

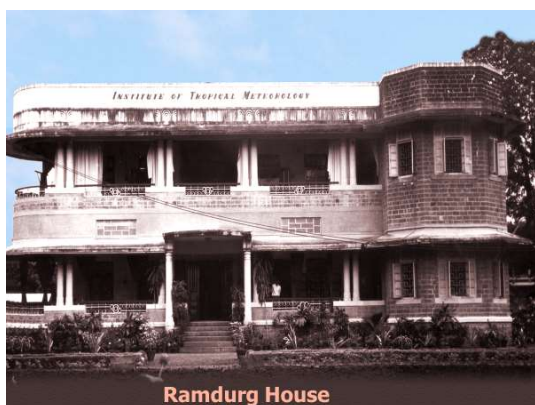


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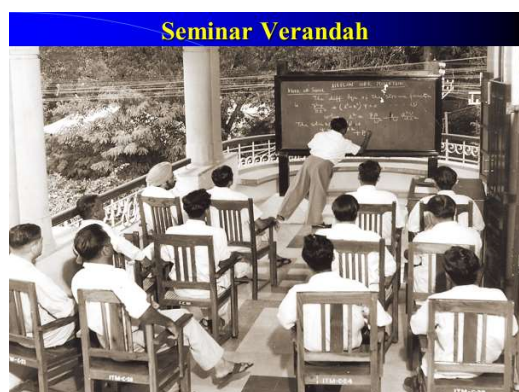
Indian Institute of Tropical Meteorology, Pashan, Pune



Ramdurg House



IITM completed 60 years on 17th November 2022 and celebrated Diamond Jubilee



Seminar Verandah



Venue of Scientific seminars, from Seminar Verandah to Meghdoot Auditorium

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The Indian Meteorological Society was established in 1956 and was registered on 26 May 1972 under the societies Registration act of 1860 as amended by Punjab Amendment Act 1957 applicable to Delhi. Registration No. of the society is 5403. The Society's headquarter is located at Delhi and its local chapters are functional at various places of India. The Society is a non-profit making organization and none of its income or assets accrues to the benefit of its members.

Objectives of the Society:

1. Advancement of Meteorological and allied sciences in all their aspects
2. Dissemination of the knowledge of such sciences both among the scientific workers and among the public and
3. Promotion of application of Meteorology and allied sciences to various constructive human activities

Any person, who is interested in above objectives of the society, is eligible to become a Life member. **The Life membership fee is Rs. 3000/- only for Scientists/ Researchers from India.** Please visit https://imetsociety.org/wp-content/pdf/docs/forms/IMS_LM_form.pdf for IMS life membership form (also provided at the end of this Bulletin).

“**Bulletin of IMSP**” is generally published quarterly. Correspondence and contributions to the Bulletin may be sent to Editorial Board (**mahap@tropmet.res.in**), with copy (Cc) to the IMSP Chairman (**ks_hosalikar@yahoo.co.in**). The manuscript should be typed at 1.15 space using Times New Roman font size 12, in MS-Word file. The author’s name should be typed on the line below the title, the affiliation and email ID should follow on next line. The first author is requested to send softcopy of his/her passport size photograph.

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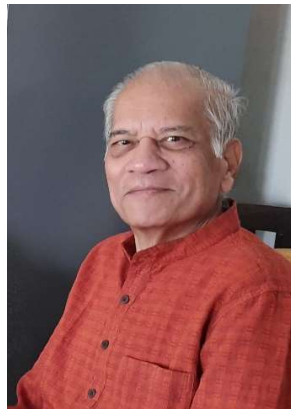
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Prof. P. R. Pisharoty as I Knew Him



Ranjan Ratnakar Kelkar ^{1,2,3,4,5,6}

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After getting my M. Sc. degree in Physics from the University of Pune (then Poona) in 1964, I had been working there as a Demonstrator in the Physics Department. On my way to the university, I would pass by the newly-established Institute of Tropical Meteorology and wonder what might be going on within it. I was soon to find it out for myself, after I joined ITM as a Senior Scientific Assistant in September 1965.

My first couple of days at ITM were spent in completing the administrative formalities and visiting the library. Dr P. R. Pisharoty was the Director of ITM and he called me to his office. After knowing that I was fresh from the university, he said to me, “As a student, you were taught to believe all that was written in a text-book. Now that you have joined a research institute, you should learn to question everything that you read.” That was the first of the many lessons in life that I would be learning from Dr Pisharoty during the course of my career.

He then accompanied me to the library and asked me what I had been reading. I told him that I was browsing through a small book which was a brief introduction to meteorology. He picked up a bulky book from the shelves. I still remember that it was Reiter’s Jet Stream Meteorology. He handed it over to me and said, “Do some serious reading.” Soon afterwards, he assigned me to work with Mr Ramesh Godbole in the Division of Physical Meteorology and Aerology, which

was in the process of being set up and did not yet have a Head. Dr Pisharoty used to have a round of the place twice a day and inquire about little things. Once he asked me where I signed my attendance and I told him that I had to go another section to do that. The next time he came on his rounds, he brought a new attendance register with him for me, so that I did not waste time going to another place. Although it was then a part of the India Meteorological Department, the atmosphere in ITM was very different from that of a typical government office, even from the next-door IMD establishment which I had to frequently visit for obtaining books, data or information. The scientists in ITM were eminent personalities but they did not throw around an air of seniority. They were friendly, approachable people. This atmosphere was Dr Pisharoty's creation. ITM was established in a two-storey building named Ramdurg House and it did not have a seminar hall then. Curtains would be drawn across the long verandah in front of the Director's Office on the first floor and steel chairs would be unfolded and laid out. The speakers had only blackboard and chalk as aids. But we used to hear stalwarts like Joseph Smagorinsky, Syukuro Manabe, Takio Murakami and William Gray, visiting ITM at the invitation of Dr Pisharoty.

It was due to Dr Pisharoty's initiative that out of the first six IBM 1620 electronic computers that India got, one was installed at ITM. In an era in which the word software had just been coined and numerical weather prediction was looked upon with skepticism, Dr Pisharoty nudged us to construct what was, in a sense, one of the earliest numerical models of the Indian monsoon.

<p>Founder Director (1962-1967)</p>		<p><i>As the Director of ITM Prof. Pisharoty wanted to see India coming up fast with NWP models for Short-Range (1-3 days), Medium Range (3-10 days) and Long-Range (monsoon season) Forecasting</i></p>
<p>Prof. P.R. Pisharoty A person of deep and broad vision Significantly contributed in kinetic energy fluxes in upper atmosphere, monsoon, cloud clusters of Atlantic and Pacific Oceans, equatorial electrojet, remote sensing of vegetables</p>		

In 1971, ITM became IITM, the word Indian having been prefixed to its name to go with its new autonomous status. Dr Pisharoty had moved to the Physical Research Laboratory, Ahmedabad. I had happily joined the IMD mainstream with a promotion to the post of Assistant Meteorologist. But my six years of upbringing at ITM with Dr Pisharoty as its Director, had moulded my personality for ever. It had trained me to see things in a different light, had given me the courage to question established practices and equipped me to act with conviction when required.

