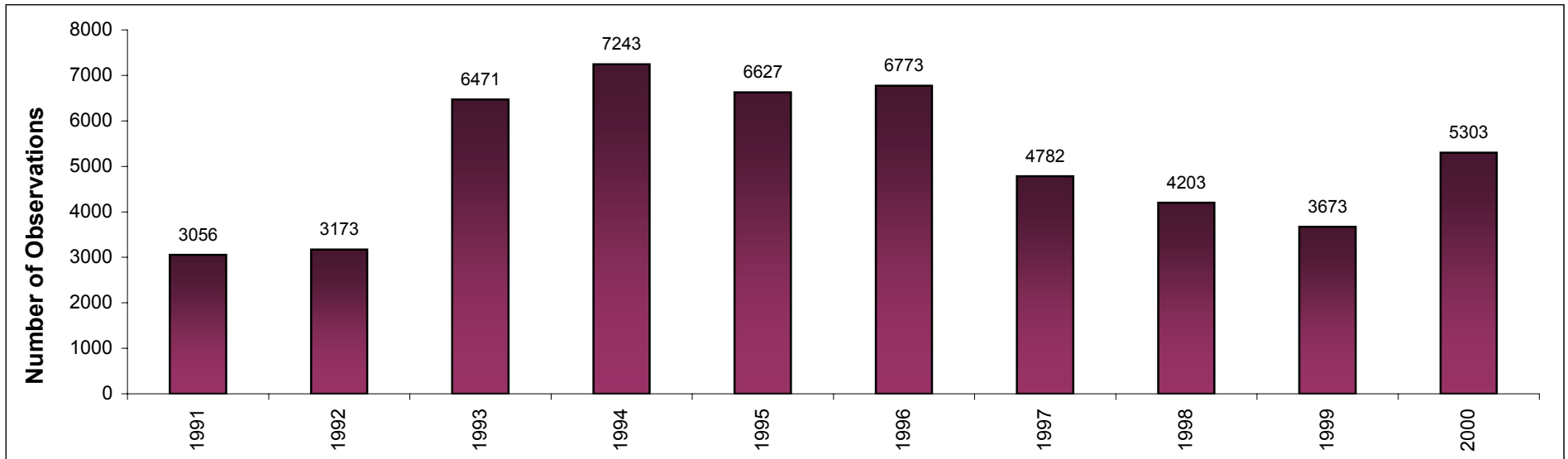
DECEMBER : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 51304

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 51304

Marine Climatological Summary Charts 1991-2000

ANNUAL CHARTS OF 1991 - 2000

CHART - I : AIR TEMPERATURE

CHART - II : SEA SURFACE TEMPERATURE

CHART - III : DEW POINT TEMPERATURE

CHART - IV : AIR-SEA TEMPERATURE DIFFERENCE

CHART - V : WIND SPEED

CHART - VI : WIND DIRECTION

CHART - VII : LIGHT AND STRONG WINDS

CHART - VIII : GALE AND MAXIMUM WINDS

CHART - IX : WAVE HEIGHT

CHART - X : FREQUENCY DISTRIBUTION OF HEIGHTS

CHART - XI : WAVE PERIOD AND SWELL DIRECTION

CHART - XII : WAVE PERIOD AND MAXIMUM WAVE HEIGHT

CHART - XIII : MEAN SEA LEVEL PRESSURE

CHART - XIV : PRECIPITATION

CHART - XV : TOTAL CLOUD AMOUNT

CHART - XVI : VISIBILITY

CHART - XVII : POSITION OF SHIP OBSERVATIONS

CHART - XVIII : STANDARD DEVIATION OF POSITIONS

SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS

COUNTRYWISE AND YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS

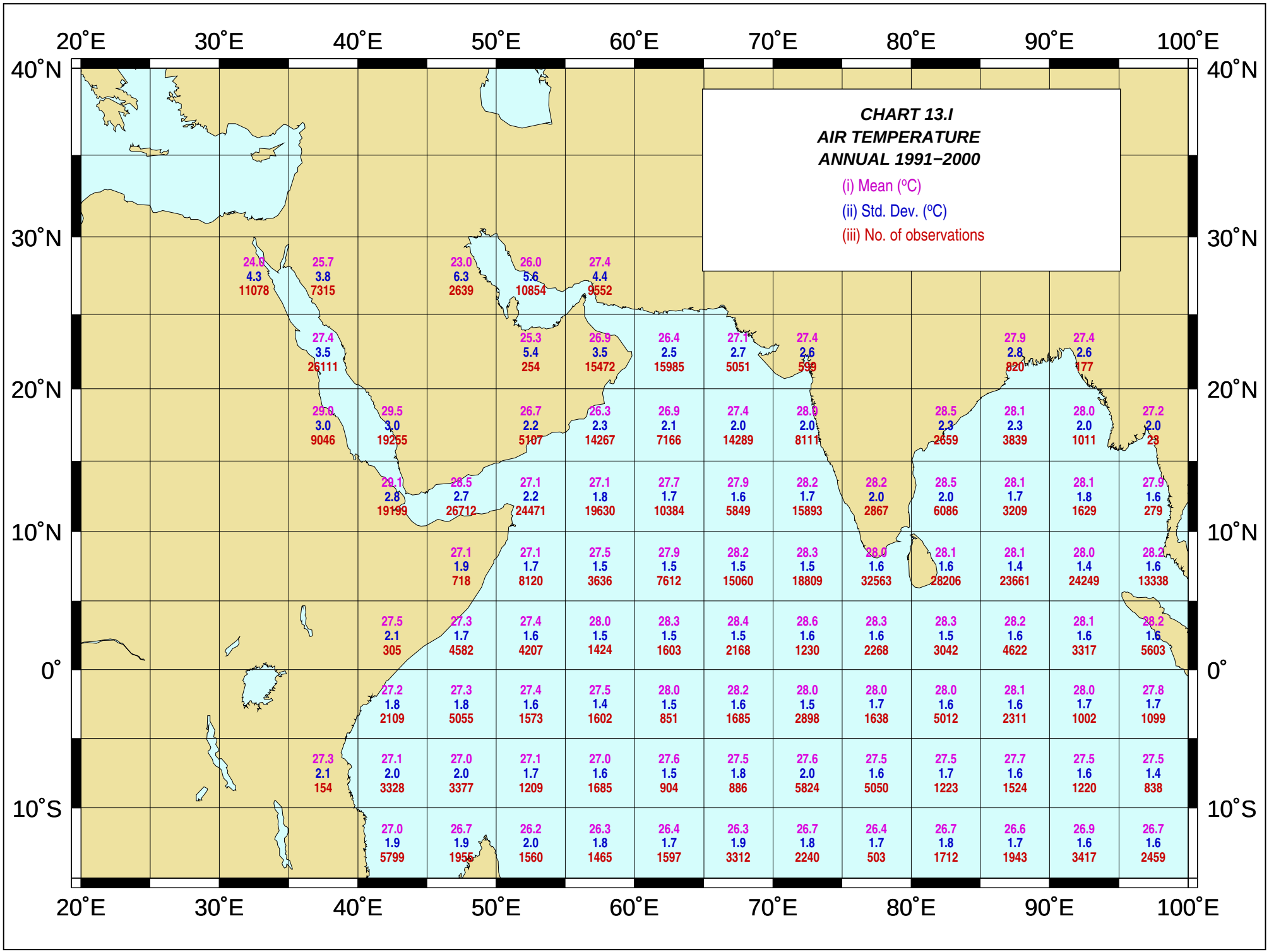


CHART 13.I
AIR TEMPERATURE
ANNUAL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
24.8 4.3 11078
25.7 3.8 7315
23.0 6.3 2639
26.0 5.6 10854
27.4 4.4 9552
27.4 3.5 26111
25.3 5.4 254
26.9 3.5 15472
26.4 2.5 15985
27.1 2.7 5051
27.4 2.6 599
27.9 2.8 820
27.4 2.6 177
29.0 3.0 9046
29.5 3.0 19255
26.7 2.2 5107
26.3 2.3 14267
26.9 2.1 7166
27.4 2.0 14289
28.0 2.0 8111
28.5 2.3 2659
28.1 2.3 3839
28.0 2.0 1011
27.2 2.0 28
29.1 2.8 19199
28.5 2.7 26712
27.1 2.2 24471
27.1 1.8 19630
27.7 1.7 10384
27.9 1.6 5849
28.2 1.7 15893
28.2 2.0 2867
28.5 2.0 6086
28.1 1.7 3209
28.1 1.8 1629
27.9 1.6 279
27.1 1.9 718
27.1 1.7 8120
27.5 1.5 3636
27.9 1.5 7612
28.2 1.5 15060
28.3 1.5 18809
28.0 1.6 32563
28.1 1.6 28206
28.1 1.4 23661
28.0 1.4 24249
28.2 1.6 13338
27.5 2.1 305
27.3 1.7 4582
27.4 1.6 4207
28.0 1.5 1424
28.3 1.5 1603
28.4 1.5 2168
28.6 1.6 1230
28.3 1.6 2268
28.3 1.5 3042
28.2 1.6 4622
28.1 1.6 3317
28.2 1.6 5603
27.2 1.8 2109
27.3 1.8 5055
27.4 1.6 1573
27.5 1.4 1602
28.0 1.5 851
28.2 1.6 1685
28.0 1.5 2898
28.0 1.7 1638
28.0 1.6 5012
28.1 1.6 2311
28.0 1.7 1002
27.8 1.7 1099
27.3 2.1 154
27.1 2.0 3328
27.0 2.0 3377
27.1 1.7 1209
27.0 1.6 1685
27.6 1.5 904
27.5 1.8 886
27.6 2.0 5824
27.5 1.6 5050
27.5 1.7 1223
27.7 1.6 1524
27.5 1.6 1220
27.5 1.4 838
27.0 1.9 5799
26.7 1.9 1955
26.2 2.0 1560
26.3 1.8 1465
26.4 1.7 1597
26.3 1.9 3312
26.7 1.8 2240
26.4 1.7 503
26.7 1.8 1712
26.6 1.7 1943
26.9 1.6 3417
26.7 1.6 2459

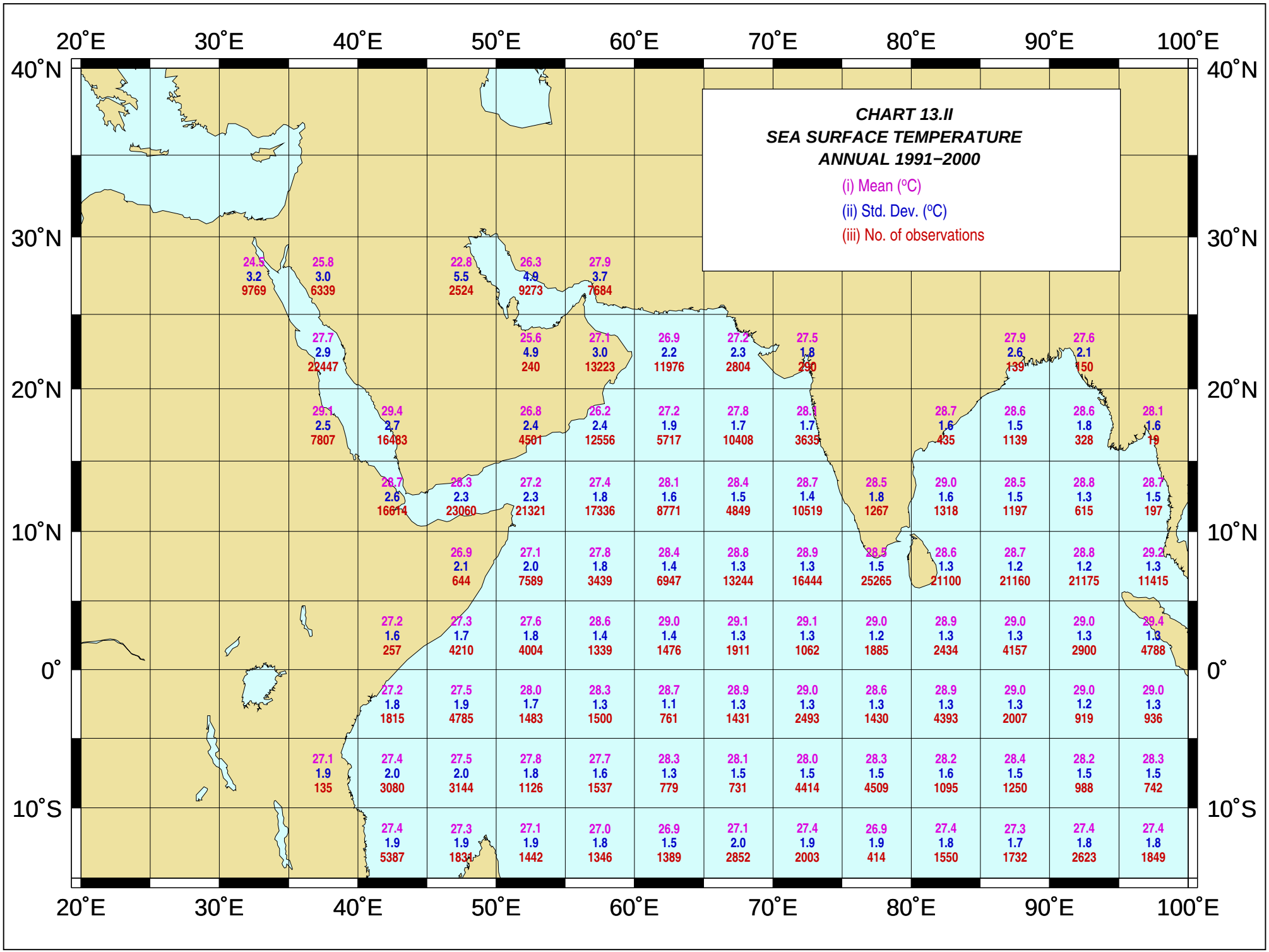


CHART 13.II
SEA SURFACE TEMPERATURE
ANNUAL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
24.5 3.2 9769
25.8 3.0 6339
22.8 5.5 2524
26.3 4.9 9273
27.9 3.7 7684
27.7 2.9 22447
25.6 4.9 240
27.1 3.0 13223
26.9 2.2 11976
27.2 2.3 2804
27.5 1.8 290
27.9 2.6 139
27.6 2.1 150
29.1 2.5 7807
29.4 2.7 16483
26.8 2.4 4501
26.2 2.4 12556
27.2 1.9 5717
27.8 1.7 10408
28.1 1.7 3635
28.7 1.6 435
28.6 1.5 1139
28.6 1.8 328
28.1 1.6 19
28.7 2.6 16614
28.3 2.3 23060
27.2 2.3 21321
27.4 1.8 17336
28.1 1.6 8771
28.4 1.5 4849
28.7 1.4 10519
28.5 1.8 1267
29.0 1.6 1318
28.5 1.5 1197
28.8 1.3 615
28.7 1.5 197
26.9 2.1 644
27.1 2.0 7589
27.8 1.8 3439
28.4 1.4 6947
28.8 1.3 13244
28.9 1.3 16444
28.5 1.5 25265
28.6 1.3 21100
28.7 1.2 21160
28.8 1.2 21175
29.2 1.3 11415
27.2 1.6 257
27.3 1.7 4210
27.6 1.8 4004
28.6 1.4 1339
29.0 1.4 1476
29.1 1.3 1911
29.1 1.3 1062
29.0 1.2 1885
28.9 1.3 2434
29.0 1.3 4157
29.0 1.3 2900
29.4 1.3 4788
27.2 1.8 1815
27.5 1.9 4785
28.0 1.7 1483
28.3 1.3 1500
28.7 1.1 761
28.9 1.3 1431
29.0 1.3 2493
28.6 1.3 1430
28.9 1.3 4393
29.0 1.3 2007
29.0 1.2 919
29.0 1.3 936
27.1 1.9 135
27.4 2.0 3080
27.5 2.0 3144
27.8 1.8 1126
27.7 1.6 1537
28.3 1.3 779
28.1 1.5 731
28.0 1.5 4414
28.3 1.5 4509
28.2 1.6 1095
28.4 1.5 1250
28.2 1.5 988
28.3 1.5 742
27.4 1.9 5387
27.3 1.9 1831
27.1 1.9 1442
27.0 1.8 1346
26.9 1.5 1389
27.1 2.0 2852
27.4 1.9 2003
26.9 1.9 414
27.4 1.8 1550
27.3 1.7 1732
27.4 1.8 2623
27.4 1.8 1849

