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पृथ्वी विज्ञान मंत्रालय/ **MINISTRY OF EARTH SCIENCES**

भारत मौसम विज्ञान भवन / **INDIA METEOROLOGICAL DEPARTMENT**

रेडियो सौन्डे और रेडियो विंड के मासिक सामान्य मूल्य (१९८१ - २०१०)

तथा मासिक उपरिवायु के पवन दिग्दर्शक आरेख (२००० - २०१५)

MONTHLY NORMALS OF RADIOSONDE AND RADIOWIND (1981-2010) AND

MONTHLY UPPER AIR WINDROSE DIAGRAMS (2000-2015)

मछलीपट्टनम
MACHILIPATNAM
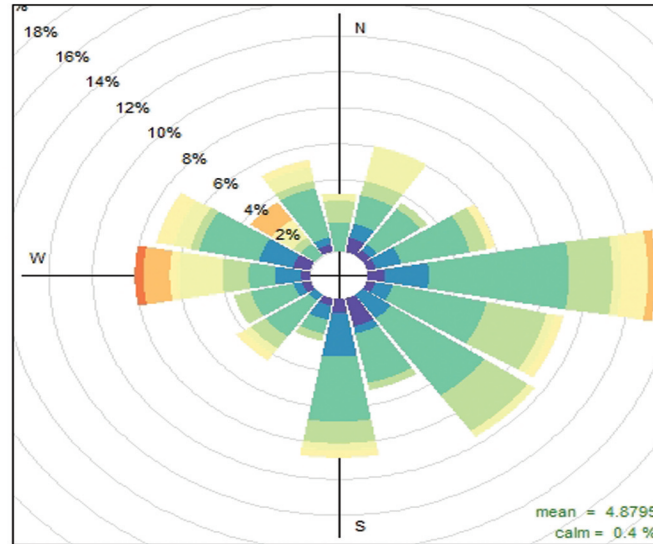
सितम्बर २०२०

SEPTEMBER 2020

भारत सरकार / GOVERNMENT OF INDIA

पृथ्वी विज्ञान मंत्रालय/ MINISTRY OF EARTH SCIENCES

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PREFACE

India Meteorological Department (IMD), Ministry of Earth Sciences, brings out publications on varied meteorological topics. Normals of Radiosonde and Radiowind data has been published by the Climate Data Management and Services Group (CDMS), Office of Climate Research and Services (C R & S), IMD Pune since 1979. Four such publications have been published till date. The present publication 'Monthly Normals of Radiosonde and Radiowind (1981-2010) and Monthly Upper Air Windrose Diagrams (2000-2015)' is prepared using 0000 UTC (0530 IST) observation data from 35 Radiosonde and Radiowind (RS/RW) Upper Air stations for the period 1981-2010 and wind profile data of 34 RS/RW stations for the period 2000-2015 at eight different levels (1000, 925, 850, 700, 500, 300, 200, 100 hPa). The wind rose diagrams are prepared using R software after processing the RS/RW data by applying various quality checks. The present publication provides the climatology of different meteorological parameters at various levels over the station **Machilipatnam** (Latitude $16^0 12$'N, Longitude $81^0 09$'E).

The first part of this publication contains wind roses which provide comprehensive wind frequency information from each direction with various ranges of wind speed. Wind rose is a graphical tool prepared in order to summarise the information about wind speed and wind direction for the station. The tables adjoining to each wind rose diagrams contain information of frequency of occurrence of wind speed in percentage at different ranges of wind direction. In wind roses, the most regular structure comprises of a circle from which eight or sixteen lines come out, one for each direction. The length of each line denotes the occurrence of wind from that direction and the occurrence of calm conditions is entered in the centre. The wind rose diagrams prepared in this publication will be an essential source of information to the distribution pattern of wind direction and wind speed over the station. The information generated in this publication regarding wind roses is expected to be useful and have several applications in the fields such as environmental impact assessment, industrial emissions measurements, wind energy, agriculture engineering, ambient air monitoring, air quality measurements, air dispersion modelling, etc.

The second part of the publication contains information related to station normals which comprises of altitude of standard pressure levels (mean, highest and lowest), normal values of upper air temperatures (mean, highest, lowest and dew point), resultant wind direction, resultant wind velocity and scalar wind speed at standard pressure levels. Besides, it also contains normal values of pressure and altitude of freezing level and pressure, altitude and temperature of tropopause.

The entire work of this publication has been done by a group of officers and staff members led by Shri. Sudeep Kumar B L, Scientist- C, Shri Nahush Kulkarni, Scientist- C, CDMS Group, O/o Climate Research & Services (C R & S), IMD Pune under the guidance of Shri. A.D. Tathe, Scientist E, Group Head, CDMS Group. The valuable contributions were made by Shri. G.S. Dhekne, Met. B, Shri.R.M. Walke, Met. A, Shri. S.H. Bhagwat, Met. A, Shri. R.V. Ghoge, Met. A, Smt. Geetha Harikumar, Met. A, Smt. Hasina Nisar, Met. A, Smt. Vaishali Jadhav, Met A , Smt. S.H.Joshi, Met A and S.H. Sangale S.A. towards the preparation of this publication. It is hoped that the information from this publication will be useful to the scientific community and operational activities at their particular stations.

Pune   **Dr. D. S. Pai**

September 2020   Head C R & S

Table of content

Description of various terms used in the table (Normals of Radiosonde data)

SN.	Terms	Description
1	PRESSURE	Standard Pressure levels in hPa (1000 to 7 hPa)
2	HEIGHT	Mean altitude of isobaric levels in gpm.
3	Hmax	Highest altitude of monthly mean values in gpm.
4	Hmin	Lowest altitude of monthly mean values in gpm.
5	TEMP	Mean dry bulb air temperature in $^{\circ}$C.
6	TMAX	Highest value of temperature in $^{\circ}$C observed at particular isobaric level
7	TMIN	Lowest value of temperature in $^{\circ}$C observed at particular isobaric level
8	DEWPT	Mean dew point temperature in $^{\circ}$C.
9	DIR	Mean resultant wind direction in degrees .
10	VELO	Mean resultant wind velocity in mps (vector mean).
11	U	The resolved part of wind velocity in East direction (East component)
12	V	The resolved part of wind velocity in North direction (North component)
13	VM	Mean wind speed irrespective of direction in mps (scalar mean).
14	P	Mean pressure of freezing and tropopause levels in hPa .
15	Height	Altitude of freezing and tropopause levels in gpm .
16	H_max	Highest altitude of freezing level of monthly mean values in gpm.
17	H_min	Lowest altitude of freezing level of monthly mean values in gpm .
18	SURFACE	Station level atmospheric pressure in hPa.
19	FIRST TROPOPAUSE	Tropopause observed at altitude less than 14 Km .
20	SECOND TROPOPAUSE	Tropopause observed at altitude more than 14 Km .

Description of terms used in the table (Wind rose table)

1	Speed	Range of wind velocity in mps
2	Direction	Range of wind direction in degrees

Interpretation of wind rose diagrams:

Frequency of counts by wind direction (%)
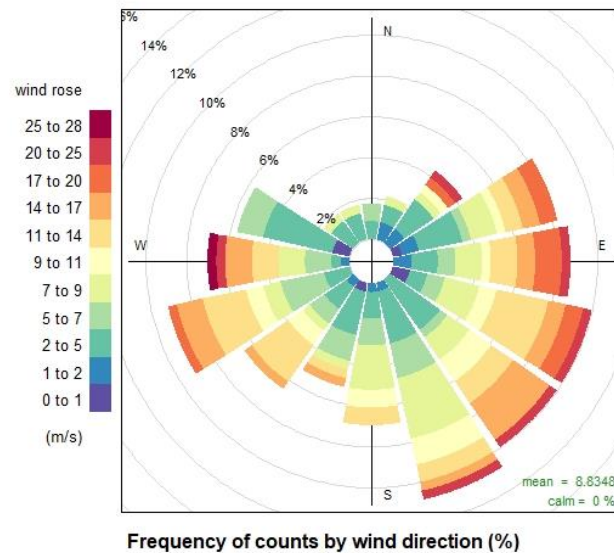
A wind rose diagrams at different upper air levels gives a very concise but information-laden view of how wind speed and direction are typically distributed at a particular location and month.

- The diagrams normally comprises of 8, 16 or 32 radiating spokes, which represent wind directions in terms of the cardinal wind directions (North East South West) and their intermediate directions.

- Presented in a circular format, the wind rose shows the frequency of winds blowing FROM particular directions.

- The length of each "spoke" around the circle is related to the frequency of time that the wind blows from a particular direction and each of the spokes are color-coded along their length to indicate the speed of the wind.

- Each concentric circle represents a different frequency, emanating from zero at the centre to increasing frequencies at the outer circles.

The circular format of the wind rose shows the direction the winds blew from and the length of each "spoke" around the circle shows how often the wind blew from that direction.

Machilipatnam January 1000 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.8	1.5	0.8	0	0	0	0	0	0	0	0
12-33		0.4	2.3	1.1	0.4	0	0	0	0	0	0	0
34-56		0.4	2.7	11	3.4	0	0	0	0	0	0	0
57-78		1.9	3.4	11	3	0.4	0	0	0	0	0	0
79-101		0.8	3.4	8	6.1	0	0.4	0	0	0	0	0
102-123		2.3	2.3	4.2	0.8	0	0	0	0	0	0	0
124-146		1.1	1.1	3.8	0	0.4	0	0	0	0	0	0
147-168	2	1.5	1.1	1.5	0.4	0	0	0	0	0	0	0
168-191		2.7	0	3	0.4	0	0	0	0	0	0	0
192-213		1.9	1.5	0.4	0	0	0	0	0	0	0	0
214-236		2.3	0	0	0	0	0	0	0	0	0	0
237-258		0.4	0	0	0	0	0	0	0	0	0	0
259-281		0.4	0	0	0	0	0	0	0	0	0	0
282-303		0.4	0.4	0	0	0	0	0	0	0	0	0
304-326		1.1	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
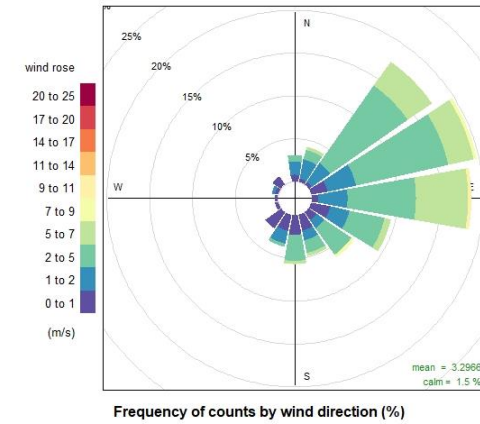
Machilipatnam January 925 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.8	0.4	0.4	0	0	0	0	0	0
12-33		0	1.9	0.8	0.4	0	0	0	0	0	0	0
34-56		0	0.8	7.3	1.9	0	0	0	0	0	0	0
57-78		1.5	1.1	11.1	5.7	0.8	0	0	0	0	0	0
79-101		1.1	1.5	12.2	6.5	5.3	1.1	0	0	0	0	0
102-123		0	1.5	6.1	2.7	0	0	0	0	0	0	0
124-146		0.8	1.1	5.7	1.1	0	0.4	0	0	0	0	0
147-168	0	0.4	1.5	2.7	1.1	0	0	0	0	0	0	0
168-191		0.4	1.1	2.3	0.4	0.8	0	0	0	0	0	0
192-213		0	0.4	1.1	0	0	0.4	0	0	0	0	0
214-236		0	1.1	0.8	0	0	0	0	0	0	0	0
237-258		0	0	0.8	0	0	0	0	0	0	0	0
259-281		0.4	0.4	0	0	0	0	0	0	0	0	0
282-303		0.4	0	0	0	0	0	0	0	0	0	0
304-326		0	0.4	0.8	0	0	0	0	0	0	0	0
327-348		0	0	0.4	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
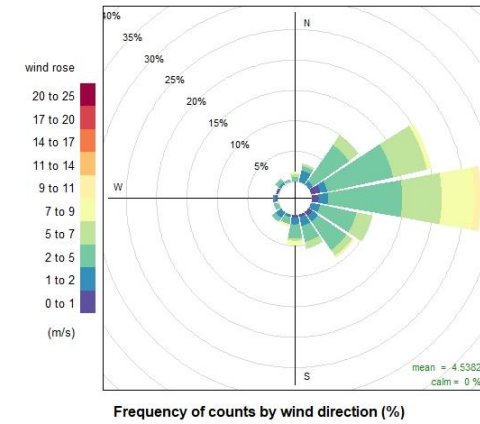
Machilipatnam   January   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.4	1.1	1.9	0.8	0	0	0	0	0	0	0
12-33		0.4	1.1	4.2	2.7	0.4	0	0	0	0	0	0
34-56		0	0.8	9.5	3	2.7	1.1	0.4	0	0	0	0
57-78		0.4	1.9	8.7	4.2	2.7	0.4	0	0	0	0	0
79-101		0.8	1.5	8.7	3.4	0.8	0.4	0	0	0	0	0
102-123		0	0.4	3.8	2.3	0.8	0	0	0	0	0	0
124-146		0	0.8	4.9	0.8	0.4	0	0	0	0	0	0
147-168	0	0	0.4	0.8	1.1	0.4	0	0	0	0	0	0
168-191		0.4	0.8	2.3	0.4	0	0	0	0	0	0	0
192-213		0.4	0.8	1.1	0.4	0	0.4	0	0	0	0	0
214-236		0	0.4	1.1	0.8	0.4	0	0	0	0	0	0
237-258		0	0.4	1.9	0	0	0	0	0	0	0	0
259-281		0	0.4	1.1	0.4	0.4	0	0	0	0	0	0
282-303		0	0	0.4	0	0	0.4	0	0	0	0	0
304-326		0.4	0	0.8	0	0	0	0	0	0	0	0
327-348		0.8	0	1.5	0.4	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 4.6996
calm = 0.4 %

Frequency of counts by wind direction (%)
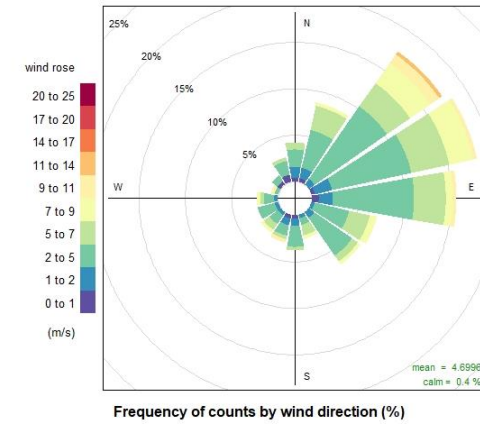
Machilipatnam   January   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.4	1.9	1.2	1.2	0.4	0	0	0	0	0
12-33		0.4	0.8	5.4	2.3	0.4	0.4	0	0	0	0	0
34-56		0.4	0.4	3.8	0.8	1.2	0.8	0.4	0	0	0	0
57-78		0.8	1.2	1.9	0.8	1.2	0	0	0	0	0	0
79-101		0.8	0.4	2.3	1.9	1.5	0.4	0	0.4	0	0	0
102-123		0.4	0.4	1.9	0	0.4	0.4	0	0	0	0	0
124-146		0.4	0.8	1.2	0.4	0	0.4	0	0	0	0	0
147-168	0	0	0	0.4	0	0.8	0	0	0	0	0	0
168-191		0.8	0.4	0.8	1.5	0	0	0	0	0	0	0
192-213		0	0.4	3.1	1.2	0.4	0	0.4	0	0	0	0
214-236		0	0.8	3.5	1.5	1.2	1.2	0	0	0	0	0
237-258		0.4	0.8	2.3	3.1	1.2	0.8	0	0	0	0	0
259-281		0.4	1.9	5	2.7	1.5	1.2	0.4	0	0	0	0
282-303		0	1.5	2.7	1.9	0.4	0	0.4	0	0	0	0
304-326		0.4	0.4	3.5	0.8	1.2	1.2	0	0	0	0	0
327-348		0	0.4	1.2	0.4	1.2	0.4	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 5.3154
calm = 0.4 %

Frequency of counts by wind direction (%)
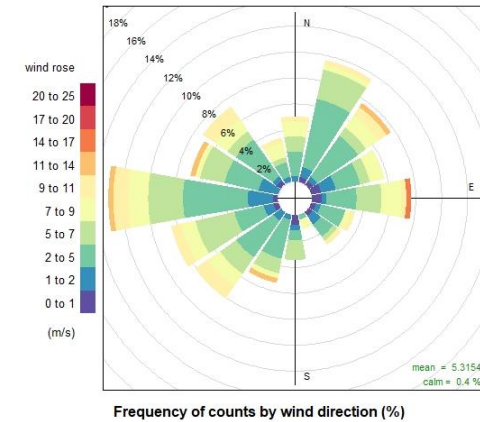
Machilipatnam   January   500 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.4	0	0.8	0.8	0	0.8	0.8	0.8	0	0
12-33		0	0	0.4	0.4	0	0.4	0.4	0.4	0	0	0
34-56		0	0	0	0.8	0.4	0.4	0	0	0	0	0
57-78		0	0	1.2	0	0	0	0	0	0	0	0
79-101		0	0.4	0	0.4	0	0	0	0	0	0	0
102-123		0.4	0	0.4	0	0	0.4	0	0	0	0	0
124-146	0	0	0.4	0.8	0.4	0	0.4	0	0	0	0	0
147-168		0.4	0.4	1.2	0.8	0.8	0	0	0	0	0	0
168-191		0	0.4	0.8	0	0.8	0.4	0	0	0	0	0
192-213		0	0.4	0.8	0	0.4	0	0	0	0	0	0
214-236		0	0.8	2	0.8	2	0.8	0.4	0.8	0	0.8	0
237-258		0	0.4	1.2	2.4	1.6	3.2	3.6	2	1.2	1.6	0.4
259-281		0	0	2.8	3.6	3.2	2.8	5.7	3.6	0.8	0	0.4
282-303		0	0	0.4	1.2	1.2	1.6	2.4	1.2	0.8	0.4	0.4
304-326		0	0	2	2.4	2	2.8	1.2	0.8	0.4	0	0
327-348		0	0	2	1.2	1.6	1.2	0.8	0.8	0	0.4	0

wind rose

25 to 28
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 10.065
calm = 0 %

Frequency of counts by wind direction (%)
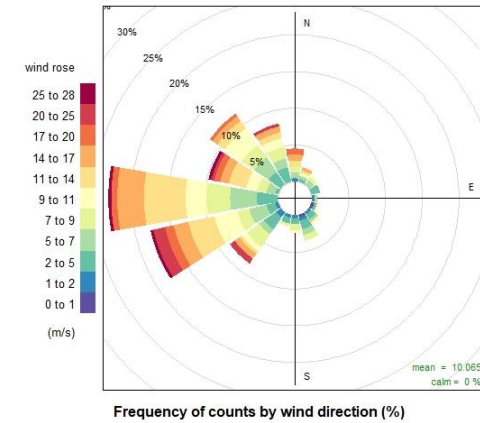
Machilipatnam   January   300 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0.4	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146	0	0	0	0.4	0	0	0	0	0	0	0	0
147-168		0	0	0.9	0.4	0	0	0.4	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0.4	0	0	0.9	0.4	0	0	0
214-236		0.4	0	0	1.3	0.9	2.2	2.2	1.8	1.3	0.4	2.6
237-258		0	0	0.4	0.9	2.6	2.6	3.5	4.8	2.2	3.1	7
259-281		0	0	0.4	1.3	2.6	2.2	4.4	2.2	2.6	4.4	6.6
282-303		0	0	0.9	0	1.3	2.2	3.1	3.9	4.8	0.4	2.6
304-326		0	0	0.9	0.4	0.9	0.9	0	0.9	1.8	0.9	1.3
327-348		0	0	0	0	0	0	0	0.4	0	0.4	0.4

wind rose

25 to 45
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 17.64
calm = 0 %

Frequency of counts by wind direction (%)
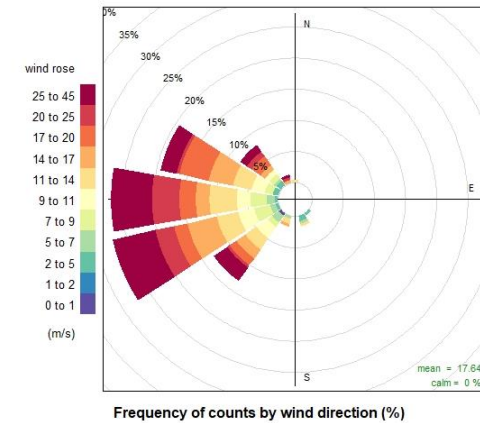
Machilipatnam   January   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146	0	0	0	0	0	0	0	0.5	0	0	0	0
147-168		0	0	0	0	0.5	0	0	0	0	0	0
168-191		0	0	0.5	0	0.5	0	0	0	1	0	0
192-213		0	0	0	0	1	1.9	1	1.9	1.4	3.9	1
214-236		0	0	0.5	0.5	1.4	1.9	3.9	3.4	1.9	1.9	1.9
237-258		0	0	0	1	2.4	2.4	4.3	2.4	2.9	6.8	9.7
259-281		0	0	1	1	1	0.5	1.9	4.3	2.9	4.8	7.2
282-303		0	0	1	1.4	0.5	0	0	0	0.5	1	3.4
304-326		0	0	0	0	0	0.5	0.5	0.5	0.5	0.5	0
327-348		0	0	0	0	0	0	0	0.5	0	0.5	0
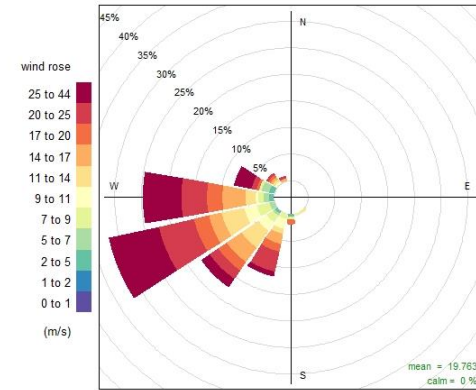
Frequency of counts by wind direction (%)

Machilipatnam   January   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.9	0.9	0	0	0	0	0	0	0
12-33		0	0	1.9	0	0	0	0	0	0	0	0
34-56		0	0	0.9	0	0	0	0	0	0	0	0
57-78		0	0	0.9	0	0.9	0.9	0	0	0	0	0
79-101		0	0	0	0.9	1.9	0.9	0	0	0	0	0
102-123		0	0.9	0	0	0.9	1.9	0	0	0	0	0
124-146		0	0	0.9	0	0.9	0.9	0	0	0	0	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0	0.9	1.9	0	0	0	0	0.9	0	0	0
192-213		0	0	0	1.9	2.8	0	0.9	0	0	0	0
214-236		0.9	0	2.8	1.9	0	0.9	4.7	0.9	0	0	0
237-258		0	0.9	1.9	2.8	0.9	0.9	1.9	1.9	1.9	0	0
259-281		0	0.9	2.8	1.9	2.8	2.8	0.9	3.7	4.7	0	0.9
282-303		0.9	0	0.9	0	0.9	3.7	0.9	1.9	0.9	0.9	0
304-326		0	0	0	1.9	1.9	2.8	1.9	0	0	0.9	0
327-348		0	1.9	0.9	1.9	0	0	0	0	0	0.9	0
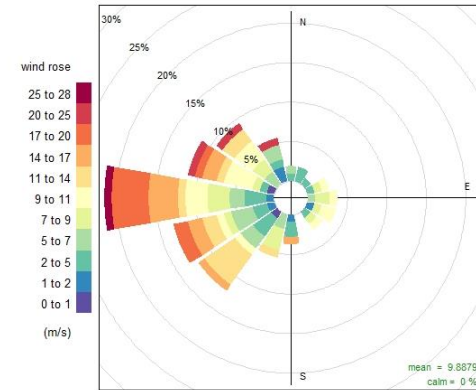
Frequency of counts by wind direction (%)

Machilipatnam   February   1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1	0	0	0	0	0	0	0	0	0	0
12-33		1	2.5	0.5	0	0	0	0	0	0	0	0
34-56		1	1.5	2	0.5	0	0	0	0	0	0	0
57-78		0.5	4	4	0	0	0	0	0	0	0	0
79-101		2	1.5	6	4.5	0.5	0	0	0	0	0	0
102-123		4	2	2.5	1.5	0	0	0	0	0	0	0
124-146		3.5	3.5	5	1.5	0	0	0	0	0	0	0
147-168	1	3	2.5	2.5	1	0	0	0	0	0	0	0
168-191		2.5	3.5	10.6	1.5	0	0	0	0	0	0	0
192-213		0.5	2.5	3.5	0.5	0	0	0	0	0	0	0
214-236		2	1.5	1	0.5	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0.5	0	0	0	0	0	0	0	0
282-303		0	0.5	0	0	0	0	0	0	0	0	0
304-326		0.5	0	0.5	0	0	0	0	0	0	0	0
327-348		1	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
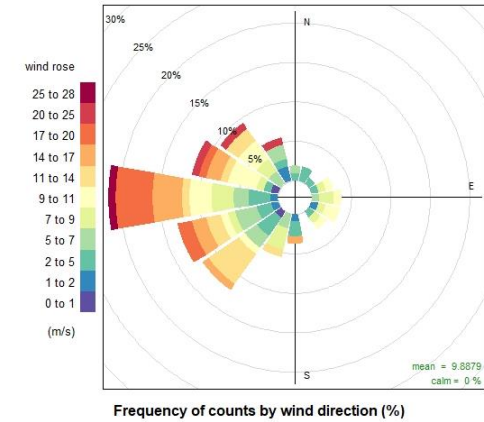
Machilipatnam   February   925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.5	0.5	0.5	0	0	0	0	0	0	0
12-33		0	0.5	1.5	0	0	0	0	0	0	0	0
34-56		0	0.5	1	0	0	0	0	0	0	0	0
57-78		1	1	4.5	1.5	0	0	0	0	0	0	0
79-101		0	1.5	9.5	4	0	0.5	0	0.5	0	0	0
102-123		0.5	1.5	10.1	4	1	0.5	0	0	0	0	0
124-146		0.5	2	7	2.5	0.5	0	0	0	0	0	0
147-168		0.5	1	4.5	3.5	0	0	0	0	0	0	0
168-191	1	0	1	5.5	3.5	0	0	0	0	0	0	0.5
192-213		0	0.5	3.5	4.5	1	0	0	0	0	0	0
214-236		1	2	1.5	1	0	0	0	0	0	0	0
237-258		0	0	1	0	0	0	0	0	0	0	0
259-281		0	0.5	0.5	0	0	0	0	0	0	0	0
282-303		0	1	0.5	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	1	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
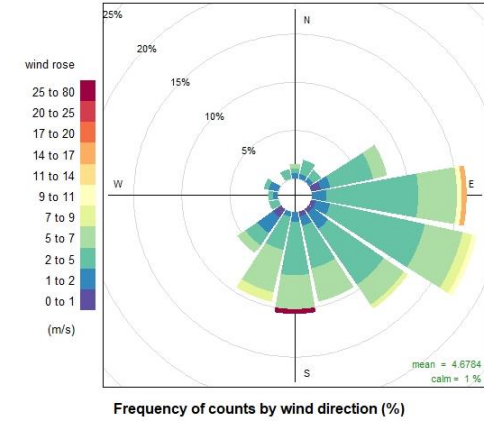
Machilipatnam — February — 850 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.5	0	3.5	0.5	0	0	0	0	0	0	0
12-33		0	2	3.5	2.5	1	0	0	0	0	0	0
34-56		0.5	1	6.5	4.5	1	0	0	0	0	0	0
57-78		0.5	0.5	6	3	1	0.5	0	0	0	0	0
79-101		0.5	0.5	6	3	1.5	0	0	0.5	0	0	0
102-123		0	1	4.5	2	1	0	0	0	0	0	0
124-146		0	0.5	3.5	1.5	0.5	0	0	0	0	0	0
147-168	1	0	0	3	0.5	1.5	0	0	0	0	0	0
168-191		0	1	2.5	2	0	0	0	0	0	0	0
192-213		0	0.5	2.5	3	0	0	0	0	0	0	0
214-236		0.5	0	2.5	0.5	0.5	0	0	0	0	0	0
237-258		0	0.5	2	0	0	0	0	0	0	0	0
259-281		0	0	0.5	0.5	0.5	0	0	0.5	0	0	0
282-303		0.5	0.5	1	0.5	0	0	0.5	0	0	0	0
304-326		0	0.5	0	0.5	0	0	0	0	0	0	0
327-348		0	0.5	3	1	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
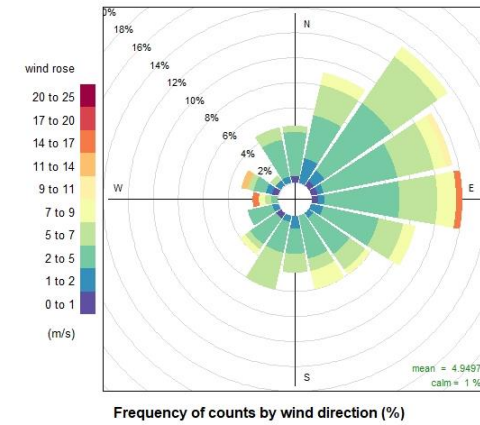
Machilipatnam — February — 700 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.5	0.5	6	0	2	0	0	0	0	0	0
12-33		0.5	0	4.5	2.5	1.5	0.5	0	0	0	0	0
34-56		0.5	0	2	3.5	0.5	0	1	0	0	0	0
57-78		0.5	0	1.5	0.5	1	0.5	0	0	0	0	0
79-101		0	0	1	0.5	1	0.5	0	1	0	0	0
102-123		0.5	0.5	2	1.5	0	0	0	0	0	0	0
124-146		0	0	0.5	0	0	0	0	0	0	0	0
147-168	0	0	0	1	0	0	0	0.5	0	0	0	0
168-191		0	1	1	1.5	0	0	0	0	0	0	0
192-213		0	0	1.5	1	0	0	0	0	0	0	0
214-236		0	1	2	1	1	1.5	0.5	0	0	0	0
237-258		0	0.5	4.5	1.5	1	0.5	0.5	0	0	0	0
259-281		0	0.5	3	2.5	3	1	1.5	0	0	0	0
282-303		0	1	2.5	1	2	1	0	0	0	0	0
304-326		1.5	1	3	3	2	0	0	0	0	0	0
327-348		0.5	0.5	3.5	2.5	0.5	0.5	0	0	0	0	0