It was several years later that I had occasion to meet Professor Pisharoty again in Pune when he gave a talk on the subject of remote sensing. For most of us in the audience, this was an entirely new field, and Pisharoty kept us spellbound. He showed us remotely sensed pseudo-colour images of coconut trees and explained how the wilted coconuts could be distinguished from the healthy ones by observing them from above in infrared and other wavelengths.

Years later again, he was talking at another seminar about INSAT imagery. There were many conventional meteorologists in the audience who still loved their synoptic charts and were not particularly impressed by satellite images. To them he said, “Each satellite image contains millions of bits of information. These images contain solutions. You have to find out the problems!”

The National Centre for Medium Range Weather Forecasting was established in 1989 and Professor Pisharoty had played a crucial role in its creation. I was in the Satellite Meteorology Division of IMD at New Delhi at that time and I had been watching the Cray supercomputer being set up on the first floor of the building where I worked. It had a glamour and attraction of its own, and one fine morning, I found myself facing Professor Pisharoty in the panel that was interviewing me as a candidate for a post in the NCMRWF. In the middle of my interview, Pisharoty suddenly asked me, “What is your ambition?”, a question that caught me on the wrong foot and made me uncomfortable for the rest of the interview. Obviously, the NCMRWF post was not offered to me, but I was never sorry for it. In hindsight, I think that it was Professor Pisharoty’s subtle way of telling me that my future lay with IMD and not outside it.

I had another chance of coming closer to Professor Pisharoty, when he was the President of the Indian Meteorological Society for the 1991-93 term, and I was its Secretary. He was living in Pune and I was in Delhi, and he used to write me long letters in his characteristic beautiful handwriting. He used to say, “the more you write, the better will be your handwriting and the more you think, the sharper will be your intellect!” We were organizing the TROPMET-93 conference in Delhi, the second one in the series after its very successful start in the previous year at Ahmedabad, and we were worried about finances. However, just a letter or phone call from Professor Pisharoty would be sufficient to get a grant, and in the end the event was a real success.

Once we were discussing the future of the Indian Meteorological Society and how to increase the membership figure. I still remember Pisharoty's remark, "Every Indian breathes air and so is qualified to be a member of the IMS! We should work towards enrolling millions of members!"

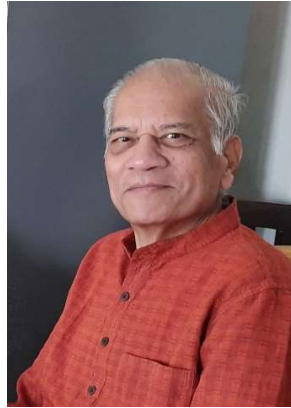
The last interaction that I had with him was in 1998 in the chamber of Professor A. P. J. Abdul Kalam, then Scientific Adviser to Raksha Mantri, along with Professor G. C. Asnani, in a meeting called by Professor Kalam to discuss the Mountain Meteorology Project. The need to build observational systems in the mountain areas and issue specialised forecasts had been felt since long. But there were many difficulties: civilian meteorologists could not be posted in the forward areas, the army had limited expertise in the field, instruments could not be maintained in the hostile environment, communications and infrastructure were required, and there were no funds allocated. The meeting lasted just for an hour but the result was clear soon after Pisharoty had said, "For briefing airline pilots before take-off, you have established meteorological offices at airports. If you have to warn against snowfall or avalanches in the mountain areas, you must set up a meteorological centre in the mountains." This was accepted as the direction in which to move and a team was formed for writing a project report. Solutions were found for all the problems. The project was implemented jointly by several agencies, resulting in the creation of a state-of-art infra-structure for mountain meteorology in India.

I remember the advice given by Pisharoty in one of his many speeches that I had the privilege to hear. To everybody's amazement he had said, "It is a good idea to draft one's own obituary while one is alive, and try to live up to it. Then, when the time comes, someone else will actually write it and it would ring true!"

We all have our own ideals and we strive to gain wisdom. But what distinguished Professor Pisharoty from the rest of us was that he lived up to his very high ideals in his own life, and that his profound words of wisdom flowed from what he actually practised. His greatness was characterised by simplicity, dignity and integrity, qualities that are becoming increasingly harder to find in today's world.

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Prof. Takio Murakami as I Knew Him



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¹ Former Director General of Meteorology (DGM), India Meteorological Department (IMD)

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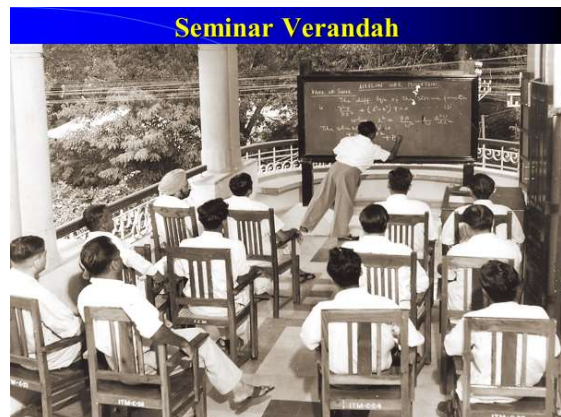
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“We are going to flatten the Himalayas and see what will happen to the Indian monsoon! We will be cooling the Indian Ocean to find out if the monsoon will go dry!” The words were coming from a short-statured man speaking with great enthusiasm and confidence. The year was 1968. The place was the open verandah of Ramdurg House, where the Institute of Tropical Meteorology (ITM) was situated in Pune. The speaker was standing in front of a blackboard with just a chalk in his hand and manipulating the monsoon seemed like a child’s play to him. He was Takio Murakami.



Prof. Takio Murakami



Seminar Verandah, Ramdurg House, ITM

Prof. Takio Murakami commenced his career as a weather forecaster at Japan Meteorological Agency in the 1950s. He then devoted himself to research in tropical meteorology and monsoon dynamics. In 1960 he went to MIT as a visiting researcher for four years. In 1968, he came to ITM as a WMO-nominated expert to spend a year with ITM scientists and work on the monsoon. So there I was, listening to Murakami's talk. I was a recently recruited Senior Scientific Assistant in ITM, and my job was only to help scientists do their research. But I was fascinated by Takio Murakami. I was in my early twenties and I had seen the Himalayas and the Indian Ocean only in geography textbooks. How could Murakami cut the Himalayas to size or modify the temperature of the sea, I wondered. I was soon to discover that Murakami's only tool was a computer named IBM 1620.

The IBM 1620 occupied a whole room. It had an operator's console with hundreds of flashing lights and switches. It had a memory of 32 K that was the size of a large cupboard. It was fed with cards that had been punched with appropriate code. Thousands of cards would be going into waste paper baskets by the end of each day. Six machines of the IBM 1620 series had been imported by the Government of India, which in its wisdom and foresight had given one of them for meteorological research.