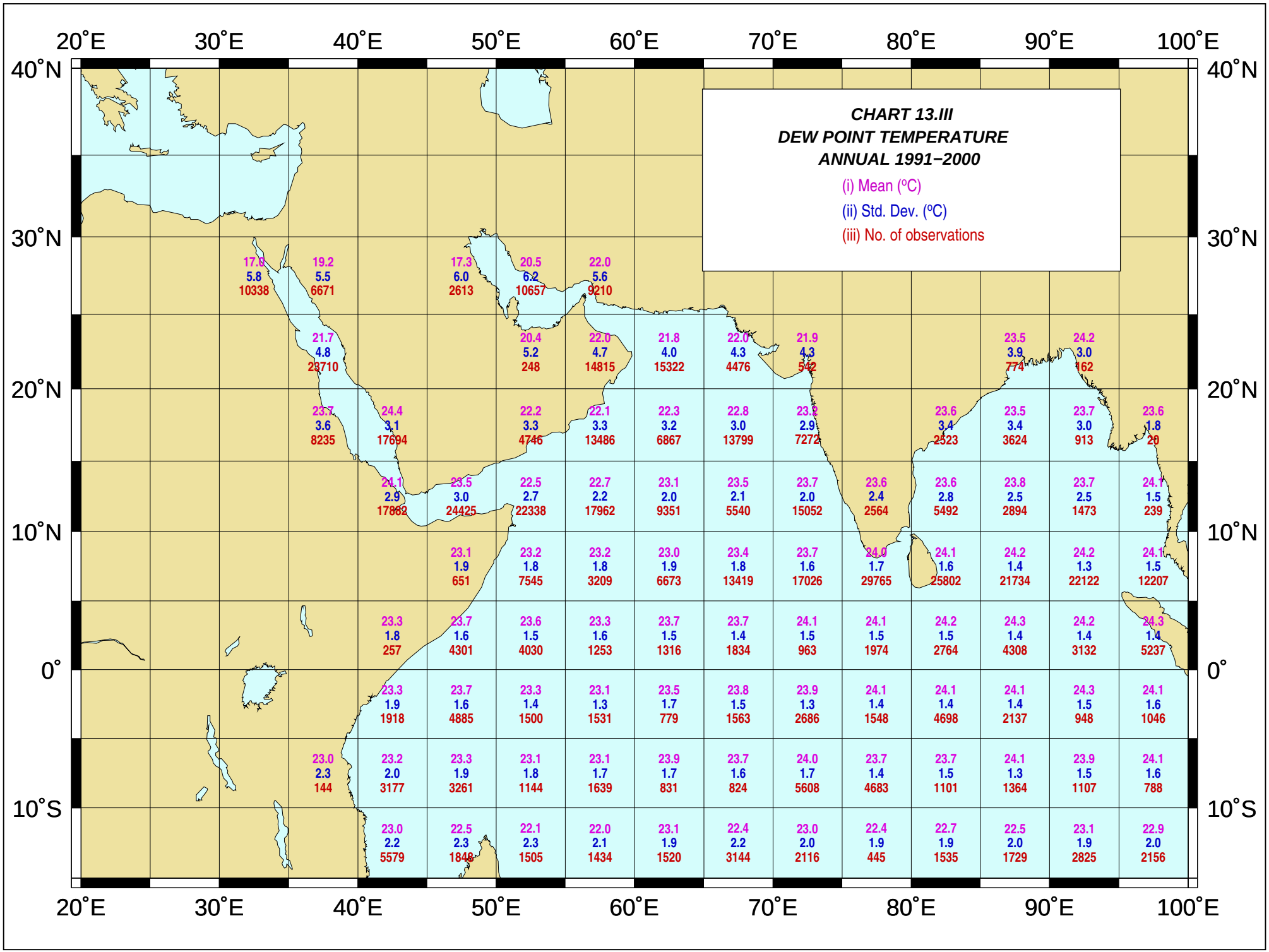


CHART 13.III
DEW POINT TEMPERATURE
ANNUAL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
17.6 5.8 10338
19.2 5.5 6671
17.3 6.0 2613
20.5 6.2 10657
22.0 5.6 9210
21.7 4.8 23710
20.4 5.2 248
22.0 4.7 14815
21.8 4.0 15322
22.0 4.3 4476
21.9 4.3 542
23.5 3.9 774
24.2 3.0 162
23.7 3.6 8235
24.4 3.1 17694
22.2 3.3 4746
22.1 3.3 13486
22.3 3.2 6867
22.8 3.0 13799
23.2 2.9 7272
23.6 3.4 2523
23.5 3.4 3624
23.7 3.0 913
23.6 1.8 20
24.1 2.9 17882
23.5 3.0 24425
22.5 2.7 22338
22.7 2.2 17962
23.1 2.0 9351
23.5 2.1 5540
23.7 2.0 15052
23.6 2.4 2564
23.6 2.8 5492
23.8 2.5 2894
23.7 2.5 1473
24.1 1.5 239
23.1 1.9 651
23.2 1.8 7545
23.2 1.8 3209
23.0 1.9 6673
23.4 1.8 13419
23.7 1.6 17026
24.0 1.7 29765
24.1 1.6 25802
24.2 1.4 21734
24.2 1.3 22122
24.1 1.5 12207
23.3 1.8 257
23.7 1.6 4301
23.6 1.5 4030
23.3 1.6 1253
23.7 1.5 1316
23.7 1.4 1834
24.1 1.5 963
24.1 1.5 1974
24.2 1.5 2764
24.3 1.4 4308
24.2 1.4 3132
24.3 1.4 5237
23.3 1.9 1918
23.7 1.6 4885
23.3 1.4 1500
23.1 1.3 1531
23.5 1.7 779
23.8 1.5 1563
23.9 1.3 2686
24.1 1.4 1548
24.1 1.4 4698
24.1 1.4 2137
24.3 1.5 948
24.1 1.6 1046
23.0 2.3 144
23.2 2.0 3177
23.3 1.9 3261
23.1 1.8 1144
23.1 1.7 1639
23.9 1.7 831
23.7 1.6 824
24.0 1.7 5608
23.7 1.4 4683
23.7 1.5 1101
24.1 1.3 1364
23.9 1.5 1107
24.1 1.6 788
23.0 2.2 5579
22.5 2.3 1848
22.1 2.3 1505
22.0 2.1 1434
23.1 1.9 1520
22.4 2.2 3144
23.0 2.0 2116
22.4 1.9 445
22.7 1.9 1535
22.5 2.0 1729
23.1 1.9 2825
22.9 2.0 2156

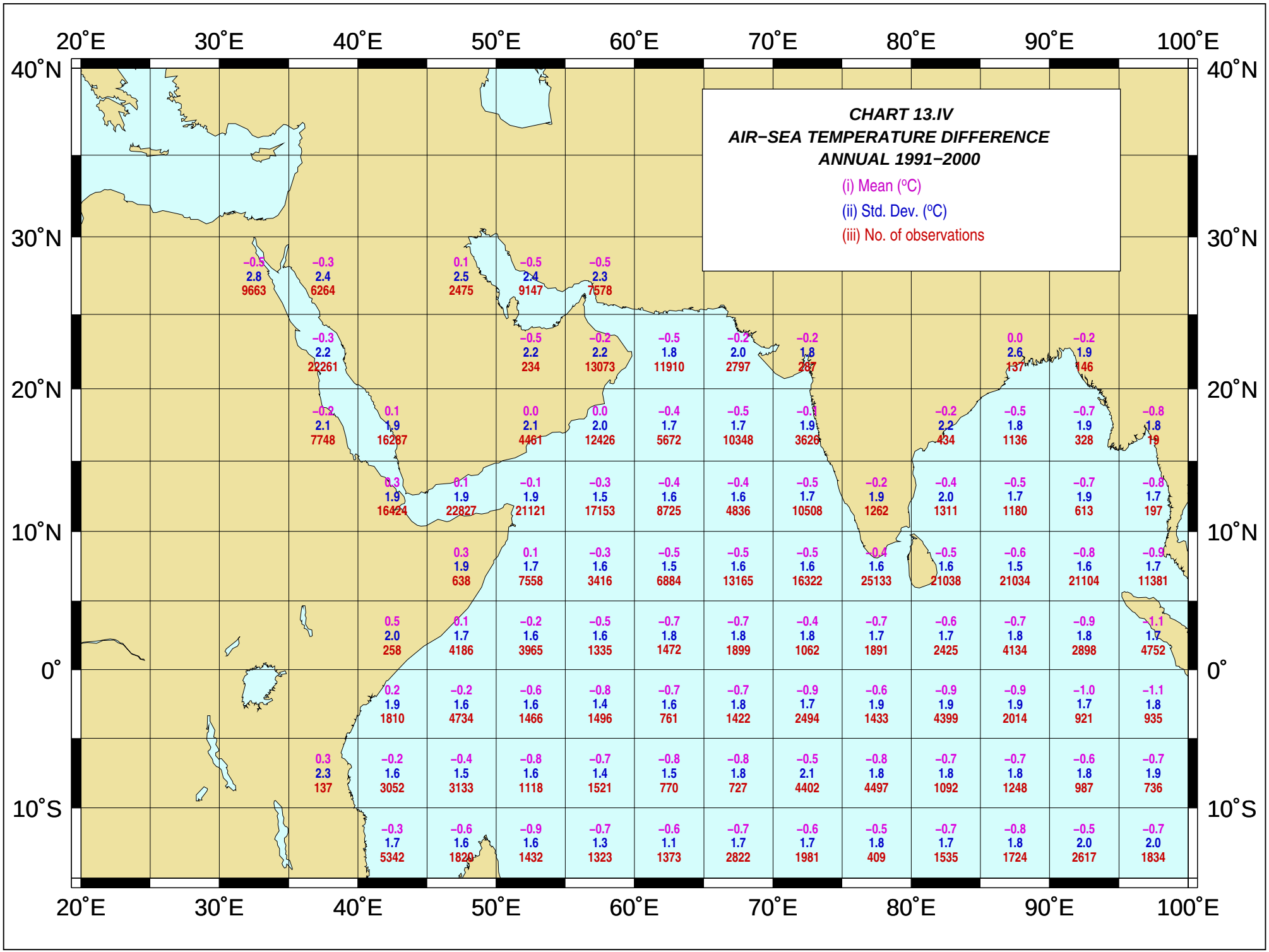


CHART 13.IV
AIR–SEA TEMPERATURE DIFFERENCE
ANNUAL 1991–2000
(i) Mean (°C)
(ii) Std. Dev. (°C)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
−0.5 2.8 9663
−0.3 2.4 6264
0.1 2.5 2475
−0.5 2.4 9147
−0.5 2.3 7578
−0.3 2.2 22261
−0.5 2.2 234
−0.2 2.2 13073
−0.5 1.8 11910
−0.2 2.0 2797
−0.2 1.8 287
0.0 2.6 137
−0.2 1.9 146
−0.2 2.1 7748
0.1 1.9 16287
0.0 2.1 4461
0.0 2.0 12426
−0.4 1.7 5672
−0.5 1.7 10348
−0.3 1.9 3626
−0.2 2.2 434
−0.5 1.8 1136
−0.7 1.9 328
−0.8 1.8 19
0.3 1.9 16424
0.1 1.9 22827
−0.1 1.9 21121
−0.3 1.5 17153
−0.4 1.6 8725
−0.4 1.6 4836
−0.5 1.7 10508
−0.2 1.9 1262
−0.4 2.0 1311
−0.5 1.7 1180
−0.7 1.9 613
−0.8 1.7 197
0.3 1.9 638
0.1 1.7 7558
−0.3 1.6 3416
−0.5 1.5 6884
−0.5 1.6 13165
−0.5 1.6 16322
−0.4 1.6 25133
−0.5 1.6 21038
−0.6 1.5 21034
−0.8 1.6 21104
−0.9 1.7 11381
0.5 2.0 258
0.1 1.7 4186
−0.2 1.6 3965
−0.5 1.6 1335
−0.7 1.8 1472
−0.7 1.8 1899
−0.4 1.8 1062
−0.7 1.7 1891
−0.6 1.7 2425
−0.7 1.8 4134
−0.9 1.8 2898
−1.1 1.7 4752
0.2 1.9 1810
−0.2 1.6 4734
−0.6 1.6 1466
−0.8 1.4 1496
−0.7 1.6 761
−0.7 1.8 1422
−0.9 1.7 2494
−0.6 1.9 1433
−0.9 1.9 4399
−0.9 1.9 2014
−1.0 1.7 921
−1.1 1.8 935
0.3 2.3 137
−0.2 1.6 3052
−0.4 1.5 3133
−0.8 1.6 1118
−0.7 1.4 1521
−0.8 1.5 770
−0.8 1.8 727
−0.5 2.1 4402
−0.8 1.8 4497
−0.7 1.8 1092
−0.7 1.8 1248
−0.6 1.8 987
−0.7 1.9 736
−0.3 1.7 5342
−0.6 1.6 1820
−0.9 1.6 1432
−0.7 1.3 1323
−0.6 1.1 1373
−0.7 1.7 2822
−0.6 1.7 1981
−0.5 1.8 409
−0.7 1.7 1535
−0.8 1.8 1724
−0.5 2.0 2617
−0.7 2.0 1834