Frequency of counts by wind direction (%)
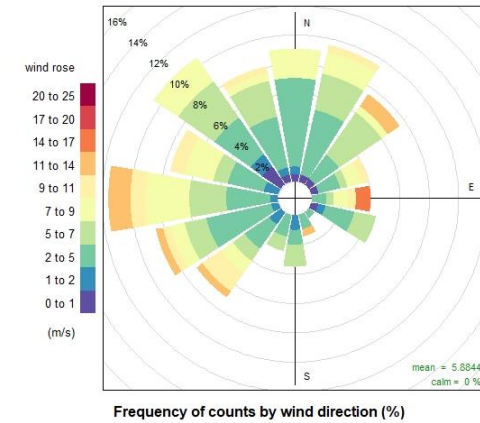
Machilipatnam   **February**   **500 hPa level**

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	1.1	0.5	1.1	0	1.1	0.5	0	0	0
12-33		0	0	1.1	1.6	0.5	0	0	0.5	0	0	0
34-56		0.5	0	1.1	0.5	0	0.5	0.5	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0.5	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0.5	0	0	0	0	0	0	0	0
124-146		0	0	0.5	0	0	0	0	0	0	0	0
147-168	0	0	0	0.5	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0.5	0.5	0	0	0	0	0
192-213		0	0	0	1.1	0	0	0	0	0	0	0
214-236		0	0.5	0	0.5	1.6	2.7	2.2	1.1	0	0.5	0
237-258		0	0.5	0	2.7	3.3	3.3	3.8	1.1	0.5	1.1	0
259-281		0	0	2.2	2.2	1.6	4.9	3.8	3.3	1.1	0	0.5
282-303		0	0	1.6	2.7	1.1	1.6	3.3	2.2	0.5	0.5	0
304-326		0	0	2.2	1.1	2.2	1.6	3.8	1.1	0.5	0.5	0
327-348		0	0	1.1	2.7	1.6	2.2	2.2	2.2	0	0	0

Frequency of counts by wind direction (%)

wind rose
25 to 27
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 10.339
calm = 0 %
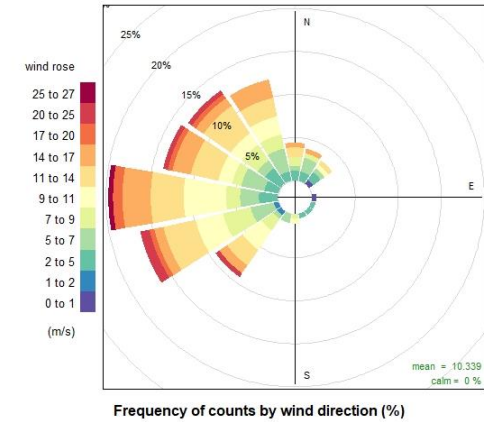
Machilipatnam   **February**   **300 hPa level**

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0.6	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0.6	1.2	0	0	0	0	0	0	0
147-168		0	0	0.6	0	0	0	0	0	0	0	0
168-191	0	0	0	0.6	0	0	0	0	0	0	0	0
192-213		0	0.6	0	0	0.6	0	0	0	0	0	0.6
214-236		0	0.6	1.2	2.3	1.2	1.8	3.5	0	1.8	4.1	2.3
237-258		0	0.6	0.6	2.3	1.2	1.8	2.9	1.8	1.2	5.8	7.6
259-281		0	0	1.2	0	0.6	1.8	2.3	4.7	1.8	4.1	4.7
282-303		0	0	0	1.8	0.6	0.6	1.2	2.3	3.5	2.9	5.3
304-326		0.6	0	0.6	0	1.2	0.6	1.2	0	1.2	1.2	0
327-348		0	0	1.2	1.2	0	0	0	1.2	0	0.6	0.6

Frequency of counts by wind direction (%)

wind rose
25 to 48
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 17.883
calm = 0 %
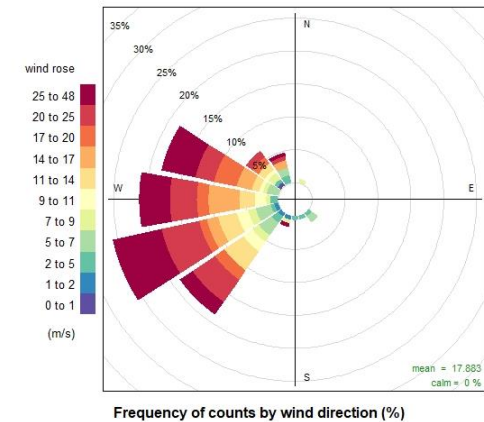
Machilipatnam   February   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.6	0	0.6	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0.6	0	0	0	0.6	0	0	0	0
147-168	0	0	0	1.3	0	0	0	0	0	0	0	0
168-191		0	0	0.6	1.3	0	0	1.3	0	0	0	0
192-213		0	0.6	0.6	1.3	1.3	1.3	0.6	1.3	0.6	0	0
214-236		0	0.6	1.3	0.6	1.3	2.5	1.9	4.4	1.3	3.2	1.9
237-258		0	0	0.6	0.6	0	0.6	0.6	3.2	3.2	1.9	9.5
259-281		0	0	0	0.6	0.6	0	1.9	1.9	1.9	8.9	11.4
282-303		0	0	0	0.6	1.9	0.6	2.5	1.3	1.9	1.9	3.8
304-326		0	0	0.6	0	0	0	0	0	0	0.6	0.6
327-348		0	0	0	0	1.3	0.6	0	0	0	0.6	0

Frequency of counts by wind direction (%)
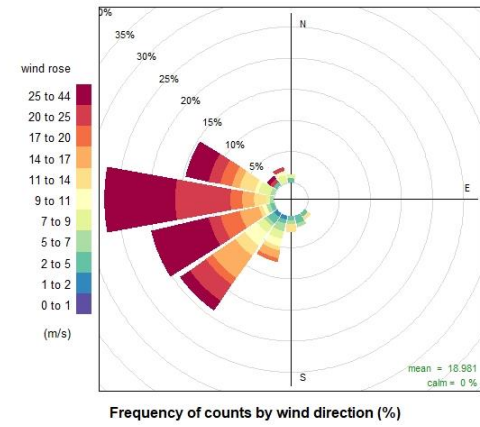
Machilipatnam   February   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	1	0	0	0	0	0	0	0
12-33		0	0	0	1	0	0	0	0	0	0	0
34-56		0	0	1	1	1	0	0	0	0	0	0
57-78		0	0	2	0	2	1	1	1	0	0	0
79-101		0	0	1	0	0	1	0	2	0	0	0
102-123		0	0	2	0	0	0	0	0	0	0	0
124-146		0	0	2	0	0	2	1	0	0	0	0
147-168		0	0	1	0	0	1	0	0	0	0	0
168-191	0	0	0	1	0	0	0	0	0	0	0	0
192-213		0	1	2	0	0	0	0	0	0	0	0
214-236		0	1	3	1	2	1	0	0	0	0	0
237-258		0	1	2	5	2	0	4	1	1	0	0
259-281		0	0	1	0	4	1	2	5	3	1	1
282-303		0	0	5	5.9	3	1	2	1	1	3	0
304-326		0	0	0	5	0	0	1	0	0	0	0
327-348		0	0	1	0	1	0	0	0	0	0	0

Frequency of counts by wind direction (%)
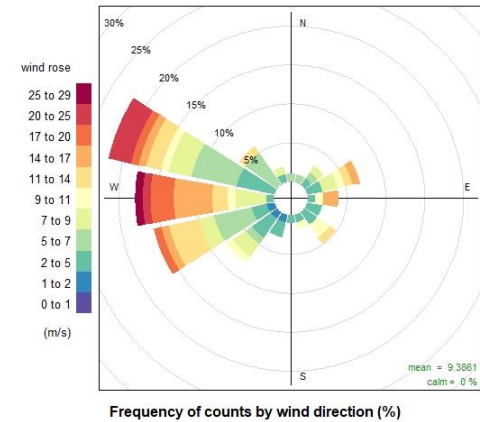
Machilipatnam   March   1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.3	0.3	0.3	0.3	0	0	0	0	0	0	0
12-33		0.7	0	0	0	0	0	0	0	0	0	0
34-56		1	0	0.3	0	0	0	0	0	0	0	0
57-78		0.3	0.3	0.3	0	0	0	0	0	0	0	0
79-101		1	0.3	1.3	0	0	0	0	0	0	0	0
102-123		1.3	0.3	0	0	0.3	0	0	0	0	0	0
124-146		1.7	2.7	3	0.3	0	0	0	0	0	0	0
147-168	3	4.3	2.7	5	0.3	0.3	0	0	0	0	0	0
168-191		11.7	8.4	19.7	1.7	0.7	0	0	0	0	0	0
192-213		6.4	3.3	4.3	0.3	0	0	0	0	0	0	0
214-236		1.7	1	2.7	0.3	0	0	0	0	0	0	0
237-258		0.3	0.3	0	0	0	0	0	0	0	0	0
259-281		0	0.7	0.3	0	0	0	0	0	0	0	0
282-303		0.3	0.3	0.3	0	0	0	0	0	0	0	0
304-326		0	0.3	0	0	0	0	0	0	0	0	0
327-348		1	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
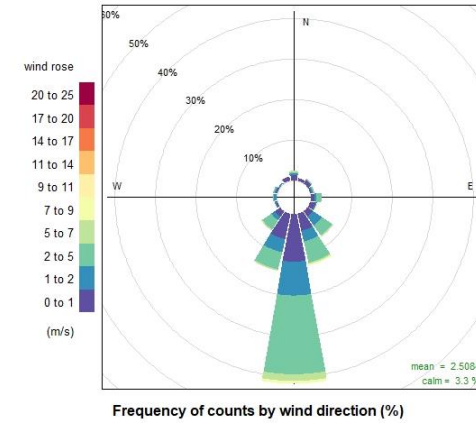
Machilipatnam   March   925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.3	0	0	0	0	0	0	0	0	0
12-33		0	0.7	0.3	1	0	0	0	0	0	0	0
34-56		0.7	0	0.3	0	0	0	0	0	0	0	0
57-78		0.7	0.3	0.7	0	0	0	0	0	0	0	0
79-101		1	0.7	2	0.7	0	0	0	0	0	0	0
102-123		1	1.7	3.7	0.3	0	0	0	0	0	0	0
124-146		0.3	2	8.4	1	0.3	0	0	0	0	0	0
147-168	0	0.7	1.7	12	2.7	1.7	0	0.3	0	0	0	0
168-191		0.7	2.3	15.1	6.4	3.3	1	0	0	0	0	0
192-213		0.3	0.3	8.7	4.3	0.7	0.3	0	0	0	0	0
214-236		0.3	1	2.3	0.3	0	0.7	0	0	0	0	0
237-258		0.3	0	1.3	0	0	0	0	0	0	0	0
259-281		0	0.7	0	0.3	0	0	0	0	0	0	0
282-303		0	0.3	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0.3	0.7	0.3	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
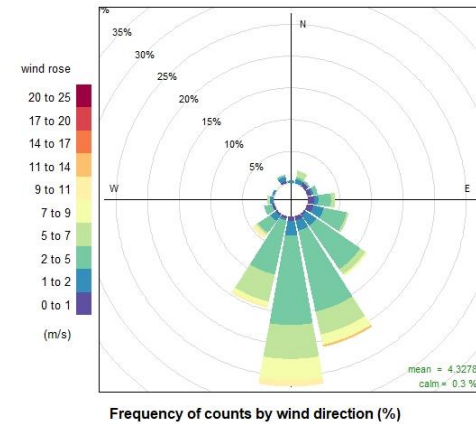
Machilipatnam   March   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.7	0.7	1.3	0	0	0	0	0	0	0	0
12-33		0	0.7	2.3	0.3	0	0	0	0	0	0	0
34-56		1.3	1.3	3.3	0.7	0.3	0	0	0	0	0	0
57-78		1	1	3.7	1.7	1	0	0	0	0	0	0
79-101		1.7	1.7	5	1	0.3	0.3	0	0	0	0	0
102-123		0.3	1.3	5.4	1.3	0.3	0.3	0	0	0	0	0
124-146	0	1	1.7	11.7	2.3	1	0	0	0.3	0	0	0
147-168		0	1	6	1.7	0.7	0	0	0	0	0	0
168-191		0	1	6.4	3.3	1.7	0.7	0	0	0	0	0
192-213		0.7	1	1	1.7	1.7	0	0	0	0	0	0
214-236		0.7	0.3	1.7	1	0	0	0	0	0	0	0
237-258		0.7	0.3	0	0.3	0	0	0	0	0	0	0
259-281		0.3	1	1	0	0	0	0	0	0	0	0
282-303		0	0.7	1	0	0.3	0	0	0	0	0	0
304-326		0	0.7	1.3	0	0	0.3	0	0	0	0	0
327-348		0	0.3	0.7	0	0	0	0	0	0	0	0

mean = 4.2375
calm = 0.3 %

Frequency of counts by wind direction (%)
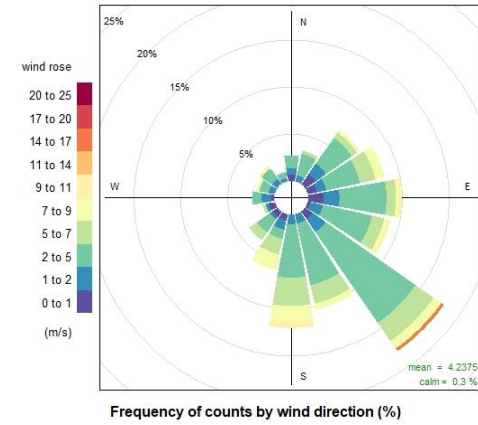
Machilipatnam   March   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.7	0.7	5.4	2	2.4	0.7	0	0.3	0	0	0
12-33		0.3	0.3	4.1	5.4	2	1.4	0.3	0.3	0	0	0
34-56		0	1	3.7	2.4	3.4	1.4	0	0	0	0	0
57-78		0	0.7	3.7	3.7	1	1	0	0	0	0	0
79-101		0	0.3	3.1	1.4	1	0.3	0	0	0	0	0
102-123		0	0.3	0.7	1	1	0.3	0	0	0	0	0
124-146		0	0.3	0.7	0.7	0.3	0	0	0	0	0	0
147-168	1	0.3	0.3	0	0.3	0	0	0	0	0	0	0
168-191		0	0.3	0.3	0.3	0.3	0.7	0	0	0	0	0
192-213		0	0.3	0.3	0	0	0	0	0	0	0	0
214-236		0	0.7	1.4	0.3	0	0	0	0	0	0	0
237-258		0	0.7	0.7	1	0	0.3	0	0.3	0	0	0
259-281		0.3	0.3	1	0.3	0.7	0	0.3	0	0	0	0
282-303		0	1	3.7	2	1.4	0.7	0	0	0	0	0
304-326		0.3	1	2.7	1.7	1.7	0.3	0	0	0	0	0
327-348		0	0.7	5.8	1.7	1.7	0.3	0	0.3	0	0	0

mean = 5.8339
calm = 0.7 %

Frequency of counts by wind direction (%)
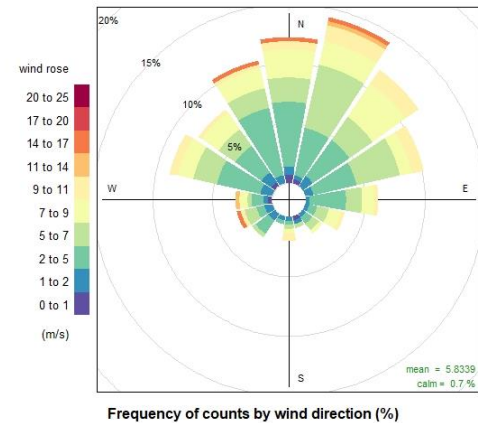
Machilipatnam **March** **500 hPa level**

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.4	1.1	2.9	0.4	0	1.8	1.1	0.4	1.1	0
12-33		0	0.4	0.7	0.7	0	1.4	0.7	0	0	0	0
34-56		0	0	0.7	1.1	0	0.4	0	0	0	0	0
57-78		0.7	0	1.8	0.4	0.4	0	1.1	0	0	0	0
79-101		0	0	0	1.4	0.4	0	0	0	0	0	0
102-123		0	0.4	0	0	0	0	0	0	0	0	0
124-146		0.4	0	0.4	1.1	0	0.4	0	0	0	0	0
147-168	0	0	0	1.1	0.7	0	0	0	0.4	0	0	0
168-191		0	0	0.7	1.1	0.4	0.7	0.4	0	0	0	0
192-213		0	0	0.7	1.4	1.1	1.1	0	0	0	0	0
214-236		0	0.4	2.5	1.4	1.4	1.1	0	0.4	0.4	0	0
237-258		0.4	0	1.8	1.4	2.5	2.1	2.5	0.4	0	0	0
259-281		0	1.1	1.4	2.9	2.5	1.8	1.1	1.4	0.4	0.4	0
282-303		0.4	0	1.1	2.5	2.5	1.4	2.5	1.1	0	0	0
304-326		0.4	0.4	2.9	5	3.6	0.7	1.4	0.7	0	0	0
327-348		0	0	3.6	0.4	0.4	2.5	1.4	0.7	0	0	0

mean = 8.3536
calm = 0 %

Frequency of counts by wind direction (%)
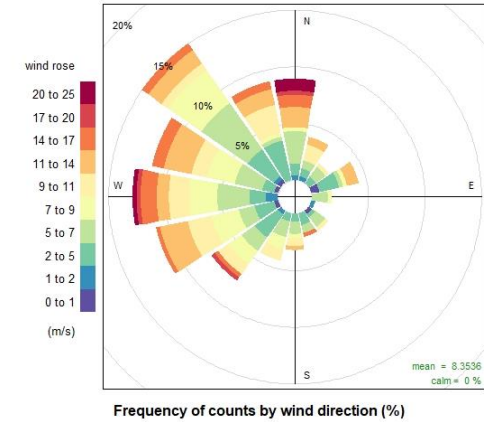
Machilipatnam **March** **300 hPa level**

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0.4	0	0	0	0	0
12-33		0	0	0.4	0.4	0	0	0	0	0	0	0
34-56		0	0	0.4	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0.4	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0	0	0	0	0	0	0	0	0
147-168	0	0	0	0.4	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0.4	0
192-213		0	0	0	1.6	1.2	0.4	0.8	0.4	0	0.4	0
214-236		0	0	0.4	1.6	1.6	1.6	1.9	3.1	0.4	1.6	1.6
237-258		0	0.4	0.4	0	2.3	1.9	2.7	5	3.5	4.7	4.3
259-281		0	0	1.6	1.6	1.6	1.6	3.9	6.2	3.9	4.3	3.9
282-303		0	0	1.6	3.1	1.2	1.6	1.6	0.4	0	1.9	2.3
304-326		0	0.4	0	2.3	1.2	0.8	1.2	0.8	1.2	0.4	1.6
327-348		0	0	0.4	0	0.4	0	0	1.2	0	0	0.4

mean = 15.868
calm = 0 %

Frequency of counts by wind direction (%)
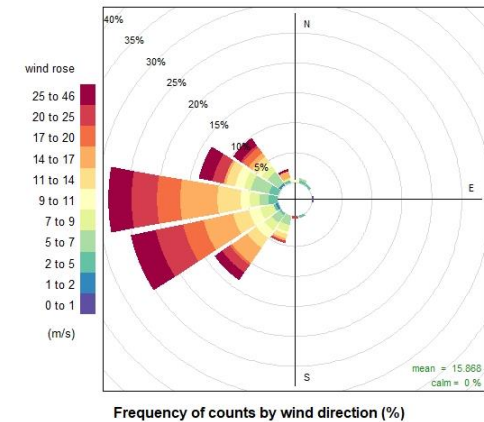
Machilipatnam   March   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0.4	0	0	0
12-33		0	0	0.4	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0.4	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0.4	0	0	0	0	0	0	0	0
147-168	0	0	0	0.8	1.2	0	0	0	0	0	0	0
168-191		0	0.4	0.4	0	0	0	0.4	1.7	0.4	0	0
192-213		0	0.4	0.4	0.4	0.4	0.8	1.7	1.2	0.8	0.4	0.4
214-236		0	0.4	0	0.8	1.7	1.2	2.9	1.2	5	2.1	2.9
237-258		0	0.8	0.8	2.9	2.9	3.3	2.5	2.9	2.1	1.7	5.8
259-281		0	0	1.7	1.2	0.4	1.2	2.5	3.3	2.1	5	6.2
282-303		0	0.4	1.7	0.8	0.4	1.2	0.8	1.7	2.9	2.1	1.7
304-326		0	0	0.4	0	0	0.4	0.8	0.4	0	0	1.2
327-348		0	0.4	0.4	0	0.4	0	0.4	0	0	0	0

Frequency of counts by wind direction (%)
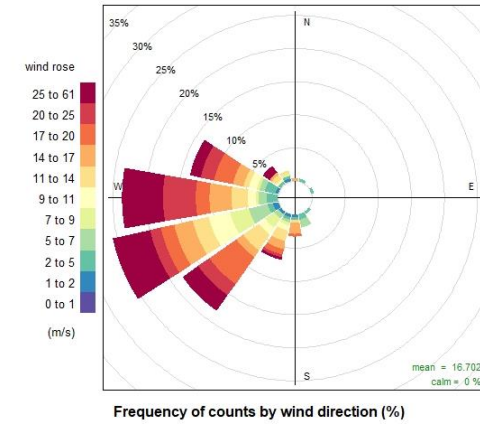
Machilipatnam   March   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	1.4	2.2	1.4	0.7	0	0	0.7	0	0	0
12-33		0	0	2.2	0.7	0	0.7	0	0	0	0	0
34-56		0	1.4	2.2	3.6	1.4	0	0.7	0	0	0	0
57-78		0	0	2.9	0.7	1.4	1.4	0	0.7	0	0	0
79-101		0.7	0	1.4	0	2.2	1.4	0.7	0	0	0	0
102-123		0	0	0	0.7	0	0	0	0	0	0	0
124-146		0	0	2.2	0.7	1.4	0	0	0	0	0	0
147-168	1	0	0.7	0.7	1.4	0	0	0	0	0	0	0
168-191		0	0	0.7	0.7	0	0	0.7	0	0	0	0
192-213		0.7	1.4	1.4	0	0.7	0	0	0	0	0	0
214-236		0.7	1.4	2.2	0.7	2.2	0	0.7	0.7	0	0	0
237-258		0	0	1.4	2.2	0.7	1.4	0.7	2.9	0	0	0
259-281		0.7	0	0.7	2.9	2.9	1.4	0.7	1.4	1.4	1.4	0.7
282-303		0.7	0.7	2.2	0	1.4	1.4	2.2	2.2	0	0	0
304-326		0.7	0	2.2	0.7	0	0	0	0	0	0.7	0
327-348		0	0	3.6	0.7	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
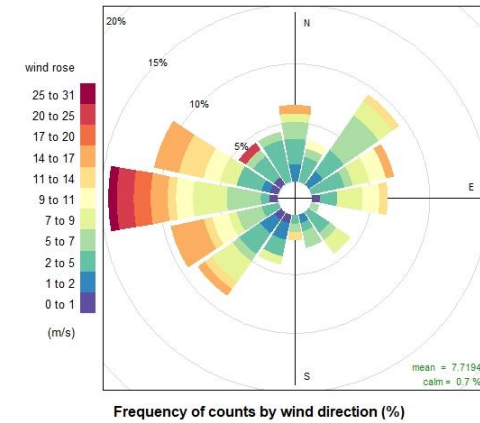
Machilipatnam   April   1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.4	0	0	0	0	0	0	0	0	0
12-33		0.4	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0.4	0.4	0	0	0	0	0	0	0	0
79-101		0	0	0.4	0.4	0	0	0	0	0	0	0
102-123		1.2	0	0.4	0	0	0	0	0	0	0	0
124-146		0.8	0	2.4	0	0	0	0	0	0	0	0
147-168	4	2.4	2	0.4	0.4	0	0	0	0	0	0	0
168-191		6.5	5.7	35.6	5.7	0	0	0	0	0	0	0
192-213		6.9	6.9	4	0.4	0	0	0	0	0	0	0
214-236		2.8	0	5.7	1.6	0	0	0	0	0	0	0
237-258		0	0.8	0	0	0	0	0	0	0	0	0
259-281		0	0	0.4	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0.4	0	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 3.0607
calm = 4 %

Frequency of counts by wind direction (%)
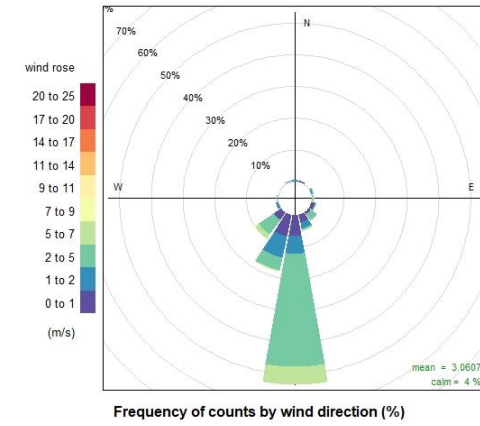
Machilipatnam   April   925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.4	0.4	0	0	0	0	0	0	0
12-33		0	0.4	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0.4	0	0	0	0	0
79-101		0	0	1.2	0.4	0	0	0	0	0	0	0
102-123		1.2	1.2	1.6	0.4	0	0	0	0	0	0	0
124-146		0.4	0.4	2	0.4	0	0	0	0	0	0	0
147-168	0	0.4	2	6.1	2.8	0	0	0	0	0	0	0
168-191		0.4	1.2	17.4	10.1	4.5	0.8	0	0	0	0	0
192-213		0	1.2	9.3	10.1	6.1	1.6	0.8	0	0	0	0
214-236		0	0	4.5	3.6	2.4	0	0	0	0	0	0
237-258		0	0	1.2	0	0	0	0	0	0	0	0
259-281		0	0.4	0.4	0	0	0	0	0	0	0	0
282-303		0.4	0.4	0	0	0	0	0	0	0	0	0
304-326		0	0.4	0.4	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 5.3522
calm = 0 %