Murakami's monsoon model was conceptualized by him, designed by him, and written by him on paper. I had the privilege of converting his paperwork into what was executable on a computer. It was quickly evident that Murakami's model, even when trimmed to its barest minimum was too large for the IBM 1620 to handle. So, we began to hire computer time on the more powerful CDC 3600 at the Tata Institute of Fundamental Research, Mumbai. I would carry boxfuls of cards to Mumbai, run the programs there and bring back the results to show them to Murakami. Sometimes he would be thrilled to see them, sometimes disappointed.

On an occasion that I still remember, Murakami had given me a hundred pages of code in his own handwriting and had asked me to get them punched on cards. I completed that job with a speed that Murakami had perhaps not been expecting. He was sceptical that I had not done a thorough check. I felt unhappy with his remark and retorted that there were no errors on my part, but that his mistakes if any have been copied faithfully by me. Murakami was visibly offended. He tried his best to find out errors in my work, but he could discover none. He called me later and expressed his appreciation.

When Murakami first arrived at ITM, so many people flocked around him. They saw in him an opportunity to do great research. But Murakami was not only a great scientist, he was also a strict taskmaster. He expected a lot from his co-workers, and his expectations were difficult to meet. I was one person who remained attached to Murakami until it was time for him to leave ITM a year later.

Murakami's work was truly pioneering. He simulated a near-steady state monsoon in a zonally symmetric framework along the longitude 80 deg. E in the month of July. He designed a primitive equation model with a sigma-system in which the atmosphere was divided into 8 layers. The top of the frictional boundary layer was taken as level 8-and-a-half. In the horizontal, only y-variation was considered, with 18 grid points at 5-degree latitude interval. In the x-direction, symmetry was assumed. Radiation heating and cooling was computed using the distribution of absorbing gases and clouds for the month of July. During the iterations, whenever the vertical lapse rate of temperature exceeded the wet (dry) adiabatic value with saturated conditions, it was adjusted to the wet (dry) adiabatic value by a redistribution of static energy. SST was kept at a constant value of 300 deg K, while the land surface temperature was computed from the heat balance of the surface fluxes. The model was run with a calm initial state and the initial vertical distribution of temperature was prescribed as per the standard atmosphere. The model was run with a 10-minute time step for 80 days and experiments were repeated without the Himalayan orography. Murakami was successful in simulating some of the large-scale features of the monsoon circulation and the wind speeds were of the same order as those in climatological normal. The result of particular importance was that when the Himalayan mountains were removed from the orographic profile along the longitude 80 deg. E, the zonal circulation became much weaker, with lower-level westerly winds of 10 knots and upper level easterly winds of 20 knots only. This showed that a realistic parameterization of the Himalayan mountains is crucial to the numerical simulation of the monsoon.

Presently the term "monsoon model" has become a household word in India. But the monsoon model that Murakami designed and ran successfully five decades ago, was something way ahead of his time! It is ironical that such fundamental and invaluable work never got published in a journal and it remains confined to the pages of a conference proceedings volume. (Murakami T., Godbole R. V. and Kelkar R. R., 1970, "Numerical simulation of the monsoon along 80° E", Proc. Conf. Summer Monsoon of Southeast Asia, Norfolk, Va, USA, [Ed: Ramage C. S.], pp 39-51). After completing his stint in ITM, Murakami joined the Department of Meteorology, University of Hawaii at Manoa. He made a pivotal contribution to the planning and implementation of both the summer and winter MONEX experiments conducted in 1978-79. He officially retired from the University of Hawaii in 1990 and became a professor emeritus. He passed away in 2013 at the age of 92.

I must acknowledge that I learnt a lot of meteorology from Murakami. But on a personal level, I got to learn much more from his way of life, his honesty, dedication and foresight. My own contribution to Murakami's monsoon model was minimal, but he was gracious enough to include my name as the co-author of his paper. That was Takio!

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A Journey from ITM to IITM, for research on Tropical Meteorology in India



Compiled by

Somnath Mahapatra^{1,2,3,4}

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Conception of ITM through a resolution adopted by WMO (World Meteorological Organization):

India Meteorological Department (IMD) was established on 15th January, 1875. In 1920s-1940s, IMD made path breaking discoveries, like Teleconnection between Monsoon and other global climate modes, e.g., Southern Oscillation was discovered, and Long-range Prediction of Monsoon was established.

During 1950's demand on IMD's Weather and Climate services increased many-fold. Keeping in view the rapid developments in the field around the world, IMD envisioned that sustained improved services require a large dedicated group (a Centre) to work on Research & Development (R & D) of improving forecasts. The need to study the fundamental atmospheric problems and understand the mechanism of monsoon, weather systems and climate related processes in the tropical region, particularly over the monsoon region, became acute for India in 1950's when the country's post- Independence economic development program was launched. Considering this urgent need the World Meteorological Organization (WMO), in its Third Congress, recommended the creation of meteorological research and training institutes in the tropical countries.

A proposal for the establishment of the **Institute of Tropical Meteorology (ITM)** was submitted to the Government of India by the India Meteorological Department (IMD) in 1959.

At the Third Session of WMO Congress in May 1959, following Resolution was adopted:

“Resolution 22 (CG-II):

Research Institute for Tropical Meteorology

The Congress, considering,

- (1) The urgent need for research work in tropical Meteorology especially as regards developing forecasting techniques,**
- (2) The limited facilities and resources available in tropical countries for carrying out search,**
- (3) The great economic value of improved Met. Services in the tropics for public transport, agriculture, public health, water resource development and many other branches of the national economy,**

DECIDES that the World Met. Organization should do everything possible to initiate, sponsor and encourage the establishment and operation of one or more research institute for tropical meteorology &

DECIDES the Executive Committee to take all possible steps to implement the above decision”

The proposal was formally approved by the Government of India in February 1962 as one of the schemes under its Third Five Year Plan and finally the Institute was formally founded as the **Institute of Tropical Meteorology (ITM) on 17th November, 1962 at Pune (the then Poona)**, as a distinct unit of the India Meteorological Department (IMD). **Prof. P. R. Pisharoty was posted as the first Director of this Institute.** The ITM was established as a distinct unit of the India Meteorological Department for research in Meteorology and Atmospheric Science.

ITM started functioning in Ramdurg House, a building of IMD adjacent to its main office **at Shivajinagar, Pune (earlier Poona).** **ITM received financial and scientific support from WMO under its UNDP Special Fund Programme during 1963-67.** UNDP Support included visits of experts from developed countries to ITM, training of Institute’s scientists in centers of excellence in developed countries and supply of technical equipment. Some well-known international scientists were attached to the ITM as specialists under the UNDP Project during 1963-1967. **These specialists were Professors Donald Jones, Ernest Hovmoller, Francis Ho, Ferdinand Baer, Takio Murakami and Hiroshima Ito.**



ITM was hosted at Ramdurg House at Shivajinagar, Pune (earlier Poona)

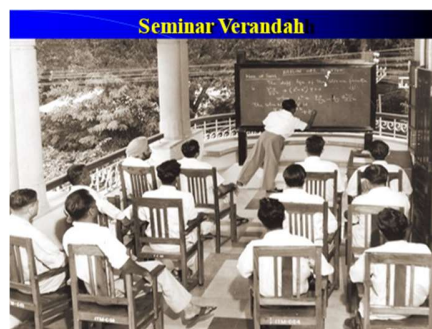
The founder Director **Padmashree Prof. P. R. Pisharoty** (1962-1967), was a person of deep & broad vision. He wanted to see India coming up fast with Numerical Weather Prediction (NWP) models for Short-Range (1-3 days), Medium Range (3-10 days) & Long-Range (monsoon season) Forecasting. With his exceptional vision, **Prof. Pisharoty was successful in acquiring about 81 acres of land at Pashan, Pune in November 1964 for construction of permanent buildings for the Institute and residential quarters for its staff.** About 35 acres of the land on the other side of the road was provided to IMD. ITM and IMD scientists participated in the International Indian Ocean Expedition (**IIOE**), an international collaboration programme during **1963-1967** to understand weather, climate and oceanography of the Indian Ocean in which many nations participated. Data collected during IIOE field programme led to several path making researches on meteorology and oceanography of the Indian Ocean.