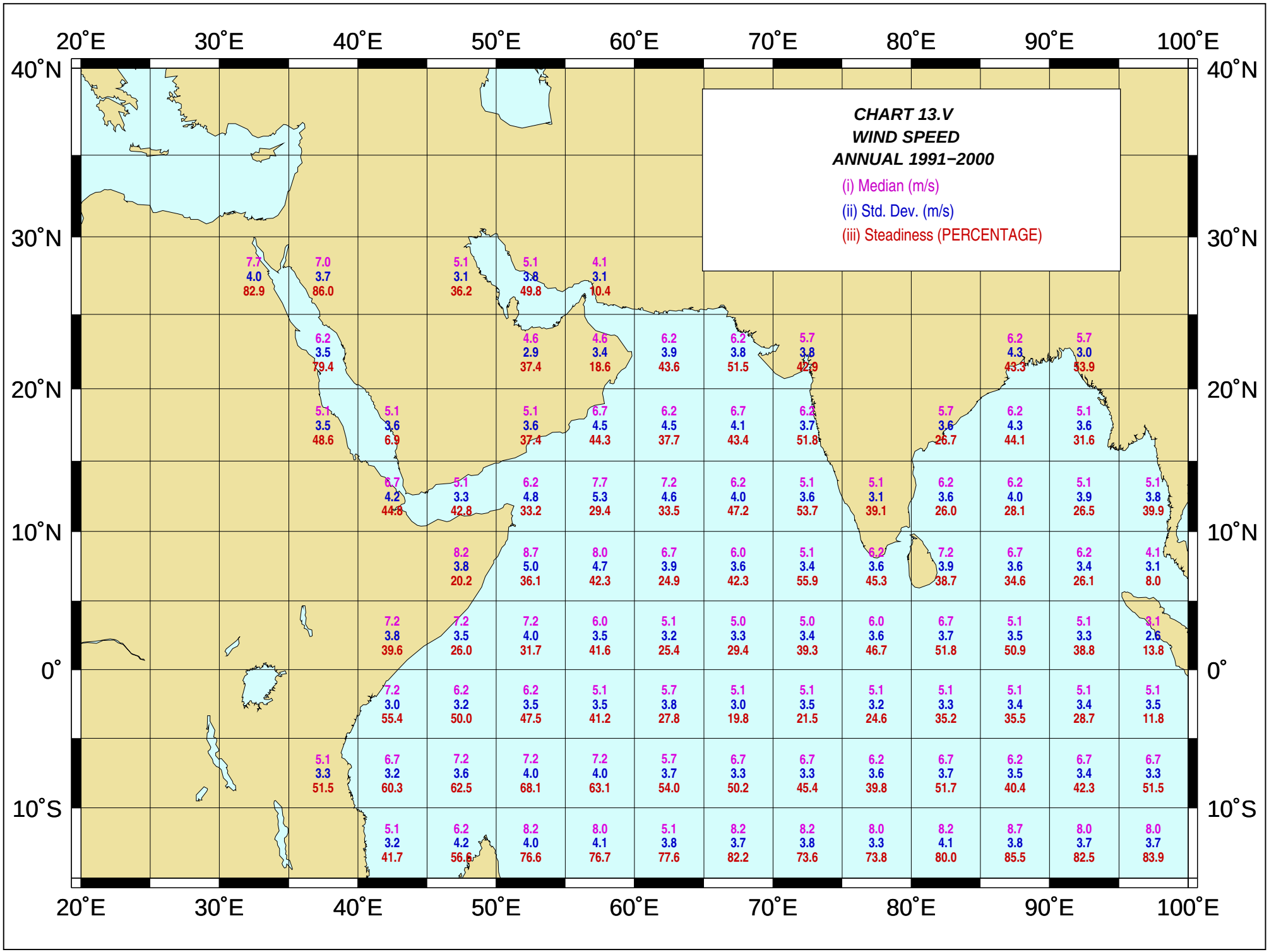


CHART 13.V
WIND SPEED
ANNUAL 1991–2000
(i) Median (m/s)
(ii) Std. Dev. (m/s)
(iii) Steadiness (PERCENTAGE)
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
7.7 4.0 82.9
7.0 3.7 86.0
5.1 3.1 36.2
5.1 3.8 49.8
4.1 3.1 10.4
6.2 3.5 79.4
4.6 2.9 37.4
4.6 3.4 18.6
6.2 3.9 43.6
6.2 3.8 51.5
5.7 3.8 42.9
6.2 4.3 43.3
5.7 3.0 53.9
5.1 3.5 48.6
5.1 3.6 6.9
5.1 3.6 37.4
6.7 4.5 44.3
6.2 4.5 37.7
6.7 4.1 43.4
6.2 3.7 51.8
5.7 3.6 26.7
6.2 4.3 44.1
5.1 3.6 31.6
6.7 4.2 44.8
5.1 3.3 42.8
6.2 4.8 33.2
7.7 5.3 29.4
7.2 4.6 33.5
6.2 4.0 47.2
5.1 3.6 53.7
5.1 3.1 39.1
6.2 3.6 26.0
6.2 4.0 28.1
5.1 3.9 26.5
5.1 3.8 39.9
8.2 3.8 20.2
8.7 5.0 36.1
8.0 4.7 42.3
6.7 3.9 24.9
6.0 3.6 42.3
5.1 3.4 55.9
6.2 3.6 45.3
7.2 3.9 38.7
6.7 3.6 34.6
6.2 3.4 26.1
4.1 3.1 8.0
7.2 3.8 39.6
7.2 3.5 26.0
7.2 4.0 31.7
6.0 3.5 41.6
5.1 3.2 25.4
5.0 3.3 29.4
5.0 3.4 39.3
6.0 3.6 46.7
6.7 3.7 51.8
5.1 3.5 50.9
5.1 3.3 38.8
3.1 2.6 13.8
7.2 3.0 55.4
6.2 3.2 50.0
6.2 3.5 47.5
5.1 3.5 41.2
5.7 3.8 27.8
5.1 3.0 19.8
5.1 3.5 21.5
5.1 3.2 24.6
5.1 3.3 35.2
5.1 3.4 35.5
5.1 3.4 28.7
5.1 3.5 11.8
5.1 3.3 51.5
6.7 3.2 60.3
7.2 3.6 62.5
7.2 4.0 68.1
7.2 4.0 63.1
5.7 3.7 54.0
6.7 3.3 50.2
6.7 3.3 45.4
6.2 3.6 39.8
6.7 3.7 51.7
6.2 3.5 40.4
6.7 3.4 42.3
6.7 3.3 51.5
5.1 3.2 41.7
6.2 4.2 56.6
8.2 4.0 76.6
8.0 4.1 76.7
5.1 3.8 77.6
8.2 3.7 82.2
8.2 3.8 73.6
8.0 3.3 73.8
8.2 4.1 80.0
8.7 3.8 85.5
8.0 3.7 82.5
8.0 3.7 83.9

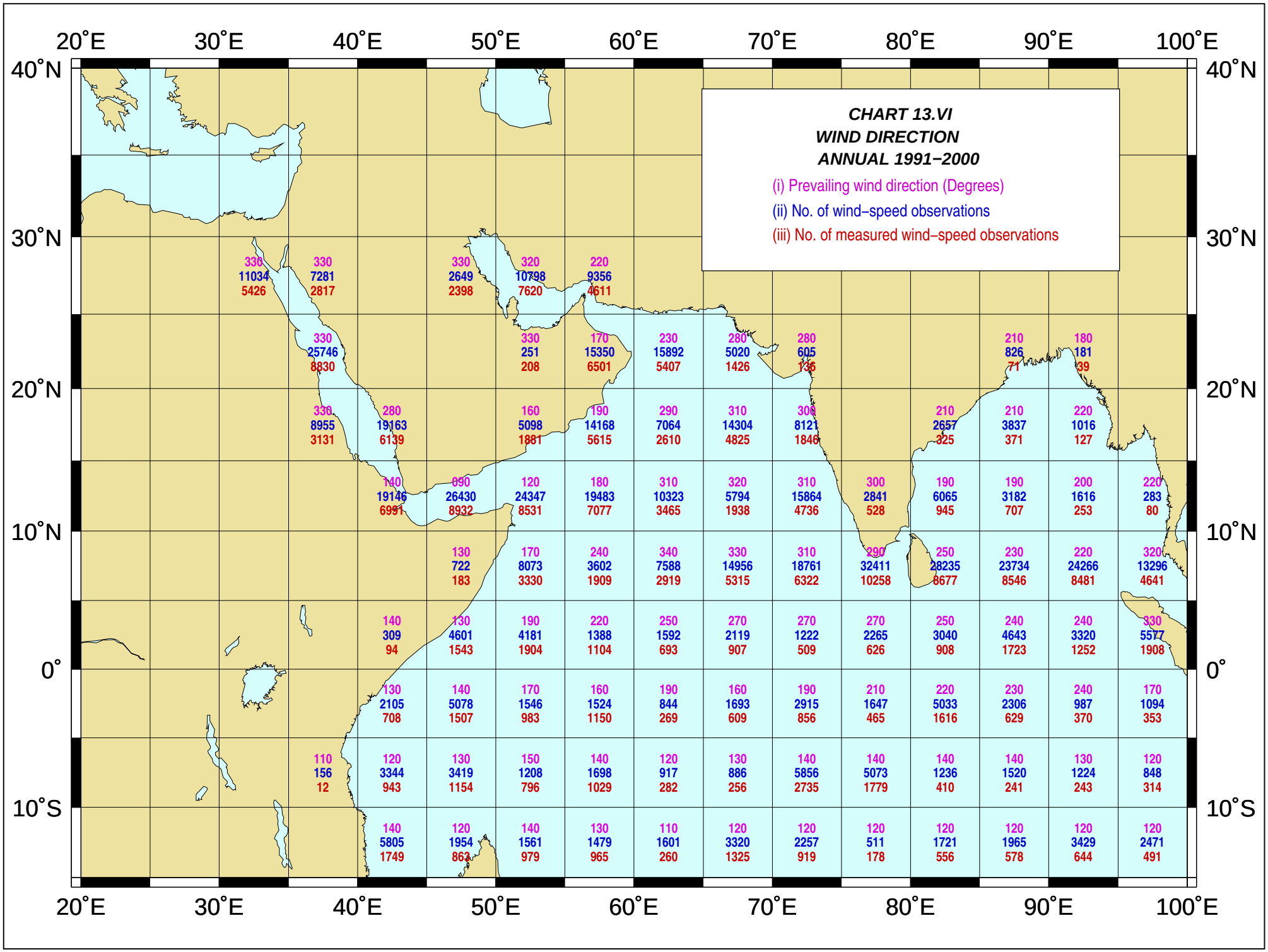


CHART 13.VI
WIND DIRECTION
ANNUAL 1991–2000
(i) Prevailing wind direction (Degrees)
(ii) No. of wind–speed observations
(iii) No. of measured wind–speed observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
330 11034 5426
330 7281 2817
330 2649 2398
320 10798 7620
220 9356 4611
330 25746 8830
330 251 208
170 15350 6501
230 15892 5407
280 5020 1426
280 605 136
210 826 71
180 181 39
330 8955 3131
280 19163 6139
160 5098 1881
190 14168 5615
290 7064 2610
310 14304 4825
300 8121 1846
210 2657 325
210 3837 371
220 1016 127
140 19146 6991
090 26430 8932
120 24347 8531
180 19483 7077
310 10323 3465
320 5794 1938
310 15864 4736
300 2841 528
190 6065 945
190 3182 707
200 1616 253
220 283 80
130 722 183
170 8073 3330
240 3602 1909
340 7588 2919
330 14956 5315
310 18761 6322
290 32411 10258
250 28235 8677
230 23734 8546
220 24266 8481
320 13296 4641
140 309 94
130 4601 1543
190 4181 1904
220 1388 1104
250 1592 693
270 2119 907
270 1222 509
270 2265 626
250 3040 908
240 4643 1723
240 3320 1252
330 5577 1908
130 2105 708
140 5078 1507
170 1546 983
160 1524 1150
190 844 269
160 1693 609
190 2915 856
210 1647 465
220 5033 1616
230 2306 629
240 987 370
170 1094 353
110 156 12
120 3344 943
130 3419 1154
150 1208 796
140 1698 1029
120 917 282
130 886 256
140 5856 2735
140 5073 1779
140 1236 410
140 1520 241
130 1224 243
120 848 314
140 5805 1749
120 1954 863
140 1561 979
130 1479 965
110 1601 260
120 3320 1325
120 2257 919
120 511 178
120 1721 556
120 1965 578
120 3429 644
120 2471 491

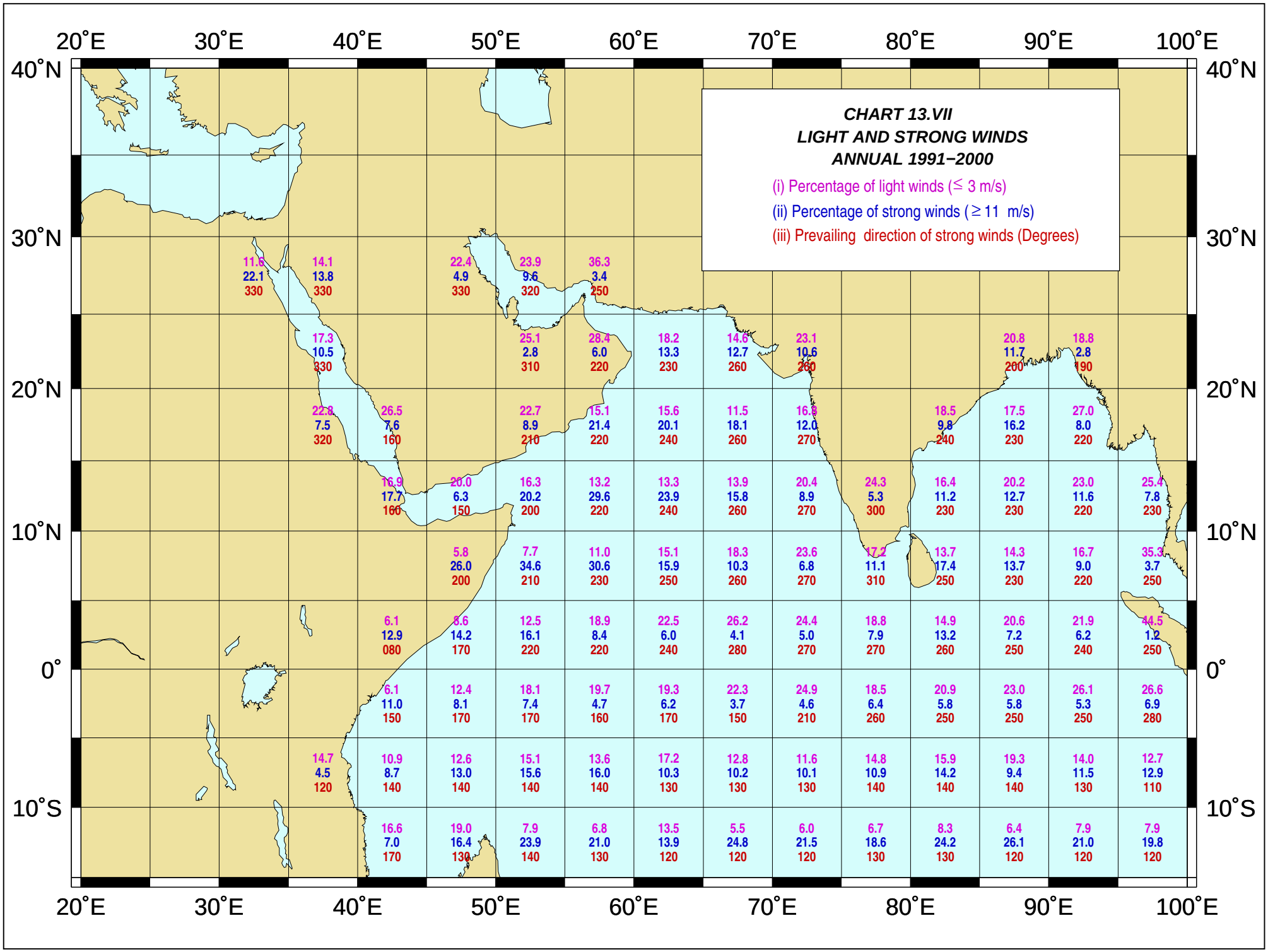


CHART 13.VII
LIGHT AND STRONG WINDS
ANNUAL 1991–2000
(i) Percentage of light winds (≤ 3 m/s)
(ii) Percentage of strong winds (≥ 11 m/s)
(iii) Prevailing direction of strong winds (Degrees)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
11.6 22.1 330
14.1 13.8 330
22.4 4.9 330
23.9 9.6 320
36.3 3.4 250
17.3 10.5 330
25.1 2.8 310
28.4 6.0 220
18.2 13.3 230
14.6 12.7 260
23.1 10.6 260
20.8 11.7 260
18.8 2.8 190
22.8 7.5 320
26.5 7.6 160
22.7 8.9 210
15.1 21.4 220
15.6 20.1 240
11.5 18.1 260
16.9 12.0 270
18.5 9.8 240
17.5 16.2 230
27.0 8.0 220
16.9 17.7 160
20.0 6.3 150
16.3 20.2 200
13.2 29.6 220
13.3 23.9 240
13.9 15.8 260
20.4 8.9 270
24.3 5.3 300
16.4 11.2 230
20.2 12.7 230
23.0 11.6 220
25.4 7.8 230
5.8 26.0 200
7.7 34.6 210
11.0 30.6 230
15.1 15.9 250
18.3 10.3 260
23.6 6.8 270
17.2 11.1 310
13.7 17.4 250
14.3 13.7 230
16.7 9.0 220
35.3 3.7 250
6.1 12.9 080
8.6 14.2 170
12.5 16.1 220
18.9 8.4 220
22.5 6.0 240
26.2 4.1 280
24.4 5.0 270
18.8 7.9 270
14.9 13.2 260
20.6 7.2 250
21.9 6.2 240
44.5 1.2 250
6.1 11.0 150
12.4 8.1 170
18.1 7.4 170
19.7 4.7 160
19.3 6.2 170
22.3 3.7 150
24.9 4.6 210
18.5 6.4 260
20.9 5.8 250
23.0 5.8 250
26.1 5.3 250
26.6 6.9 280
14.7 4.5 120
10.9 8.7 140
12.6 13.0 140
15.1 15.6 140
13.6 16.0 140
17.2 10.3 130
12.8 10.2 130
11.6 10.1 130
14.8 10.9 140
15.9 14.2 140
19.3 9.4 140
14.0 11.5 130
12.7 12.9 110
16.6 7.0 170
19.0 16.4 130
7.9 23.9 140
6.8 21.0 130
13.5 13.9 120
5.5 24.8 120
6.0 21.5 120
6.7 18.6 130
8.3 24.2 130
6.4 26.1 120
7.9 21.0 120
7.9 19.8 120