Frequency of counts by wind direction (%)
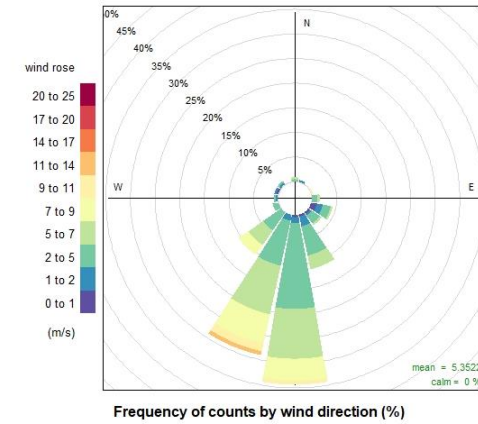
Machilipatnam   April   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	2	0	0	0	0	0	0	0	0
12-33		0.8	0.4	1.6	0	0	0	0	0	0	0	0
34-56		0	1.2	0.4	0	0	0	0	0	0	0	0
57-78		0	0.4	2	0	0	0	0.4	0	0	0	0
79-101		0.4	2.8	6.5	0.8	0.8	0	0	0	0	0	0
102-123		0.4	1.2	10.5	1.2	0	0	0	0	0	0	0
124-146		0	1.6	10.1	1.6	0	0	0	0	0	0	0
147-168	0	0.4	2.4	5.3	0	0.8	0	0.4	0	0	0	0
168-191		0	1.2	7.7	2.4	0.4	0	0	0	0	0	0
192-213		0.8	1.6	4.9	1.6	0	0.4	0	0	0	0	0
214-236		1.2	1.6	3.2	1.2	0.4	0	0	0	0	0	0
237-258		0.8	2	4.5	0	0	0.4	0	0	0	0	0
259-281		0.4	0	0.8	0.8	0.4	0	0	0	0	0	0
282-303		0.4	0.4	0.8	0	0	0	0	0	0	0	0
304-326		0	0.4	0.8	0	0	0	0	0	0	0	0
327-348		0	1.2	0	0	0	0	0	0	0	0	0

mean = 3.8947
calm = 0.4 %

Frequency of counts by wind direction (%)
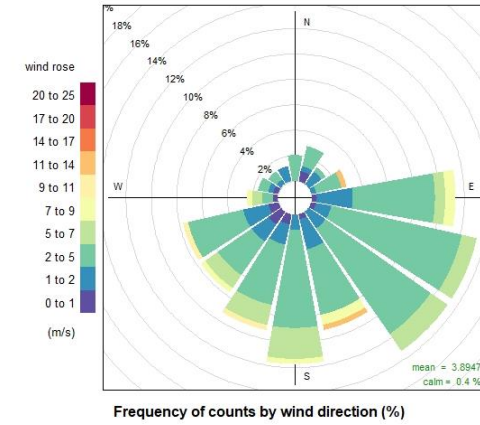
Machilipatnam   April   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.8	4.9	2.5	2.9	0.8	0	0	0	0	0
12-33		0	0	6.6	3.7	3.3	3.7	0.4	0	0	0	0
34-56		0	0	6.6	7	2.5	0.4	0.8	0	0	0	0
57-78		0	0.4	4.9	3.7	3.7	0.8	0.8	0.4	0	0	0
79-101		0	0	3.3	4.1	0.8	0.4	0	0	0	0	0
102-123		0	0	1.2	0.4	0	0	0	0	0	0	0
124-146		0	0	0.8	0	0	0	0	0	0	0	0
147-168	0	0	0	0.4	0	0	0	0	0	0	0	0
168-191		0	0	0.4	0.4	0	0	0	0	0	0	0
192-213		0	0	0.4	0.4	0	0	0	0	0	0	0
214-236		0	0.8	0	0	0	0	0	0	0	0	0
237-258		0	0	0.8	0	0.4	0.4	0	0	0	0	0
259-281		0	0.4	2.5	0	0.4	0	0	0	0	0	0
282-303		0	0.4	1.6	0.4	0.4	0	0	0	0	0	0
304-326		0.8	0.4	2.9	2.5	0.4	0.4	0	0	0	0	0
327-348		0.8	0	4.1	1.6	2.9	0	0	0	0	0	0

mean = 6.0779
calm = 0 %

Frequency of counts by wind direction (%)
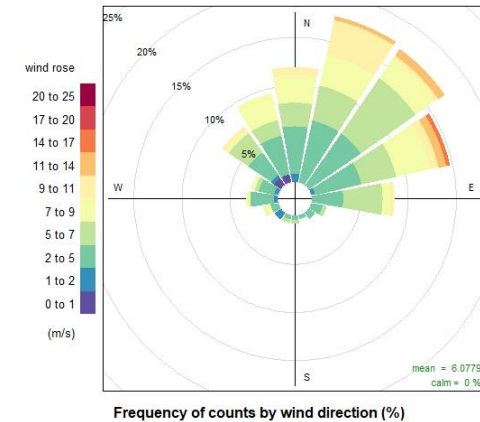
Machilipatnam April 500 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.9	0.9	1.7	1.7	3	0.9	0.4	0	0	0	0
12-33		0.9	0.4	2.6	2.1	0.4	1.3	0.4	0.4	0	0	0
34-56		0	0.4	1.3	2.1	1.3	0.4	0	0	0	0	0
57-78		0.4	0.4	1.3	1.3	0.4	0.4	0	0.4	0	0	0
79-101		0.9	0	1.3	0	0.9	0	0.9	0	0	0	0
102-123		0	0.9	3	0.4	0	0.4	0	0	0	0	0
124-146		0	0.4	2.1	0.4	0	0	0	0	0	0	0
147-168	0	0.4	0.4	0.9	0	0	0	0	0	0	0	0
168-191		0.9	0	0.9	0.4	0.9	0	0	0	0	0	0
192-213		0.4	0.9	1.7	2.1	0.4	0	0	0	0	0	0
214-236		0	0	2.6	0.4	2.1	0	0.4	0	0	0	0
237-258		0	0.9	3.4	1.7	2.6	1.7	0.9	0	0	0	0
259-281		0.4	0.9	2.6	0.9	1.3	0.9	1.7	0	0	0	0
282-303		0.4	0.4	2.1	1.7	1.3	0.9	0.9	0.9	0	0	0
304-326		0	0	0.9	1.3	1.3	0.4	0.9	0.4	0	0	0
327-348		0.4	0.9	3	3	2.1	0	0.9	0.4	0	0	0

wind rose
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 6.4103
calm = 0.4 %

Frequency of counts by wind direction (%)
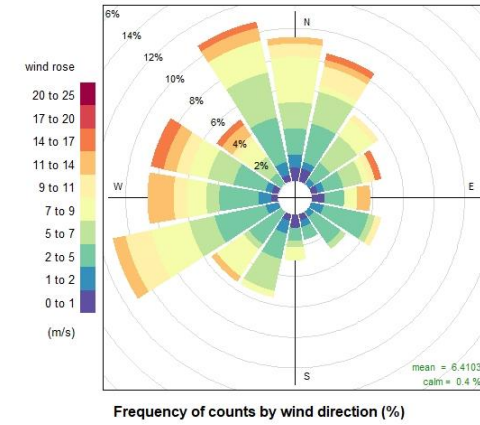
Machilipatnam April 300 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.9	0.5	0.9	0	0	0	0	0	0
12-33		0	0.5	0	0	0.5	0	0	0	0	0.5	0
34-56		0	0	0.5	0	0	0	0	0	0	0	0
57-78		0	0	0.9	0.5	0	0	0	0	0	0	0
79-101		0.5	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0.5	0.5	0	0	0	0	0	0	0
124-146		0	0.5	0	0	0	0	0	0	0	0	0
147-168	0	0	0	0.5	0	0	0	0	0	0	0	0
168-191		0	0.5	0.9	0	0	0	0	0	0	0	0
192-213		0	0	0	1.4	0.9	1.4	0.5	0	0.5	0.9	0
214-236		0.5	0	0.9	1.4	0	0.9	1.4	3.7	1.4	0.5	0.5
237-258		0	0	3.2	3.2	2.7	2.3	4.1	7.3	2.3	4.1	0.5
259-281		0	0.5	1.4	1.4	1.8	2.3	3.7	2.3	4.1	2.7	0.5
282-303		0	0	3.2	0.9	0.9	0.5	1.8	1.8	2.3	0.9	0.9
304-326		0	0	1.4	0.9	1.4	0.5	0.5	0.5	0.9	0.9	0
327-348		0	0.5	1.8	0.5	0	0.5	0	0.5	0	0	0

wind rose
25 to 32
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 12.324
calm = 0.5 %

Frequency of counts by wind direction (%)
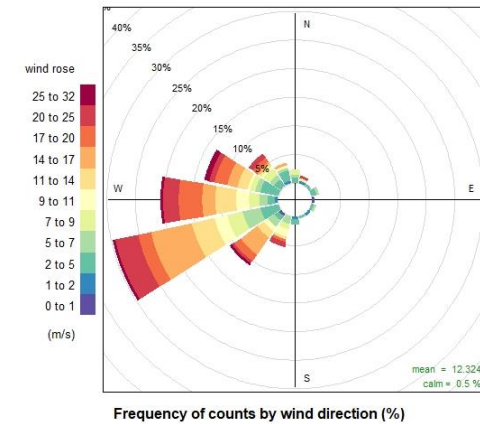
Machilipatnam   April   200 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.5	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0.5	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	1.1	0.5	0	0	0	0	0	0	0
124-146		0	0	0.5	0.5	0	0	0	0	0	0	0
147-168	0	0	0	0	0.5	0	0	0	0	0	0.5	0
168-191		0	0	1.1	0	2.1	0	0.5	0	0	0	0
192-213		0.5	0	1.1	0.5	1.1	1.1	0.5	0	0	1.6	0
214-236		0	0.5	0.5	0.5	0.5	2.1	4.7	3.7	4.2	2.6	1.6
237-258		0	0	2.1	5.3	1.6	3.2	3.2	4.7	4.2	5.3	4.2
259-281		0	0	1.1	1.6	0.5	0.5	1.6	1.6	5.3	3.7	1.1
282-303		0	0	2.1	0.5	0.5	0.5	2.1	1.1	2.1	0	0.5
304-326		0	0	0.5	0.5	0	0	0	0	0.5	0	0.5
327-348		0	0	0	0	1.1	1.1	0	0	0	0	0
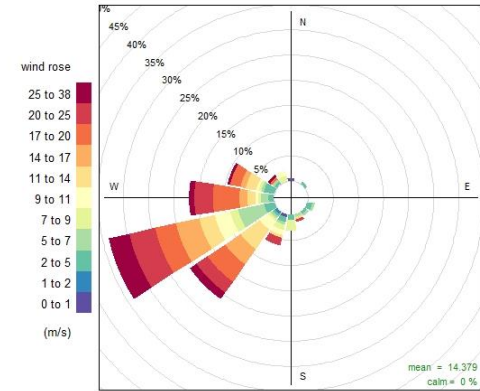
Frequency of counts by wind direction (%)

Machilipatnam   April   100 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	1	1.9	0	0	0	0	0	0	0
12-33		0	0	1	0	0	1	0	0	0	0	0
34-56		0	0	4.8	0	1.9	0	0	1	0	0	0
57-78		0	0	0	2.9	2.9	1	0	0	0	0	0
79-101		0	0	1.9	1	4.8	4.8	1.9	1.9	0	0	0
102-123		0	1	1.9	1.9	3.8	1.9	0	0	0	0	0
124-146		0	0	4.8	1	0	0	0	0	0	0	0
147-168	1	1	0	0	0	0	0	0	0	0	0	0
168-191		0	0	3.8	1	0	0	0	0	0	0	0
192-213		0	0	0	1	0	0	0	0	0	0	0
214-236		0	0	3.8	4.8	0	0	1	1	0	0	0
237-258		1	0	2.9	1	1	0	0	0	0	0	0
259-281		0	1	1	1	3.8	1.9	0	1	0	0	0
282-303		1	0	1.9	0	0	1	1	0	0	0	0
304-326		0	0	3.8	0	1	0	0	0	0	0	0
327-348		0	1	1.9	1	0	0	0	1	0	0	0
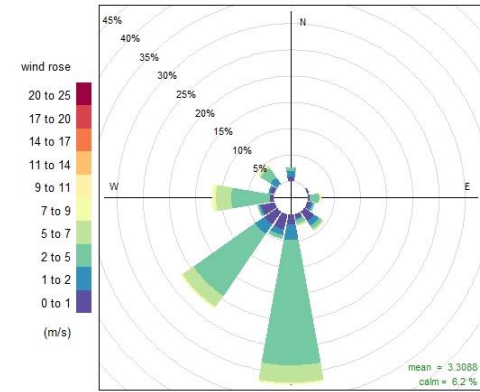
Frequency of counts by wind direction (%)

Machilipatnam   May   1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.7	1.1	0.7	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0.4	0	0	0	0	0	0	0	0	0	0
79-101		0.4	0	1.8	0	0.4	0	0	0	0	0	0
102-123		0.7	0.4	0.4	0	0	0	0	0	0	0	0
124-146		2.2	1.1	0.7	0.4	0	0	0	0	0	0	0
147-168	6	0.7	0.4	0.7	0.4	0	0	0	0	0	0	0
168-191		1.8	2.9	23.9	3.3	0.4	0	0	0	0	0	0
192-213		2.9	1.1	0.7	0	0	0	0	0	0	0	0
214-236		2.9	2.2	14.3	2.6	0.4	0	0	0	0	0	0
237-258		2.6	0.4	0.4	0	0	0	0	0	0	0	0
259-281		0.7	0	7.4	2.9	0.7	0	0	0	0	0	0
282-303		0.7	0.4	0	0	0	0	0	0	0	0	0
304-326		0	1.5	2.2	0.4	0	0.4	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
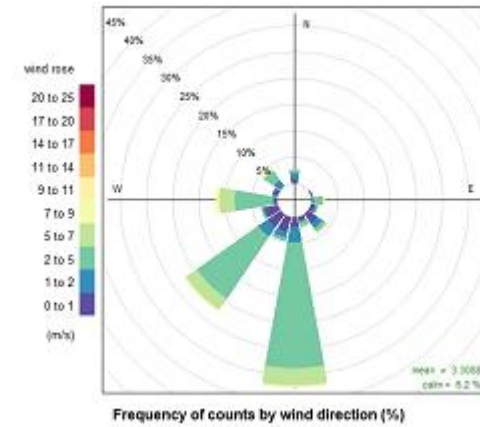
Machilipatnam   May   925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.4	0	0	0	0	0	0	0	0
12-33		0.4	0	0.4	0	0.4	0	0	0	0	0	0
34-56		0	0.4	0.7	0	0	0	0	0.4	0	0	0
57-78		0	0	0	0.4	0	0	0	0	0	0	0
79-101		0	0	1.5	0.7	0	0.4	0	0	0	0	0
102-123		0	0.4	0.4	0.4	0	0	0	0	0	0	0
124-146		0.4	0	1.8	0	0.4	0.4	0	0	0	0	0
147-168	0	0	0.4	2.9	0.7	0	0	0	0	0	0	0
168-191		0	0	3.3	3.6	0.7	1.8	0	0	0	0	0
192-213		0.4	0	5.5	6.2	3.3	2.9	0.4	0	0	0	0
214-236		0.7	1.1	5.1	1.8	2.5	5.1	1.1	0	0	0	0
237-258		0	0.7	1.8	4	3.3	0.4	1.8	0.4	0	0	0
259-281		0	0.4	1.1	2.2	3.3	1.5	1.8	1.1	0	0	0
282-303		0	0.4	0.7	1.5	2.2	0.7	2.9	1.8	1.1	0	0
304-326		0	0.4	0.4	0.7	1.1	0.4	0.4	1.1	0	0	0
327-348		0	0	0.7	0.7	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)
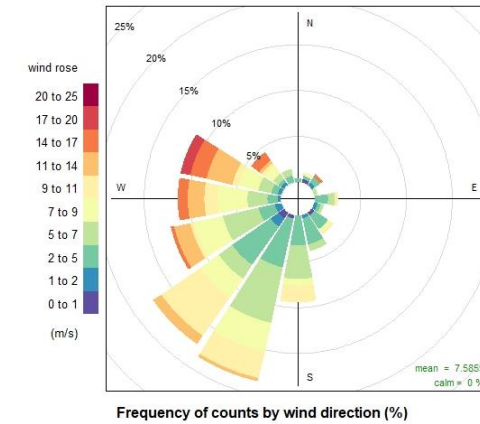
Machilipatnam   May   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.1	0	1.8	0	0	0	0.4	0	0	0	0
12-33		0.4	0.7	1.5	0.4	0	0.4	0	0.4	0	0	0
34-56		0	0.4	1.8	0	0	0	0	0	0	0	0
57-78		1.1	0.4	1.1	0.7	0	0	0	0	0	0	0
79-101		0.4	0.7	1.5	1.1	0	0.4	0	0	0	0	0
102-123		0	0.7	1.1	0.7	0	0	0	0	0	0	0
124-146		0.4	1.1	2.2	1.5	0	0	0.4	0	0	0	0
147-168	0	0.4	0.4	1.8	0	0	0	0	0	0	0	0
168-191		0.4	0.4	2.9	1.1	0	0	0	0	0	0	0
192-213		0	0.4	3.3	1.1	0.4	0.4	0	0	0	0	0
214-236		0.4	0.7	3.3	1.5	0	0	0	0	0	0	0
237-258		0.4	1.1	4.4	2.9	2.2	0.4	0.7	0.4	0	0	0
259-281		0.4	1.8	4.4	2.2	2.5	3.3	0.7	0	0	0	0
282-303		0.7	0.4	3.3	2.9	1.5	4.4	1.8	0.7	0	0	0
304-326		0	0.4	1.5	2.2	1.8	1.1	1.8	1.8	0.4	0	0
327-348		0.4	0.4	0.4	0.7	0.4	0.4	0.4	0	0	0	0

Frequency of counts by wind direction (%)
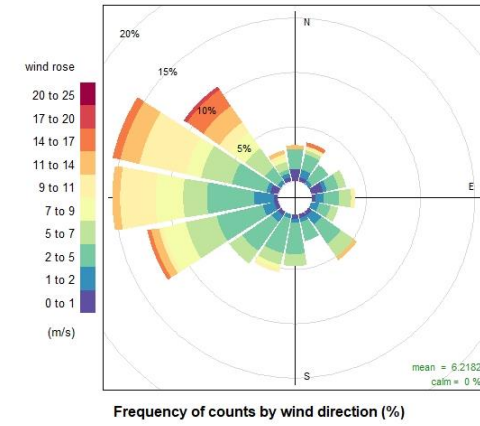
Machilipatnam   May   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.4	1.1	4.4	3.3	2.9	2.5	0	0.7	0	0	0
12-33		0.4	1.5	6.2	2.5	2.2	0.7	0	0.7	0	0	0.4
34-56		0.7	1.1	2.5	4	3.3	0	1.5	0	0	0	0
57-78		0	0.7	1.5	1.8	1.8	0.4	0	0	0	0	0
79-101		0	0.4	1.5	0.7	0	0	1.1	0	0	0	0
102-123		0.7	0	0.7	0	0.4	0	0.4	0	0	0	0
124-146		0.4	0	0.4	0	0	0	0.4	0	0	0	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0.7	0	0.4	0	0.4	0	0	0	0	0	0
192-213		0	0.4	0	0	0	0	0	0	0	0	0
214-236		0	0.4	0.7	0	0	0	0	0	0	0	0
237-258		0	1.1	1.1	0.4	0	0	0	0	0	0	0
259-281		0.7	0.4	1.1	0.7	0	0.7	0	0	0	0	0
282-303		0	0	1.5	1.1	2.9	0	0	0	0	0	0
304-326		0.4	0	4.4	2.5	4	0.7	0.4	0	0	0	0
327-348		0	0.4	5.8	5.1	4.4	0.4	0.7	0	0	0	0

Frequency of counts by wind direction (%)
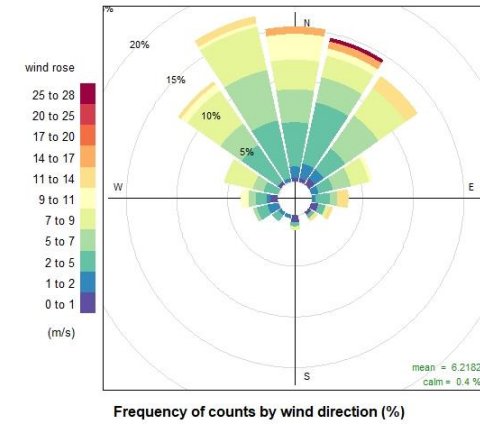
Machilipatnam   May   500 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.2	0.4	2.4	4.5	2.4	1.6	0.4	0	0	0	0
12-33		0.4	0.8	5.7	3.7	2	0.8	0.8	0	0.4	0	0
34-56		0	0.8	4.9	2.4	2.4	2.4	1.2	0.4	0	0	0
57-78		0.4	0	2.4	0.8	0.8	0.4	0.8	0	0	0.4	0
79-101		0	0	3.3	0.4	1.2	0.8	0.4	0	0	0	0
102-123		0	0.4	2	0.4	0	0	0.8	0	0	0	0
124-146		0.4	0	0.4	0.4	0.4	0.4	0	0	0	0	0
147-168	0	0.4	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		2	0	0.8	0	0	0	0	0	0	0	0
214-236		0.4	0.4	0.8	0.4	0.4	0.4	0.4	0	0.4	0	0
237-258		0	0.8	1.2	0.4	0.4	0	0	0.4	0	0	0
259-281		0	0.4	0.8	2.4	0.4	0	1.6	0.4	0	0	0
282-303		0.4	0	1.2	2.4	0.4	0.8	0.8	0	0	0	0
304-326		0.4	0.4	2	1.6	1.2	0	1.2	0	0	0	0
327-348		0.4	0	4.1	2	1.6	2	0	0	0	0	0

Frequency of counts by wind direction (%)
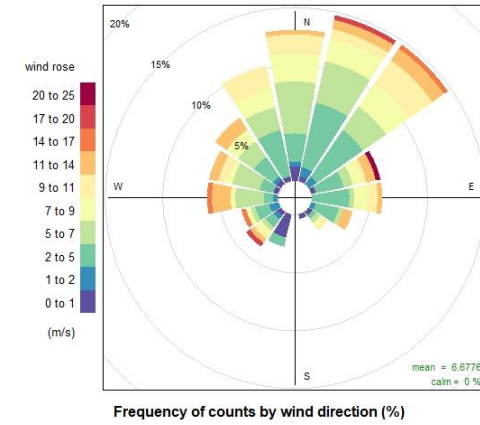
Machilipatnam   May   300 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.5	1.9	2.8	0.9	0	0	0	0.5	0	0	0
12-33		0	0.9	1.4	1.9	0.5	0	0	0	0	0	0
34-56		0	0	2.8	0.9	0.9	1.4	0	0	0	0	0
57-78		0	0.5	1.9	0.5	0.9	0.5	0	0	0	0	0
79-101		0	0	2.8	0.5	0.9	1.4	0.5	0	0	0	0
102-123		0	0.9	1.9	1.4	0.5	0.9	0.5	0	0	0	0
124-146		0	0.9	1.4	0	0.5	0	0	0	0	0	0
147-168	0	0.5	0.5	0.9	1.4	0.5	0	0	0	0	0	0
168-191		0	0.5	0.9	0.5	0.5	0	0.5	0	0	0	0
192-213		0.5	0	1.9	1.4	0	0.5	0.5	0	0	0	0
214-236		0	0.5	2.3	2.8	1.4	0.5	0.9	0.9	0	0	0
237-258		0	0.5	3.8	0.9	0.9	0.9	0.5	0	0.5	0	0
259-281		0	0.5	4.7	1.9	0.9	1.9	0.5	0.5	0.5	0.5	0.5
282-303		0	0.9	5.6	1.4	2.8	0	0.9	0	0	0	0.5
304-326		0.5	0.5	1.4	1.4	0.5	0.5	0.9	0	0	0	0
327-348		0	0.5	1.4	0.9	0.5	0	0.9	0	0	0	0

Frequency of counts by wind direction (%)
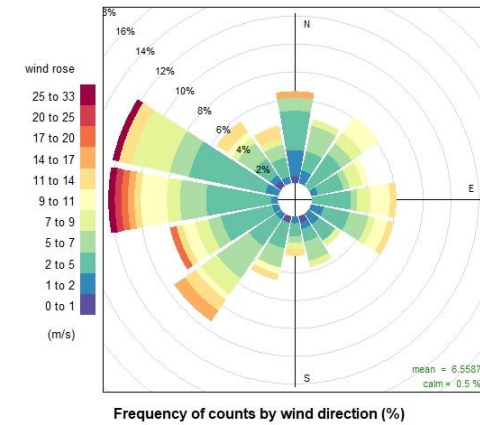
Machilipatnam **May** **200 hPa level**

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.5	0.5	0.5	0	0	0	0	0	0	0
12-33		0.5	0	0.5	0	0	0.5	0	0	0	0	0
34-56		0	0	1.1	0.5	1.1	0	0	0	0	0	0
57-78		0	0.5	1.6	0.5	2.7	1.6	1.1	0	0	0	0
79-101		0	0	4.3	2.1	2.1	1.1	1.1	0	0	0	0
102-123		0	1.1	3.2	0	2.7	0	0.5	1.1	0.5	0	0
124-146		0	0	1.6	3.2	3.2	2.1	1.1	0	0.5	0	0
147-168	0	0	0	3.2	0.5	2.1	0.5	1.1	0.5	0	0	0
168-191		0	0	4.8	1.1	0.5	1.1	0	0	0	0	0
192-213		0	0	2.1	0.5	0	3.2	2.1	0.5	0	0	0
214-236		0	0.5	1.6	0.5	2.7	1.6	1.6	0.5	0	0.5	0
237-258		0	1.1	2.1	1.1	0.5	0.5	0	1.1	0	0	0
259-281		0	0	1.1	0.5	1.6	1.6	0	0.5	0	0	0
282-303		0	0	0.5	0.5	2.1	0.5	0.5	0	0	0	0
304-326		0	0	1.6	0.5	0	0	0	0	0	0	0
327-348		0.5	0	1.1	0	0.5	0.5	0	0	0	0	0
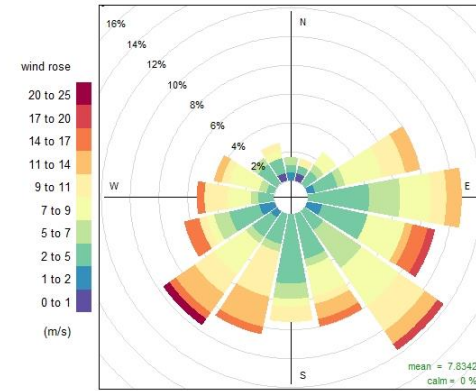
wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 7.8342
calm = 0 %

Frequency of counts by wind direction (%)

Machilipatnam **May** **100 hPa level**

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0.8	0	0	0	0	0	0
34-56		0	0	1.5	0	0	0.8	1.5	0	0	0.8	0
57-78		0	0	0.8	3.1	3.1	0	3.8	3.1	1.5	0.8	0.8
79-101		0	0	1.5	3.8	6.9	3.1	5.3	8.4	9.2	8.4	1.5
102-123		0	0.8	1.5	2.3	1.5	1.5	3.8	6.1	3.1	1.5	0
124-146		0	0	0.8	0	0	0.8	0	0	0	0.8	0
147-168		0	0	1.5	0	0	0	0	0	0	0	0
168-191	0	0	0	0.8	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0.8	0	0	0	0	0	0	0	0
237-258		0	0	0	0.8	0.8	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0.8	0	0	0	0	0	0	0

wind rose

25 to 26
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 13.328
calm = 0 %
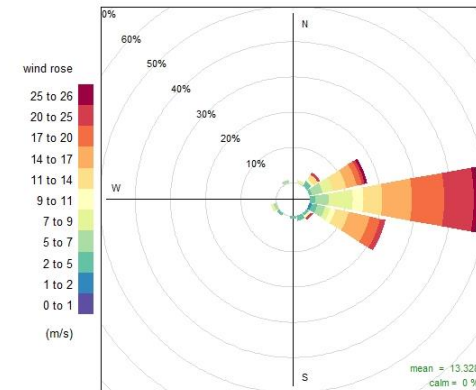
Frequency of counts by wind direction (%)

Machilipatnam   June   1000 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.4	0	1.1	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0.4	0.4	0	0	0	0	0	0	0	0
147-168	7	0.4	0.4	0	0	0	0	0	0	0	0	0
168-191		0	0.4	4.6	1.1	0	0	0	0	0	0	0
192-213		2.1	0.4	1.4	0	0	0	0	0	0	0	0
214-236		1.8	1.8	18.8	4.6	0	0	0	0	0	0	0
237-258		0.7	1.1	3.2	0	0	0.4	0	0	0	0	0
259-281		0.4	0	33	4.6	3.2	0	0	0	0	0	0
282-303		0.7	0.4	0.7	0	0	0	0.4	0	0	0	0
304-326		0	1.1	3.2	0	0	0	0	0	0	0	0
327-348		0	0	0.4	0	0	0	0	0	0	0	0
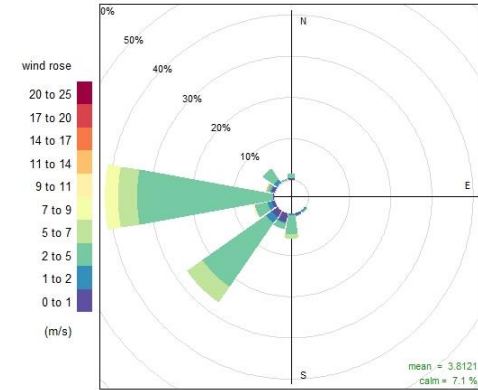
Frequency of counts by wind direction (%)

Machilipatnam   June   925 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0.3	0	0	0	0	0	0	0
57-78		0	0.3	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0.3	0	0	0	0	0	0	0	0
124-146		0	0	0.3	0	0	0	0	0	0	0	0
147-168	1	0	0	0.3	0.3	0	0	0	0	0	0	0
168-191		0	0	1	0.3	0	0	0	0	0	0	0
192-213		0	0	3	1.7	1.4	0.7	0.3	0	0	0	0
214-236		0.3	0	0	1	2	1.7	1	0	0	0	0
237-258		0	0	1.7	2.4	3.4	7.1	1.4	1.7	1	0	0
259-281		0.3	0.7	2	3.4	5.4	4.1	5.7	6.1	0.7	1.4	0
282-303		0.7	0.3	1	2.4	4.7	3.7	6.8	6.1	3	0.7	0
304-326		0	0	0.7	1.4	0	0.3	0.7	0.3	0.3	0	0
327-348		0	0	0.3	0.7	0	0	0	0	0	0	0
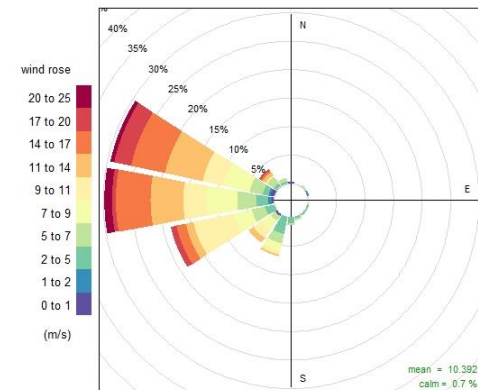
Frequency of counts by wind direction (%)