Autonomous Status to the Institute, becoming Indian Institute of Tropical Meteorology (IITM) in 1971

Consequent upon the recommendation of the Committee for Organization of Scientific Research (COSR) appointed by the Government of India the Institute was transformed into **an autonomous organization on 1st April 1971 under the name “Indian Institute of Tropical Meteorology” (IITM).**

The Committee for Organization of Scientific Research (COSR) appointed by the Prime Minister of India, under the Chairmanship of Prof. S. Bhagvantam, visited and examined the working of the Institute on 15th November 1966 and recommended that for more effective functioning, the Institute should be separated from the India Meteorological Department and created in to an autonomous body with a Governing Council. This recommendation was accepted by the Government and it was decided that the Institute of Tropical Meteorology should be

registered under a Society under the Societies' Registration Act, 1860. **In accordance with Government's decision, the Institute was registered under the name of "Indian Institute of Tropical Meteorology (IITM)" with effect from 1st April 1971.**



Formative stage of IITM at Ramdurg House at Shivajinagar, Pune (earlier Poona) and its Seminar-Verandah

Under autonomy, the Institute was initially financed by the Ministry of Tourism and Civil Aviation, Government of India. With some officials coming from IMD, some young scientists were recruited at IITM. In its formative stage itself, the Institute was privileged to have famous scientists, like Prof. J. Shukla, Dr O.N. Dhar, Dr U.S. De, Dr R. Suryanarayana, Dr R.P. Sarkar, Dr H. S. Bedi, Dr R. R. Kelkar, Dr A.S.R. Murty, Dr D. A Mooley, Prof D. R. Sikka, Dr R. C. Srivastava, Dr Y. Ramanathan, etc. They used to have scientific discussions in a Seminar Verandah of Ramdurg House. **Later on, the new building of IITM was constructed at the acquired land at Pashan, Pune**

Indian Institute of Tropical Meteorology, Pashan, Pune



IITM Pune Main building at Dr Homi Bhabha Road, Pashan, Pune

The IITM was transferred from Ministry of Tourism and Civil Aviation to Department of Science and Technology (DST), Ministry of Science and Technology in January 1985 and then to the Ministry of Earth Sciences (MoES) in July 2006 and since then IITM is an autonomous Institute of MoES.

Directors of IITM:

Prof. P.R. Pisharoty (1962-1967)

Prof. R. Ananthakrishnan (1968-1971)

Dr. Kshudiram Saha (1974-1976)

Dr. Bh. V. Ramana Murthy (1978-1985)

Shri. D.R. Sikka (1986-1992)

Prof. R. N. Keshava Murthy (1992-1996)

Dr. Govind Ballabh Pant (1997-2005)

Prof. B. N. Goswami (2006-2014)

Dr. M. N. Rajeevan (2015-2015)

Prof. Ravi Shankar Nanjundiah (2017-2021)

Dr. R. Krishnan (2022- present)

Details about IITM, its various scientific projects, various products, year-wise research publications, Institute personnel and other information are available at **IITM website:** <https://www.tropmet.res.in/>

At present, IITM has become a centre of excellence, with the kind support of the Ministry of Earth Sciences (MoES), Government of India. Through **Monsoon Mission** project of MoES, IITM has developed dynamical prediction systems at different time scales (seasonal, extended range & short range) and coordinated a large number of national and international projects, making a global presence in the field of monsoon weather & climate predictions & research. Centre for Climate Change Research (CCCR) has contributed significantly for assessment of global climate change & global warming scenarios, especially towards the sixth assessment report (AR-6) of the Intergovernmental Panel on Climate Change (IPCC) of the United Nations. A high-performance computing (HPC) system has been very useful for high level modelling & predictions/projections through coupled ocean-atmosphere global dynamical modelling systems.

I am sharing below **some photographs related to IITM** (which have been collected from various sources of IITM). CCCR and HPC buildings were constructed in Pashan Pune campus of IITM.



HPC Center

CCCR building and HPC Centre at Pashan Pune campus of IITM.

IITM has contributed a lot in the observational research of weather & climate, through projects like Physics & Dynamics of Tropical Clouds (**PDTC**), Cloud Aerosol Interaction and Precipitation Enhancement Experiment (**CAIPEEX**), Metropolitan Air-Quality and Weather Services (**MAQWS**) & **SAFAR** (System of Air Quality and Weather Forecasting and Research), Winter Fog Experiment (**WiFEX**), Atmospheric Research Testbed (**ART**), etc. which have collaborated with modelling groups of the Institute, whenever required. IITM scientists are also conducting Lower atmospheric research using **Unmanned Aerial System Facility**.



Research aircraft utilized for Cloud Aerosol Interaction and Precipitation Enhancement Experiment (CAIPEEX)

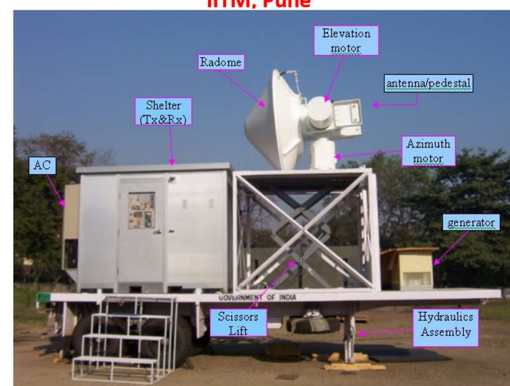


IITM New Delhi Branch and Winter Fog Field Campaign at New Delhi

IITM already has a branch office in New Delhi for a long time. In recent past, IITM made its presence in Mahabaleshwar & Sholapur of Maharashtra and Atmospheric Research Testbed (ART) facility in Central India (at Silkheda village in Sehore District of Madhya Pradesh, about 45 Km away from Bhopal). The High-Altitude Cloud Physics Laboratory (HACPL) has been established at Mahabaleshwar, and ART facility is being developed over a big area of about 100 acres of land at Silkheda. Thunderstorm Dynamics group of IITM has developed lightning detection network in Maharashtra and other states. IITM developed mobile Apps SAFAR (for Air Quality), DAMINI (for thunderstorm/lightning alerts), etc. for use of general public. ENVIS Data Centre of IITM helped public awareness about environment & necessary capacity building.