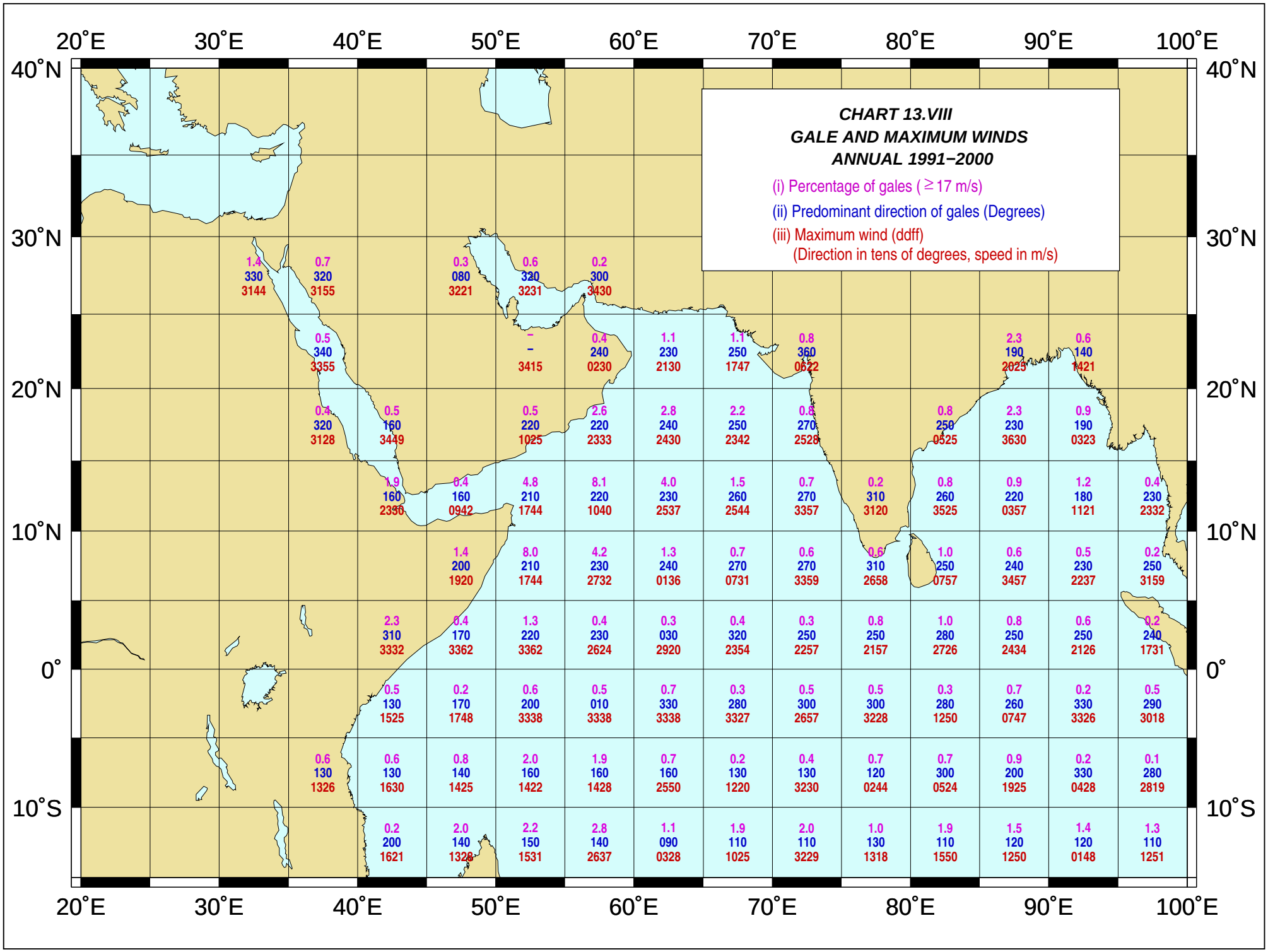


CHART 13.VIII
GALE AND MAXIMUM WINDS
ANNUAL 1991–2000
(i) Percentage of gales (≥ 17 m/s)
(ii) Predominant direction of gales (Degrees)
(iii) Maximum wind (ddff)
(Direction in tens of degrees, speed in m/s)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.4 330 3144
0.7 320 3155
0.3 080 3221
0.6 320 3231
0.2 300 3430
0.5 340 3355
– – 3415
0.4 240 0230
1.1 230 2130
1.1 250 1747
0.8 360 0622
2.3 190 2025
0.6 140 1421
0.4 320 3128
0.5 160 3449
0.5 220 1025
2.6 220 2333
2.8 240 2430
2.2 250 2342
0.8 270 2528
0.8 250 0525
2.3 230 3630
0.9 190 0323
1.9 160 2356
0.4 160 0942
4.8 210 1744
8.1 220 1040
4.0 230 2537
1.5 260 2544
0.7 270 3357
0.2 310 3120
0.8 260 3525
0.9 220 0357
1.2 180 1121
0.4 230 2332
1.4 200 1920
8.0 210 1744
4.2 230 2732
1.3 240 0136
0.7 270 0731
0.6 270 3359
0.6 310 2658
1.0 250 0757
0.6 240 3457
0.5 230 2237
0.2 250 3159
2.3 310 3332
0.4 170 3362
1.3 220 3362
0.4 230 2624
0.3 030 2920
0.4 320 2354
0.3 250 2257
0.8 250 2157
1.0 280 2726
0.8 250 2434
0.6 250 2126
0.2 240 1731
0.5 130 1525
0.2 170 1748
0.6 200 3338
0.5 010 3338
0.7 330 3338
0.3 280 3327
0.5 300 2657
0.5 300 3228
0.3 280 1250
0.7 260 0747
0.2 330 3326
0.5 290 3018
0.6 130 1326
0.6 130 1630
0.8 140 1425
2.0 160 1422
1.9 160 1428
0.7 160 2550
0.2 130 1220
0.4 130 3230
0.7 120 0244
0.7 300 0524
0.9 200 1925
0.2 330 0428
0.1 280 2819
0.2 200 1621
2.0 140 1328
2.2 150 1531
2.8 140 2637
1.1 090 0328
1.9 110 1025
2.0 110 3229
1.0 130 1318
1.9 110 1550
1.5 120 1250
1.4 120 0148
1.3 110 1251

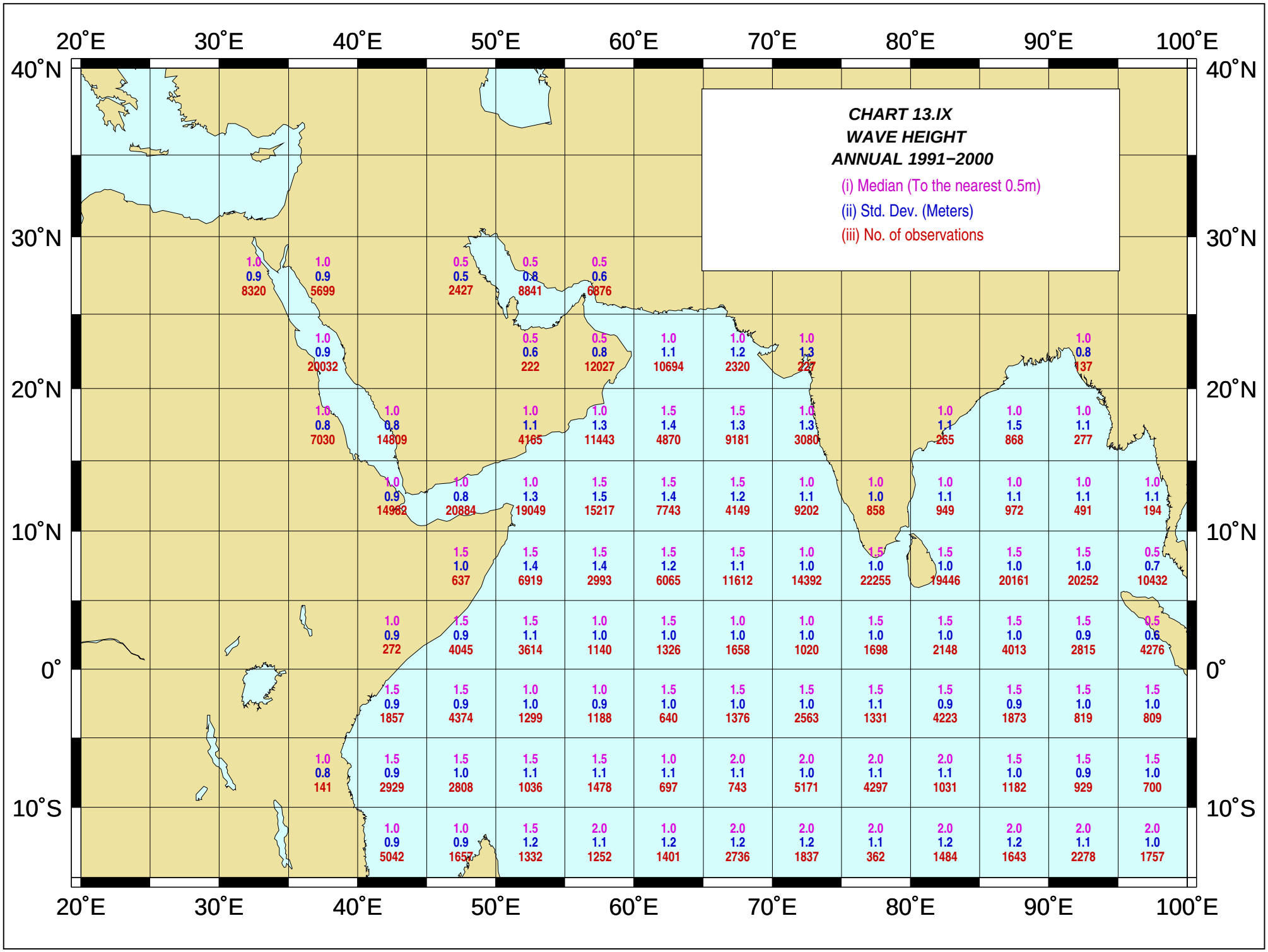


CHART 13.IX
WAVE HEIGHT
ANNUAL 1991–2000
(i) Median (To the nearest 0.5m)
(ii) Std. Dev. (Meters)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1.0 0.9 8320
1.0 0.9 5699
0.5 0.5 2427
0.5 0.8 8841
0.5 0.6 6876
1.0 0.9 20032
0.5 0.6 222
0.5 0.8 12027
1.0 1.1 10694
1.0 1.2 2320
1.0 1.3 227
1.0 0.8 137
1.0 0.8 7030
1.0 0.8 14809
1.0 1.1 4165
1.0 1.3 11443
1.5 1.4 4870
1.5 1.3 9181
1.0 1.3 3080
1.0 1.1 265
1.0 1.5 868
1.0 1.1 277
1.0 0.9 14962
1.0 0.8 20884
1.0 1.3 19049
1.5 1.5 15217
1.5 1.4 7743
1.5 1.2 4149
1.0 1.1 9202
1.0 1.0 858
1.0 1.1 949
1.0 1.1 972
1.0 1.1 491
1.0 1.1 194
1.5 1.0 637
1.5 1.4 6919
1.5 1.4 2993
1.5 1.2 6065
1.5 1.1 11612
1.0 1.0 14392
1.5 1.0 22255
1.5 1.0 19446
1.5 1.0 20161
1.5 1.0 20252
0.5 0.7 10432
1.0 0.9 272
1.5 0.9 4045
1.5 1.1 3614
1.0 1.0 1140
1.5 1.0 1326
1.0 1.0 1658
1.0 1.0 1020
1.5 1.0 1698
1.5 1.0 2148
1.5 1.0 4013
1.5 0.9 2815
0.5 0.6 4276
1.5 0.9 1857
1.5 0.9 4374
1.0 1.0 1299
1.0 0.9 1188
1.5 1.0 640
1.5 1.0 1376
1.5 1.0 2563
1.5 1.1 1331
1.5 0.9 4223
1.5 0.9 1873
1.5 1.0 819
1.5 1.0 809
1.0 0.8 141
1.5 0.9 2929
1.5 1.0 2808
1.5 1.1 1036
1.5 1.1 1478
1.0 1.1 697
2.0 1.1 743
2.0 1.0 5171
2.0 1.1 4297
2.0 1.1 1031
1.5 1.0 1182
1.5 0.9 929
1.5 1.0 700
1.0 0.9 5042
1.0 0.9 1657
1.5 1.2 1332
2.0 1.1 1252
1.0 1.2 1401
2.0 1.2 2736
2.0 1.2 1837
2.0 1.1 362
2.0 1.2 1484
2.0 1.2 1643
2.0 1.1 2278
2.0 1.0 1757