Machilipatnam   June   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0	0.7	0.3	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0.3	0	0	0	0	0	0	0	0
57-78		0	0	0.3	0	0	0	0	0	0	0	0
79-101		0	0	0.3	0	0	0	0	0	0	0	0
102-123		0	0	0.3	0	0	0	0	0	0	0	0
124-146		0	0.3	0.7	0	0	0	0	0	0	0	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0.7	0	0	0	0	0	0	0	0
192-213		0	0.3	1.4	0.7	0	0	0	0	0	0	0
214-236		0	0.3	2	2	1	0	0.3	0	0	0	0
237-258		0	0	1	2.4	0.7	0.7	2	0.7	0	0	0
259-281		0	0	2.7	4.7	5.1	4.1	4.7	3.4	1	2.4	1.4
282-303		0	0	2	2.7	5.4	5.4	6.4	6.1	3.7	3.4	1.4
304-326		0.3	0	1	1.7	1.4	1.4	2.4	1.4	0.7	0.7	0
327-348		0.3	0.3	1	0.7	0	0.7	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 11.142
calm = 0.3 %
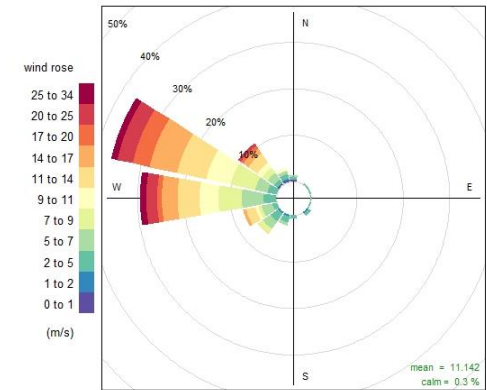
Machilipatnam   June   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.7	3.8	1.4	0.7	0	0	0	0	0	0
12-33		0.3	0.3	3.4	1.4	1	0	0	0	0	0	0
34-56		0	0.7	3.4	0.3	0	0	0	0	0	0	0
57-78		0	0.7	2.4	0.7	0.3	0.7	0	0	0	0	0
79-101		0.3	0.3	1.4	0.3	0	0	0	0	0	0	0
102-123		0.3	0	0	0	0	0	0	0	0	0	0
124-146		0	0.3	0	0	0	0	0	0	0	0	0
147-168	0	0.3	0.3	1.4	0.3	0	0	0	0	0	0	0
168-191		0	0.7	0.7	0	0	0	0	0	0	0	0
192-213		0	0	1	0.3	0	0.3	0	0	0	0	0
214-236		0.3	0.7	1.4	0.3	0.3	0	0	0	0	0	0
237-258		0.3	0	1.7	1.4	1.4	1.7	1.7	0.7	0.3	0.3	0
259-281		0	0	2.1	3.4	3.8	3.4	4.1	3.4	1.7	0.7	0
282-303		0.3	1.4	3.8	1	1.4	1	3.1	2.1	1.4	0.3	0
304-326		0	0.7	3.4	3.1	1.4	1.4	0.3	1	0	0	0
327-348		0	0	2.1	3.1	0.7	0.3	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 7.8282
calm = 0.3 %
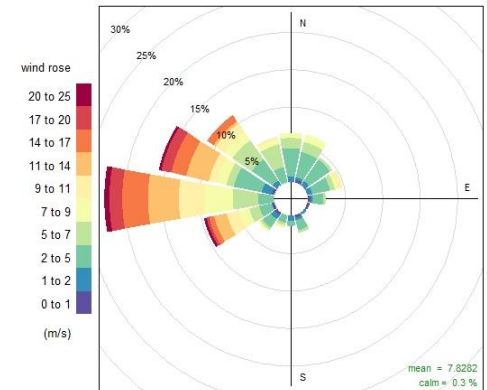
Machilipatnam

June   500 hPa level

Direction / Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.4	0.8	1.3	0.8	0.8	0	0	0	0	0	0
12-33		1.3	0	1.3	1.7	0	0.4	0	0	0	0	0
34-56		0	0	3.4	0.4	1.7	0.4	0	0	0	0	0
57-78		0	0	2.5	2.5	1.7	1.3	0.4	0	0	0	0
79-101		0	0.4	2.1	0.4	1.3	0.4	0.8	0	0	0	0
102-123		0	0.4	3.4	0.8	0	0	0	0	0	0	0
124-146		0.8	0.8	1.3	0.8	0	0	0	0	0	0	0
147-168	0	0.8	0	1.3	0	0	0.4	0	0	0	0	0
168-191		0	0	2.1	0	0	0	0.4	0	0	0	0
192-213		0	0.8	0.8	0.4	0	0	0.4	0.4	0	0	0
214-236		0	0.8	3	2.1	0	0.8	0.4	0.4	0.4	0	0
237-258		0.4	0.4	2.5	1.3	1.3	1.3	0.4	1.3	0.8	0.4	0
259-281		0.4	0.4	3.8	3	1.7	3	0	0	0.4	0.8	0
282-303		0.4	0.4	2.1	1.7	1.3	0.8	1.3	0.4	0.4	0	0
304-326		0	0.4	2.1	0.8	2.5	0	0	0	0.4	0	0
327-348		0.8	0.8	4.2	0.4	0.8	0.4	0	0	0	0	0

wind rose
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 6.6203
calm = 0.4 %
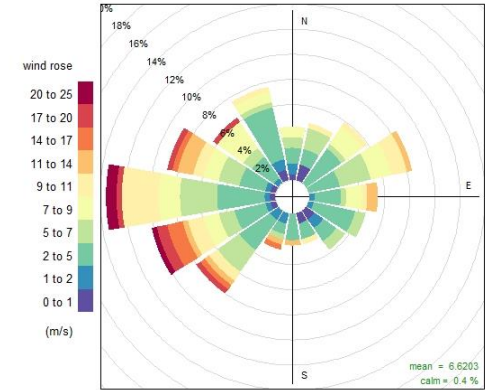
Frequency of counts by wind direction (%)

Machilipatnam

June   300 hPa level

Direction / Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.5	0.5	0	0.5	0	0	0	0.5	0	0
12-33		0	0	4.2	1	0.5	0	0.5	0	0	0	0.5
34-56		0	0.5	2.1	2.1	2.1	0	0	0	0	0	0
57-78		0	1	5.2	5.2	7.3	5.2	1	0.5	0	0	0
79-101		0	0.5	3.1	3.1	9.9	4.2	3.6	1	2.1	0.5	0
102-123		0.5	0.5	4.2	5.2	1.6	2.6	2.1	0.5	0	0.5	0
124-146		0	0	1.6	0.5	0	0	0	0	0	0	0
147-168	0	0	0	0.5	0.5	0.5	0.5	0	0	0	0	0
168-191		0.5	0	0.5	0.5	0	0	0	0	0	0	0
192-213		0	0	0.5	0	0	0	0	0	0	0	0
214-236		0	0.5	1	0.5	0	0	0	0	0	0	0
237-258		0	0	0	0.5	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0.5	0	0	0	0	0	0	0
304-326		0	1	0	0	0.5	0	0	0	0	0	0
327-348		0	0	2.1	0	0	0	0	0	0	0	0

wind rose
25 to 34
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 7.875
calm = 0 %
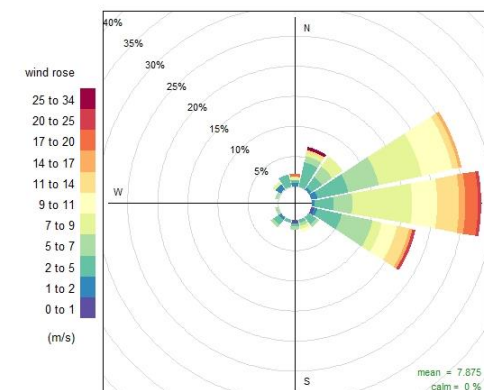
Frequency of counts by wind direction (%)

Machilipatnam   June   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0.6	0	0	0	0
34-56		0	0	0	0	1.2	0.6	0.6	0.6	0	0.6	0
57-78		0	0.6	1.2	2.9	0.6	1.7	0.6	5.2	4.6	4	1.7
79-101		0	1.2	1.7	2.3	1.2	4	5.8	11.6	8.7	9.8	5.8
102-123		0	0.6	1.2	2.3	1.7	3.5	2.9	0.6	1.7	0.6	0.6
124-146	0	0	0	0	0	0	0	0	0	0	0	0
147-168		0	0	0.6	0.6	0	0	0	0	0	0	0
168-191		0	0	0	0	0.6	0	0	0	0	0	0
192-213		0	0	0.6	0	0	0	0	0	0	0	0
214-236		0	0	0.6	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0.6	0.6	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

25 to 33
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 15.133
calm = 1.2 %

Frequency of counts by wind direction (%)
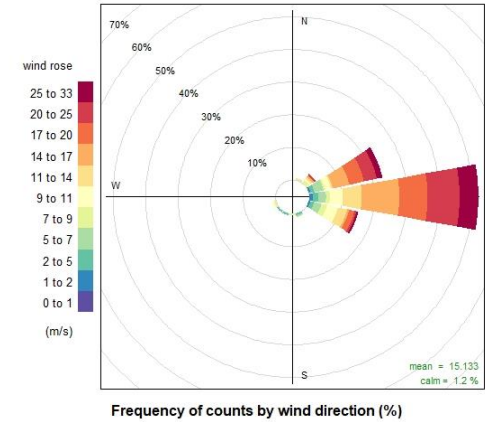
Machilipatnam   June   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0.9	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0.9	0	0	1.8	0.9	0	1.8	0.9	1.8	0.9	3.6
79-101		0	0.9	0	0.9	0.9	1.8	4.5	2.7	6.4	21.8	30.9
102-123		0	0	0	0.9	0	0	0.9	1.8	2.7	3.6	3.6
124-146		0	0	0	0	0	0	0	0.9	0	0	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0.9	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

25 to 41
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 23.118
calm = 0.%

Frequency of counts by wind direction (%)

Machilipatnam　　　　July　　　　1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0.4	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146	3	0	0	0	0	0	0	0	0	0	0	0
147-168		0	0	0	0	0	0	0	0	0	0	0
168-191		0	1.8	2.8	0.4	0	0	0	0	0	0	0
192-213		1.1	0	1.1	0	0	0	0	0	0	0	0
214-236		0.7	1.1	16.1	2.8	0.4	0	0	0	0	0	0
237-258		1.1	0.7	0.7	0	0	0	0	0	0	0	0
259-281		1.1	0.7	43.2	12.3	4.9	0	0	0	0	0	0
282-303		0	0	0.7	0	0	0	0	0	0	0	0
304-326		0.4	0.4	2.5	0.4	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 4.3614
calm = 2.8 %
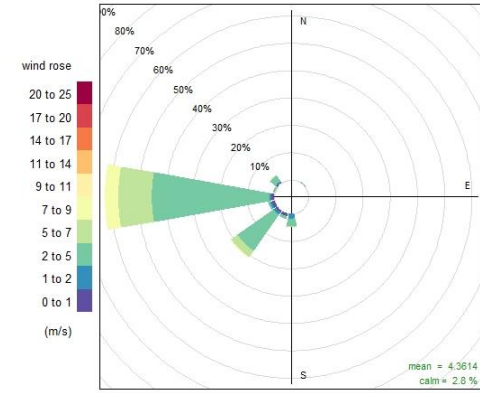
Frequency of counts by wind direction (%)

Machilipatnam　　　　July　　　　925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0.3	0	0	0	0	0	0	0	0	0	0
79-101		0.3	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0.3	0	0	0	0	0	0	0	0
124-146	0	0	0	0	0	0	0	0	0	0	0	0
147-168		0	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0.3	0	0	0	0	0	0	0
192-213		0	0	0.7	0.3	0.7	1	0	0	0	0	0
214-236		0	0	1.6	1.6	1.6	1	0.3	1	0	0	0
237-258		0	0	1.3	2.3	2.6	3.3	2	1.3	1.3	0.3	0
259-281		0.3	0.3	3	3.6	5.3	7.9	11.8	7.6	3.3	0.7	0.3
282-303		0	0	1	0.7	3	4.3	7.9	5.9	3	0.7	0
304-326		0	0	0.3	0	0.3	1	1.3	0.3	0	0	0
327-348		0	0	0.7	0	0	0	0	0	0	0	0

wind rose

25 to 31
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 11.49
calm = 0 %
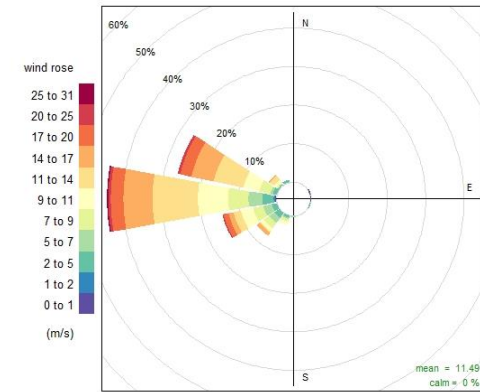
Frequency of counts by wind direction (%)

Machilipatnam   July   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0.3	0	0	0	0	0	0	0
12-33		0	0	0.7	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0.3	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0.3	0	0	0	0	0	0	0	0
147-168	0	0	0	0.3	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0.3	0	0	0	0	0
192-213		0	0	0.3	0	0.3	0	0	0	0	0	0
214-236		0	0	0.3	1.3	0.7	0	0	0	0	0	0
237-258		0	0	2.3	2.3	2	0	0.7	0	0.3	0.3	0
259-281		0	0.7	3.6	4.3	2	2.6	7.6	2	2.3	2.6	0.7
282-303		0	0.3	1	4	2.3	6.6	12.2	7.6	5	4.6	1.7
304-326		0	1	1.3	0.3	1	1.7	2.6	2.3	1	1	0.3
327-348		0	0	0.3	0	0	0	0.3	0	0	0	0

wind rose

25 to 30
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 12.35
calm = 0 %
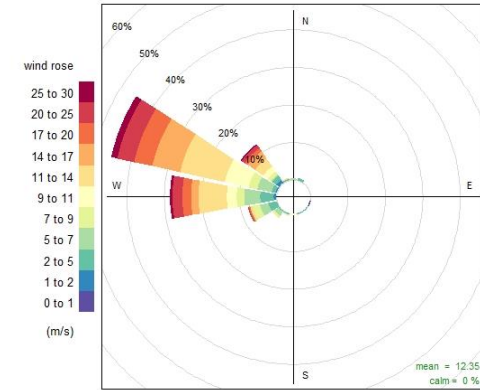
Frequency of counts by wind direction (%)

Machilipatnam   July   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.3	0.3	0.3	0	0	0	0	0	0
12-33		0	0	1	0	0	0	0	0	0	0	0
34-56		0	0.3	0	0	0.7	0.3	0	0	0	0	0
57-78		0	0	0	0	0	0.3	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0.3	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0	0	0	0	0	0	0	0	0
147-168	0	0.3	0	0	0	0	0	0	0	0	0	0
168-191		0	0.3	0	0.3	0	0	0	0	0	0	0
192-213		0	0	0.7	0.3	0	0	0	0	0	0	0
214-236		0	0	0.3	0.3	0	0.3	0	0	0	0	0
237-258		0	0.7	0.7	0.7	0.7	2	1.7	0.7	0	0	0
259-281		1.3	0.7	2.3	6.7	7.7	5	8.4	6.7	1	0.7	0
282-303		0.7	1.7	4	4.4	2.7	3.7	5.7	1	2	1.7	0
304-326		0.3	0	3.7	2	3	1.3	1.7	0.3	0	0.3	0
327-348		0	0.3	1	0.7	0.7	1	1	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 9.4966
calm = 0.3 %
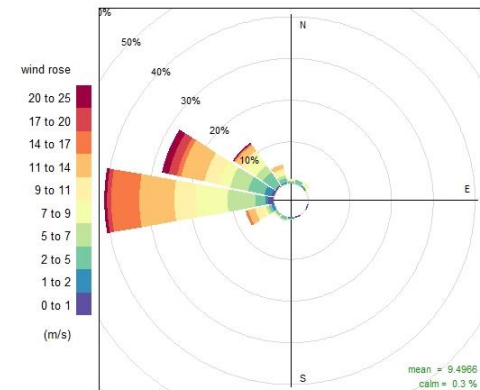
Frequency of counts by wind direction (%)

Machilipatnam — July — 500 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.4	0	0.8	0.8	0.4	0.4	0	0	0	0	0
12-33		0.8	0	2.5	0	0	0	0	0	0	0	0
34-56		0	0.4	1.7	0	0.8	0.4	0	0	0	0	0
57-78		0.4	0.4	2.5	0	1.2	0.4	0	0	0	0	0
79-101		0	1.2	3.3	1.2	0	0	0.4	0	0	0	0.4
102-123		0	0.4	1.7	0.4	0	0.4	0	0	0	0	0
124-146		0.4	0.8	0.8	0	0.4	0	0	0	0	0	0
147-168	0	0.4	0.4	1.2	0.4	0	0	0	0	0	0	0
168-191		0.4	0.4	0	0.4	0	0	0	0	0	0	0
192-213		0	0.8	2.5	0.8	0	0	0	0	0	0	0
214-236		0	1.7	3.3	2.5	0.8	0.4	0.4	0	0	0	0
237-258		0.4	0.4	2.5	1.7	1.7	1.2	0	0.4	0.4	0	0
259-281		0.8	0	4.1	4.6	4.6	1.2	2.5	0.4	1.2	0.4	0
282-303		0.8	0	5	3.7	2.5	1.7	0.4	0.8	0.4	0.4	0
304-326		0	0	3.3	2.5	0.8	0	0	0	0	0	0
327-348		0	0.8	0.8	1.7	0.4	0.8	0.4	0	0	0	0

Frequency of counts by wind direction (%)

mean = 6.3983
calm = 0.4 %
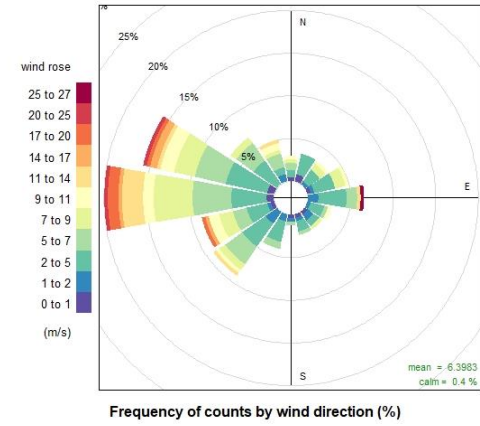
Machilipatnam — July — 300 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.5	1	0	0	0	0	0	0	0	0
12-33		0	0	1	0.5	0.5	0	0.5	0	0	0.5	0
34-56		0	0	0.5	2	0	1	1.5	0.5	0.5	0	0.5
57-78		1	1.5	5	3.5	5	3	3	0	0.5	0	0
79-101		0	0	3.5	3.5	7.9	5	6.4	4	2.5	0.5	0
102-123		0	0	5	2.5	2.5	2.5	6.9	1.5	1	0	0
124-146		0	0.5	1	0.5	0	0.5	0.5	0.5	0	0	0
147-168	0	0	0	0	0	1	1	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0.5	0	0.5	0.5	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0.5	0	0	0	0	0	0	0	0
282-303		0.5	0	1	1	0	0	0	0	0	0	0
304-326		0.5	0	0.5	0	0	0	0	0	0	0	0
327-348		0	0	1	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 9.2129
calm = 0 %
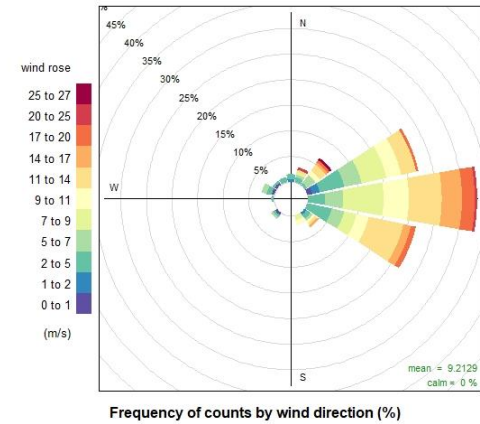
Machilipatnam   July   200 hPa level

Direction / Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0.6	0	0	0	0
34-56		0	0	1.1	0	0.6	0.6	0.6	0	0.6	0.6	0.6
57-78		0	0	1.1	0	0	1.1	4	2.3	9	5.6	2.8
79-101		0.6	0.6	1.7	0.6	0.6	2.3	3.4	6.2	9.6	22	14.7
102-123		0	0	0	0.6	0	0.6	0.6	0.6	1.1	0.6	0.6
124-146		0	0	0	0.6	0	0	0	0.6	0	0.6	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0.6	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

25 to 37
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 19.599
calm = 0 %
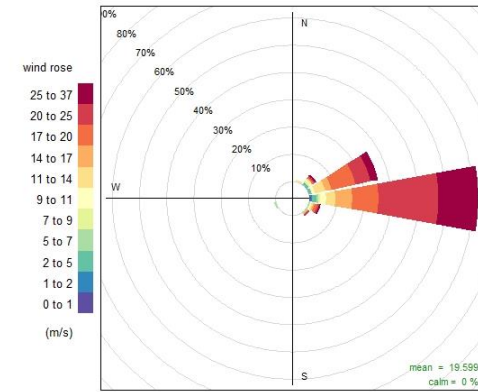
Frequency of counts by wind direction (%)

Machilipatnam   July   100 hPa level

Direction / Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	1
57-78		0	0	1	0	1	0	0	0	3.1	4.1	6.2
79-101		0	1	1	0	1	0	1	1	4.1	15.5	55.7
102-123		0	0	0	0	1	0	0	0	0	1	1
124-146		0	0	0	0	0	0	0	0	0	0	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

25 to 44
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 28.031
calm = 0 %

Frequency of counts by wind direction (%)

Machilipatnam   August   1000 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.3	0.6	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0.3	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0	0	0	0	0	0	0	0	0	0
147-168	3	0.3	0	0	0	0	0	0	0	0	0	0
168-191		0.6	0.6	2.2	0.6	0	0	0	0	0	0	0
192-213		1.3	0.6	2.2	0.3	0	0	0	0	0	0	0
214-236		3.2	1.6	16.1	2.8	0.3	0.3	0	0	0	0	0
237-258		0	0.3	4.4	0.3	0	0	0	0	0	0	0
259-281		0.9	0.9	33.1	10.4	3.8	0.9	0	0	0.3	0	0
282-303		1.3	0.3	0	0	0	0	0	0	0	0	0
304-326		0.3	0.3	2.5	0.9	0.3	0	0	0	0	0	0
327-348		0.3	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

wind rose — 20 to 25, 17 to 20, 14 to 17, 11 to 14, 9 to 11, 7 to 9, 5 to 7, 2 to 5, 1 to 2, 0 to 1 (m/s)

mean = 4.1893   calm = 2.8 %
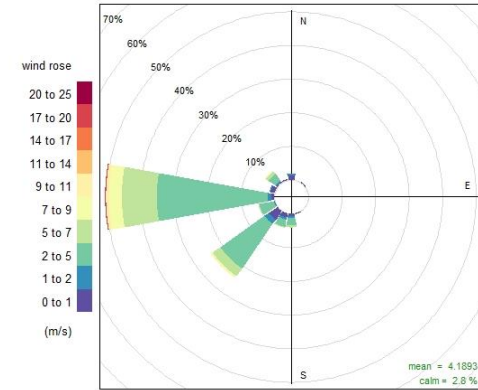
Machilipatnam   August   925 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.3	0	0	0	0	0	0	0	0
12-33		0	0	0.6	0	0	0	0	0	0	0	0
34-56		0	0	0.3	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0	0.3	0	0	0	0	0	0	0	0	0
102-123		0	0	0	0	0	0	0	0	0	0	0
124-146		0	0.3	1.2	0	0	0	0	0	0	0	0
147-168	0	0	0	0.6	0	0	0	0	0	0	0	0
168-191		0	0	1.2	0	0.3	0	0	0	0	0	0
192-213		0	0.3	2.4	1.5	0.6	0.3	0	0	0	0	0
214-236		0.3	0	2.4	1.8	1.8	1.5	0.6	0	0	0	0
237-258		0.3	0.3	2.1	2.1	2.4	3.7	1.8	0.6	0	0	0.3
259-281		0	0.9	4.6	3.1	2.1	4.9	9.2	6.4	2.4	0.3	0.3
282-303		0	0	2.8	3.1	3.7	4.3	6.4	6.4	1.2	0.3	0
304-326		0	0	0.3	0.3	0	0.6	1.5	0.9	0	0	0
327-348		0	0.3	0.3	0	0.3	0	0.3	0	0	0	0

Frequency of counts by wind direction (%)

wind rose — 25 to 29, 20 to 25, 17 to 20, 14 to 17, 11 to 14, 9 to 11, 7 to 9, 5 to 7, 2 to 5, 1 to 2, 0 to 1 (m/s)

mean = 10.055   calm = 0 %
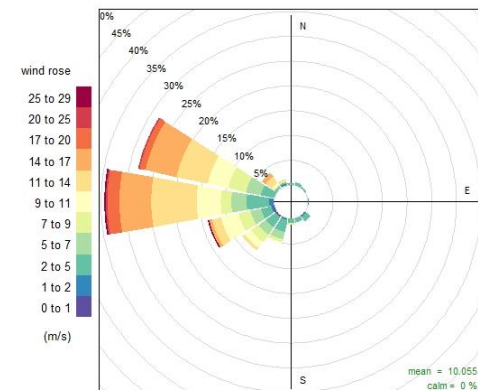
Machilipatnam   August   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0.6	0.3	0.3	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0.3	0	0	0	0.6	0	0	0	0	0	0
57-78		0	0.3	0.3	0	0	0	0	0	0	0	0
79-101		0	0	1.3	0	0	0	0	0	0	0	0
102-123		0	0.3	0.3	0.3	0	0	0	0	0	0	0
124-146		0	0.3	0.3	0	0	0	0	0	0	0	0
147-168	0	0	0.3	0.3	0.3	0	0	0	0	0	0	0
168-191		0	0	0.6	0.3	0	0	0	0	0	0	0
192-213		0	0.3	0.3	0.6	0	0	0.3	0	0	0	0
214-236		0	0.3	2.2	0	0.6	0	0	0	0	0	0
237-258		0	0.6	1.3	1.6	2.8	1.6	0.3	0.3	0	0	0.3
259-281		0.3	0.6	3.1	3.4	3.8	4.7	3.1	3.1	0.9	0	0.9
282-303		0.3	0	2.5	3.1	4.7	4.7	6.6	10	5.3	4.1	0
304-326		0.3	0.3	0.9	1.3	2.2	1.3	1.9	1.6	1.9	0.3	0
327-348		0	0	0.3	0.3	0.3	0	0.3	0	0	0	0
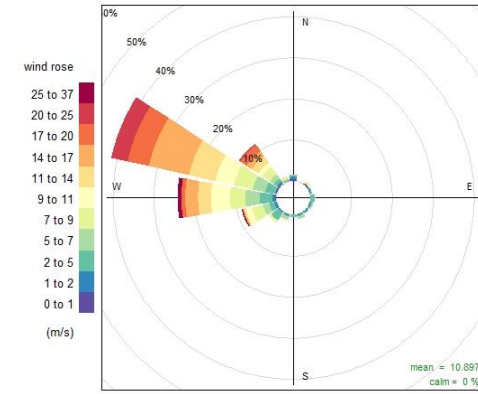
Frequency of counts by wind direction (%)

Machilipatnam   August   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.7	0.7	0	0	0	0	0	0	0
12-33		0	0	1.3	0	0.3	0	0	0	0	0	0.3
34-56		0.3	0	1	0.3	0	0	0	0	0	0	0
57-78		0	0.3	0.3	0.3	0	0	0.3	0	0	0	0
79-101		0.3	0.3	0	0	0	0	0	0	0	0	0
102-123		0	0.3	0	0.3	0.3	0	0	0	0	0	0
124-146		0	0	1	0.7	0	0	0	0	0	0	0
147-168	0	0.3	0.3	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		0.3	0	1	0.3	0	0	0	0	0	0	0
214-236		0	0.3	1.3	0.3	1	0	0	0	0	0	0
237-258		0	0.7	2	0.3	1	1	0.7	1	0	0	0
259-281		0.3	1	3.9	3.9	4.2	4.2	5.5	3.6	1	0.3	0.3
282-303		1.6	0.3	2.3	3.3	3.3	4.9	9.8	4.6	2	1	0
304-326		0.3	0.3	1.6	2.3	2	2.9	2.3	1	0	0.3	0.3
327-348		0.3	0	1.6	0.7	0.7	0.3	0.3	0.3	0	0	0
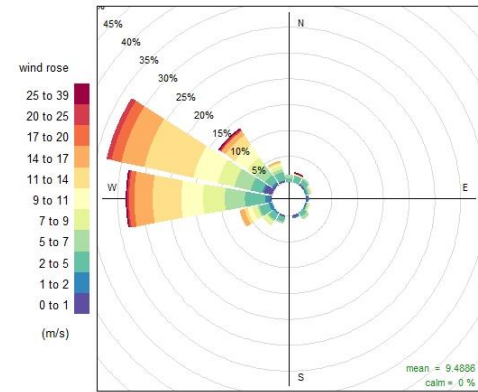
Frequency of counts by wind direction (%)