X-band Dual Polarization Doppler Weather Radar – IITM, Pune



High Altitude Cloud Physics Laboratory (HACPL), Mahabaleshwar



Atmospheric Research Testbed (ART) site at Silkgheda, Madhya Pradesh in Central India.



Dual-Polarimetric C-band Doppler Weather Radar (DWR) commissioned at the ART site

In addition to research activities, IITM contributes significantly for teaching and guidance to post-graduate students & Research Scholars (for their M.Sc., M. Tech. and Ph. D degrees) and various training activities through Academic Cell and DESK (Development of Skilled Manpower in Earth System Sciences, of MoES). Over the years, IITM contributed significantly for training & capacity building of the new generation and conducted several science popularization activities & events for the society.



Advanced training hall at IITM Pune

IITM has several Memorandum of Understanding (MoUs) and Agreements with various national & international organizations, e.g., IITM hosts the International Monsoons Project Office (IMPO) at its Pune campus through an agreement with World Meteorological Organization (WMO) and support from MoES, worked for CORDEX of World Climate Research Program (WCRP) of WMO, has MOU with Savitribai Phule Pune University (SPPU) and many other Universities, etc.

IITM celebrated its Diamond Jubilee Foundation Day (60th Anniversary) on 17th November 2022. Dr. M. Ravichandran, Secretary, Ministry of Earth Sciences was the Chief Guest of the foundation day function. **Prof. R. N. Keshavamurty**, Former Director IITM, Pune Govt. of India, **and Prof. Jagadish Shukla**, Managing Director, COLA, Professor, Climate Dynamics, George Mason University, USA were the Guests of Honor. Many persons were felicitated on that occasion. We congratulate IITM for its illustrious growth and great service to the nation.

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इंटरनेट के संसार में हिन्दी की उपस्थिति



मनोज कुमार टंडन ^{१,२,३}

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आज का युग कंप्यूटर (संगणक) का युग है। आज संगणक किसी ना किसी रूप में हमारे जीवन से जुड़ा हुआ है। इंटरनेट (अंतरजाल) एक दूसरे से जुड़े संगणकों का एक विश्व व्यापी नेटवर्क है। इंटरनेट शब्द का वास्तविक तकनीकी अर्थ है “नेटवर्क्स का नेटवर्क”। इंटरनेट का अविष्कार १९६९ में अमेरिका में हुआ। भारत में इंटरनेट १९८० के दशक में आया। इंटरनेट विज्ञान की एक ऐसी उपलब्धि है जिस ने सूचना तकनीकी के क्षेत्र में असीमित संभावनाओं के द्वार खोल दिये हैं। इंटरनेट की संकल्पना ने “गागर में सागर” को चरितार्थ कर दिया है। ज्ञान के क्षेत्र में मानवता की सबसे बड़ी उपलब्धि इंटरनेट है। इंटरनेट के लाभ और नुकसान दोनों हैं। यह इस बात पर निर्भर करता है की आप इंटरनेट को किस रूप में अपनाते हैं। इंटरनेट ने संगणक नेटवर्क के क्षेत्र में एक बहुत बड़ी क्रांति लायी है। इंटरनेट (अंतरजाल) से जुड़े संगणक आपस में अंतरजाल नियमावली (इंटरनेट प्रोटोकॉल) के जरिये सूचना का आदान प्रदान करते हैं। इंटरनेट (अंतरजाल) संगणकों का निजी नेटवर्क होता है जो इंटरनेट प्रोटोकॉल तकनीकी का उपयोग करता है। इंटरनेट विभिन्न संस्थाओं के बीच का संगणक नेटवर्क है जब कि इंटरनेट किसी संगठन के अंदर का संगणक नेटवर्क है।

इंटरनेट और इंटरनेट (अंतरजाल और अंतर्जाल) के नाम मिलते जुलते हैं मगर इनका प्रयोग अलग अलग कामों के लिये किया जाता है। इंटरनेट आधुनिक जीवन का एक महत्वपूर्ण हिस्सा बन गया है। इंटरनेट की सहायता से हमें किसी भी तरह की जानकारी सर्च इंजन की मदद से मिनटों में मिल जाती है। इंटरनेट का सबसे बड़ा नुकसान है की हमें इस की आदत सी हो जाती है और इस से हमारा बहुत समय बर्बाद भी हो सकता है। अन्य विषयों की तरह इंटरनेट की भी अपनी शब्दावली और शब्दकोश हैं। इंटरनेट की शब्दावली के कुछ बहुप्रचलित शब्द हैं :-

ब्राउज़र	अटैचमेंट	ई-मेल	बैंडविड्थ	डाउनलोड	सर्च इंजन
होम-पेज	ट्वीटर	ट्वीट	फेस बुक	सर्फिंग	वर्ल्ड वाइड वेब

इंटरनेट के संसार में हिंदी अपनी उपस्थिति दर्ज कर चुकी है। यह सिद्ध हो चुका है कि हिंदी किसी भी उच्च-भू तकनीक के अनुकूल है। हिंदी की वेबसाइटों की संख्या जिस अनुपात में बढ़ रही है उसी अनुपात में इसके पाठकों की संख्या भी बढ़ रही है। लेकिन अभी हिंदी को नेट पर बहुत लंबा सफर तय करना है। इसके मार्ग में अनेक तकनीकी बाधाएँ हैं। इन बाधाओं के बारे में आगे बात करेंगे। पहले इस मिथक की बात करें जिसे हिंदी के प्रबुद्ध वर्ग तक ने अपने मन में बैठा रखा है। मिथक यह है कि इंटरनेट, शब्द और अंततः किताब के लिए खतरा है। प्रबुद्ध वर्ग का इस उच्च-भू तकनीक से अलगाव विचारधारात्मक उतना नहीं है, जितना कि इसके दाँव-पेंचों को न समझ पाने (जैसे आर्थिक या फिर तकनीकी जटिलताओं से अनुकूलन न कर पाना) के कारण है। अतः वे इससे एक दूरी बरतना ही पसंद करते हैं। इसलिए सबसे पहले इंटरनेट पर किताबों-पत्रिकाओं की संभावनाओं की बात की जाए। भूमंडलीकरण की प्रक्रिया में दुनिया बहुत तेज़ी से सिकुड़ती और पास आती जा रही है। वैश्विक ग्राम की अवधारणा के पीछे सूचना क्रांति की शक्ति है। इस प्रक्रिया में इंटरनेट की भूमिका असंदिग्ध है। जहाँ दुनिया भर में पाठकों की संख्या का ग्राफ नीचे आया है, वहीं सूचना क्रांति को किताब पर छाए खतरे के रूप में भी देखा जा रहा है। इलेक्ट्रानिक माध्यमों में इंटरनेट एक ऐसा माध्यम है, जहाँ कथा और अ-कथा साहित्य बहुतायत में उपलब्ध हो सकते हैं। इसका अर्थ है कि इंटरनेट पर कोई भी कृति इंटरनेट पाठक वर्ग के लिए डाउनलोड की जा सकती है। इससे वेब पीढ़ी के पाठक तो अनमोल साहित्य और वैचारिक पुस्तकों से जुड़ेंगे ही, साथ में पुस्तक के वर्तमान स्वरूप में एक नया आयाम भी जुड़ेगा। इस दिशा में प्रयास हुए भी हैं, उदाहरण के तौर पर माइक्रोफ़िल्म को सामने रखते हैं। खास अर्थों में यह भी पुस्तक की परिभाषा में एक नया आयाम तो जोड़ती है, लेकिन महँगाई और जटिल तकनीक के कारण इसकी पहुँच सीमित है, जबकि इंटरनेट का फैलाव विश्वव्यापी है। सही मायनों में किताब के व्यापक प्रसार की प्रक्रिया पंद्रहवीं शताब्दी में प्रिंटिंग प्रेस के आविष्कार के बाद से ही आरंभ हुई थी। इसने ज्ञान पर कुछ विशिष्ट लोगों के एकाधिकार को तोड़ा और आम जन के लिए ज्ञान की नई दुनिया के द्वार खोले। अब यही काम इंटरनेट भी कर रहा है, लेकिन ज़्यादा तीव्रता से और व्यापक स्तर पर, इंटरनेट ने सूचना और ज्ञान पर एकाधिकार को तोड़ा और विकेंद्रित किया है।