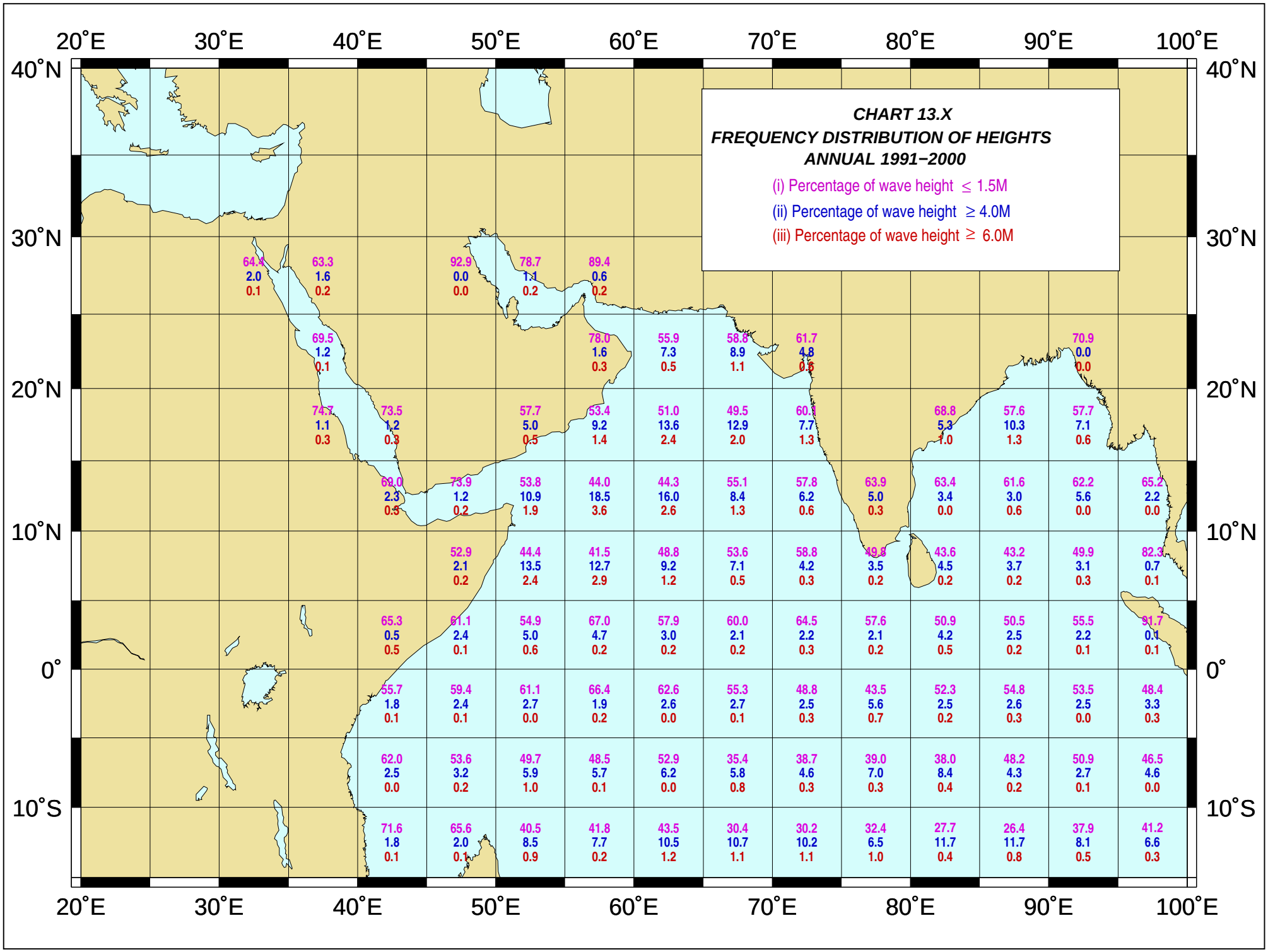


CHART 13.X
FREQUENCY DISTRIBUTION OF HEIGHTS
ANNUAL 1991–2000
(i) Percentage of wave height ≤ 1.5M
(ii) Percentage of wave height ≥ 4.0M
(iii) Percentage of wave height ≥ 6.0M
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
64.4 2.0 0.1
63.3 1.6 0.2
92.9 0.0 0.0
78.7 1.1 0.2
89.4 0.6 0.2
69.5 1.2 0.1
78.0 1.6 0.3
55.9 7.3 0.5
58.8 8.9 1.1
61.7 4.8 0.5
70.9 0.0 0.0
74.7 1.1 0.3
73.5 1.2 0.3
57.7 5.0 0.5
53.4 9.2 1.4
51.0 13.6 2.4
49.5 12.9 2.0
60.1 7.7 1.3
68.8 5.3 1.0
57.6 10.3 1.3
57.7 7.1 0.6
69.0 2.3 0.5
73.9 1.2 0.2
53.8 10.9 1.9
44.0 18.5 3.6
44.3 16.0 2.6
55.1 8.4 1.3
57.8 6.2 0.6
63.9 5.0 0.3
63.4 3.4 0.0
61.6 3.0 0.6
62.2 5.6 0.0
65.2 2.2 0.0
52.9 2.1 0.2
44.4 13.5 2.4
41.5 12.7 2.9
48.8 9.2 1.2
53.6 7.1 0.5
58.8 4.2 0.3
49.8 3.5 0.2
43.6 4.5 0.2
43.2 3.7 0.2
49.9 3.1 0.3
82.3 0.7 0.1
65.3 0.5 0.5
61.1 2.4 0.1
54.9 5.0 0.6
67.0 4.7 0.2
57.9 3.0 0.2
60.0 2.1 0.2
64.5 2.2 0.3
57.6 2.1 0.2
50.9 4.2 0.5
50.5 2.5 0.2
55.5 2.2 0.1
91.7 0.1 0.1
55.7 1.8 0.1
59.4 2.4 0.1
61.1 2.7 0.0
66.4 1.9 0.2
62.6 2.6 0.0
55.3 2.7 0.1
48.8 2.5 0.3
43.5 5.6 0.7
52.3 2.5 0.2
54.8 2.6 0.3
53.5 2.5 0.0
48.4 3.3 0.3
62.0 2.5 0.0
53.6 3.2 0.2
49.7 5.9 1.0
48.5 5.7 0.1
52.9 6.2 0.0
35.4 5.8 0.8
38.7 4.6 0.3
39.0 7.0 0.3
38.0 8.4 0.4
48.2 4.3 0.2
50.9 2.7 0.1
46.5 4.6 0.0
71.6 1.8 0.1
65.6 2.0 0.1
40.5 8.5 0.9
41.8 7.7 0.2
43.5 10.5 1.2
30.4 10.7 1.1
30.2 10.2 1.1
32.4 6.5 1.0
27.7 11.7 0.4
26.4 11.7 0.8
37.9 8.1 0.5
41.2 6.6 0.3

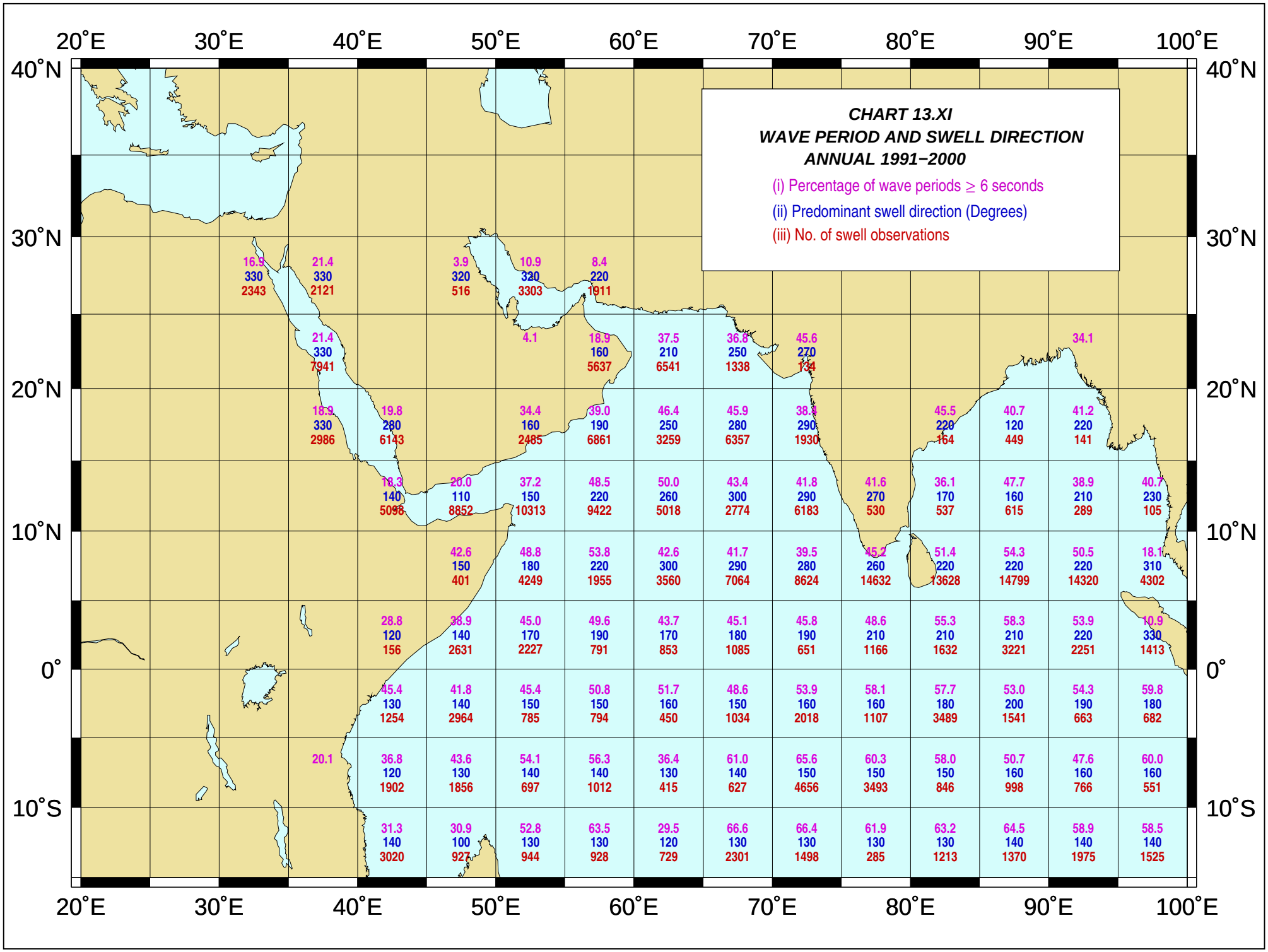


CHART 13.XI
WAVE PERIOD AND SWELL DIRECTION
ANNUAL 1991–2000
(i) Percentage of wave periods ≥ 6 seconds
(ii) Predominant swell direction (Degrees)
(iii) No. of swell observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
16.9 330 2343
21.4 330 2121
3.9 320 516
10.9 320 3303
8.4 220 1911
21.4 330 7941
4.1
18.9 160 5637
37.5 210 6541
36.8 250 1338
45.6 270 134
34.1
18.9 330 2986
19.8 280 6143
34.4 160 2485
39.0 190 6861
46.4 250 3259
45.9 280 6357
38.9 290 1930
45.5 220 164
40.7 120 449
41.2 220 141
18.3 140 5098
20.0 110 8852
37.2 150 10313
48.5 220 9422
50.0 260 5018
43.4 300 2774
41.8 290 6183
41.6 270 530
36.1 170 537
47.7 160 615
38.9 210 289
40.7 230 105
42.6 150 401
48.8 180 4249
53.8 220 1955
42.6 300 3560
41.7 290 7064
39.5 280 8624
45.2 260 14632
51.4 220 13628
54.3 220 14799
50.5 220 14320
18.1 310 4302
28.8 120 156
38.9 140 2631
45.0 170 2227
49.6 190 791
43.7 170 853
45.1 180 1085
45.8 190 651
48.6 210 1166
55.3 210 1632
58.3 210 3221
53.9 220 2251
10.9 330 1413
45.4 130 1254
41.8 140 2964
45.4 150 785
50.8 150 794
51.7 160 450
48.6 150 1034
53.9 160 2018
58.1 160 1107
57.7 180 3489
53.0 200 1541
54.3 190 663
59.8 180 682
20.1
36.8 120 1902
43.6 130 1856
54.1 140 697
56.3 140 1012
36.4 130 415
61.0 140 627
65.6 150 4656
60.3 150 3493
58.0 150 846
50.7 160 998
47.6 160 766
60.0 160 551
31.3 140 3020
30.9 100 927
52.8 130 944
63.5 130 928
29.5 120 729
66.6 130 2301
66.4 130 1498
61.9 130 285
63.2 130 1213
64.5 140 1370
58.9 140 1975
58.5 140 1525

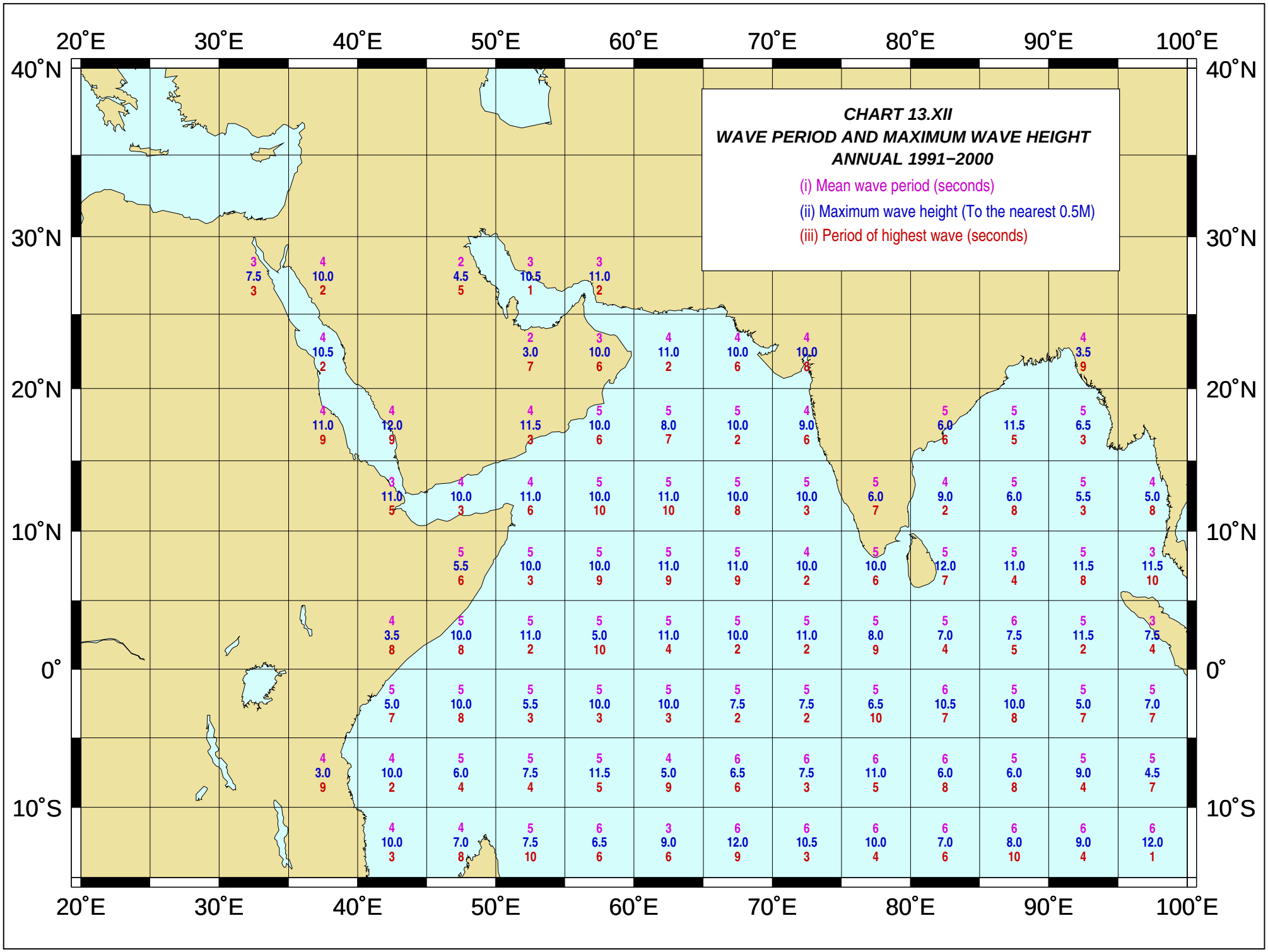


CHART 13.XII
WAVE PERIOD AND MAXIMUM WAVE HEIGHT
ANNUAL 1991–2000
(i) Mean wave period (seconds)
(ii) Maximum wave height (To the nearest 0.5M)
(iii) Period of highest wave (seconds)
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S