Machilipatnam   August   500 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.8	0	2	0	0	0	0	0	0	0	0
12-33		0	0	2	0.8	0	0	0	0	0	0	0
34-56		0	0	1.2	0.8	0.4	0	0	0	0	0.4	0
57-78		0	0.4	2	2.4	0.4	1.2	0.4	0	0	0	0
79-101		0.4	0	1.6	2	2.4	1.6	0	0	0	0	0
102-123		0	0.4	2	1.6	1.6	0.4	0	0	0	0	0
124-146		0.8	0.4	0.8	0.4	0.4	0	0	0	0	0	0
147-168	0	0.4	0	0.4	0.4	0.4	0	0	0	0.4	0	0
168-191		0.8	0.4	0	0	0	0.4	0	0	0	0	0
192-213		0.4	0.4	0	0	1.2	0.4	0	0	0	0	0
214-236		0.8	0.4	0.8	0.4	0.8	0.4	0.4	0.4	0	0	0
237-258		0.4	0.4	1.6	0.8	1.2	0.8	1.2	0	0	0	0
259-281		0.8	0.4	3.9	3.9	2.4	3.5	2	0.8	0.8	0	0
282-303		0.8	0.4	2.8	3.9	3.1	2.8	2	0.8	1.2	0	0.4
304-326		0	1.2	5.5	1.2	1.6	0.4	0.8	0	0	0	0
327-348		0.4	0	2.8	1.6	0	0	0	0	0	0	0
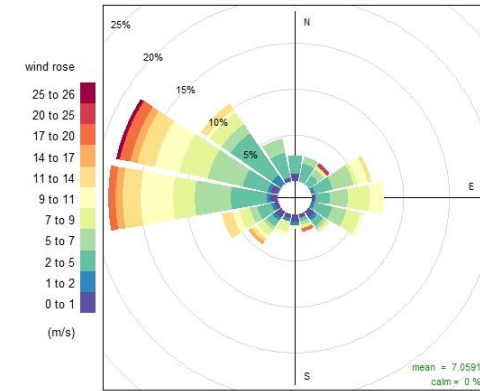
Frequency of counts by wind direction (%)

Machilipatnam   August   300 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0.5	1.4	0.5	0.5	0.5	0	0	0	0	0
34-56		0	0.9	3.7	0.5	0.9	0	0	0	0	0	0
57-78		0	0	1.4	3.3	3.7	2.8	1.4	0	0.5	0	0.5
79-101		0.5	0	1.4	3.3	7	9.3	11.2	7	1.9	0	0
102-123		0	0	1.9	2.3	3.3	2.3	6.1	2.3	1.9	0.5	0
124-146		0	0.5	0.9	2.3	0.9	0.9	0.9	0	0	0	0
147-168	0	0	0	0.5	0.5	0.9	0	0	0	0	0	0
168-191		0	0	0	0.5	0	0.5	0	0	0	0	0
192-213		0.5	0.5	0.9	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0.5	0.5	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0.5	0	0	0	0	0	0	0	0.5	0
304-326		0	0	0.5	0	0	0	0	0	0	0	0
327-348		0	0	0	0.9	0.5	0	0	0	0	0	0
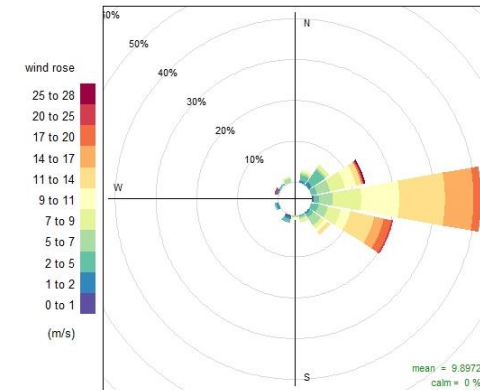
Frequency of counts by wind direction (%)

Machilipatnam   August   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0.6	0	0	0	0
34-56		0	0	0	0	1.2	0.6	1.2	0.6	0	0	0
57-78		0	0	0	0	0.6	0.6	2.9	7.1	3.5	7.1	2.9
79-101		0	0	0.6	0.6	0	1.2	7.6	7.1	11.2	22.4	12.9
102-123		0	0	0	0	0	1.2	0.6	1.2	0.6	2.4	1.2
124-146		0	0	0	0	0	0	0	0	0	0	0
147-168		0	0	0	0	0	0	0	0	0	0	0
168-191	0	0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0.6	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

Machilipatnam   August   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	1.3
57-78		0	0	0	0	1.3	0	0	2.6	2.6	5.2	5.2
79-101		0	0	0	0	0	1.3	3.9	3.9	9.1	20.8	31.2
102-123		0	0	0	0	0	0	0	0	0	3.9	6.5
124-146		0	0	0	0	0	0	0	0	0	0	0
147-168		0	0	0	0	0	0	0	1.3	0	0	0
168-191	0	0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

Machilipatnam   September   1000 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0	1.9	0	0	0	0	0	0	0	0
12-33		0.6	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0.3	0	0	0	0	0	0	0	0	0	0
79-101		1.3	0	0	0	0	0	0	0	0	0	0
102-123		0.6	0	0	0	0	0	0	0	0	0	0
124-146		0.9	0	0.9	0	0	0	0	0	0	0	0
147-168	7	1.3	0	0.3	0	0	0	0	0	0	0	0
168-191		1.3	1.6	3.5	0.6	0	0	0	0	0	0	0
192-213		2.5	0	0.6	0	0	0	0	0	0	0	0
214-236		1.6	2.2	9.5	1.9	0	0.3	0	0	0	0	0
237-258		4.7	0	3.8	0	0	0	0	0	0	0	0
259-281		1.6	1.3	25.3	4.7	0.3	0	0	0	0	0	0
282-303		0.6	1.3	1.6	0	0	0	0	0	0	0	0
304-326		2.2	0.9	6.6	1.6	0	0	0	0	0	0	0
327-348		0.9	0.9	0.3	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 3.0633
calm = 7 %
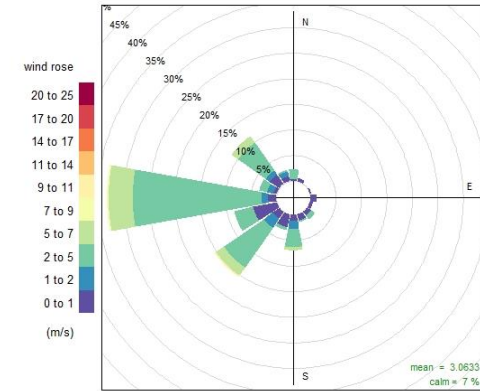
Machilipatnam   September   925 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	1.3	0.6	0.6	0	0	0	0	0	0
12-33		0	0	0	0	0.6	0	0	0	0	0	0
34-56		0	0.3	0.3	0.3	0	0	0	0	0	0	0
57-78		0	0	0.3	0.3	0.3	0	0	0	0	0	0
79-101		0.3	0.3	0.3	0	0	0	0	0	0	0	0
102-123		0.3	0	1.3	0	0	0	0	0	0	0	0
124-146		0.3	0.3	2.2	0	0	0	0	0	0	0	0
147-168	0	0.3	0.9	1.3	0.6	0	0	0	0	0	0	0
168-191		0.3	1.3	2.2	0	0.6	0	0	0	0	0	0
192-213		0	0.9	3.5	1.6	0.3	0.3	0	0	0	0	0
214-236		0.3	0.6	1.9	0.9	2.2	1.6	0	0	0	0	0
237-258		0	0.6	4.7	2.5	2.5	1.9	0.3	0.3	0	0	0
259-281		0.6	0.6	4.1	4.7	5	2.5	4.4	0.6	0	0	0
282-303		0.3	0.6	2.8	2.5	3.5	1.9	2.5	1.9	0	0.3	0
304-326		0	0	4.4	2.2	1.6	0.3	1.3	0.3	0	0	0
327-348		0	0.3	1.9	0.9	1.3	0.9	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 6.817
calm = 0.3 %
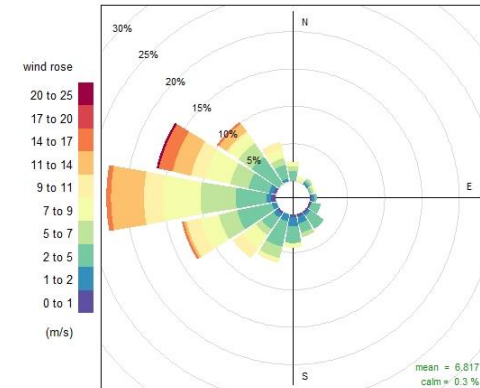
Machilipatnam — September — 850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.6	0.3	1.3	1.3	1	0	0	0	0	0	0
12-33		1	0.6	1	0	0	0	0	0	0	0	0
34-56		0	0.6	0.3	0.6	0.3	0.6	0	0	0	0	0
57-78		0	0.6	0	0	0.3	0	0	0	0	0	0
79-101		0.3	0.3	1.3	0.3	0	0	0	0	0	0	0
102-123		0	0.3	1.6	0.3	0.3	0	0	0	0	0	0
124-146		0	0.6	1.9	0.6	0.3	0	0	0	0	0	0
147-168	0	0.3	0.3	1	0.6	0	0	0	0	0	0	0
168-191		0	0.6	0	0	0.3	0	0	0	0	0	0
192-213		0	1	1.9	0.3	0.6	0	0	0	0	0	0
214-236		0	0.6	1.9	0.3	0	0.6	0	0	0	0	0
237-258		0.3	0.3	3.2	1	1.3	0.6	0	0.3	0	0	0.3
259-281		0	1	1.6	3.2	4.8	3.8	2.6	0.6	0	0	0
282-303		0.6	0.6	3.5	5.4	4.2	3.2	5.4	2.2	0.6	0.3	0
304-326		0.3	0.6	2.2	3.2	1.9	0.6	1	0.3	0	0	0.3
327-348		0	0.6	2.9	3.2	1	0.6	0	0	0	0	0

mean = 7.1186
calm = 0.3 %

Frequency of counts by wind direction (%)
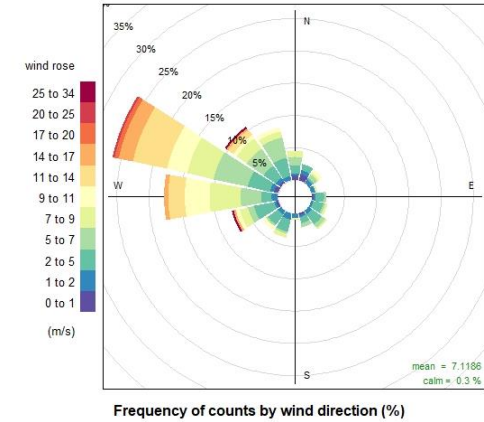
Machilipatnam — September — 700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.6	2.3	1.6	1	1	0	0	0	0	0
12-33		0	0.3	1.3	1	1.3	0	0	0	0	0	0
34-56		0	0.6	2.3	0	0.3	0.6	0.3	0	0	0	0
57-78		0	0	3.2	0.3	0.3	0	0	0	0	0	0
79-101		0	0	1.6	1.6	0.6	0	0	0	0	0	0
102-123		0.6	0	1	0.6	0	0	0	0.3	0	0	0
124-146		0.6	0.3	0.3	0.6	0.3	0	0	0	0	0	0
147-168	1	0	0	0.3	0	0	0	0	0	0	0	0
168-191		0	0	1.9	0.3	0	0	0	0	0	0	0
192-213		0	0	0.6	0.6	0	0	0	0	0	0	0
214-236		0	0.3	0.3	0	0.3	0	0.3	0	0	0	0
237-258		0	1	1.9	1	0.3	0.3	2.6	0	0	0	0
259-281		0	0.6	2.9	1	1.3	2.6	1.9	0.3	0	0	0
282-303		1	0.3	4.5	5.5	3.9	2.9	2.3	1	0.3	0	0
304-326		0.6	0.6	4.9	4.5	2.6	1.9	1.6	0	0	0	0.3
327-348		0.3	1	4.9	1.6	1.9	0.3	0	0	0	0	0

mean = 6.6526
calm = 0.6 %

Frequency of counts by wind direction (%)
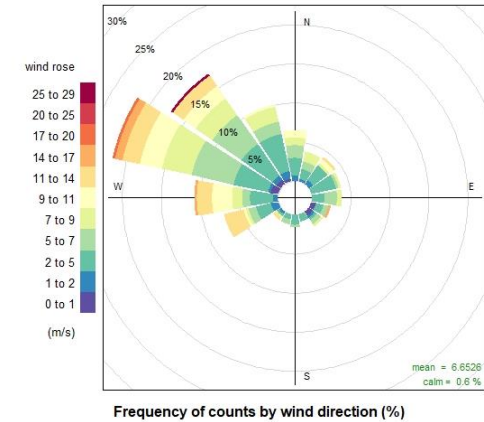
Machilipatnam — September — 500 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.7	1.4	0.7	0.4	0	0	0	0	0	0
12-33		0.7	0.7	5.8	0.7	0.7	0	0	0	0	0	0
34-56		0.4	0	4	0.4	0.4	0	0	0	0	0	0
57-78		0.4	1.1	4.7	3.6	0.7	0.7	0.7	0	0	0	0
79-101		0	1.1	5.1	3.3	2.5	0.7	0.4	0	0	0	0
102-123		0	0.7	3.3	1.4	1.4	0.7	0	0	0	0	0
124-146		0.7	0.4	1.8	1.8	1.1	0.4	0	0	0	0	0
147-168	0	0	0	0.4	0.4	0	0	0	0	0	0	0
168-191		0	0	0.4	0.4	0	0	0	0	0	0	0
192-213		0.4	0.7	1.4	0	0	0	0	0	0	0	0
214-236		0.4	0.4	1.4	0.4	0.4	0.4	0	0.4	0	0	0
237-258		0	0.7	0.7	1.1	1.8	0.4	1.1	0	0	0	0
259-281		0.4	0	2.5	2.5	0.7	1.1	0	0.4	0	0	0
282-303		0.4	0.7	1.8	2.5	1.4	1.4	1.1	0	0	0	0
304-326		1.1	0.7	4	1.8	1.4	0.4	0	0	0	0	0
327-348		0	0	1.8	1.1	1.1	0	0	0	0	0	0

wind rose
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 5.692
calm = 0.4 %

Frequency of counts by wind direction (%)
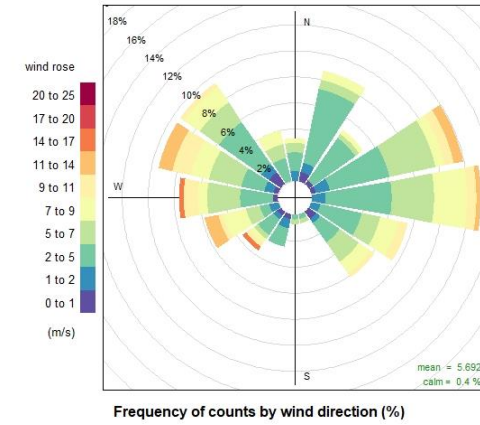
Machilipatnam — September — 300 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.4	0.4	0.4	0	0	0	0	0	0	0
12-33		0	0	1.6	0.4	0	0.8	0	0	0	0	0
34-56		0	0	1.6	1.6	0.4	0	0	0	0	0	0
57-78		0.4	0	3.6	1.6	3.2	1.6	0.4	1.2	0	0	0
79-101		0	0.4	4	3.6	8.8	3.2	8	1.6	0.4	0	0
102-123		0.4	0.8	7.2	4	6.8	6.8	4	1.6	0	0	0
124-146		0	0	2	2	2	0	0.8	0	0	0	0
147-168	1	0.4	0.4	3.2	0.8	0.4	0	0.4	0	0	0	0
168-191		0	0	0.4	0	0	0	0	0	0	0	0
192-213		0	0.4	0	0.4	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0.4	0	0	0.4	0	0	0	0	0	0
259-281		0.4	0	0.4	0	0	0	0	0	0	0	0
282-303		0.4	0	0.4	0	0	0	0	0	0	0	0
304-326		0	0.4	0.8	0.4	0	0	0	0	0	0	0.4
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose
25 to 32
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 8
calm = 0.8 %

Frequency of counts by wind direction (%)
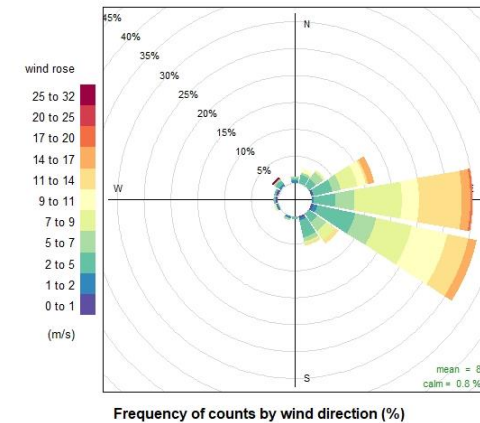
Machilipatnam   September   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0.4	0	0	0	0.4
34-56		0	0	0.4	0.4	1.3	0.4	0.4	0	0	0.9	0
57-78		0	0	0.4	0.9	0.4	2.2	2.7	3.6	2.2	3.1	0.4
79-101		0.4	0.9	0.9	1.3	2.2	7.2	4.5	10.3	9	10.3	1.3
102-123		0	0	1.3	2.2	1.8	3.1	4.9	6.3	3.1	2.2	0.4
124-146	1	0	0	0	0	0	0.9	0.4	0	0.9	0	0
147-168		0.4	0	0	0	0.4	0	0	0	0	0	0
168-191		0	0	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0.4	0	0	0	0	0	0	0
214-236		0	0.4	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

25 to 52
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 15.049
calm = 0.9 %

Frequency of counts by wind direction (%)
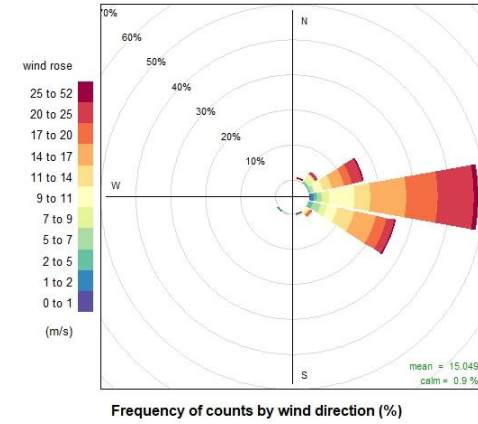
Machilipatnam   September   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0.8	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0.8	2.5	1.7	0.8	0.8	0	0.8
79-101		0	0	0.8	2.5	5.9	3.4	11.9	12.7	9.3	13.6	11
102-123		0	0	0	0	0	3.4	5.9	1.7	2.5	4.2	0.8
124-146		0	0	0	0	0	0	0.8	0	0	0	0
147-168	0	0	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0	0	0.8	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

25 to 36
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 17.102
calm = 0 %

Frequency of counts by wind direction (%)

Machilipatnam   October   1000 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		3.4	1.8	3.7	0.6	0	0	0	0	0	0	0
12-33		1.5	1.8	4	0	0	0	0	0	0	0	0
34-56		1.5	2.2	7.4	1.8	1.5	0.3	0.3	0	0	0	0
57-78		2.2	1.2	2.5	1.8	0	0	0	0	0	0	0
79-101		2.8	0.3	3.4	0.3	0.6	0	0	0	0	0	0
102-123		1.5	0.6	0.3	0	0	0	0	0	0	0	0
124-146		2.2	0.3	2.2	0	0	0	0	0	0	0	0
147-168	6	1.5	0	0.6	0	0	0	0	0	0	0	0
168-191		1.2	0.3	0.3	0	0	0	0	0	0	0	0
192-213		0.3	0.3	0.3	0	0	0	0	0	0	0	0
214-236		2.2	0.6	2.2	0.6	0	0	0	0	0	0	0
237-258		1.5	0.9	0	0	0	0	0	0	0	0	0
259-281		2.8	2.8	5.2	2.2	0.3	0	0	0	0	0	0
282-303		2.8	0.6	0	0	0	0	0	0	0	0	0
304-326		1.5	0.9	5.2	0.9	0	0	0	0	0	0	0
327-348		0.6	0	0.9	0	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 2.84
calm = 6.2 %

Frequency of counts by wind direction (%)
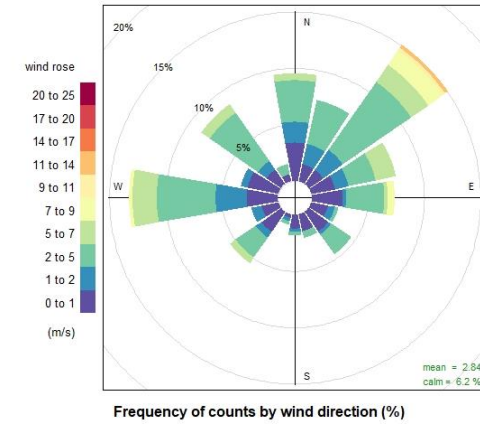
Machilipatnam   October   925 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.9	1.5	2.1	1.8	0.3	0.6	0	0	0	0	0
12-33		0.3	1.2	2.7	1.5	0	0.3	0.6	0	0	0	0
34-56		0.9	1.8	3.3	2.7	0.9	0.6	0.3	0.3	0	0	0
57-78		0.3	1.8	4.3	4.3	3.3	1.8	1.5	0.3	0	0	0
79-101		0.3	1.5	4.3	4	1.8	0.3	0	0.6	0	0	0
102-123		0.6	1.2	2.7	0.9	0.3	0	0	0	0	0	0
124-146		0	0.3	2.1	0.6	0.3	0	0	0	0	0	0
147-168	0	0.9	0.9	0	0.3	0	0	0	0	0	0	0
168-191		0.9	0	0.9	0	0.6	0	0	0	0	0	0
192-213		0	0.3	0.9	0.3	0	0	0	0.3	0	0	0
214-236		0	0.6	1.5	0.3	0.6	0.3	0	0	0	0	0
237-258		0.3	0.3	2.4	0.3	0	0.3	0	0	0	0	0
259-281		0.3	0.9	0.9	0.6	0	0.9	0.9	0	0	0	0
282-303		0.6	0.9	1.2	0.6	1.5	0.6	0	0	0	0	0
304-326		1.2	0.6	2.4	0.6	0.6	0.6	0.6	0	0	0	0
327-348		0.6	1.5	1.2	0.9	0.6	0.3	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1

(m/s)

mean = 5.3313
calm = 0.3 %

Frequency of counts by wind direction (%)
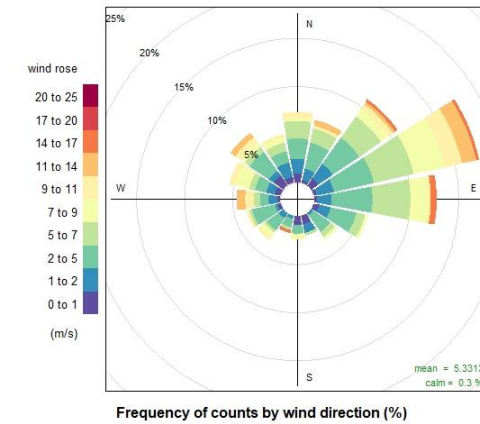
Machilipatnam — October — 850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.9	1.2	1.8	2.5	0.6	0.3	0.3	0	0	0	0
12-33		0.6	1.2	3.4	0.9	1.2	0.6	0	0	0	0	0
34-56		0.6	0.9	5.2	3.4	2.1	0.6	0.9	0.6	0	0	0
57-78		0.6	0	7.4	2.1	3.1	0.9	0.6	0.3	0	0	0
79-101		0.6	0.9	5.5	6.1	2.1	1.8	0	0	0.3	0	0
102-123		0.3	0	1.8	1.5	0.6	0.3	0	0	0	0	0
124-146		0.6	0.6	1.8	0.3	0.3	0	0.3	0	0	0	0
147-168	1	0.6	0	0.3	0.3	0	0	0	0	0	0	0
168-191		0	0.6	0.9	0.6	0.3	0.3	0	0	0	0	0
192-213		0	0.6	0.3	0	0	0.3	0	0	0	0	0
214-236		0.3	0.3	0.6	0.3	0.3	0.3	0	0	0	0	0
237-258		0	0.3	1.2	0.3	0.3	0	0	0	0	0	0
259-281		0.6	0.3	0.3	0.9	0.6	0.3	0.6	0	0	0	0
282-303		0	0.6	2.5	1.2	0.6	0.3	0.3	0.3	0	0	0
304-326		0.3	0.6	1.8	0.6	1.2	0.3	0.3	0.3	0	0	0
327-348		0.3	0	2.1	0.9	0	0.3	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 5.6718
calm = 0.6 %

Frequency of counts by wind direction (%)
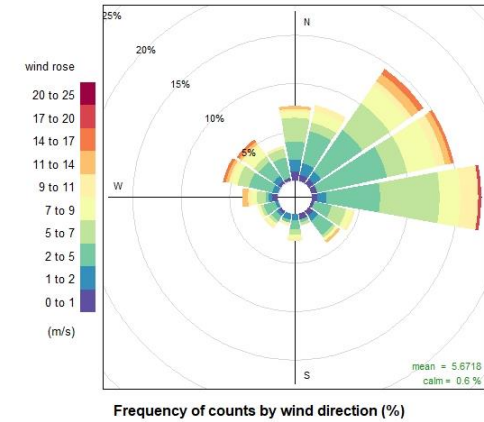
Machilipatnam — October — 700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.6	0.6	3.1	1.5	0.3	0.3	0.9	0	0	0	0
12-33		0.9	1.2	4.6	0.9	0.3	0.3	0	0.3	0.3	0	0
34-56		0.6	1.2	5.6	1.5	1.2	0.6	0	0.3	0	0	0
57-78		0.3	0.9	4.3	3.4	1.2	0.9	0.6	0.3	0	0	0
79-101		0	0.6	7.4	2.8	2.2	2.2	0.6	0	0.3	0	0
102-123		0.3	0.6	4	1.2	1.2	0.6	0	0	0	0	0
124-146		0	0.3	1.2	0.9	1.2	0.3	0	0	0	0	0
147-168	1	0.3	0.6	0.6	0.6	0.6	0.6	0	0	0	0	0
168-191		0.6	0.3	0.6	0.3	0.3	0	0	0	0	0	0
192-213		0	0.3	0	0.6	0.3	0.3	0	0	0	0	0
214-236		0.3	0.3	0.6	0.6	0	0	0	0	0	0	0
237-258		0.3	0.3	0.6	0.9	1.2	0	0	0	0	0	0
259-281		0.3	0.6	0.3	0.6	0.9	0.6	0.3	0	0	0	0
282-303		0.6	0	1.2	0.6	1.5	0.6	0	0	0.3	0	0
304-326		0.3	0.3	3.1	0.3	0.3	0.3	0	0.3	0	0	0
327-348		0	0.9	1.5	1.2	0.9	0.6	0.3	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 5.7399
calm = 0.6 %

Frequency of counts by wind direction (%)
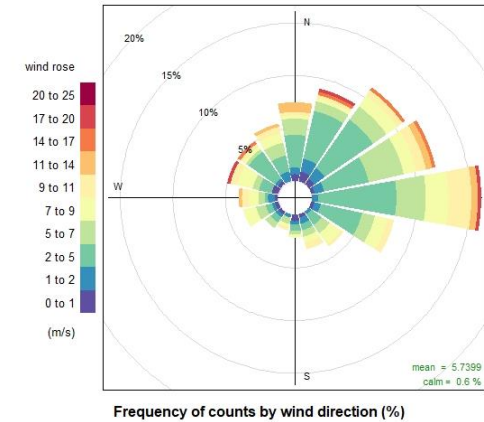
Machilipatnam

October — 500 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0.7	0.7	0.7	0	0	0	0	0	0	0
12-33		0	0	1.7	1	0.7	0	0	0	0	0	0
34-56		0.3	1.7	3.1	1.4	2.7	0.7	0.3	0.7	0.3	0	0
57-78		0.3	1.4	4.5	3.4	2.7	0.7	0.3	0.3	0	0	0
79-101		0.7	1	5.8	2.4	2.1	1.7	0.7	0.3	0	0	0
102-123		0.7	1	3.8	1	2.4	0.7	0.7	0	0	0	0
124-146		0.3	0.3	2.1	1.4	1.4	1	0	0	0	0	0
147-168	1	0.7	0.7	4.1	0.3	0.7	0	0	0	0	0	0
168-191		0.3	1.4	1.7	1	0	0	0.3	0	0	0	0
192-213		0.3	0.3	2.4	1	1	0.3	0	0	0	0	0
214-236		0	1	0	0.3	0.7	0.3	0	0	0	0	0
237-258		0	0.3	1.4	1	1	1	0	0.3	0	0	0
259-281		0	0	2.7	0.7	1	0	0	0	0	0	0
282-303		0.7	1	1.7	0.3	0.3	0	0	0	0	0	0
304-326		0	0	1	0.7	0	0	0	0	0	0	0
327-348		0	0.7	1	0.7	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 5.6575
calm = 0.7 %