विश्वव्यापी संजाल (वर्ल्ड वाइड वेब जो संक्षेप में डब्ल्यू डब्ल्यू डब्ल्यू कहलाता है) के ज़रिए इंटरनेट उपयोगकर्ता दुनिया भर की कैसी भी जानकारी प्राप्त कर सकते हैं। इस प्रकार जो कार्य प्रिंटिंग मशीन के आविष्कार से आरंभ हुआ था, उसे इंटरनेट ने विस्तार ही दिया है, अतिशय सूचना की समस्या और इस पर किसी एक ही व्यक्ति विशेष के वर्चस्व के प्रश्न को निश्चित ही अनदेखा नहीं किया जा सकता, इस ओर सावधान रहने की आवश्यकता है। जहाँ तक इंटरनेट पर साहित्यिक कृतियाँ उपलब्ध कराने की बात है, तो यह प्रकाशकों और साहित्यकारों की इच्छा शक्ति पर निर्भर करता है। इंटरनेट पर फैल रहा है हिन्दी का संसार। अंतरजाल से हिन्दी मिला रही है कदमताल। इंटरनेट ने दुनिया की बहुत सी भाषाओं को समृद्ध किया है और हिन्दी भी इसी प्लेटफार्म पर सवार होकर विकास की नई रफ्तार पकड़ रही है। **इंटरनेट पर हिन्दी साहित्य का संसार काफी व्यापक हो गया है।** एक आकलन के अनुसार साहित्यिक हिन्दी के वेबपन्नों की संख्या करोड़ों तक पहुंच चुकी है। अगर आप सोचते हैं कि इंटरनेट आपके जीवन में पूरी तरह रच-बस गया है तो यह आपकी भूल है। इसके आपके जीवन का हिस्सा बनने की तो अभी बस शुरुआत हुई है। अभी हम इसके जरिये कुछ सूचनाएं, वीडियो वगैरह शेयर करते हैं, या थोड़ी-बहुत बातचीत कर लेते हैं। आने वाले दिनों में हमारी चीजें इंटरनेट के माध्यम से आपस में बात कर लिया करेंगी। मसलन, आप सोते रहेंगे और कमरे में चल रहे ब्लोअर को ऑफ करने की कमांड इंटरनेट प्रोटोकॉल प्रक्रिया से आपका तकिया देगा या गर्मियों के मौसम में घर की तरफ बढ़ रही गाड़ी घर में पड़े फ्रिज को इंटरनेट प्रोटोकॉल प्रक्रिया से कमांड देगी कि सबके लिए एक-एक गिलास ठंडे स्क्वाश का इंतजाम करे। इंटरनेट फिक्शन नहीं वास्तविकता है। आधुनिक जीवन शैली में इंटरनेट अपने पाँव जमा चुका है।



“बिन पानी सब सूना” तो हम सबने सुना ही है, यदि आज के संदर्भ में हम कहें की “बिन इंटरनेट सब सूना” तो शायद गलत ना होगा। आज के युवा वर्ग का यही प्रवचन है की “इंटरनेट बिन जीना भी कोई जीना”। इंटरनेट एक जादुई चिराग से कम नहीं। इंटरनेट एक जादुई चिराग की तरह जनसाधारण में उत्सुकता पैदा कर उन्हें इंटरनेट के विश्व में अधिक जानने और प्रयोग करने की ओर प्रेरित करता है। आज के वैज्ञानिक और इलेक्ट्रॉनिक युग में संपूर्ण विश्व इंटरनेट का परिवार बन गया है। **इंटरनेट की ई-मेल सुविधा ने डाकिये के महत्व को बहुत कम कर दिया है।**

हिंदी में फॉन्ट की ज़बरदस्त समस्या है। हिंदी के सैंकड़ों फॉन्ट उपलब्ध हैं और यही समस्या की असली जड़ है। अंग्रेज़ी के टाइम्स न्यू रोमन की तरह हिंदी में कोई वैश्विक फॉन्ट नहीं है कि सभी हिंदी भाषी एक ही फॉन्ट पर काम कर सकें। हर पत्रिका, हर अखबार और हर प्रकाशक अपना एक नया ही फॉन्ट चलाता है। इस तरह से हिंदी में फॉन्ट को लेकर अराजकता की स्थिति बनी हुई है। इसी कारण हिंदी में कोई एक जैसा की-बोर्ड (कुंजीपटल) नहीं हैं। हालाँकि बाज़ार में की-बोर्ड पर चिपकाने वाले स्टिकर मिलते हैं, लेकिन जिन लोगों को व्यावसायिक मांगों के चलते एक से अधिक फॉन्ट पर काम करना पड़ता है उनके लिए ये स्टिकर किसी काम के नहीं होते और यह हिंदी की व्यावसायिक दुर्बलता है। इस मायने में यह हिंदी वालों की विलक्षण मेधा ही है कि वे अंग्रेज़ी के की-बोर्ड पर हिंदी की टाइपिंग कर लेते हैं। इससे सिद्ध होता है कि हिंदी वाले तमाम मुश्किलों के बावजूद तकनीक सचेत बने हैं। इंटरनेट उपयोगिता के हिंदी-प्रेमी हिंदी की वेबसाइटों पर जाते तो हैं लेकिन हिंदी में “सबके लिए फॉन्ट” न होने के कारण टिकते नहीं। वेबदुनिया सरीखी प्रसिद्ध वेबसाइट के “चैट सिस्टम” के असफल होने का यही कारण है।