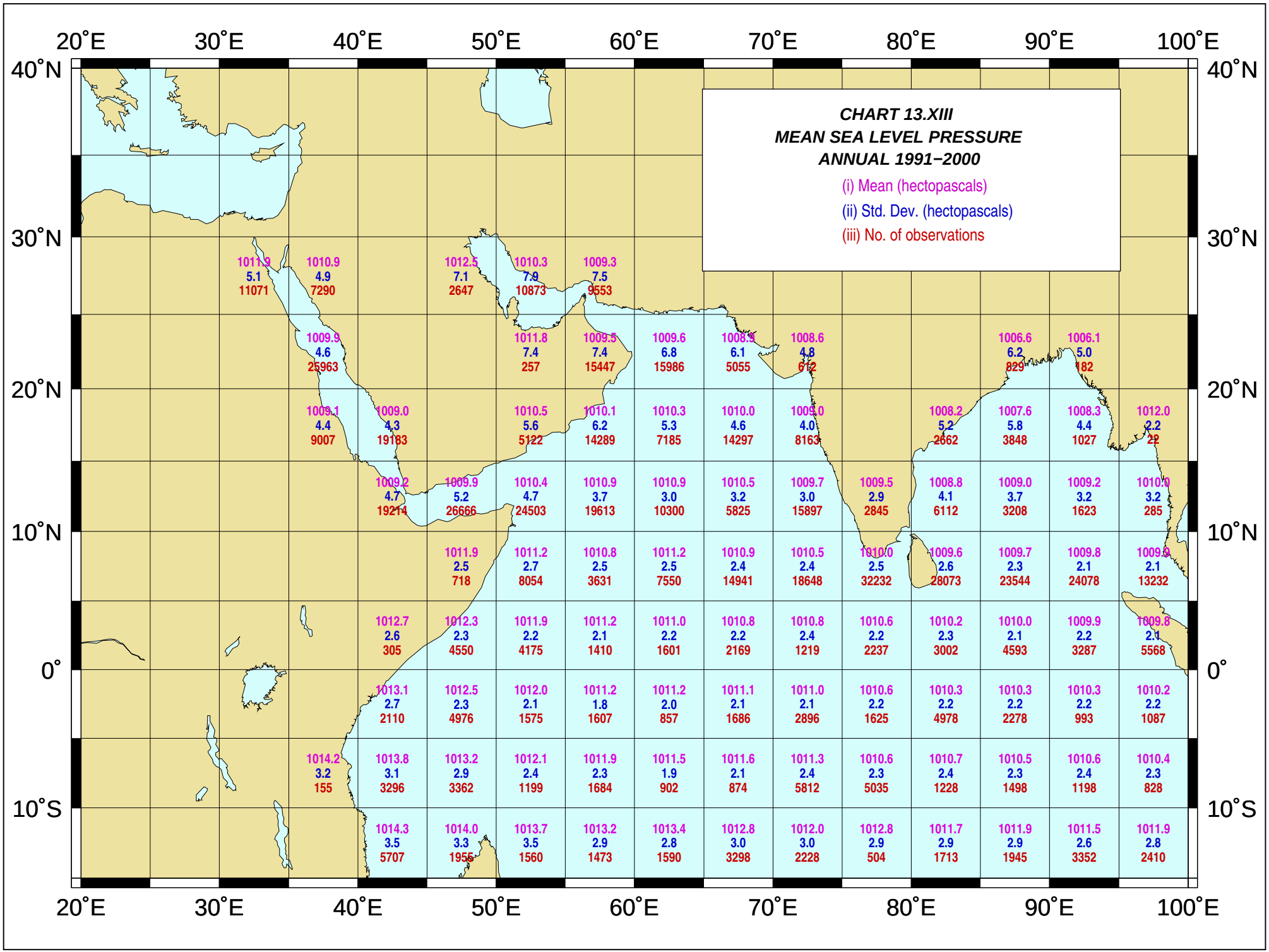


CHART 13.XIII
MEAN SEA LEVEL PRESSURE
ANNUAL 1991–2000
(i) Mean (hectopascals)
(ii) Std. Dev. (hectopascals)
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
1011.2 5.1 11071
1010.9 4.9 7290
1012.5 7.1 2647
1010.3 7.9 10873
1009.3 7.5 9553
1009.9 4.6 25963
1011.8 7.4 257
1009.5 7.4 15447
1009.6 6.8 15986
1008.9 6.1 5055
1008.6 4.8 672
1006.6 6.2 829
1006.1 5.0 182
1009.1 4.4 9007
1009.0 4.3 19183
1010.5 5.6 5122
1010.1 6.2 14289
1010.3 5.3 7185
1010.0 4.6 14297
1009.0 4.0 8163
1008.2 5.2 2662
1007.6 5.8 3848
1008.3 4.4 1027
1012.0 2.2 29
1009.2 4.7 19214
1009.9 5.2 26666
1010.4 4.7 24503
1010.9 3.7 19613
1010.9 3.0 10300
1010.5 3.2 5825
1009.7 3.0 15897
1009.5 2.9 2845
1008.8 4.1 6112
1009.0 3.7 3208
1009.2 3.2 1623
1010.0 3.2 285
1011.9 2.5 718
1011.2 2.7 8054
1010.8 2.5 3631
1011.2 2.5 7550
1010.9 2.4 14941
1010.5 2.4 18648
1010.0 2.5 32232
1009.6 2.6 28073
1009.7 2.3 23544
1009.8 2.1 24078
1009.8 2.1 13232
1012.7 2.6 305
1012.3 2.3 4550
1011.9 2.2 4175
1011.2 2.1 1410
1011.0 2.2 1601
1010.8 2.2 2169
1010.8 2.4 1219
1010.6 2.2 2237
1010.2 2.3 3002
1010.0 2.1 4593
1009.9 2.2 3287
1009.8 2.1 5568
1013.1 2.7 2110
1012.5 2.3 4976
1012.0 2.1 1575
1011.2 1.8 1607
1011.2 2.0 857
1011.1 2.1 1686
1011.0 2.1 2896
1010.6 2.2 1625
1010.3 2.2 4978
1010.3 2.2 2278
1010.3 2.2 993
1010.2 2.2 1087
1014.2 3.2 155
1013.8 3.1 3296
1013.2 2.9 3362
1012.1 2.4 1199
1011.9 2.3 1684
1011.5 1.9 902
1011.6 2.1 874
1011.3 2.4 5812
1010.6 2.3 5035
1010.7 2.4 1228
1010.5 2.3 1498
1010.6 2.4 1198
1010.4 2.3 828
1014.3 3.5 5707
1014.0 3.3 1955
1013.7 3.5 1560
1013.2 2.9 1473
1013.4 2.8 1590
1012.8 3.0 3298
1012.0 3.0 2228
1012.8 2.9 504
1011.7 2.9 1713
1011.9 2.9 1945
1011.5 2.6 3352
1011.9 2.8 2410

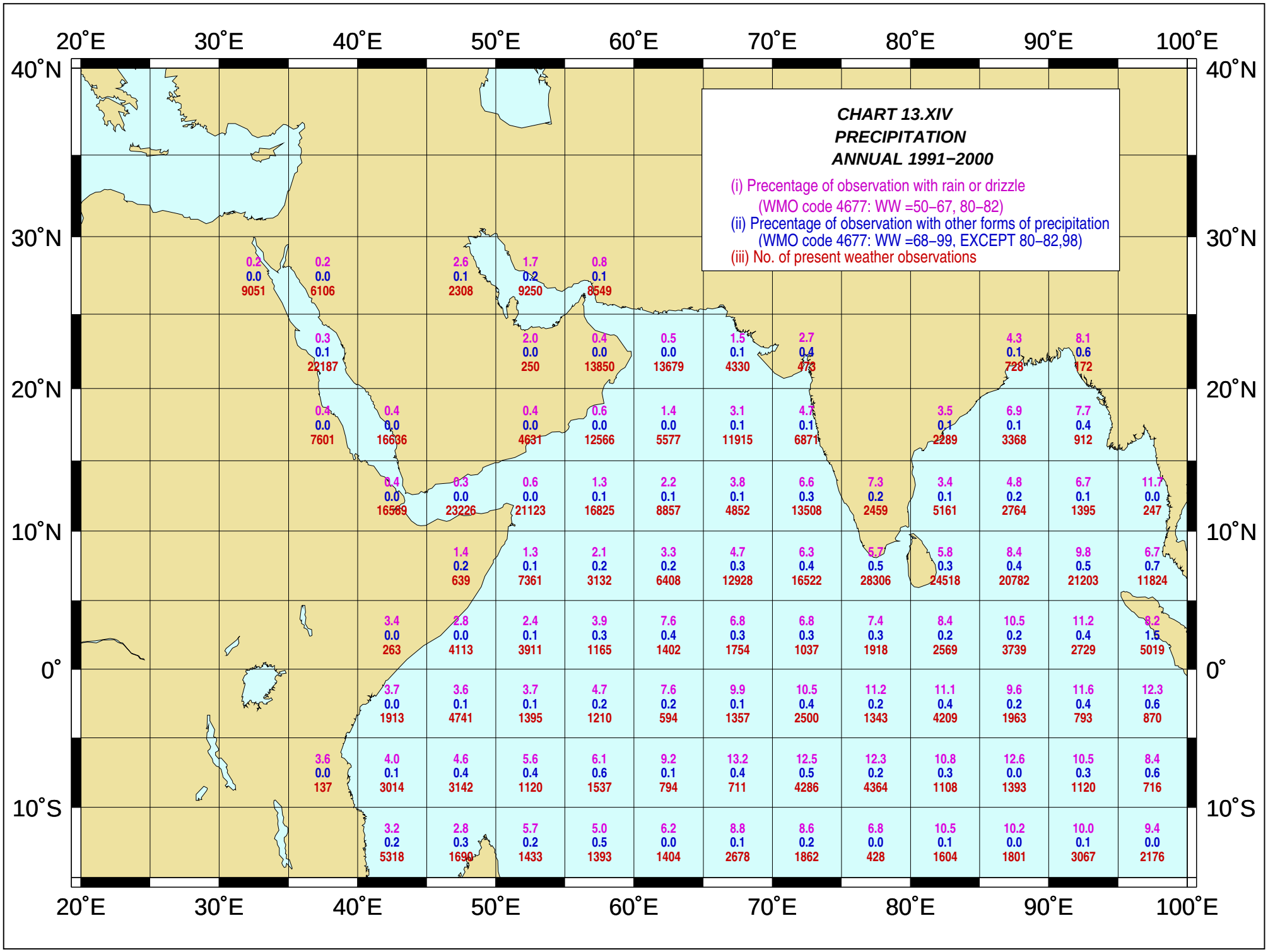


CHART 13.XIV
PRECIPITATION
ANNUAL 1991–2000
(i) Precentage of observation with rain or drizzle
(WMO code 4677: WW =50–67, 80–82)
(ii) Precentage of observation with other forms of precipitation
(WMO code 4677: WW =68–99, EXCEPT 80–82,98)
(iii) No. of present weather observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.2 0.0 9051
0.2 0.0 6106
2.6 0.1 2308
1.7 0.2 9250
0.8 0.1 8549
0.3 0.1 22187
2.0 0.0 250
0.4 0.0 13850
0.5 0.0 13679
1.5 0.1 4330
2.7 0.4 473
4.3 0.1 728
8.1 0.6 172
0.4 0.0 7601
0.4 0.0 16636
0.4 0.0 4631
0.6 0.0 12566
1.4 0.0 5577
3.1 0.1 11915
4.7 0.1 6871
3.5 0.1 2289
6.9 0.1 3368
7.7 0.4 912
0.4 0.0 16589
0.3 0.0 23226
0.6 0.0 21123
1.3 0.1 16825
2.2 0.1 8857
3.8 0.1 4852
6.6 0.3 13508
7.3 0.2 2459
3.4 0.1 5161
4.8 0.2 2764
6.7 0.1 1395
11.7 0.0 247
1.4 0.2 639
1.3 0.1 7361
2.1 0.2 3132
3.3 0.2 6408
4.7 0.3 12928
6.3 0.4 16522
5.7 0.5 28306
5.8 0.3 24518
8.4 0.4 20782
9.8 0.5 21203
6.7 0.7 11824
3.4 0.0 263
2.8 0.0 4113
2.4 0.1 3911
3.9 0.3 1165
7.6 0.4 1402
6.8 0.3 1754
6.8 0.3 1037
7.4 0.3 1918
8.4 0.2 2569
10.5 0.2 3739
11.2 0.4 2729
8.2 1.5 5019
3.7 0.0 1913
3.6 0.1 4741
3.7 0.1 1395
4.7 0.2 1210
7.6 0.2 594
9.9 0.1 1357
10.5 0.4 2500
11.2 0.2 1343
11.1 0.4 4209
9.6 0.2 1963
11.6 0.4 793
12.3 0.6 870
3.6 0.0 137
4.0 0.1 3014
4.6 0.4 3142
5.6 0.4 1120
6.1 0.6 1537
9.2 0.1 794
13.2 0.4 711
12.5 0.5 4286
12.3 0.2 4364
10.8 0.3 1108
12.6 0.0 1393
10.5 0.3 1120
8.4 0.6 716
3.2 0.2 5318
2.8 0.3 1690
5.7 0.2 1433
5.0 0.5 1393
6.2 0.0 1404
8.8 0.1 2678
8.6 0.2 1862
6.8 0.0 428
10.5 0.1 1604
10.2 0.0 1801
10.0 0.1 3067
9.4 0.0 2176

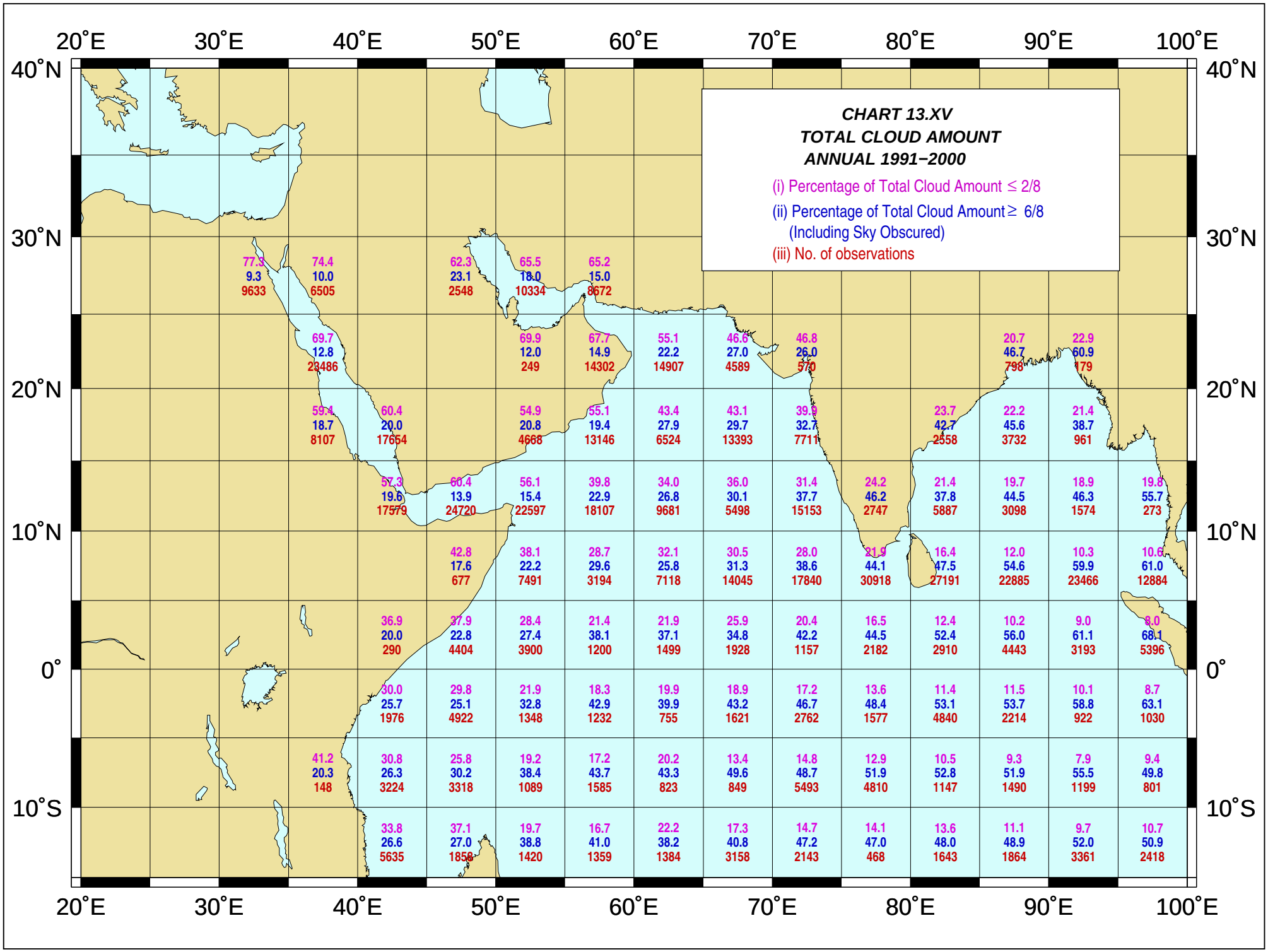


CHART 13.XV
TOTAL CLOUD AMOUNT
ANNUAL 1991–2000
(i) Percentage of Total Cloud Amount ≤ 2/8
(ii) Percentage of Total Cloud Amount ≥ 6/8
(Including Sky Obscured)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
77.3 9.3 9633
74.4 10.0 6505
62.3 23.1 2548
65.5 18.0 10334
65.2 15.0 8672
69.7 12.8 23486
69.9 12.0 249
67.7 14.9 14302
55.1 22.2 14907
46.6 27.0 4589
46.8 26.0 570
20.7 46.7 798
22.9 60.9 179
59.4 18.7 8107
60.4 20.0 17654
54.9 20.8 4668
55.1 19.4 13146
43.4 27.9 6524
43.1 29.7 13393
39.9 32.7 7711
23.7 42.7 2558
22.2 45.6 3732
21.4 38.7 961
57.3 19.6 17579
60.4 13.9 24720
56.1 15.4 22597
39.8 22.9 18107
34.0 26.8 9681
36.0 30.1 5498
31.4 37.7 15153
24.2 46.2 2747
21.4 37.8 5887
19.7 44.5 3098
18.9 46.3 1574
19.8 55.7 273
42.8 17.6 677
38.1 22.2 7491
28.7 29.6 3194
32.1 25.8 7118
30.5 31.3 14045
28.0 38.6 17840
21.9 44.1 30918
16.4 47.5 27191
12.0 54.6 22885
10.3 59.9 23466
10.6 61.0 12884
36.9 20.0 290
37.9 22.8 4404
28.4 27.4 3900
21.4 38.1 1200
21.9 37.1 1499
25.9 34.8 1928
20.4 42.2 1157
16.5 44.5 2182
12.4 52.4 2910
10.2 56.0 4443
9.0 61.1 3193
8.0 68.1 5396
30.0 25.7 1976
29.8 25.1 4922
21.9 32.8 1348
18.3 42.9 1232
19.9 39.9 755
18.9 43.2 1621
17.2 46.7 2762
13.6 48.4 1577
11.4 53.1 4840
11.5 53.7 2214
10.1 58.8 922
8.7 63.1 1030
41.2 20.3 148
30.8 26.3 3224
25.8 30.2 3318
19.2 38.4 1089
17.2 43.7 1585
20.2 43.3 823
13.4 49.6 849
14.8 48.7 5493
12.9 51.9 4810
10.5 52.8 1147
9.3 51.9 1490
7.9 55.5 1199
9.4 49.8 801
33.8 26.6 5635
37.1 27.0 1858
19.7 38.8 1420
16.7 41.0 1359
22.2 38.2 1384
17.3 40.8 3158
14.7 47.2 2143
14.1 47.0 468
13.6 48.0 1643
11.1 48.9 1864
9.7 52.0 3361
10.7 50.9 2418