Frequency of counts by wind direction (%)
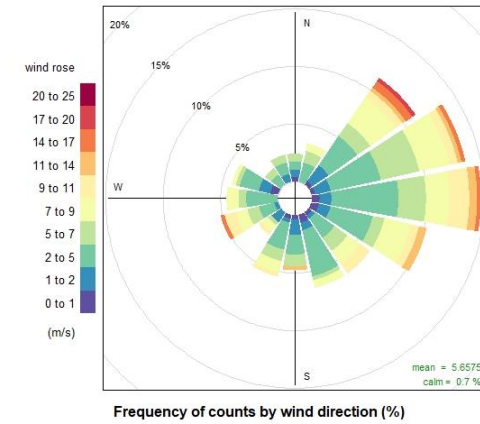
Machilipatnam

October — 300 hPa level

Speed / Direction	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0	0	0	0	0	0
12-33		0	0	1.2	0.8	0	0	0	0	0	0	0
34-56		0.4	1.6	2.7	0.8	0	0	0	0	0	0	0
57-78		0	0.8	3.5	1.6	1.6	1.2	0	0	0	0	0
79-101		0.8	0.8	5.9	2	2.7	1.6	0.4	0.4	0.4	0	0
102-123		0.8	1.6	4.3	4.7	3.5	0.8	0.8	0.4	0	0	0
124-146		0.4	0.8	6.2	3.1	2.7	1.2	1.2	0	0	0	0
147-168	1	0.4	0.4	1.2	3.1	0	1.2	0.4	0	0	0	0
168-191		0.4	0	3.5	0.8	1.2	0.8	0	0	0	0	0
192-213		0	0.8	2	1.2	1.2	0.8	1.2	0	0	0	0
214-236		0	0	2.3	0	0.8	0.4	0	0.4	0.4	0	0
237-258		0	0.4	0.4	0.4	0	0	1.2	0	0	0.4	0
259-281		0.4	1.2	0	0	0.8	0	0.4	0	0	0	0
282-303		0.8	0.4	1.6	0	0.8	0.4	0	0	0.4	0	0
304-326		0.4	0	0.4	0	0	0	0.8	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

wind rose

20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 6.3242
calm = 0.8 %

Frequency of counts by wind direction (%)
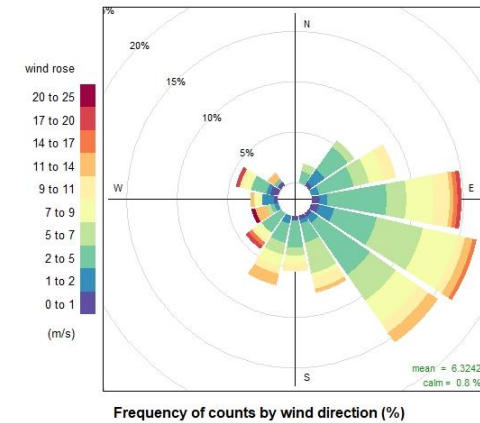
Machilipatnam October 200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0.4	0.4	0	0	0	0	0	0
12-33		0.4	0.4	0.4	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0.4	0.4	0	0	0	0	0
57-78		0	0	1.8	1.3	0.4	0	1.8	0.9	0	0	0
79-101		0	0.9	1.3	1.8	2.2	1.8	4	1.8	2.2	0.9	0.4
102-123		0	0.9	1.8	2.7	4.4	4	1.3	3.1	0.9	0.9	0.4
124-146		0	0	2.7	3.1	3.5	2.7	1.8	1.3	0	0	0
147-168	1	0.4	0	3.1	1.3	2.2	2.2	0.9	1.3	0	0.4	0
168-191		0	0.4	3.5	0.9	0	0.4	1.3	0.4	0.4	0	0
192-213		0	0	1.3	1.3	0.9	0.4	1.3	0.4	0.4	0.4	0
214-236		0	0	0.9	0.9	0	1.8	1.3	0	0	0.9	0
237-258		0	0	0.4	0	0	0	0.9	0	0	0	0
259-281		0	0	0	0	0.4	0.9	0	0	0	0	0
282-303		0	0	0.4	0.4	0	0	0	0	0	0	0
304-326		0	0	0	0	0.9	0.4	0	0.4	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 9.9159
calm = 0.9 %
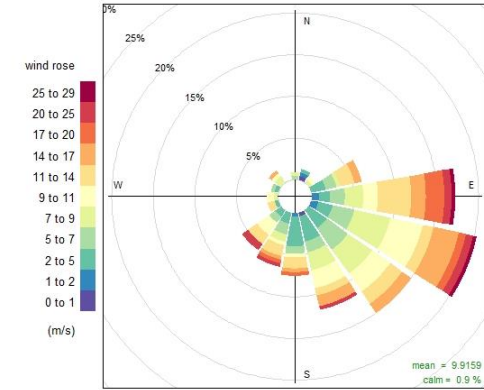
Machilipatnam October 100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0.8	0.8	0	0	0	0	0	0
12-33		0	0	2.3	0.8	0	0	0	0	0	0	0
34-56		0	2.3	0.8	0	0.8	0	0	0	0	0	0
57-78		0	0	3	3	1.5	0	3	0	0	0	0
79-101		0.8	0	9.8	6.8	6.8	3.8	5.3	2.3	1.5	0	0.8
102-123		0.8	2.3	1.5	3	5.3	3.8	4.5	0.8	0	0.8	0
124-146		0	0	1.5	2.3	1.5	1.5	0	0.8	0	0	0
147-168		0	0	0.8	0	1.5	0.8	0	0	0	0	0
168-191	1	1.5	0	0	0	0	0.8	0	0	0	0	0
192-213		0	0	1.5	0.8	0	0	0	0	0	0	0
214-236		0	0	0.8	0	0	0	0	0	0	0	0
237-258		0	0.8	0	0	0	0	0	0	0	0	0
259-281		0	0	0.8	0	0	0	0	0	0	0	0
282-303		0.8	0	0	0	0	0	0	0	0	0	0
304-326		0	0	0.8	0	0	0.8	0	0	0	0	0
327-348		0	0	0	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 7.9318
calm = 0.8 %
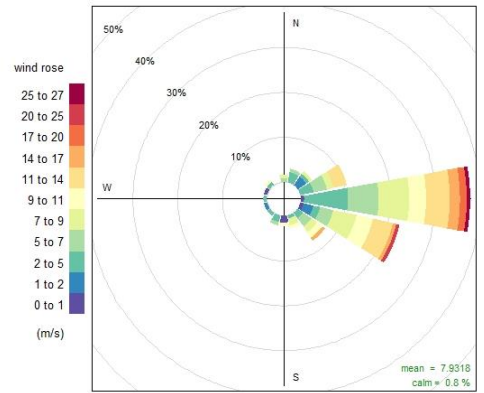
Machilipatnam   November   1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.2	2.2	4	0	0.3	0	0	0	0	0	0
12-33		1.2	2.2	7.4	0.3	0	0	0	0	0	0	0
34-56		2.5	6.5	18.5	4.6	1.8	0	0	0	0	0	0
57-78		1.5	3.7	9.2	3.4	1.2	0.3	0	0	0	0	0
79-101		1.5	0.9	9.8	3.1	0.3	0	0	0	0	0	0
102-123		0.9	0.6	0.9	0.3	0	0	0	0	0	0	0
124-146		0.6	0	0	0.3	0.3	0	0	0	0	0	0
147-168	1	0.6	0	0	0	0	0	0	0	0	0	0
168-191		0	0	0	0.3	0	0	0	0	0	0	0
192-213		0.6	0.3	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0.3	0	0	0	0	0	0	0	0	0	0
259-281		0.3	0	0	0.3	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0.3	0.9	0.3	0.3	0	0	0	0	0	0	0
327-348		0.6	1.5	0.3	0	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 3.7231
calm = 1.2 %
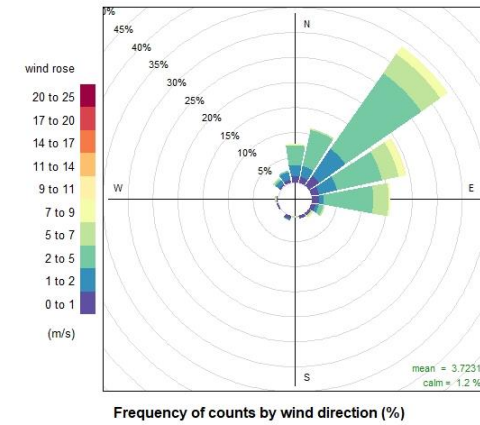
Machilipatnam   November   925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.6	0.6	0	0.3	0	0	0	0	0	0
12-33		0	0.9	4.9	1.2	0	0.3	0	0	0	0	0
34-56		0	1.5	7.1	3.4	0.9	0.6	0.9	0.3	0	0	0
57-78		0.9	1.2	13.2	11	8.9	3.1	1.2	0.3	0	0	0
79-101		0.9	0.3	7.1	5.5	4.3	1.5	1.5	0	0	0	0
102-123		0.3	0	2.8	2.5	0.3	0.6	0.3	0	0	0	0
124-146		0.3	0	0.6	0.9	0.3	0	0	0	0	0	0
147-168	0	0	0	0.9	0	0	0	0.6	0	0	0	0
168-191		0	0.3	0	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0.3	0.3	0	0.3	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0	0.3	0	0.3	0	0	0	0	0
282-303		0	0.3	0	0	0	0	0	0	0	0	0
304-326		0	0.3	0.3	0	0	0	0	0	0	0	0
327-348		0	0	1.5	0.3	0	0	0	0	0	0	0

Frequency of counts by wind direction (%)

mean = 6.0307
calm = 0.3 %
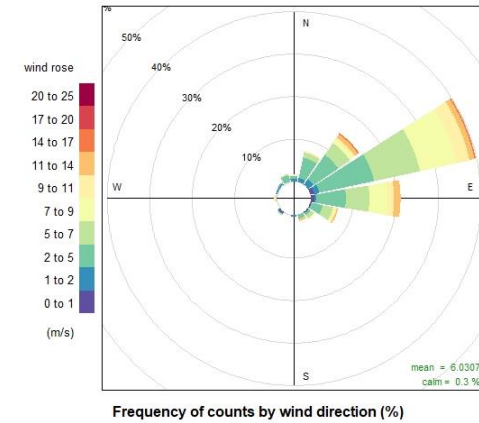
Machilipatnam   November   850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.9	0.3	0.6	0.9	0	0	0	0	0	0	0
12-33		0.3	0.3	4.3	2.5	0	0.3	0	0	0	0	0
34-56		0	1.2	7.7	8	2.2	0.6	1.5	0.3	0.3	0	0
57-78		0.3	0.6	7.1	10.8	4.3	2.5	1.2	0.3	0	0	0
79-101		0	0	5.8	8	4.9	1.5	1.2	0.3	0.3	0.3	0
102-123		0.6	0.3	3.4	2.8	0	2.2	0.3	0.3	0	0	0
124-146		0	0	0.9	0.6	0.6	0.3	0	0.3	0.3	0	0
147-168	0	0.3	0	0.9	0.6	0	0	0	0	0	0	0
168-191		0	0.3	0.3	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0.3	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0	0.3	0	0	0	0	0	0	0	0
282-303		0	0.3	0.3	0	0	0.3	0	0	0	0	0
304-326		0	0	0	0	0	0	0	0	0	0	0
327-348		0	0	0.3	0.3	0.3	0.3	0	0	0	0	0

wind rose
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 6.5877
calm = 0 %
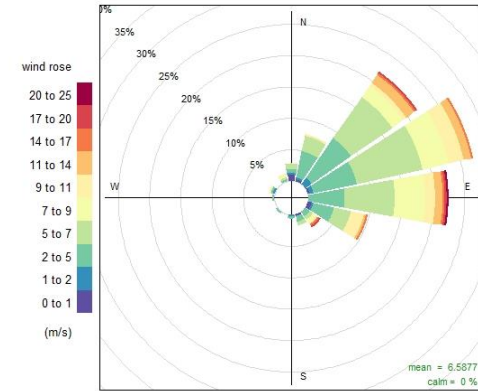
Frequency of counts by wind direction (%)

Machilipatnam   November   700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.6	0	2.5	1.6	0.3	0	0	0	0	0	0
12-33		0.3	0.9	3.1	2.8	0.3	0.3	0	0	0	0	0
34-56		0.9	0	4.3	2.2	2.5	0.6	0.9	0.3	0	0	0
57-78		0.9	0.6	7.5	5.6	2.5	1.2	0.6	0	0	0.3	0
79-101		0.6	0.3	5.3	4.7	3.7	0.6	0.6	0.3	0	0	0
102-123		0	0.9	2.8	3.1	1.9	0.3	0.3	0.3	0	0	0
124-146		0.6	0.6	1.6	2.2	1.6	0.3	0.3	0	0.3	0	0
147-168		0	0.6	1.6	0	0.3	0.6	0	0	0	0	0
168-191	1	0.3	0.3	0.9	0.3	0	0.3	0.3	0	0	0	0
192-213		0.3	0	0.6	0.3	0.3	0	0	0	0	0	0
214-236		0	0	0.3	0.6	0	0	0	0	0	0	0
237-258		0.3	0	0.9	0.6	0	0	0	0	0	0	0
259-281		0.9	0.3	0	0.6	0	0	0	0	0	0	0
282-303		0.3	0.9	0.6	0	0	0	0	0	0	0	0
304-326		0.6	1.6	2.2	0	0.3	0	0	0	0	0	0
327-348		0.9	0.3	1.6	0.6	0.3	0	0	0	0	0	0

wind rose
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 5.618
calm = 0.9 %
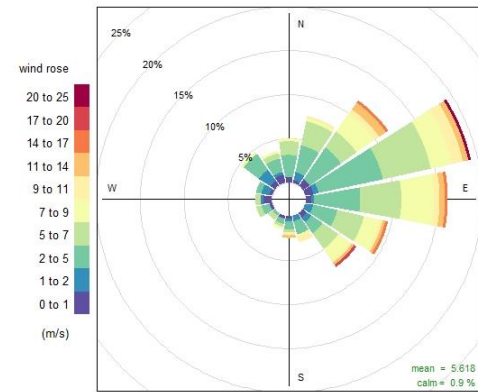
Frequency of counts by wind direction (%)

Machilipatnam   November   500 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1	0.3	1.7	0.7	0	0	0	0	0	0	0
12-33		0.7	0.7	2.7	1.3	0.7	0.7	0	0	0	0	0
34-56		1	1	2	1.3	3	1	0.3	0	0.3	0	0
57-78		0.3	1.3	4.7	3.7	1.7	1.3	0.7	0	0	0	0
79-101		0.3	1.3	2	3.4	2	1	1.3	0	0	0	0
102-123		0	1	4	2.7	0.7	1.3	0	0	0	0	0
124-146		0	0.7	3	1.3	0.3	1.3	0.3	0.3	0	0	0
147-168	0	0	1	1.3	1.7	0.7	0.7	0	0	0	0	0
168-191		0.7	0.7	1.3	1	0.7	0.3	0	0	0	0	0
192-213		0.7	0.3	3.4	0.3	0	0.3	0.3	0	0	0	0
214-236		0	0.3	2.3	0.3	0.3	0	0.3	0	0	0	0
237-258		0	0.3	3	1	0.3	0.3	0.7	0	0	0	0
259-281		0.3	0.7	1.7	0	0.3	0	0	0	0	0	0
282-303		0	0	0.7	0.7	0.3	0	0	0	0	0	0
304-326		0	1	1.3	0.3	1	0	0	0	0.3	0	0
327-348		0.3	0.7	1.3	0.3	0.7	0	0	0	0	0	0

Frequency of counts by wind direction (%)
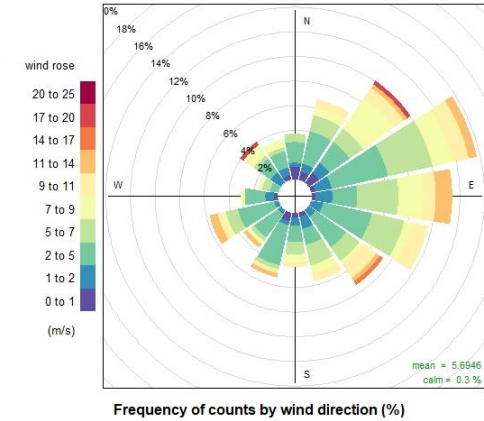
Machilipatnam   November   300 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.7	1.1	0.7	0.4	0	0	0	0	0	0
12-33		0	0.4	1.9	0.4	0.7	0	0	0	0	0	0
34-56		0	0	1.1	0.4	0	0	0.4	0	0	0	0
57-78		0.4	1.1	1.5	1.1	0.4	0	0	0.4	0	0	0
79-101		0	0.4	1.5	0.4	1.1	0.7	0	0.4	0	0	0
102-123		0	0.4	1.9	0.4	0.4	0	0.7	0	0	0	0
124-146		0.4	0.4	2.2	1.5	0	0	0.4	0.4	0	0	0
147-168	0	0.4	1.5	1.5	1.1	1.5	0	0.4	0	0	0	0
168-191		0	1.1	2.2	3.3	0.7	0.4	0	0	0	0	0
192-213		0.4	1.5	1.5	0.7	2.6	0.7	0.7	0	0	0	0
214-236		0.7	0.4	2.6	4.1	0.7	0.7	1.1	0.4	0.4	0	0
237-258		0	1.1	3	2.2	2.2	1.9	0.7	1.1	0.7	0.7	0
259-281		0	0.4	3.3	1.1	3	0.4	1.1	0.4	1.1	0	0
282-303		0.4	0	2.2	1.9	1.1	0.7	0.7	0.7	0.7	0	0
304-326		0	1.1	1.5	0.7	0.4	0.7	0	0	0	0	0
327-348		0	0	1.1	0.4	0	0	0.4	0.4	0	0	0

Frequency of counts by wind direction (%)
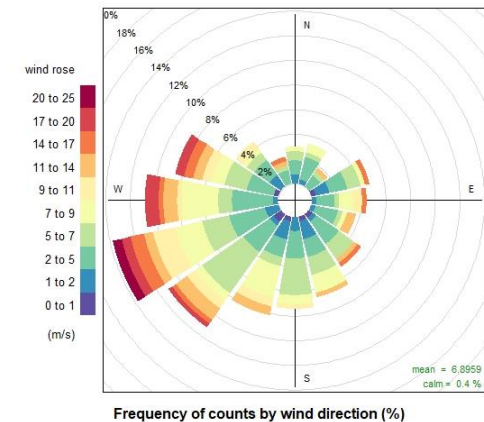
Machilipatnam   November   200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0	0	0.4	0	0	0	0	0
12-33		0	0	0.8	0	0.4	0	0	0	0	0	0
34-56		0	0	0	0.4	0	0	0	0	0	0	0
57-78		0.4	0	0.4	0.8	0	0	0	0	0	0	0
79-101		0	0.8	0.8	0.8	0	0.8	1.2	0	0	0	0
102-123		0	0.8	0	0.8	0.4	0.8	0.4	0.4	0.4	0	0
124-146		0	0	1.2	0	0.4	0.4	0.4	1.2	0	0	0
147-168	0	0	0	1.6	0.8	1.2	1.6	1.2	0	0.4	0	0
168-191		0	0.8	2.4	3.2	1.2	2	2.4	0.8	0	0.4	0
192-213		0	0	2.4	2	3.2	2.4	2.4	1.2	2	0	0
214-236		0	0.4	2.4	1.6	4	1.6	0.8	2.8	2	0.4	0.4
237-258		0.4	0	1.2	1.6	3.2	1.6	1.6	1.6	0.8	1.2	0.8
259-281		0.4	0.8	0	0.4	1.2	2	1.2	1.2	2.4	0.4	0.8
282-303		0.4	0	1.2	0.4	0.4	1.2	0.4	0	0.4	0.4	0
304-326		0	0.4	0	0.4	0.4	0	0	0	0	0	0
327-348		0	0.4	0.8	0.4	0	0.4	0	0	0	0	0

Frequency of counts by wind direction (%)
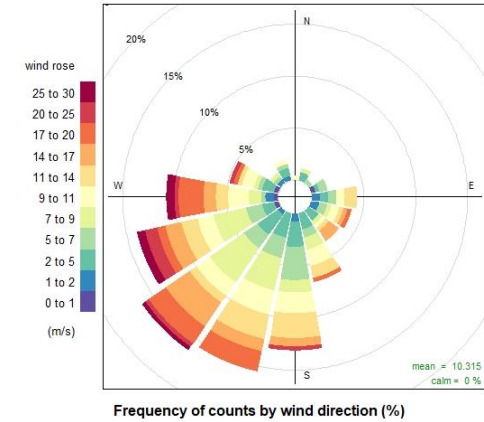
Machilipatnam   November   100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.4	0.7	1.4	0	0	0.7	0	0	0	0	0
12-33		0	1.4	2.1	0.7	0	0	0.7	0	0	0	0
34-56		0.7	0.7	2.8	3.5	0.7	0	0	0	0	0	0
57-78		0.7	0.7	1.4	0.7	1.4	0.7	0	0.7	0	0	0
79-101		0	0	4.9	0	1.4	2.1	1.4	0	0	0	0
102-123		0.7	0.7	4.2	4.2	4.2	0.7	0	0.7	0.7	0	0
124-146		0	0.7	0.7	2.1	0	0.7	0.7	0.7	0	0	0
147-168	1	0.7	0	4.2	0.7	1.4	0	0	0	0	0	0
168-191		0.7	0	2.8	1.4	1.4	0	0	0	0	0	0
192-213		0	0	0	0.7	0.7	0	0	0	0	0	0
214-236		0	0.7	2.8	0	1.4	0.7	0	0	0	0	0
237-258		0	0.7	2.1	1.4	0.7	0	0.7	0	0	0	0
259-281		0.7	1.4	0	2.1	0	0	0	0	0	0	0
282-303		0	0	0.7	0.7	0	0	0	0	0	0	0
304-326		0	1.4	1.4	3.5	0	0	0	0	0	0	0
327-348		0.7	1.4	1.4	0	0.7	0	0	0.7	0	0	0

Frequency of counts by wind direction (%)
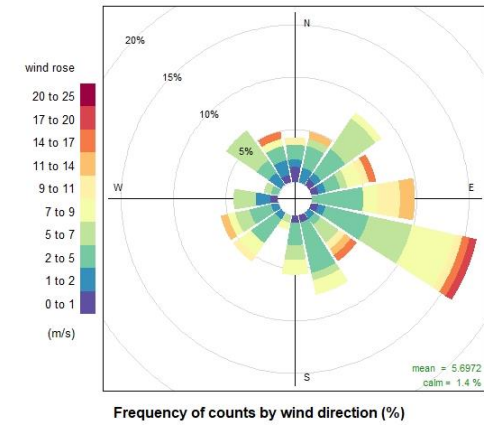
Machilipatnam   December   1000 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		1.3	0.6	3.2	0.3	0	0	0	0	0	0	0
12-33		0.6	3.2	6.7	0	0	0	0	0	0	0	0
34-56		1.9	2.5	14	2.2	1.6	0.3	0.3	0	0	0	0
57-78		1.9	3.8	14.3	5.7	1.9	0.6	0	0	0	0	0
79-101		1.3	5.1	8.6	4.1	0	0.3	0	0	0	0	0
102-123		1	0	0	0	0	0	0	0	0	0	0
124-146		1	0.3	0	0	0.3	0	0	0	0	0	0
147-168	1	0	0.3	0.3	0	0	0	0	0	0	0	0
168-191		0	0	0.3	0	0	0	0	0	0	0	0
192-213		0.6	0.3	0	0	0	0	0	0	0	0	0
214-236		0.6	0.3	0	0	0	0	0	0	0	0	0
237-258		0.6	0	0	0	0	0	0	0	0	0	0
259-281		0.3	0	0.6	0.3	0	0	0	0	0	0	0
282-303		0	0	0	0	0	0	0	0	0	0	0
304-326		0	0.6	0	0.3	0	0	0	0	0	0	0
327-348		1.6	1.6	0.6	0	0	0	0	0	0	0	0

mean = 3.6975
calm = 1.3 %

Frequency of counts by wind direction (%)
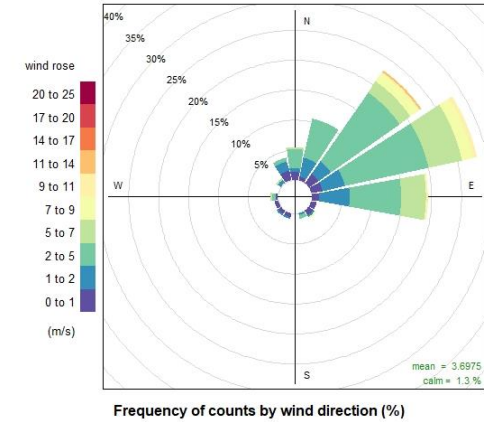
Machilipatnam   December   925 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0.6	0.6	0	0	0	0	0	0	0	0
12-33		0	1	3.2	0.3	0.3	0	0	0	0	0	0
34-56		0.6	1.6	9.6	4.1	1	0	0.3	0	0	0	0
57-78		0.3	2.5	18.2	9.9	8.6	2.9	1	0	0.3	0	0
79-101		0.3	1.3	9.2	5.7	3.2	1.3	0.3	0	0	0	0
102-123		0	1	2.2	0	0.3	0.3	0.3	0	0	0	0
124-146		0.3	0	0.3	0.3	0	0	0	0	0	0	0
147-168	1	0	0.3	0.3	0	0	0	0	0	0	0	0
168-191		0	0	0.3	0	0	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0	0	0	0	0	0	0	0	0
237-258		0	0.3	0	0	0	0	0	0	0	0	0
259-281		0.3	0.3	0.3	0	0	0	0	0	0	0	0
282-303		0	0	0.3	0	0	0	0	0	0	0	0
304-326		0.3	0.3	0	0	0.3	0	0	0	0	0	0
327-348		0	1	1.3	0	0.3	0	0	0	0	0	0

mean = 5.328
calm = 0.3 %

Frequency of counts by wind direction (%)
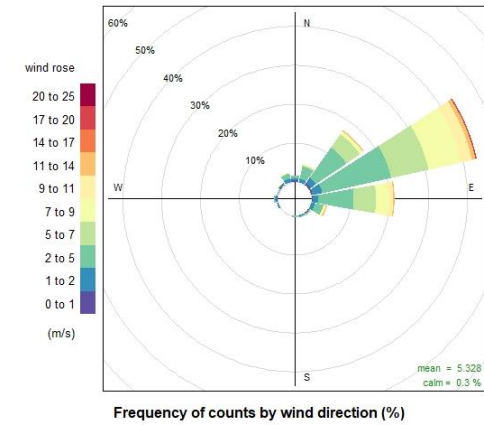
Machilipatnam December 850 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.3	0.6	1.3	0	0.6	0.3	0	0	0	0	0
12-33		0	0.6	5.7	2.5	0	0	0	0	0	0	0
34-56		0	0.6	7.6	8.9	4.5	0.6	0	0	0.3	0	0
57-78		0	1.3	11.5	12.4	6.4	1.6	2.2	0.6	0	0.3	0
79-101		0.6	0.3	7	2.9	3.2	1.6	0	0	0	0	0
102-123		0.3	0	1.9	1	0.3	0.3	0.3	0	0	0	0
124-146		0	0.6	1	0.3	0	0	0	0	0	0	0
147-168	1	0.3	0.3	0.3	0	0	0	0	0	0	0	0
168-191		0.3	0	0	0	0.3	0	0	0	0	0	0
192-213		0	0	0	0	0	0	0	0	0	0	0
214-236		0	0	0.3	0	0	0	0	0	0	0	0
237-258		0	0	0	0	0	0	0	0	0	0	0
259-281		0	0.3	0.6	0.6	0	0	0	0	0	0	0
282-303		0	0	0.3	0	0	0	0	0	0	0	0
304-326		0	0	0.6	0.3	0.3	0	0	0	0	0	0
327-348		0	0	1	0.3	0.6	0	0	0	0	0	0

mean = 5.9968
calm = 0.3 %

Frequency of counts by wind direction (%)
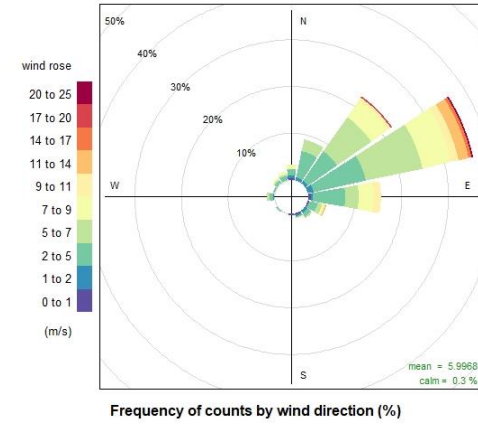
Machilipatnam December 700 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	1.3	2.9	2.3	1.3	0	0.3	0.3	0	0	0
12-33		0	1	3.5	2.6	3.2	0.6	0	0	0	0	0
34-56		0.3	0.6	5.5	5.8	5.5	1.3	1.6	0	0	0	0
57-78		0.3	0	4.2	5.8	2.6	1.3	0	0	0	0	0
79-101		1	1.6	2.9	2.6	0.6	0.6	0	0.3	0.3	0	0
102-123		0.3	0	2.6	1.9	0.6	1.3	0	0	0	0	0
124-146		0.3	1	1	0.6	1	0	0.3	0	0	0	0
147-168	1	0	0.3	0.6	0.3	0.3	0	0	0	0	0	0
168-191		0.6	0.6	1	0.3	0.3	0	0	0	0	0	0
192-213		0	0.3	0.6	0.6	0	0	0	0	0	0	0
214-236		0	0.3	1.6	0.6	0	0	0	0	0	0	0
237-258		0	0.3	0.3	1	0	0	0	0	0	0	0
259-281		0.6	0	1.6	0.3	0	0.6	0	0	0	0	0
282-303		0	0	1.3	1	1	0.3	0	0	0	0	0
304-326		0.3	0	1	1	0.6	0.3	0	0	0	0	0
327-348		0	1	2.6	0	0.6	0	0	0	0	0	0

mean = 5.9711
calm = 0.6 %

Frequency of counts by wind direction (%)
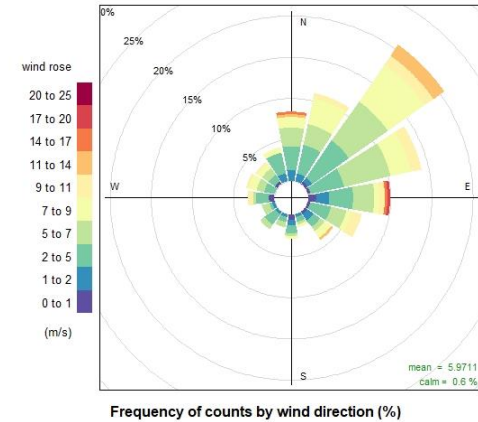
Machilipatnam December 500 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0.7	3.4	1.3	1.7	0	0.7	0	0	0	0
12-33		0	0.7	2.3	1.7	0.7	0	1.7	0.3	0	0	0
34-56		0	0	2	1.7	0.7	0.3	0	0.3	0	0	0
57-78		0	0.3	2.3	3	1	0	0	0	0	0	0
79-101		0.7	0.3	2.7	0.7	1.3	0.7	0	0	0	0	0
102-123		0	0	2.3	0.3	0.3	0.7	0	0.3	0.3	0	0
124-146		0	0.7	1.7	1	1.3	0.3	0	0	0	0	0
147-168	0	0.3	0	2	0.7	1	0.3	0	0	0	0	0
168-191		0	1	1.3	0	0.7	0.3	0.3	0	0	0	0
192-213		0	1.7	1.7	0.3	0.3	0	0.3	0	0	0	0
214-236		0.3	1	1.7	1.7	1	0	0.3	0	0	0	0
237-258		0.7	0.3	1.3	0.3	0.7	0.3	1.7	0	0	0	0
259-281		0	0	1	2.3	2	1.7	1.3	1.7	0.3	0	0
282-303		0	0.7	1.7	1.7	2	0.3	1	0	0.3	0	0
304-326		0.3	0.7	2.7	1.3	1.3	1	0.3	0	0	0	0
327-348		0	1	2.3	2	1.7	0	0	0.3	0	0	0