अपना समय, ऊर्जा और पैसा खर्च करके इंटरनेट सर्फिंग करने वाले उपयोगकर्ताओं से यह उम्मीद नहीं की जानी चाहिए कि वे हिंदी के दुनिया भर के फॉन्ट सीखते फिरेंगे। इन फॉन्टों से परिचित न होने की स्थिति में इंटरनेट उपयोगकर्ता को लगता है कि वह अपना समय और पैसा बर्बाद कर रहा है। इसी कारण हिंदी में ई-मेल भेजने की इच्छा रखने वाला व्यक्ति या तो इंटरनेट पर जाता ही नहीं या फिर अंततः अंग्रेज़ी में ही ई-मेल करता है। भारत में संगणक का प्रयोग अभी एक सीमित वर्ग ही कर पाता है। विशेष रूप में हिन्दी में संगणक का प्रयोग काफी सीमित है। इंटरनेट का सही लाभ तभी होगा जब संगणक का हिन्दी में प्रयोग भारत वर्ष के कोने कोने तक पहुंच जायेगा। प्रारंभिक दौर में हिंदी पीछे रह गई है। हिन्दी भारत की राष्ट्र भाषा है और दुनिया की तीसरी सबसे अधिक बोले जाने वाली भाषा है। इस संधर्ब में यह अति आवश्यक है की इंटरनेट पर हिन्दी का प्रयोग और बढ़े। इस संबंध में उचित कदम उठाने आवश्यक हैं अन्यथा हिन्दी बोलने वाले लोग सूचना, संचार और ज्ञान के क्षेत्र में पीछे रह जायेंगे। हालाँकि **इंटरनेट की दुनिया में हिंदी अपनी उपस्थिति दर्ज़ कर चुकी है** फिर भी तमाम मुश्किलों के बावजूद भी ऐसा लगता है कि **हिन्दी को इंटरनेट के संसार में अभी भी एक लम्बा सफर तय करना है ।**

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Weather forecasting services provided by IMD during Shri Amarnath Yatra



B. Sudarsan Patro ^{1,2,3}

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²**Co-opted Council Member, Executive Council (2022-2024), IMS Pune Chapter**

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Normally, the Shri Amarnath path is always frozen. Only from June through August do pilgrims embark on dangerous treks thanks to the melting of the glaciers and snow. Since 1997 IMD offers a live weather forecast service for the Shri Amarnath Pilgrimage Yatra routes so that pilgrims can be better prepared and ensure everyone's safety. IMD will establish two base camp offices at Baltal & Pahalgam during the Yatra season (long before the start). Each camp has two officials that communicate with the Yatra Managers. These offices provide meteorological information around-the-clock in time to Yatra Managers including the Police, CRPF, Army, and Shrine Board. IMD Srinagar will keep in communication with all Met Offices in the region, IAF, work with local government officials, and timely provide prediction services to the SASB, ARMY, CRPF, BSF, Beacon, J&K government, Police, and Media. For timely weather information dissemination, Shrine Board will offer a list of Yatra Managers with their contact information and mobile numbers. The accurate and timely weather forecasting services for the Shri Amarnath Yatra route in J&K is made possible by the help of 10 numbers of surface observatory networks, 05 numbers of part-time observatory network, and network of 45 automatic weather stations, 03 numbers of RADARs. To provide the public with reliable weather information, IMD also established a Doppler Weather Radar System in Srinagar, Jammu & Leh.

MC Srinagar Office daily issue route-wise forecast from Jammu to Holy Cave to all Yatra managers at 4 AM and 6 PM by Email/WhatsApp/SMS. This forecast is valid for the next five days. In addition to that also issue three hourly Nowcasts services, MC Srinagar also makes calls to all relevant personnel in the event of severe weather conditions. The forecasts include data on wind, temperature (maximum &

minimum), rainfall, thunderstorms, and other factors. Also, there are provision of weather display screens at Holy Cave, and on the route of yatra at Baltal, and Nunwan.

The IMD Observational Network in J&K is as follows.

- i. There are 10 departmental and 5 non-departmental observatories.
- ii. 45 Automatic Weather Stations.
- iii. 03 Radar stations.

Existing both routes to Amarnath holy cave as follow

- i. Jammu - Pahalgam - Chandanwari - Pissu Top - Sheshnag - Panchtarni - Amarnath cave
- ii. Jammu - Baltal - Domail - Barari - Amarnath cave



Figure-1: Routes to Amaranath Holy Cave JK.

In order to provide the general public with accurate weather information throughout the yatra period, 8 additional automatic weather stations installed on the route of the Amarnath Yatra by 6 IMD officials (jointly 04 official Surface Instrumentation division IMD Pune & 02 from Met Center Srinagar) in the month of May 2022. We observed that the weather throughout the Yatra route is quite variable. During the days we installed the system, we saw brilliant, clear sunlit mornings, windy afternoons, snowfall and hailstorms in the evenings, and rainy nights. The scenery is breathtaking.

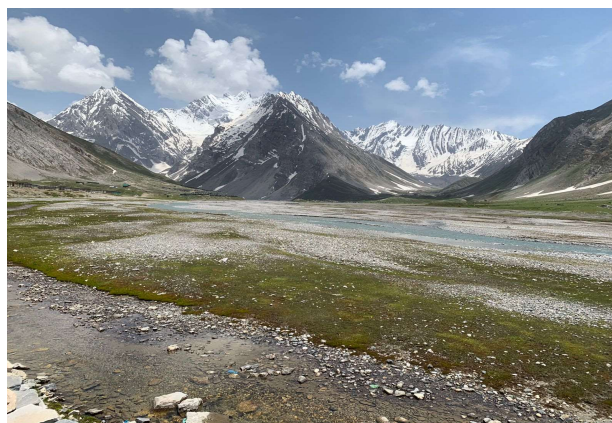


Figure-2: View at PACHATARNI, JK

Installing the autonomous weather stations in the challenging terrain was a very difficult experience. Team navigated the terrain and completed the installation satisfactorily at high altitude.



Figure- 3: AWS at Amarnath Holy Cave

Acknowledgement:

I want to sincerely thank **Dr. K. S. Hosalikar**, Head of SID & CRS in Pune, **Shri Anjit Anjan**, Sc-E, and **Shri Sonam Lotus**, Sc-E for their ongoing encouragement and support of this project.

Annexure – I

The following information includes the locations of radar networks, automatic weather stations, and surface observatories.

A. Details of Departmental (10 Nos.) and Non Departmental (5 Nos.) Part Time Meteorological Observatory in J & K.			
Sr.no	District	Name of Station	Departmental / Non-Departmental
1	Srinagar	MC Srinagar	Departmental
2	Kulgam	TMO Qazigund	Departmental
3	Anantnag	TMO Kokernag	Departmental
4	Anantnag	TMO Pahalgam	Departmental
5	Kupwara	TMO Kupwara	Departmental
6	Jammu	MO Jammu	Departmental
7	Reasi	TMO Katra	Departmental
8	Ramban	MO Banihal	Departmental
9	Bhaderwah	TMO Bhaderwah	Departmental
10	Ramban	TMO Batote	Departmental