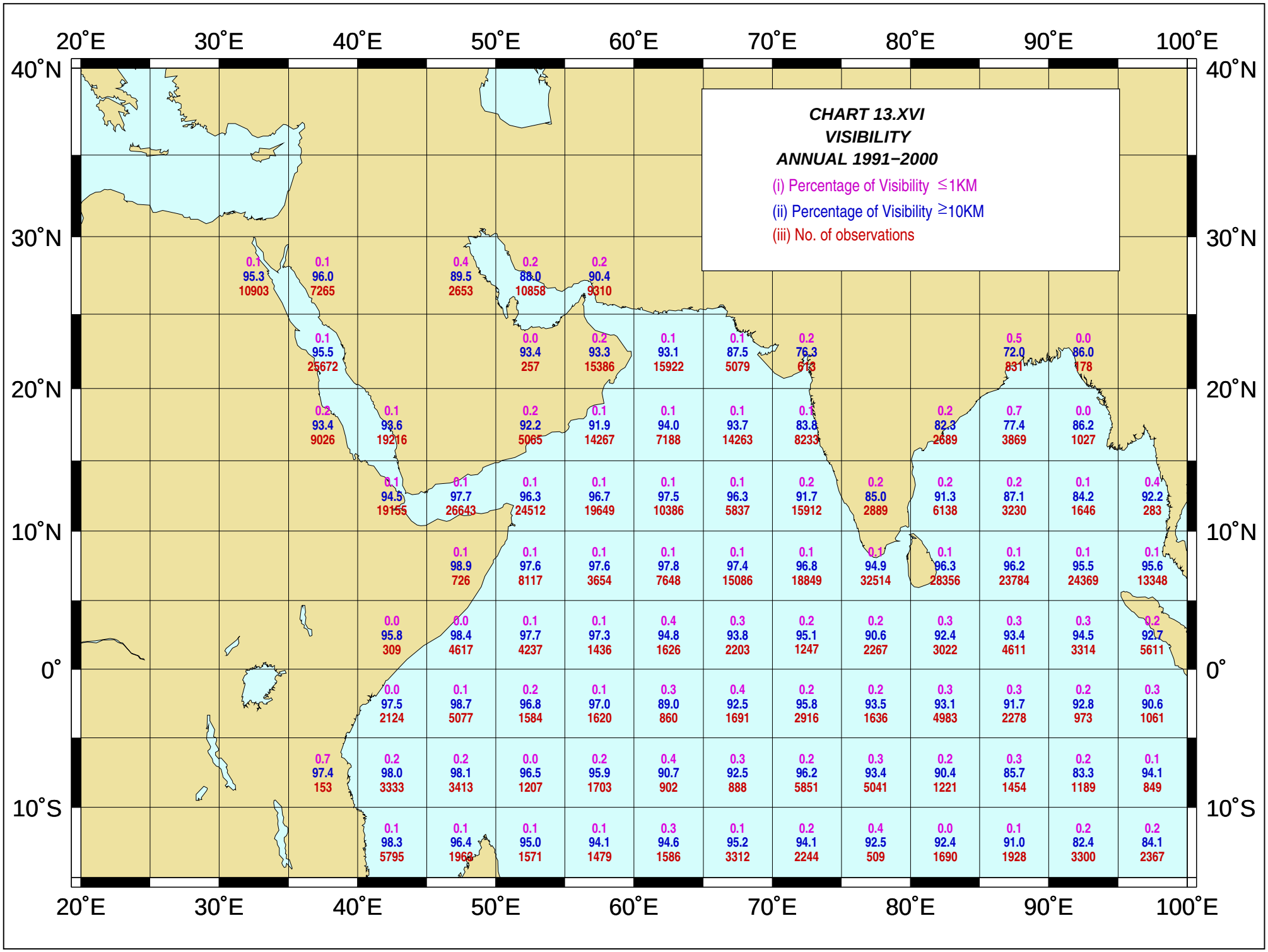


CHART 13.XVI
VISIBILITY
ANNUAL 1991–2000
(i) Percentage of Visibility ≤1KM
(ii) Percentage of Visibility ≥10KM
(iii) No. of observations
20°E
30°E
40°E
50°E
60°E
70°E
80°E
90°E
100°E
40°N
30°N
20°N
10°N
0°
10°S
0.1 95.3 10903
0.1 96.0 7265
0.4 89.5 2653
0.2 88.0 10858
0.2 90.4 9310
0.1 95.5 25672
0.0 93.4 257
0.2 93.3 15386
0.1 93.1 15922
0.1 87.5 5079
0.2 76.3 613
0.5 72.0 831
0.0 86.0 178
0.2 93.4 9026
0.1 93.6 19216
0.2 92.2 5065
0.1 91.9 14267
0.1 94.0 7188
0.1 93.7 14263
0.1 83.8 8233
0.2 82.3 2689
0.7 77.4 3869
0.0 86.2 1027
0.1 94.5 19155
0.1 97.7 26643
0.1 96.3 24512
0.1 96.7 19649
0.1 97.5 10386
0.1 96.3 5837
0.2 91.7 15912
0.2 85.0 2889
0.2 91.3 6138
0.2 87.1 3230
0.1 84.2 1646
0.4 92.2 283
0.1 98.9 726
0.1 97.6 8117
0.1 97.6 3654
0.1 97.8 7648
0.1 97.4 15086
0.1 96.8 18849
0.1 94.9 32514
0.1 96.3 28356
0.1 96.2 23784
0.1 95.5 24369
0.1 95.6 13348
0.0 95.8 309
0.0 98.4 4617
0.1 97.7 4237
0.1 97.3 1436
0.4 94.8 1626
0.3 93.8 2203
0.2 95.1 1247
0.2 90.6 2267
0.3 92.4 3022
0.3 93.4 4611
0.3 94.5 3314
0.2 92.7 5611
0.0 97.5 2124
0.1 98.7 5077
0.2 96.8 1584
0.1 97.0 1620
0.3 89.0 860
0.4 92.5 1691
0.2 95.8 2916
0.2 93.5 1636
0.3 93.1 4983
0.3 91.7 2278
0.2 92.8 973
0.3 90.6 1061
0.7 97.4 153
0.2 98.0 3333
0.2 98.1 3413
0.0 96.5 1207
0.2 95.9 1703
0.4 90.7 902
0.3 92.5 888
0.2 96.2 5851
0.3 93.4 5041
0.2 90.4 1221
0.3 85.7 1454
0.2 83.3 1189
0.1 94.1 849
0.1 98.3 5795
0.1 96.4 1968
0.1 95.0 1571
0.1 94.1 1479
0.3 94.6 1586
0.1 95.2 3312
0.2 94.1 2244
0.4 92.5 509
0.0 92.4 1690
0.1 91.0 1928
0.2 82.4 3300
0.2 84.1 2367

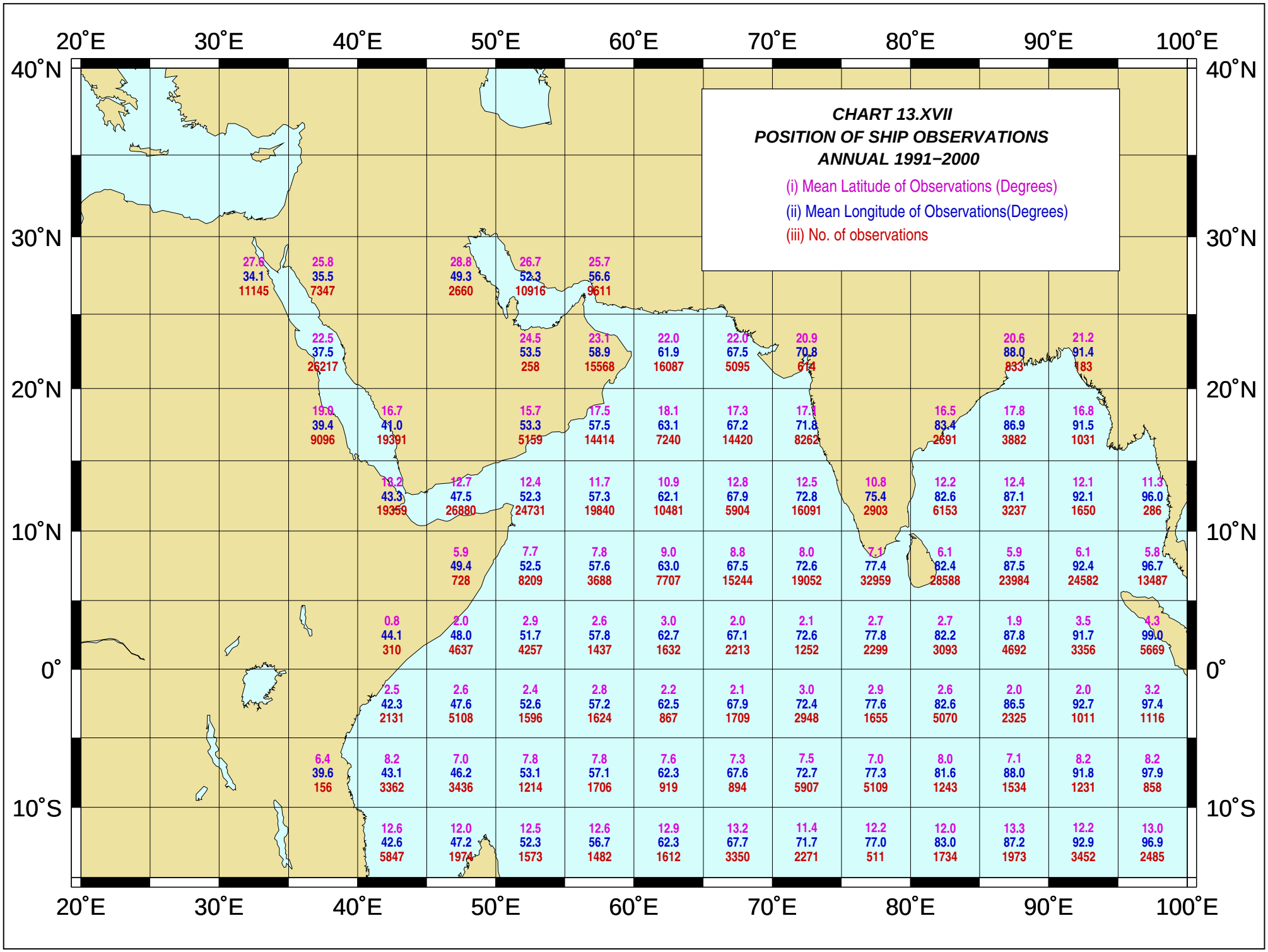


CHART 13.XVII
POSITION OF SHIP OBSERVATIONS
ANNUAL 1991–2000
(i) Mean Latitude of Observations (Degrees)
(ii) Mean Longitude of Observations(Degrees)
(iii) No. of observations
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
27.6 34.1 11145
25.8 35.5 7347
28.8 49.3 2660
26.7 52.3 10916
25.7 56.6 9611
22.5 37.5 26217
24.5 53.5 258
23.1 58.9 15568
22.0 61.9 16087
22.0 67.5 5095
20.9 70.8 614
20.6 88.0 833
21.2 91.4 183
19.0 39.4 9096
16.7 41.0 19391
15.7 53.3 5159
17.5 57.5 14414
18.1 63.1 7240
17.3 67.2 14420
17.1 71.8 8262
16.5 83.4 2691
17.8 86.9 3882
16.8 91.5 1031
12.2 43.3 19359
12.7 47.5 26880
12.4 52.3 24731
11.7 57.3 19840
10.9 62.1 10481
12.8 67.9 5904
12.5 72.8 16091
10.8 75.4 2903
12.2 82.6 6153
12.4 87.1 3237
12.1 92.1 1650
11.3 96.0 286
5.9 49.4 728
7.7 52.5 8209
7.8 57.6 3688
9.0 63.0 7707
8.8 67.5 15244
8.0 72.6 19052
7.1 77.4 32959
6.1 82.4 28588
5.9 87.5 23984
6.1 92.4 24582
5.8 96.7 13487
0.8 44.1 310
2.0 48.0 4637
2.9 51.7 4257
2.6 57.8 1437
3.0 62.7 1632
2.0 67.1 2213
2.1 72.6 1252
2.7 77.8 2299
2.7 82.2 3093
1.9 87.8 4692
3.5 91.7 3356
4.3 99.0 5669
2.5 42.3 2131
2.6 47.6 5108
2.4 52.6 1596
2.8 57.2 1624
2.2 62.5 867
2.1 67.9 1709
3.0 72.4 2948
2.9 77.6 1655
2.6 82.6 5070
2.0 86.5 2325
2.0 92.7 1011
3.2 97.4 1116
6.4 39.6 156
8.2 43.1 3362
7.0 46.2 3436
7.8 53.1 1214
7.8 57.1 1706
7.6 62.3 919
7.3 67.6 894
7.5 72.7 5907
7.0 77.3 5109
8.0 81.6 1243
7.1 88.0 1534
8.2 91.8 1231
8.2 97.9 858
12.6 42.6 5847
12.0 47.2 1974
12.5 52.3 1573
12.6 56.7 1482
12.9 62.3 1612
13.2 67.7 3350
11.4 71.7 2271
12.2 77.0 511
12.0 83.0 1734
13.3 87.2 1973
12.2 92.9 3452
13.0 96.9 2485