Frequency of counts by wind direction (%)
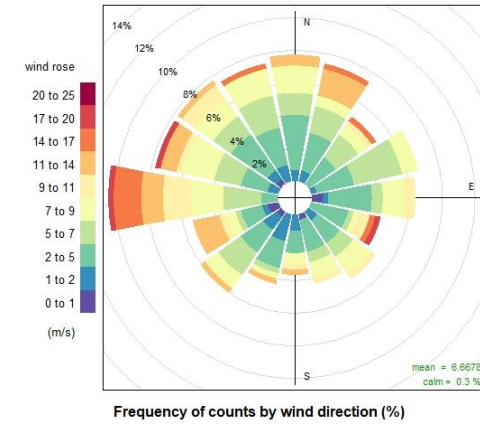
Machilipatnam December 300 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0.4	0	1.1	0	0	0	0	0	0.4	0	0
12-33		0	0	0.4	0	0	0.4	0	0	0	0	0
34-56		0	0	0.4	0	0	0	0	0	0	0	0
57-78		0	0	0.4	0	0	0	0	0	0	0	0
79-101		0	0.4	0	0	0	0.4	0.4	0.4	0	0	0
102-123		0.4	0.7	0.4	0.4	0	0	0	0	0	0	0
124-146		0	0	1.5	0.4	0	0.7	0	0	0	0	0
147-168	1	0	0	0.4	0	0.4	0	0	0.4	0	0	0
168-191		0	0	2.6	1.1	0.7	0.4	0.4	0	0	0	0
192-213		0	0.4	1.1	1.5	1.1	0.7	0.4	1.1	0	0	0
214-236		0.4	0	2.2	1.5	1.5	2.6	0.7	1.1	0.7	1.1	0
237-258		0	0.4	2.6	0.7	2.6	3	2.2	3	3.7	3.7	1.5
259-281		0	0.7	2.6	3.3	2.6	0.4	4.8	3	1.1	1.5	1.1
282-303		0	0.4	1.1	1.5	1.5	1.5	1.1	1.9	1.9	1.1	0.4
304-326		0.4	0	1.1	0.4	0.7	0.7	1.1	1.1	0.4	0	0.4
327-348		0	0	0.7	0.7	0	0	0	0.4	0.4	0.4	0

Frequency of counts by wind direction (%)
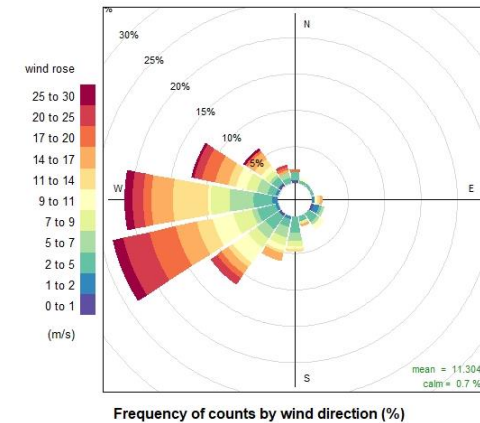
Machilipatnam — December — 200 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0	0.8	0	0	0	0	0	0	0
12-33		0	0	0	0	0	0	0	0	0	0	0
34-56		0	0	0	0	0	0	0	0	0	0	0
57-78		0	0	0	0	0	0	0	0	0	0	0
79-101		0.4	0	0.4	0	0	0.4	0	0.4	0	0	0
102-123		0	0	0.8	0	0	0	0.4	0	0	0	0
124-146		0	0	0.4	0	0	0	0	0.4	0	0	0
147-168	0	0	0	0.4	0.4	0.4	0.8	1.2	0.4	0	0	0
168-191		0.4	0	0.4	0.4	0.8	1.2	0.8	0.4	0.4	0	0.4
192-213		0.4	0.4	1.6	1.2	2.5	1.2	4.1	3.7	0.4	1.2	0
214-236		0	0	0	0.8	2.5	4.1	3.7	2	2	3.7	2.5
237-258		0	0	0.8	0.8	3.7	3.3	2.9	3.7	1.2	5.3	7.4
259-281		0	0	0.8	1.2	0.4	0.4	2	1.2	0.8	2	2.5
282-303		0	0	0	0.8	0.4	0.8	1.2	0.4	0.4	0.8	0.4
304-326		0	0	0.4	0.4	0	0	0	0.4	0	0.4	0
327-348		0	0	0	0.4	0	0	0	0	0	0.4	0

Frequency of counts by wind direction (%)

wind rose
25 to 45
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 15.422
calm = 0 %
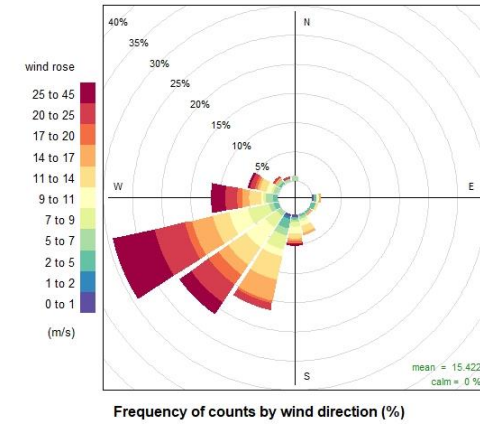
Machilipatnam — December — 100 hPa level

Direction \ Speed	calm	0-1	1-2	2-5	5-7	7-9	9-11	11-14	14-17	17-20	20-25	25 +
349-11		0	0	0.7	0	0	0	0	0	0	0	0
12-33		0	0	0.7	0	0	0	0.7	0	0	0	0
34-56		0.7	0.7	2.2	0	0.7	0	0	0	0	0	0
57-78		0	0	2.2	0.7	0.7	0	0	0	0	0	0
79-101		0	0	2.2	2.2	1.5	0	0.7	0	0	0	0
102-123		0	0.7	2.2	0.7	2.2	0	0.7	0	0	0	0
124-146		0	0.7	3.7	3.7	3.7	0	0.7	0	0	0	0
147-168		0	0	1.5	0.7	0	0	0	0	0	0	0
168-191	0	0	0	0	0.7	0.7	0.7	0	0	0	0	0
192-213		0.7	0	2.2	0	0.7	0	0	0	0	0	0
214-236		0	0.7	2.2	0.7	1.5	0.7	0.7	0	0.7	0	0
237-258		0	0.7	0.7	3	1.5	3.7	1.5	1.5	0.7	0	0
259-281		0.7	0.7	2.2	0.7	1.5	1.5	0.7	2.2	0	0	0.7
282-303		0	0	1.5	1.5	3	0.7	2.2	0	0	0	0
304-326		0	0.7	3	0.7	0.7	1.5	1.5	0.7	0	0	0
327-348		0	0	3	1.5	0	0	0	0.7	0	0	0

Frequency of counts by wind direction (%)

wind rose
25 to 27
20 to 25
17 to 20
14 to 17
11 to 14
9 to 11
7 to 9
5 to 7
2 to 5
1 to 2
0 to 1
(m/s)

mean = 7.597
calm = 0 %
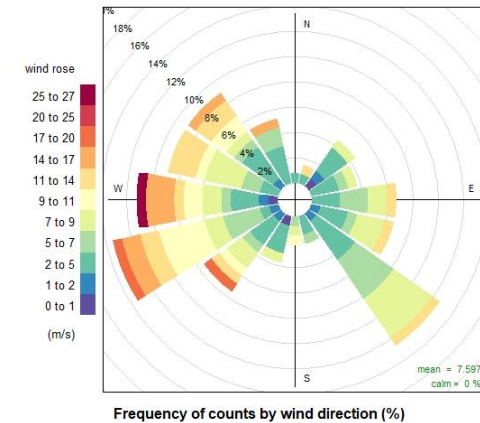
PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1012.8	1018	1008	20.8	29	16.2	19.3	79	1.5	-1.5	-0.3	2.3
1000	120	165	64	21.4	30.2	16.5	19.3	74	2.5	-2.4	-0.7	3.7
950	561	613	480	20	28.4	10	15.7	81	3	-3	-0.5	4.7
925	796	844	739	18.7	27.6	9.2	13.2	73	2.8	-2.7	-0.8	4.6
900	1029	1085	969	17.5	25.2	5.8	10.7	77	3.1	-3	-0.7	4.9
850	1515	1571	1448	15	24.8	5.8	4.8	65	2.9	-2.6	-1.2	5
800	2027	2107	1954	13	23.3	3.2	0.2	49	2.3	-1.7	-1.5	5.1
750	2566	2637	2484	11	23.4	0.9	-4.4	21	1.4	-0.5	-1.3	5.3
700	3139	3220	3045	8.7	23.5	-3.9	-8.6	325	1.2	0.7	-1	5.6
650	3747	3900	3639	5.7	23.5	-13	-11.6	293	2.1	1.9	-0.8	6.3
600	4397	4488	4257	2.2	9.4	-13.4	-14.7	284	3.3	3.2	-0.8	7.4
550	5095	5199	4912	-1.8	5.8	-18.8	-19.6	277	4.3	4.3	-0.5	8.3
500	5846	5961	5617	-6.4	4.6	-24.2	-23.3	272	5.5	5.5	-0.2	9.4
450	6661	6795	6372	-11.6	0.4	-31.5	-28.2	268	7.2	7.2	0.2	11.3
400	7553	7705	7192	-17.5	-3.7	-40.2	-33.9	267	8.9	8.9	0.5	12.8
350	8539	8744	8081	-24.3	-11.5	-50.8	-40.5	264	10.8	10.7	1.1	14.7
300	9645	9905	9061	-32.5	-19.9	-61.3	-47.5	259	12.6	12.3	2.5	15.9
250	10904	11202	10604	-42.5	-27.9	-53.7	-56.7	253	14.3	13.7	4.2	17
200	12371	12698	11998	-54.2	-42.3	-73.1	-66.1	251	14.7	13.9	4.9	17.8
175	13213	13572	12168	-60.8	-48.9	-81.4	-66.9	249	14.2	13.2	5.1	17.1
150	14155	14564	13690	-67.2	-53.3	-82.9	-81.1	249	12.7	11.8	4.6	15.8
125	15229	15709	14733	-73.5	-55.5	-87.9		254	9.1	8.8	2.5	12.3
100	16515	17083	15988	-77.6	-63.7	-89.6		259	5.3	5.2	1	8.3
80	17794	18432	17276	-75.8	-61.4	-87.5		275	2.5	2.5	-0.2	5.7
70	18574	19260	18069	-72.5	-56.5	-83.9		277	1.7	1.7	-0.2	5
60	19370	20040	18989	-68.1	-47.3	-84.5		250	1.2	1.1	0.4	4.9
50	20603	21336	20084	-63	-42.2	-81.7		360	0.1	0	-0.1	4.7
40	21989	22788	21455	-58.8	-43.1	-79.7		56	1.1	-0.9	-0.6	4.5
30	23847	24683	23246	-53.6	-35.3	-80		59	0.6	-0.5	-0.3	4.8
25	25028	25875	24395	-51.9	-36.3	-79.1		338	0.5	0.2	-0.5	4.7
20	26513	27405	25638	-49	-34.1	-81.9		276	1	1	-0.1	5
15	28482	29370	27875	-45.5	-35.5	-58.3		273	2	2	-0.1	3.6
10	31253	32180	30560	-41.5	-33.1	-50.7		277	3.1	3.1	-0.4	5.3
7	33708	34532	32911	-40	-33.5	-48.5		265	5.8	5.8	0.5	5.9

FREEZING LEVEL					FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
574	4767	6260	2579						101	16486	-79.5

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1011.4	1017	1004	22.1	27	17.6	20.4	127	1	-0.8	0.6	2
1000	108	192	13	22.7	31.6	12	20.6	135	1.6	-1.1	1.1	3.4
950	551	637	465	21.7	32.5	13	16.3	142	2.3	-1.4	1.8	4.4
925	788	868	724	21	31	12.8	13.5	144	1.9	-1.1	1.5	4.6
900	1023	1105	965	19.9	28.2	12.2	10.2	127	2	-1.6	1.2	4.6
850	1513	1602	1447	17.3	29.8	10.2	6	82	1.5	-1.5	-0.2	4.8
800	2028	2130	1959	14.1	24.6	2	1.9	40	1.6	-1	-1.2	5.3
750	2568	2691	2499	11	23	3	-2.1	356	1.5	0.1	-1.5	5.6
700	3141	3289	3054	8.3	21.8	-2.3	-7.3	315	1.8	1.3	-1.3	6.1
650	3749	3929	3640	5.4	20.6	-9.3	-10.5	293	2.6	2.4	-1	6.9
600	4399	4617	4270	2.1	19.4	-6.3	-13.8	281	3.6	3.5	-0.7	7.7
550	5097	5360	4947	-1.8	15	-9.5	-17.9	277	5.1	5.1	-0.6	9.1
500	5846	6160	5674	-6.4	13.8	-15.9	-22.9	275	6.2	6.2	-0.5	10.3
450	6662	7046	6458	-11.6	11.8	-22.7	-28.4	272	7.7	7.7	-0.3	11.8
400	7555	7994	7323	-17.6	-1.1	-28.5	-33.9	271	9.8	9.8	-0.2	13.7
350	8541	9042	8273	-24.4	-8.9	-44.5	-40.7	268	11.5	11.5	0.4	15.4
300	9645	9907	9338	-32.4	-17.5	-43.9	-48.7	260	13.9	13.7	2.3	17.5
250	10906	11554	10567	-42.1	-27.7	-52.1	-58.2	255	15	14.5	3.9	17.9
200	12375	13087	12021	-53.8	-39.9	-68.7	-69.4	251	14.7	13.9	4.7	17.8
175	13219	13930	12865	-60.2	-42.9	-73.8		251	13.8	13	4.6	17
150	14160	14867	13811	-66.8	-54.1	-82.5		253	12.4	11.9	3.6	15.5
125	15236	15937	14674	-73.2	-59.2	-87.3		256	9.6	9.3	2.4	13.1
100	16522	17179	16142	-77.8	-62.7	-91.5		266	6.1	6.1	0.4	9.4
80	17794	18398	17318	-76.5	-56.9	-88.3		279	3	3	-0.5	6.8
70	18572	19200	18176	-73.4	-52.8	-90.7		273	2.1	2.1	-0.1	5.7
60	19436	20088	19032	-68.7	-16.9	-83.5		275	2.1	2.1	-0.2	5.2
50	20579	21311	20070	-63.8	-48.9	-79.7		305	1.6	1.3	-0.9	4.9
40	21962	22735	21374	-59	-41.1	-74.5		297	0.4	0.4	-0.2	5.4
30	23772	24563	23286	-55	-34.3	-72.5		315	0.7	0.5	-0.5	6
25	24947	25790	24412	-52.8	-31.3	-69.3		324	1.7	1	-1.4	7.6
20	26417	27385	25786	-50.7	-25.5	-67.1		10	1.1	-0.2	-1.1	7.2
15	28282	29085	27528	-49.5	-41.1	-64.9		318	1.3	0.9	-1	7.4
10	31165	31780	30742	-43.9	-36.5	-49.5		281	5.7	5.6	-1.1	7.4
7	33574	34182	33208	-42	-37.1	-48.3		273	6.7	6.7	-0.4	6.9

FREEZING LEVEL			
P	Height	H_max	H_min
574	4766	6200	2870

FIRST TROPOPAUSE		
P	Height	Temp

SECOND ROPOPAUSE		
P	Height	Temp
102	16455	-79.7

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1009.3	1015	1003	24	29	18.8	22.5	180	1.7	0	1.7	2.1
1000	89	141	43	24.5	34.3	18	22.6	185	2.4	0.2	2.4	3.2
950	535	590	410	23.9	32	14.6	17.2	188	3.6	0.5	3.6	4.9
925	773	824	679	23.8	31.8	13.7	13.4	189	3	0.5	3	4.7
900	1012	1064	959	23	32	9.2	9.4	178	2.8	-0.1	2.8	4.6
850	1507	1563	1435	20.5	29	9.6	5.7	138	1.5	-1	1.1	4.3
800	2027	2090	1953	16.9	25.6	6.8	3.4	57	1.7	-1.4	-0.9	4.7
750	2572	2640	2486	12.7	22.7	3.2	0.9	23	2.8	-1.1	-2.6	5.5
700	3148	3235	3044	8.6	20.4	0	-3.3	4	3	-0.2	-3	6
650	3755	3845	3633	5	17.6	-53.4	-8.5	346	2.9	0.7	-2.8	6.1
600	4405	4527	4140	1.5	11.6	-65.6	-13.5	322	2.8	1.7	-2.2	6.4
550	5103	5229	4668	-2.2	7.2	-66.1	-18.3	300	3.2	2.8	-1.6	7.1
500	5852	6001	5245	-6.6	3.3	-66.7	-22.6	287	4.2	4	-1.2	8.2
450	6667	6836	5862	-11.7	-3.1	-79.4	-26.9	279	5.5	5.4	-0.9	9.6
400	7559	7743	6531	-17.6	-8.9	-79.9	-31.6	272	7.5	7.5	-0.2	11.6
350	8546	8753	7284	-24.3	-13.9	-80.3	-37.9	266	9.8	9.8	0.7	13.7
300	9652	9913	8152	-32.3	-22	-80.9	-45	259	11.8	11.6	2.2	15.5
250	10911	11229	9172	-42	-29.5	-83.6	-54.7	254	14.1	13.5	3.9	17.3
200	12382	12779	10403	-53.3	-39.9	-84.6	-65.5	251	14	13.2	4.6	17.1
175	13227	13604	11138	-59.7	-49.1	-87.5	-60.6	251	13.1	12.4	4.2	16.3
150	14171	14587	11394	-66.1	-56	-77.5	-66.5	255	11.4	11	3	14.6
125	15257	15722	14857	-72.3	-59.7	-85.9		258	8.8	8.6	1.8	12.1
100	16547	17087	16061	-77.3	-61.1	-89.5		265	5.2	5.2	0.5	9.2
80	17827	18419	17338	-75.7	-60.5	-88.9		268	2.3	2.3	0.1	6.4
70	18612	19250	18097	-72.2	-54.7	-85.7		264	2	2	0.2	5.6
60	19364	19993	19003	-67.6	-51.1	-81.1		267	2	2	0.1	5.6
50	20640	21272	20114	-62.6	-50.5	-74.5		287	1	1	-0.3	5.4
40	22040	22757	21527	-57.8	-40.9	-84.9		61	1	-0.9	-0.5	5
30	23887	24729	23401	-52.7	-37.1	-65.9		62	1.7	-1.5	-0.8	5
25	25077	25995	24578	-50.2	-35.1	-61.3		71	2.4	-2.3	-0.8	5.1
20	26534	27333	25994	-48.3	-40.1	-58.5		53	2	-1.6	-1.2	5.7
15	28464	29228	27852	-45.2	-35.3	-52.9		11	0.5	-0.1	-0.5	5.7
10	31210	32018	30811	-41.8	-34.1	-49.3		277	2.5	2.5	-0.3	6.7
7	33616	34385	33173	-40.4	-33.5	-48.3		268	2.7	2.7	0.1	3.7

FREEZING LEVEL					FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
579	4702	6350	3090						100	16571	-78.7

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1007	1012	1001	26.5	30.6	21.6	24.5	184	2.6	0.2	2.6	3.1
1000	71	197	13	26.7	37	21.8	24.9	191	3.3	0.6	3.2	3.9
950	520	619	400	25.5	35	15.6	20.9	197	5.1	1.5	4.9	6.2
925	762	848	702	25.2	34.6	14.8	17.7	199	4.3	1.4	4.1	5.5
900	1000	1083	927	25	37	13.8	12.9	192	4	0.8	3.9	5.3
850	1499	1567	1445	22.9	32.2	9.8	7.9	164	1.9	-0.5	1.8	4.1
800	2024	2116	1948	19.5	27.2	6.8	4.9	79	1.5	-1.5	-0.3	4.3
750	2574	2660	2479	15.3	23.8	3.2	2.3	46	2.8	-2	-1.9	5.2
700	3155	3249	3042	10.5	18.8	-2.1	-0.6	32	3.6	-1.9	-3.1	6
650	3765	3879	3643	5.8	13.6	-5.9	-4.7	19	3.7	-1.2	-3.5	6.3
600	4416	4547	4282	1.6	11.2	-10.3	-9.4	8	3	-0.4	-3	6.1
550	5113	5265	4965	-2.2	6.2	-12.3	-15.4	347	2.2	0.5	-2.1	5.9
500	5863	6038	5696	-6.2	1.6	-17.5	-20.6	305	2.1	1.7	-1.2	6.6
450	6680	6877	6488	-10.9	-1.9	-24.1	-24.9	282	3.4	3.3	-0.7	7.9
400	7576	7795	7367	-16.7	-5.7	-30.3	-30.4	271	5	5	-0.1	9.5
350	8565	8807	8301	-23.3	-10.7	-38.5	-36.3	264	7.1	7.1	0.7	11.4
300	9676	9936	9339	-31.2	-20.9	-47.9	-43.9	256	9.8	9.5	2.3	13.3
250	10942	11216	10508	-41	-30.3	-60.5	-53	249	12.1	11.3	4.4	15.3
200	12419	12714	11856	-52.5	-38.1	-74.3	-62.9	245	12.6	11.4	5.4	15.4
175	13267	13597	12603	-58.9	-44.1	-89.7	-67.8	245	11.7	10.6	5	14.6
150	14218	14579	13436	-65.4	-50.4	-86.7	-70.6	247	9.8	9	3.9	12.8
125	15304	15721	14443	-71.9	-59.1	-88.9		254	5.9	5.7	1.6	10
100	16600	17088	15720	-76.9	-62.1	-88.8		261	1.8	1.8	0.3	7.8
80	17882	18420	17073	-74.7	-58.3	-84.7		63	0.7	-0.6	-0.3	5.7
70	18671	19201	17899	-70.7	-55	-86.3		90	0.4	-0.4	0	4.8
60	19390	19988	18875	-65.8	-50.9	-79.5		63	0.2	-0.2	-0.1	4.7
50	20717	21330	20198	-60.7	-44.5	-73.3		34	0.4	-0.2	-0.3	4.9
40	22111	22741	21543	-55.9	-42.9	-66.5		75	2.3	-2.2	-0.6	5.9
30	23963	24657	23302	-51.1	-33.9	-66.3		76	3.3	-3.2	-0.8	6.4
25	25141	25898	24449	-49	-38.3	-64.9		82	4.8	-4.7	-0.7	7.5
20	26669	27405	25946	-45.8	-36.5	-59.5		79	6	-5.9	-1.1	8.3
15	28622	29389	27746	-43.2	-34.5	-59.5		86	4.1	-4.1	-0.3	7.4
10	31419	32221	30304	-40.1	-27.3	-53.5		138	2.5	-1.7	1.9	8.8
7	33846	34468	32640	-38.8	-27.9	-47.5		195	4.1	1.1	4	10.3

	FREEZING LEVEL				FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
578	4728	6350	2950						101	16565	-78.1

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1003.6	1011	991	28.6	33.6	23.4	25.5	205	2.6	1.1	2.4	3.8
1000	43	145	-3	28.7	39.2	20.2	25.8	204	3	1.2	2.7	4.1
950	494	595	382	27.8	38.1	17.9	22.4	220	5.6	3.6	4.3	7.9
925	736	827	674	27.5	39	16.8	19.7	226	5	3.6	3.5	7.6
900	976	1065	867	26.5	37.4	14.4	17	227	4.7	3.4	3.2	7.8
850	1479	1560	1360	24.1	33.5	12.3	12.8	249	2.5	2.3	0.9	6.2
800	2006	2079	1904	20.9	30.8	9.6	9.4	321	1.3	0.8	-1	5.4
750	2559	2633	2440	16.8	26.2	6.3	5.7	9	2.4	-0.4	-2.4	5.7
700	3144	3228	3010	12.3	23.3	1.3	2.4	18	3.8	-1.2	-3.6	6.3
650	3758	3853	3600	7.4	18	-1.9	-0.8	22	4.6	-1.7	-4.3	7
600	4413	4517	4250	2.6	11.2	-4.5	-5	23	4.8	-1.9	-4.4	7.3
550	5113	5236	4917	-1.6	8	-8.5	-10	27	4.2	-1.9	-3.8	7
500	5865	6011	5667	-5.3	4.4	-15.3	-15.5	28	3.2	-1.5	-2.8	6.8
450	6687	6850	6470	-9.3	3.6	-17.5	-21.3	18	2.2	-0.7	-2.1	7.1
400	7589	7769	7353	-14.5	-5.5	-26.1	-26	352	1.4	0.2	-1.4	7.4
350	8587	8785	8324	-21	-10.1	-32.7	-32.4	287	1.4	1.3	-0.4	7.3
300	9709	9974	9416	-29.1	-18.1	-39.5	-39.5	259	2.1	2.1	0.4	7.1
250	10984	11302	10673	-38.9	-27.5	-49.2	-49.3	234	2.7	2.2	1.6	7.4
200	12475	12852	12120	-50.9	-30.5	-62.1	-61.1	205	2.9	1.2	2.6	8.4
175	13331	13736	12932	-57.7	-47.1	-73.9	-62.2	176	2.8	-0.2	2.8	9.1
150	14282	14700	13836	-65.1	-54.1	-78.8	-67.3	139	3.7	-2.4	2.8	9.8
125	15370	15814	14871	-72.3	-60.1	-84.7		110	5.6	-5.3	1.9	10.8
100	16665	17179	16101	-76.9	-64.3	-88.9		96	8.1	-8.1	0.8	11.1
80	17953	18525	17356	-73.9	-57.3	-86.7		91	8	-8	0.1	9.4
70	18743	19380	18131	-69.4	-53.9	-85.5		88	6.9	-6.9	-0.2	8.2
60	19158	20007	19034	-64.4	-49.9	-79.3		89	5.6	-5.6	-0.1	7
50	20797	21394	20148	-59.2	-46.3	-75.1		82	6.4	-6.3	-0.9	7.4
40	22208	22766	21529	-55.2	-43.3	-68.1		86	7.4	-7.4	-0.5	8.1
30	24065	24712	23349	-50.8	-39.1	-61.9		91	10	-10	0.1	10.5
25	25258	25920	24518	-48.8	-36.1	-60.3		92	11.4	-11.4	0.3	11.9
20	26748	27502	26119	-46.5	-35.7	-55.7		91	13	-13	0.3	13.6
15	28741	29498	27970	-44.1	-34.3	-53.3		93	13.7	-13.7	0.6	14.5
10	31545	32324	30673	-40.6	-32.5	-50.7		93	6.9	-6.9	0.4	8.6
7	33752	34142	33400	-40.9	-36.7	-46.3		340	1.5	0.5	-1.4	5.6

FREEZING LEVEL					FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
567	4872	6810	3180						101	16657	-78.5

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1001.5	1007	990	28.4	35	23	24.3	251	4	3.8	1.3	5
1000	28	73	-36	28.5	33.9	23	24.5	247	4	3.7	1.6	5
950	476	545	400	27.3	37	20.2	21.8	254	8.2	7.9	2.2	10.3
925	717	771	643	26.2	34.8	18.8	20.1	253	7.7	7.4	2.3	10.5
900	956	1017	883	24.8	35.8	14	18.7	266	9	9	0.7	11.8
850	1455	1525	1379	21.8	32.6	10.7	16	273	8	8	-0.4	11.2
800	1979	2056	1895	18.6	30.2	6.3	13.2	277	6.5	6.5	-0.8	9.6
750	2530	2624	2439	15.2	27	5.6	10.1	281	5.1	5	-1	8.5
700	3112	3196	3010	11.6	22.6	5	6.4	284	3.8	3.7	-0.9	7.8
650	3727	3829	3617	7.9	18.4	0.8	2.5	286	3.3	3.2	-0.9	7.7
600	4384	4493	4268	4.1	11.4	-3.9	-1.3	290	2.9	2.7	-1	7.5
550	5089	5205	4967	0.1	8	-8.3	-5.3	291	2.6	2.4	-0.9	7.1
500	5845	5992	5716	-3.9	4.6	-13.7	-10.2	291	1.9	1.8	-0.7	6.4
450	6670	6834	6514	-8.4	0.8	-18.3	-15.6	304	1.1	0.9	-0.6	5.9
400	7576	7770	7392	-13.7	-5.1	-25.7	-21.3	27	0.9	-0.4	-0.8	5.5
350	8578	8787	8372	-20.2	-10.9	-29.5	-27.7	70	2.7	-2.5	-0.9	5.9
300	9704	9966	9472	-28.2	-17.7	-39.9	-35.8	77	5	-4.9	-1.1	7.2
250	10987	11286	10726	-38.2	-27.1	-48.9	-45.9	80	7.8	-7.7	-1.3	9.8
200	12481	12830	12160	-50.5	-37.9	-63.3	-57.3	80	11.7	-11.5	-2	13.6
175	13335	13718	12984	-57.7	-43.9	-70.3	-63.1	80	14.2	-14	-2.4	16.4
150	14288	14713	13922	-65.4	-50.3	-75.5	-70.4	81	16.7	-16.5	-2.6	18.9
125	15370	15845	15016	-73	-57	-83.7		84	19.2	-19.1	-2	21.6
100	16663	17192	16260	-77.4	-62.1	-88.7		90	20.2	-20.2	-0.1	21.6
80	17960	18538	17481	-73	-54.7	-88.5		91	16.2	-16.2	0.2	17
70	18755	19400	18202	-68.5	-51.9	-86.7		89	13.7	-13.7	-0.2	14.4
60	19217	19998	19280	-63.5	-49.1	-81.7		87	11.9	-11.9	-0.6	12.5
50	20821	21439	20385	-59.4	-45.3	-71.5		87	11.8	-11.8	-0.7	12.8
40	22245	22894	21719	-55.3	-38.5	-68.1		89	12.6	-12.6	-0.2	13.4
30	24091	24823	23471	-51.2	-37.7	-62.1		91	12.9	-12.9	0.2	13.3
25	25275	26001	24595	-48.9	-35.1	-59.3		90	14.3	-14.3	0.1	14.7
20	26753	27649	26029	-46.5	-32.1	-57.7		89	15.3	-15.3	-0.2	15.6
15	28719	29497	28059	-43.9	-33.7	-56.7		88	13.9	-13.9	-0.6	15.1
10	31410	32343	30747	-41.2	-29.1	-54.5		94	10.2	-10.2	0.8	10.4
7	33726	34302	33328	-40.8	-36.1	-44.7		76	4.4	-4.3	-1.1	4.4

FREEZING LEVEL					FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
549	5118	6800	3900						103	16546	-79

Machilipatnam   **43185**   **Station height**   **22**   **July**

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1002.4	1009	989	26.9	31.4	23	22.8	257	4.4	4.3	1	5.1
1000	32	196	-25	27.2	36.4	23.4	24.3	251	4.3	4.1	1.4	5.1
950	480	590	333	25.8	34.2	17.6	21.3	256	8.9	8.7	2.1	10.8
925	717	824	665	24.6	32.6	16.6	19.8	257	9	8.8	2.1	11.9
900	958	1064	830	23.1	31	15.4	18.9	267	9.9	9.9	0.6	12.8
850	1454	1559	1326	20.2	31	12.2	16.3	274	9.3	9.3	-0.6	12.6
800	1976	2078	1838	17.2	25.4	9	13.9	277	8.7	8.6	-1	11.7
750	2523	2623	2398	14	23	6.2	10.8	276	7.8	7.8	-0.8	10.7
700	3104	3205	2953	10.8	20	2.2	7.4	273	6.8	6.8	-0.4	9.7
650	3718	3822	3557	7.6	16.2	0.4	3.6	272	6.4	6.4	-0.2	9.2
600	4375	4492	4212	4.2	12.6	-2.9	-0.3	271	5.4	5.4	-0.1	8.4
550	5080	5214	4947	0.6	9.6	-6.9	-4.5	270	4	4	0	7.3
500	5839	5998	5658	-3.3	7	-11.7	-9.1	272	2.6	2.6	-0.1	6.4
450	6666	6850	6503	-7.9	3.2	-16.5	-14.2	276	1	1	-0.1	5.6
400	7574	7970	7400	-13.3	-4.9	-21.3	-20.1	75	1.6	-1.5	-0.4	5.7
350	8576	8814	8391	-19.8	-9.5	-27.9	-26.7	79	4.2	-4.1	-0.8	6.8
300	9704	9993	9498	-27.9	-17.3	-35.7	-35.2	81	7.1	-7	-1.1	8.9
250	10987	11326	10758	-38	-23.9	-48.3	-45.5	81	10.7	-10.6	-1.6	12.4
200	12482	12897	12212	-50.4	-36.5	-62.5	-57.3	79	16	-15.7	-3	17.6
175	13339	13811	13039	-57.3	-43.1	-68.5	-62.9	77	19.6	-19.1	-4.3	21.4
150	14292	14832	13944	-64.9	-49.5	-78.7	-68.5	76	22.2	-21.6	-5.2	24.3
125	15381	15905	14971	-72.5	-55.1	-84.3		79	25.3	-24.9	-4.7	27.4
100	16672	17287	16228	-76	-57.9	-87.5		86	25.3	-25.2	-1.8	26.5
80	17974	18659	17543	-69.9	-57.7	-84.7		89	19.2	-19.2	-0.4	19.6
70	18778	19550	18352	-65.9	-54.7	-83.1		88	16.4	-16.4	-0.7	16.7
60	18632	19997	19274	-62.6	-49.7	-77.9		87	15.3	-15.3	-0.8	15.5
50	20857	21628	20381	-59.1	-42.7	-72.1		87	14.6	-14.6	-0.7	14.9
40	22284	23062	21758	-55.6	-40.5	-66.7		88	14.7	-14.7	-0.5	14.9
30	24146	24940	23518	-52.2	-38.1	-63.3		89	13.7	-13.7	-0.2	14.1
25	25333	26147	24645	-50.4	-37.9	-61.7		92	10.2	-10.2	0.4	10.3
20	26831	27635	26037	-47.9	-34.9	-59.7		93	10.3	-10.3	0.5	10.4
15	28776	29589	27844	-44.8	-36.1	-56.1		92	9.3	-9.3	0.4	9.5
10	31435	32102	30430	-42.3	-33.1	-55.1		93	8.4	-8.4	0.5	8.4
7	33824	34437	32721	-40	-32.1	-52.3		98	9.6	-9.5	1.4	9.7

FREEZING LEVEL					FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
543	5199	6910	3560						107	16309	-78

PRESSURE	HEIGHT	Hmax	Hmin	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1003	1009	995	26.8	30	23.2	23.9	258	4.2	4.1	0.9	4.8
1000	37	98	-14	27	33.3	23	24.2	251	4.3	4.1	1.4	5.2
950	484	543	400	25.5	33.2	17.2	21.1	259	8.2	8	1.6	10.1
925	724	778	640	24.1	29.8	16	19.6	259	7.6	7.5	1.5	10.5
900	963	1038	892	22.7	31.2	15.2	18.5	271	8.8	8.8	-0.1	11.5
850	1459	1538	1389	19.8	28	12.6	16.1	280	8.4	8.3	-1.5	11.3
800	1979	2063	1909	16.7	28.8	10	13.5	284	7.9	7.7	-1.9	10.8
750	2526	2659	2437	13.6	28.3	5.4	10.5	283	7.3	7.1	-1.6	10.1
700	3105	3205	3014	10.5	19.4	3.4	6.8	281	6.4	6.3	-1.2	9.1
650	3719	3830	3613	7.4	16.4	0.2	2.8	281	6	5.9	-1.1	8.5
600	4375	4497	4253	4.1	12.6	-3.3	-1.3	280	5.1	5	-0.9	7.7
550	5079	5214	4938	0.5	11.6	-8.8	-5.2	283	4.1	4	-0.9	7.1
500	5838	5987	5682	-3.4	8	-12.9	-9.9	286	2.6	2.5	-0.7	6.3
450	6664	6833	6527	-8.1	5	-18.5	-14.9	319	1.1	0.7	-0.8	5.8
400	7571	7766	7414	-13.5	-3	-26.7	-20.7	48	1.3	-1	-0.9	5.9
350	8573	8803	8372	-20.1	-7.9	-33.1	-27.6	74	3.6	-3.5	-1	6.8
300	9699	9977	9431	-28.4	-14.3	-48.3	-36.1	78	6.3	-6.2	-1.3	8.7
250	10978	11325	10628	-38.6	-24.9	-63.1	-46.2	79	9.9	-9.7	-1.8	12.1
200	12470	12864	12016	-50.8	-40.3	-66.3	-58.5	78	14.5	-14.2	-3.1	16.7
175	13323	13768	12813	-58	-44.9	-72.1	-63.5	77	17.9	-17.4	-4	19.8
150	14272	14776	13708	-65.5	-52.3	-77.7	-70.3	77	20.7	-20.2	-4.6	22.6
125	15355	15764	14963	-73.3	-60.1	-83.3		80	23.7	-23.4	-4	25.5
100	16649	17057	16213	-75.9	-60.3	-88.9		87	22.8	-22.8	-1.3	23.9
80	17956	18421	17527	-70	-57.7	-84.5		89	18.5	-18.5	-0.2	18.8
70	18758	19266	18300	-66.2	-51.3	-79.9		88	16.1	-16.1	-0.5	16.5
60	19099	19988	19216	-62.8	-51.9	-75.1		86	15.1	-15.1	-1	15.4
50	20824	21386	20309	-60	-47.9	-75.1		85	14.6	-14.6	-1.2	15
40	22238	22843	21675	-56.6	-37.1	-67.5		88	15.2	-15.2	-0.4	15.5
30	24079	24751	23471	-53.6	-44.5	-63.9		87	15.5	-15.5	-0.8	15.7
25	25257	25945	24621	-51.1	-41.9	-61.9		86	14.7	-14.7	-0.9	15.5
20	26730	27493	26211	-48.8	-38.9	-59.3		86	16.3	-16.3	-1.2	16.6
15	28626	29473	28030	-46.4	-36.3	-55.9		89	18.3	-18.3	-0.2	18.8
10	31276	31628	30708	-44.4	-32.7	-56.9		92	9.4	-9.4	0.4	9.7
7	33749	34104	33353	-41.8	-33.3	-53.1		82	9.2	-9.1	-1.3	9.2

FREEZING LEVEL			
P	Height	H_max	H_min
544	5196	6890	3760

FIRST TROPOPAUSE		
P	Height	Temp

SECOND TROPOPAUSE		
P	Height	Temp
107	16300	-77.9

PRESSURE	HEIGHT	H max	H min	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1004.8	1011	943	26.7	32.2	23	24.5	249	2.5	2.3	0.9	3.5
1000	52	114	-3	26.9	33.4	18.4	24.7	242	2.7	2.4	1.3	4.1
950	500	571	400	25.6	33.7	16.4	21.5	247	4.4	4.1	1.7	7
925	736	798	670	24.3	31.7	11.2	19.6	250	4	3.8	1.4	7.3
900	979	1035	910	22.9	31.6	11.1	18.3	261	4	4	0.6	7.4
850	1474	1531	1403	19.9	27	11.6	15.5	278	3.5	3.5	-0.5	7.2
800	1994	2065	1911	16.8	25	8.9	12.6	288	3.5	3.3	-1.1	7.2
750	2540	2625	2451	13.6	23.6	4.4	9	294	3.2	2.9	-1.3	7.2
700	3120	3213	3023	10.4	25.9	3.3	5.3	299	2.6	2.3	-1.3	6.7
650	3732	3837	3625	7.1	14.2	-2.9	1.2	305	1.9	1.6	-1.1	6.2
600	4388	4501	4272	3.7	11	-6.3	-2.7	309	1.3	1	-0.8	5.8
550	5091	5216	4955	0.1	8	-12.1	-7.1	326	0.7	0.4	-0.6	5.7
500	5849	5989	5694	-3.9	4	-16.9	-11.8	39	0.6	-0.4	-0.5	5.5
450	6674	6826	6489	-8.6	-1.5	-22.9	-17	67	1.3	-1.2	-0.5	5.6
400	7578	7740	7342	-14.1	-6.3	-29.9	-23	80	2.3	-2.3	-0.4	5.6
350	8576	8762	8276	-20.9	-11.9	-39.1	-30.2	85	3.6	-3.6	-0.3	6.4
300	9700	9921	9310	-29	-19.5	-48.9	-38.2	84	4.9	-4.9	-0.5	7.4
250	10975	11243	10475	-39.3	-28.9	-59.9	-48.4	83	7.5	-7.4	-0.9	9.9
200	12461	12801	12125	-51.7	-39.3	-65.5	-60.5	80	11	-10.8	-2	13.9
175	13312	13696	12956	-58.9	-45.9	-71.5	-65	79	13.1	-12.9	-2.5	16.2
150	14264	14693	13882	-66.2	-50.9	-80.7	-70.6	79	15.1	-14.8	-2.9	18.4
125	15345	15832	14921	-73.4	-59.3	-84.9		83	17.1	-17	-2	20.4
100	16641	17199	16196	-75.3	-60.8	-87.1		88	16.3	-16.3	-0.6	18.2
80	17950	18584	17508	-69.5	-56.4	-87.7		89	13.5	-13.5	-0.3	14.2
70	18758	19432	18318	-65.5	-53.1	-87.1		86	12.3	-12.3	-0.8	12.9
60	18894	19998	19250	-62.2	-47.9	-77.3		87	12.2	-12.2	-0.6	12.7
50	20826	21616	20370	-59.1	-46.1	-69.5		87	12.9	-12.9	-0.7	13.3
40	22233	22921	21750	-56.2	-40.3	-66.5		89	13.5	-13.5	-0.3	13.6
30	24077	24837	23545	-52.8	-40.5	-63.9		88	15.2	-15.2	-0.4	15.4
25	25270	26067	24774	-50.8	-38.5	-62.7		90	17.4	-17.4	0.1	17.7
20	26706	27512	26139	-49.3	-37.9	-60.5		93	15.4	-15.4	0.7	15.7
15	28652	29492	28088	-46.6	-34.3	-55.5		95	14.7	-14.7	1.2	14.9
10	31364	32127	30725	-43.2	-34.4	-55.3		90	4.6	-4.6	0	4.6
7	33743	34346	33129	-44	-36.9	-53.7		93	6.5	-6.5	0.3	6.5

FREEZING LEVEL					FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H max	H min		P	Height	Temp		P	Height	Temp
549	5118	6550	3450						108	16241	-78.2

PRESSURE	HEIGHT	H max	H min	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1007.8	1014	993	25.3	28.4	19.4	23.6	23	0.8	-0.3	-0.7	2.8
1000	77	127	-7	25.6	31.6	20.4	23.6	41	0.9	-0.6	-0.7	3.4
950	523	582	395	24.4	31.8	17.2	20	55	1.6	-1.3	-0.9	5.6
925	761	814	629	23.2	31.2	14.8	18	56	2.2	-1.8	-1.2	5.8
900	1000	1066	868	21.7	29.8	14.8	15.8	56	2.3	-1.9	-1.3	6
850	1493	1556	1365	18.8	26.2	10.6	12.3	51	2.6	-2	-1.6	6.1
800	2011	2079	1885	15.7	22.8	8.8	9.1	48	2.5	-1.9	-1.7	6.1
750	2556	2635	2434	12.6	20.2	3.2	5.4	43	2.5	-1.7	-1.8	6.1
700	3132	3220	3008	9.7	18.4	-1.7	2	43	2.1	-1.4	-1.5	5.8
650	3744	3843	3620	6.6	15.6	-1.3	-1.7	50	1.7	-1.3	-1.1	5.7
600	4398	4517	4278	3.2	11.8	-5.3	-5.2	67	1.5	-1.4	-0.6	5.4
550	5099	5242	4977	-0.5	8.2	-9.9	-9.4	82	1.4	-1.4	-0.2	5.4
500	5855	6020	5729	-4.7	3.2	-14.1	-14.4	86	1.5	-1.5	-0.1	5.4
450	6677	6857	6527	-9.4	-1.3	-19.9	-19.6	86	1.5	-1.5	-0.1	5.5
400	7579	7759	7439	-15.1	-7.3	-23.9	-25.5	99	1.2	-1.2	0.2	5.4
350	8574	8766	8352	-21.9	-11.9	-32.7	-32.4	120	1.4	-1.2	0.7	5.6
300	9693	9909	9426	-30.1	-19.3	-44.7	-40	125	1.6	-1.3	0.9	5.9
250	10964	11227	10656	-40.4	-27.5	-52.6	-50.5	129	1.9	-1.5	1.2	7
200	12440	12766	12087	-52.9	-40.1	-74.3	-62.8	127	3	-2.4	1.8	8.8
175	13285	13616	12868	-59.8	-43.2	-76.3	-62.9	120	3.4	-2.9	1.7	9.7
150	14230	14599	13734	-67.3	-48.2	-85.6	-68.6	109	4	-3.8	1.3	9.8
125	15295	15703	14656	-74.4	-57.6	-89.3		105	5.3	-5.1	1.4	10.1
100	16583	17400	16120	-76.5	-53.9	-86.7		93	5.9	-5.9	0.3	8.6
80	17875	18800	17469	-71.3	-58.4	-84.3		91	5.9	-5.9	0.1	7.3
70	18671	19220	17786	-67.4	-53.5	-82.9		90	6.1	-6.1	0	7.1
60	19428	20700	19203	-63.4	-48	-76.5		82	6.9	-6.8	-0.9	7.7
50	20746	21356	19860	-59.6	-45.1	-71.4		82	8.2	-8.1	-1.1	8.9
40	22148	22806	21260	-56.1	-42.1	-68.7		89	9.8	-9.8	-0.1	10.1
30	23994	24710	23089	-52.2	-37.9	-65.1		87	10.9	-10.9	-0.5	11.4
25	25164	25900	24586	-50.3	-35.4	-62.1		92	12.3	-12.3	0.5	12.6
20	26638	27441	25976	-48.4	-35.7	-64.1		91	13	-13	0.2	13.8
15	28584	29404	27667	-45.6	-32.3	-65.4		94	15.7	-15.7	1	16.6
10	31482	32206	30926	-41.4	-35.3	-47.1		103	16.3	-15.9	3.7	16.8
7	33737	34380	33319	-41.2	-32.5	-46.5		97	18.2	-18.1	2.2	18.9

FREEZING LEVEL				FIRST TROPOPAUSE			SECOND TROPOPAUSE		
P	Height	H max	H min	P	Height	Temp	P	Height	Temp
557	5008	6530	3010				108	16181	-78.6

Machilipatnam   **43185**   **Station height**   **22**   **November**

PRESSURE	HEIGHT	H max	H min	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1010.9	1017	994	22.9	28.2	16.6	20.7	48	2.8	-2.1	-1.9	3.6
1000	103	193	17	23.5	30.1	16.8	20.9	50	3.9	-3	-2.5	4.8
950	547	637	372	22.4	29.8	14.2	17.4	59	5.4	-4.6	-2.8	6.7
925	782	867	703	21.1	26.4	14	15.2	57	5.1	-4.3	-2.8	6.5
900	1019	1102	872	19.6	28.2	12	12.9	60	5.3	-4.6	-2.7	6.9
850	1509	1589	1366	16.9	26	9	8.9	57	4.9	-4.1	-2.7	6.7
800	2023	2103	1888	14.4	23	5.8	5.2	53	4	-3.2	-2.4	6.1
750	2566	2638	2415	12	21.6	2.6	2.1	54	3.2	-2.6	-1.9	5.7
700	3141	3233	3020	9.4	18	-0.9	-0.8	53	2.5	-2	-1.5	5.4
650	3752	3839	3610	6.5	16.8	-4.3	-5	53	2	-1.6	-1.2	5.6
600	4405	4508	4292	3.1	12	-7.7	-8.4	52	1.8	-1.4	-1.1	5.6
550	5105	5219	4983	-0.7	8.2	-12.3	-12.6	48	1.5	-1.1	-1	5.7
500	5860	5990	5722	-5	5.2	-19.1	-17.2	27	1.1	-0.5	-1	5.9
450	6680	6841	6526	-10.1	2.2	-16.3	-22.6	353	0.8	0.1	-0.8	6.2
400	7579	7782	7416	-15.8	-2.6	-24.5	-28.3	297	1.3	1.2	-0.6	6.6
350	8571	8809	8382	-22.6	-9	-33.3	-34.6	266	2.7	2.7	0.2	7.1
300	9686	9985	9467	-30.9	-14.2	-42.8	-42.9	249	4.7	4.4	1.7	8
250	10952	11306	10708	-41.2	-21.1	-60.5	-53.1	235	6.7	5.5	3.9	9.8
200	12427	12847	12098	-53.4	-36.2	-70.7	-64.1	222	8.1	5.4	6.1	11.4
175	13269	13730	12869	-60.3	-42.7	-80.7	-64	220	8.1	5.2	6.2	11.6
150	14215	14712	13479	-67.2	-52.1	-80.1		222	6.3	4.2	4.7	10.3
125	15285	16000	14874	-74.2	-57.3	-89.7		226	3.9	2.8	2.7	8.5
100	16570	17400	15928	-77.2	-62.3	-88.3		171	0.6	-0.1	0.6	6.7
80	17865	18800	17267	-72.5	-53	-84.5		97	2.6	-2.6	0.3	6.3
70	18653	19307	17900	-68.8	-50.8	-85.7		92	2.3	-2.3	0.1	5.4
60	19407	20191	18898	-64.3	-46.7	-78.3		90	2.6	-2.6	0	5.4
50	20703	21461	20088	-60	-43.3	-78.7		89	4.3	-4.3	-0.1	6.4
40	22110	22932	21508	-55.9	-37.9	-76.5		87	6.9	-6.9	-0.4	8.4
30	23964	24839	23414	-52.3	-34.7	-68.9		87	8.5	-8.5	-0.4	9.8
25	25141	26066	24555	-50.9	-36.1	-63.9		89	8.9	-8.9	-0.2	10.4
20	26631	27595	25971	-48.3	-34.1	-62.3		91	9.3	-9.3	0.1	10.7
15	28529	29606	27829	-45.8	-30.7	-62.3		93	7.9	-7.9	0.4	9.7
10	31268	32461	30542	-43.4	-30.9	-63.3		95	7.1	-7.1	0.6	7.5
7	33667	34190	32912	-41.2	-34.3	-64.9		95	7.9	-7.9	0.7	8.4

	FREEZING LEVEL				FIRST TROPOPAUSE				SECOND TROPOPAUSE		
P	Height	H_max	H_min		P	Height	Temp		P	Height	Temp
559	4983	6400	2890						106	16267	-78.9

PRESSURE	HEIGHT	H max	H min	TEMP	TMAX	TMIN	DEWPT	DIR	VELO	U	V	VM
SURFACE	1013.3	1018	1007	20.9	26.2	16.8	19.2	62	2.7	-2.4	-1.3	3.3
1000	122	184	26	21.7	28.1	17.4	19.2	62	4.1	-3.6	-1.9	4.7
950	563	629	472	20.6	28.6	13.4	15.7	68	5.1	-4.7	-1.9	6
925	795	858	703	19.1	25.4	8	12.9	61	4.7	-4.1	-2.3	5.6
900	1032	1092	919	17.8	26.8	10.4	11.1	66	4.9	-4.5	-2	5.9
850	1519	1576	1396	15.3	26.2	6.2	6.2	62	4.5	-4	-2.1	6
800	2031	2095	1940	13.5	23	4.6	0.8	62	3.6	-3.2	-1.7	5.7
750	2572	2699	2479	11.7	21.4	2.8	-2.7	57	2.7	-2.3	-1.5	5.5
700	3146	3280	3004	9.4	20	1.2	-5.7	43	2.3	-1.6	-1.7	5.6
650	3756	3893	3600	6.4	15.8	-0.3	-9.2	28	1.7	-0.8	-1.5	5.8
600	4408	4544	4236	2.9	11.7	-5.5	-13	4	1.3	-0.1	-1.3	6.1
550	5108	5264	4981	-1.3	9.8	-10.1	-16.1	325	1.6	0.9	-1.3	6.5
500	5860	6042	5643	-6	6.6	-16.3	-20	289	2.1	2	-0.7	7
450	6677	6886	6500	-11.2	-0.3	-19.9	-25	277	3.5	3.5	-0.4	8.1
400	7571	7807	7315	-17.2	-6.5	-27.5	-31.3	269	5.2	5.2	0.1	9.3
350	8557	8824	8300	-24.2	-10.3	-33.1	-37.7	267	7.3	7.3	0.4	11.1
300	9663	9963	9315	-32.4	-19.1	-41.7	-45.1	259	9.9	9.7	1.8	12.9
250	10922	11279	10639	-42.5	-26.7	-53.3	-54.8	251	11.9	11.2	3.9	14.8
200	12387	12828	12100	-54.4	-41.5	-68.7	-65.4	243	13.8	12.3	6.2	16.4
175	13230	13718	12936	-60.7	-45.9	-72.9	-62.5	243	13.1	11.6	6	15.9
150	14172	14720	13829	-67.2	-50.1	-82.4	-75.1	245	11.6	10.5	5	14.4
125	15251	15899	14848	-73.3	-52.1	-85.1		250	8.4	7.9	2.8	11.1
100	16539	17366	15900	-77.2	-53.5	-91.5		257	4	3.9	0.9	8
80	17818	18687	17150	-75.2	-53.8	-90.7		248	0.5	0.5	0.2	5.9
70	18608	19520	18177	-71.7	-52.3	-88.7		90	0.2	-0.2	0	4.8
60	19359	19983	19062	-67.3	-47.5	-79.9		66	1	-0.9	-0.4	4.3
50	20634	21665	20142	-62.1	-47.8	-74.6		81	1.8	-1.8	-0.3	4.6
40	22045	23120	21501	-57.2	-45	-70.3		82	3	-3	-0.4	5.3
30	23898	25032	23280	-52.6	-36.6	-63.3	-62.7	76	3.4	-3.3	-0.8	6.7
25	25075	25617	24469	-50.3	-31	-62.1		62	3.4	-3	-1.6	7.1
20	26597	27141	25929	-47.8	-30.9	-59.7		62	2.4	-2.1	-1.1	6.2
15	28466	29074	27804	-45.6	-32.1	-56.1		76	2.1	-2	-0.5	6.7
10	31241	31834	30646	-40.9	-31.1	-47.1		108	1.3	-1.2	0.4	6.5
7	33303	33786	32641	-39.4	-31.1	-45.1		328	1.5	0.8	-1.3	13.8

FREEZING LEVEL				FIRST TROPOPAUSE			SECOND TROPOPAUSE		
P	Height	H_max	H_min	P	Height	Temp	P	Height	Temp
566	4888	6750	3110				101	16507	-79