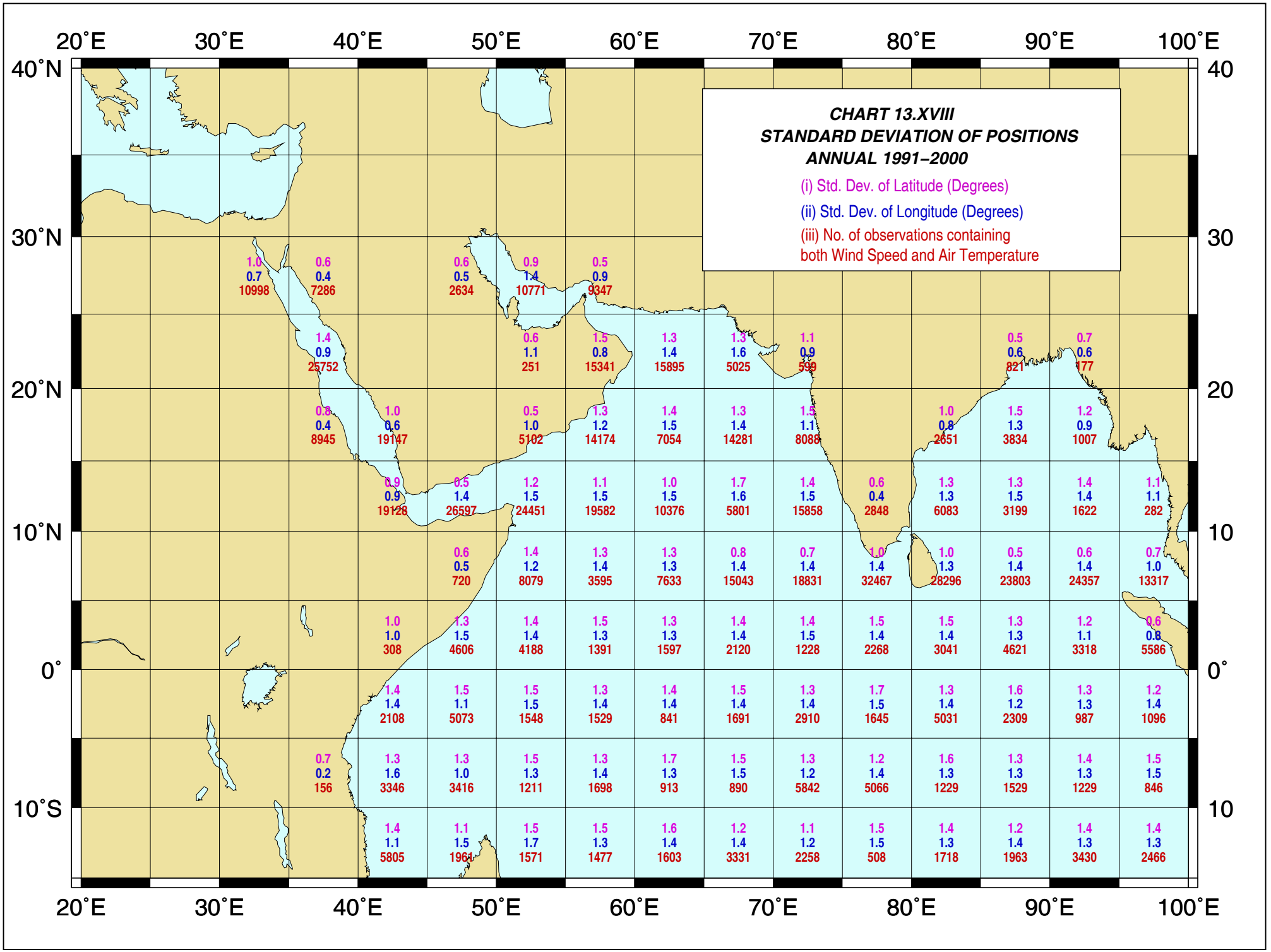
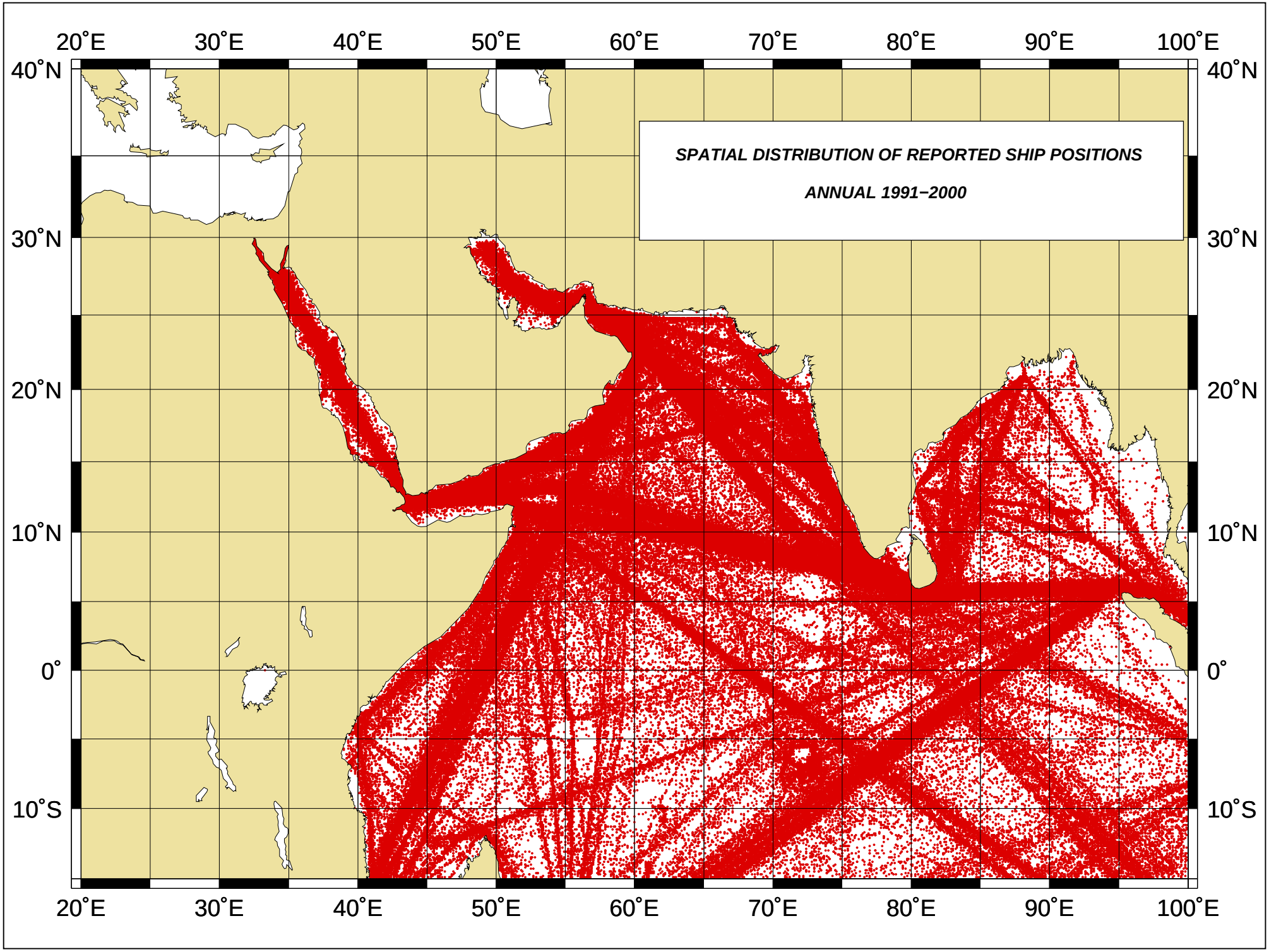
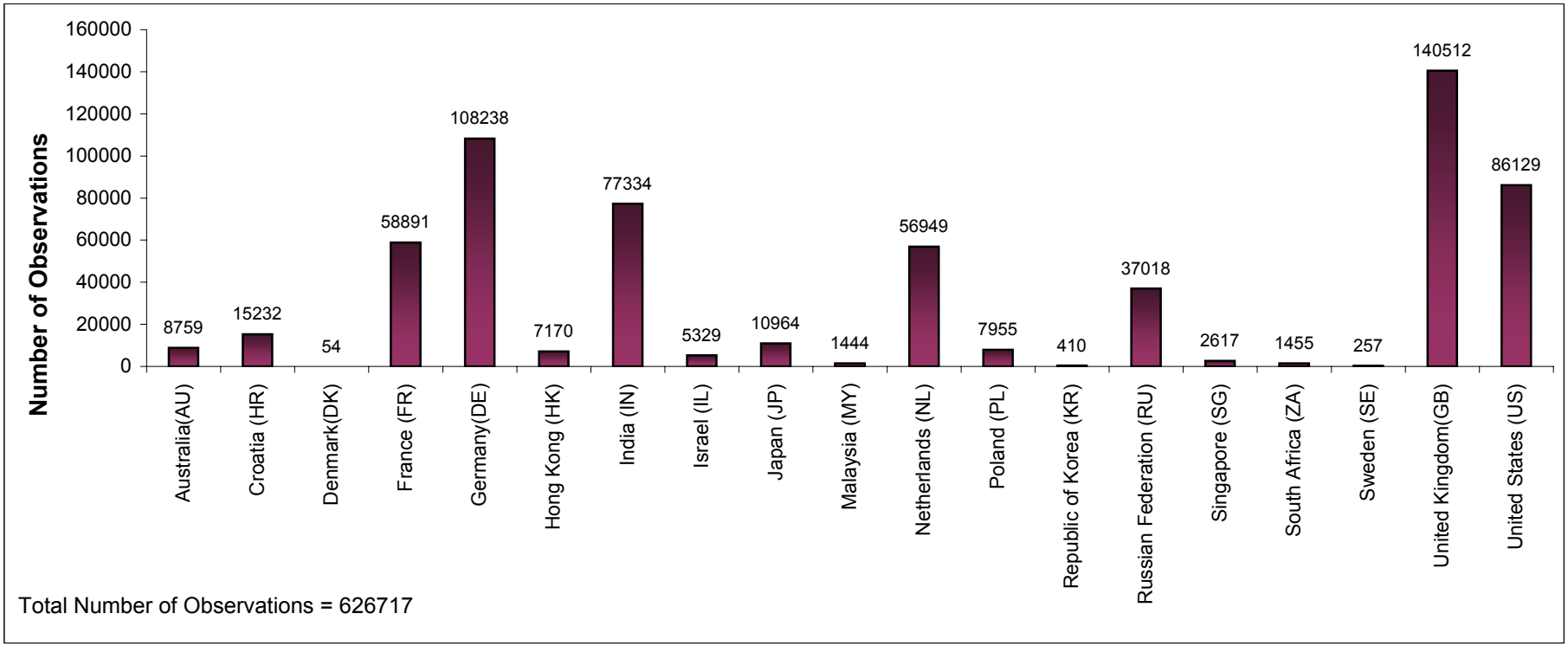


CHART 13.XVIII
STANDARD DEVIATION OF POSITIONS
ANNUAL 1991–2000
(i) Std. Dev. of Latitude (Degrees)
(ii) Std. Dev. of Longitude (Degrees)
(iii) No. of observations containing both Wind Speed and Air Temperature
20°E 30°E 40°E 50°E 60°E 70°E 80°E 90°E 100°E
40°N 30°N 20°N 10°N 0° 10°S
1.0 0.7 10998
0.6 0.4 7286
0.6 0.5 2634
0.9 1.4 10771
0.5 0.9 9347
1.4 0.9 25752
0.6 1.1 251
1.5 0.8 15341
1.3 1.4 15895
1.3 1.6 5025
1.1 0.9 599
0.5 0.6 821
0.7 0.6 177
0.8 0.4 8945
1.0 0.6 19147
0.5 1.0 5102
1.3 1.2 14174
1.4 1.5 7054
1.3 1.4 14281
1.5 1.1 8088
1.0 0.8 2651
1.5 1.3 3834
1.2 0.9 1007
0.9 0.9 19128
0.5 1.4 26597
1.2 1.5 24451
1.1 1.5 19582
1.0 1.5 10376
1.7 1.6 5801
1.4 1.5 15858
0.6 0.4 2848
1.3 1.3 6083
1.3 1.5 3199
1.4 1.4 1622
1.1 1.1 282
0.6 0.5 720
1.4 1.2 8079
1.3 1.4 3595
1.3 1.3 7633
0.8 1.4 15043
0.7 1.4 18831
1.0 1.4 32467
1.0 1.3 28296
0.5 1.4 23803
0.6 1.4 24357
0.7 1.0 13317
1.0 1.0 308
1.3 1.5 4606
1.4 1.4 4188
1.5 1.3 1391
1.3 1.3 1597
1.4 1.4 2120
1.4 1.5 1228
1.5 1.4 2268
1.5 1.4 3041
1.3 1.3 4621
1.2 1.1 3318
0.6 0.8 5586
1.4 1.4 2108
1.5 1.1 5073
1.5 1.5 1548
1.3 1.4 1529
1.4 1.4 841
1.5 1.4 1691
1.3 1.4 2910
1.7 1.5 1645
1.3 1.4 5031
1.6 1.2 2309
1.3 1.3 987
1.2 1.4 1096
0.7 0.2 156
1.3 1.6 3346
1.3 1.0 3416
1.5 1.3 1211
1.3 1.4 1698
1.7 1.3 913
1.5 1.5 890
1.3 1.2 5842
1.2 1.4 5066
1.6 1.3 1229
1.3 1.3 1529
1.4 1.3 1229
1.5 1.5 846
1.4 1.1 5805
1.1 1.5 1961
1.5 1.7 1571
1.5 1.3 1477
1.6 1.4 1603
1.2 1.4 3331
1.1 1.2 2258
1.5 1.5 508
1.4 1.3 1718
1.2 1.4 1963
1.4 1.3 3430
1.4 1.3 2466


SPATIAL DISTRIBUTION OF REPORTED SHIP POSITIONS
ANNUAL 1991–2000
20˚E
30˚E
40˚E
50˚E
60˚E
70˚E
80˚E
90˚E
100˚E
40˚N
30˚N
20˚N
10˚N
0˚
10˚S

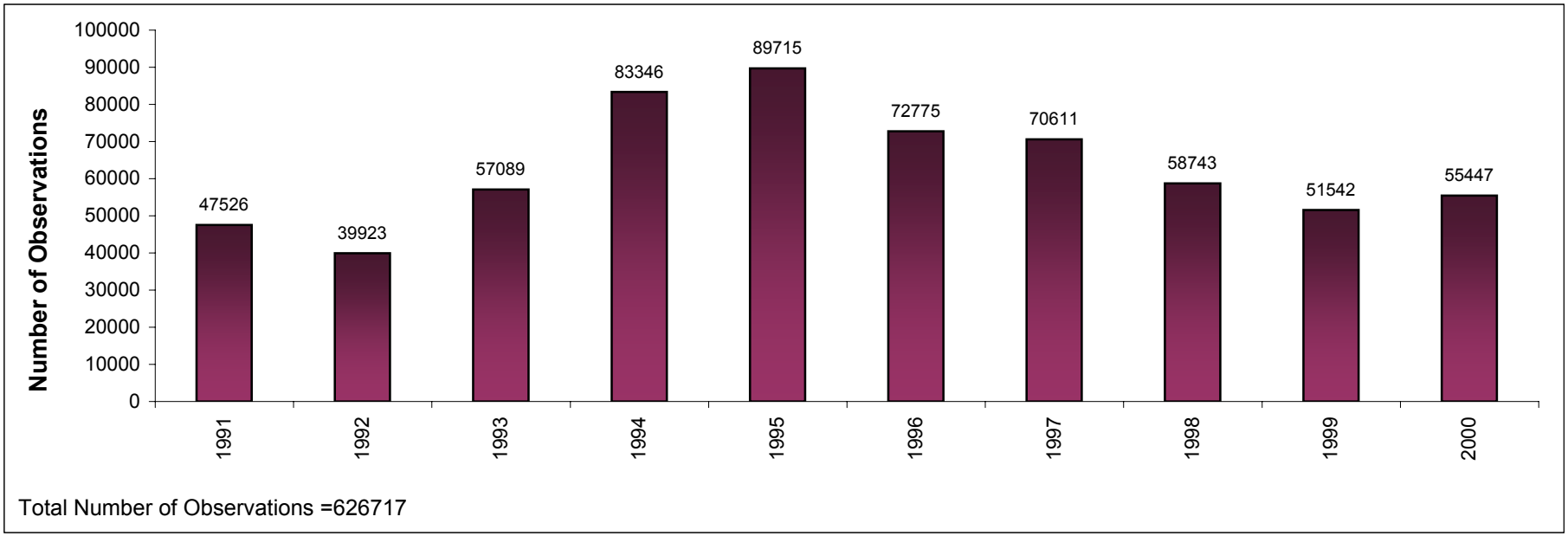
ANNUAL : 1991-2000

COUNTRYWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations = 626717

YEARWISE DISTRIBUTION OF NUMBER OF OBSERVATIONS



Total Number of Observations =626717