11	Pulwama	Part time Konibal	Non-Departmental
12	Kathua	Part time Kathua	Non-Departmental
13	Baramulla	Part time Gulmarg	Non-Departmental
14	Anantnag	HMO Pahalgam	Non-Departmental
15	Ganderbal	Part time Gund	Non-Departmental
B. Details of Automatic Weather Stations (26 Nos.)/ Automatic Rain Gauge (14 Nos.) / Agro-AWS (05 Nos.) in J & K.			
Sr. No	District	Name of Station	AWS /ARG /AGRO-AWS
1	Anantnag	Amarnath_holy_cave	AWS
2	Anantnag	Anantnag	AWS
3	Anantnag	Chandanwari	AWS
4	Anantnag	Pahalgam	AWS
5	Anantnag	Panchtarni	AWS
6	Anantnag	Sheshnag	AWS
7	Badgam	Harran	AWS
8	Bandipora	Bandipora	AWS
9	Baramulla	Baramulla_amfu	AWS
10	Baramulla	Gulmarg	AWS
11	Ganderbal	Baltal	AWS
12	Ganderbal	Bararri	AWS
13	Ganderbal	Sangam	AWS
14	Ganderbal	Sonemarg_dual	AWS
15	Jammu	Chatha_amfu	AWS
16	Jammu	Jammu	AWS
17	Kathua	Rajhani	AWS
18	Kishtwar	Kishtwar	AWS
19	Kulgam	Kulgam_amfu	AWS
20	Pulwama	Malangpura	AWS
21	Ramban	Govindpura	AWS
22	Samba	Samba	AWS
23	Shopian	Shopian	AWS
24	Srinagar	Rambagh	AWS
25	Srinagar	Srinagar_amfu	AWS
26	Udhampur	Kawa	AWS
27	Baramulla	Baramulla_kvkc	AGRO-AWS
28	Kathua	Kathua_kvkc	AGRO-AWS
29	Kupwara	Kupw_kvkc	AGRO-AWS
30	Reasi	Reasi_kvkc	AGRO-AWS
31	Baramulla	Baramulla_kvkc	AGRO-AWS
32	Anantnag	Khudwani	ARG
33	Anantnag	Larnoo	ARG
34	Bandipora	Bandipora	ARG
35	Doda	Bhaderwah	ARG
36	Ganderbal	Ganderbal	ARG
37	Jammu	Bakore	ARG
38	Jammu	R_S_Pura	ARG

39	Kathua	Burmal	ARG
40	Kathua	Kathua	ARG
41	Poonch	Rajpura_mandi	ARG
42	Pulwama	Tral	ARG
43	Rajouri	Rajouri_arg	ARG
44	Reasi	Reasi	ARG
45	Shopian	Zainapora	ARG
C. Details of RADAR (2 Nos.) in J & K.			
Sr. No	District	Name of Station	X-band RADAR
1	Srinagar	MC Srinagar	Doppler Weather Radar
2	Jammu	MC Jammu	Doppler Weather Radar
3	Leh	MC Leh	Doppler Weather Radar

An elaborate informative quiz on PHYSICS (भौतिक विज्ञान) with answers



Compiled By
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SN	Query	Answer
1.	Which is the weakest force in nature?	Gravity
2.	True or False. Scalar has direction?	False. Scalar has only magnitude.
3.	Which reaction involving atomic nuclei is source of the Sun's energy?	Nuclear Fusion
4.	Whose work in quantum physics was referred to by Albert Einstein as highest form of musicality in the sphere of thought?	Niels Bohr
5.	Which wave phenomenon results from the interference or superposition of waves moving in opposite directions?	Standing Waves (Stationary Waves)
6.	What is SI unit of an electric charge?	Coulomb
7.	Which types of electromagnetic radiation has shortest wavelength?	Gamma Rays
8.	Who presented the theory of relativity?	Albert Einstein
9.	Who is first person to define speed?	Galileo
10.	What is measured in light year?	Length
11.	Word "Physics" is derived from which Greek word?	Phusis (Fusis), meaning nature
12.	Who is the father of quantum theory?	Max Planck
13.	Who gave black hole theory?	Stephen Hawking

14.	Why does clear sky appear blue during day?	Sun's white light consists of seven colours of rainbow out of which light of blue colour is scattered most after entering earth's atmosphere; this makes clear sky appear blue during day .
15.	Who is a PHYSICIST ?	Scientist who specializes in the field of Physics.
16.	Who identified and named α, β and γ radiation ?	Ernest Rutherford
17.	LIGHTYEAR is unit of measurement of which quantity?	Distance
18.	NEWTON is the unit of measurement of which quantity?	Force
19.	PASCAL is the unit of measurement of which quantity?	Pressure
20.	OHM is the unit of measurement of which quantity?	Resistance
21.	VOLT is the unit of measurement of which quantity?	Electric Potential
22.	LUMEN is the unit of measurement of which quantity?	Luminous Flux
23.	BECQUERAL is unit of measurement of which quantity?	Radioactivity
24.	DIOPTER is the unit of measurement of which quantity?	Refractive Index of a lens
25.	GAUSS is the unit of measurement of which quantity?	Magnetic Flux.
26.	What is the Hindi name of Physics?	भौतिक विज्ञान
27.	Define the term LIGHTYEAR ?	Distance travelled by light in one year
28.	In which field term Light Year is used.	Astrophysics
29.	What is the value of one light year?	~ 9,500,000,000,000 Kilometres
30.	What is speed of light in "vacuum" free space?	300,000 Kilometres per Second OR 186,000 Miles per Second
31.	What is Atmospheric Physics ?	Application of Physics to the study of atmosphere
32.	What is Space Physics ?	It is the study of plasmas as they naturally occur in Earth's upper atmosphere and within solar system
33.	What is Solid State Physics ?	Branch of Physics dealing with practical and theoretical properties of solids.
34.	Who is the Father of Physics ?	Newton, Galileo and Einstein have all been called " Father of Modern Physics ".
35.	Who was the First Physicist ?	THALES was the first physicist and his theories actually gave the name " Physics " to the discipline.
36.	What is ALBEDO ?	Reflective ability of a heavenly body

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IMSP News:

1. Student's interaction program and lab visits:

IMSP organized **student's interaction program and laboratory visits for the students of Somayia University, Mumbai on 23rd November 2022 at NDC conference hall, IMD Pune.** Students and faculties from department of statistics, chemistry, geology and microbiology actively participated in the discussions.



2. IMS-IITM National Seminar delivered by Dr. Vijay Tallapragada:

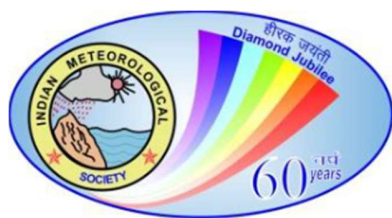
IMS Pune Chapter and IITM Pune jointly organized a **Special lecture** by a distinguished visitor & speaker, **Dr Vijaya Tallapragada**, Eminent Scientist, NOAA/ NCEP, in “**IMS-IITM National Seminar**” on **22nd December, 2022** (Thursday) from 04:00-05:30 PM, at Meghdoot Auditorium, IITM. Title of his talk was “Development of NOAA’s Community-based Coupled Unified Forecast System for Research and Operations - Current Status and Future Plans”. This seminar was attended by a large number of IMSP members, scientists, research personnel and Post-graduate & research students.



On this occasion, Dr. Vijaya Tallapragada was felicitated by Dr. R. Krishnan, Director IITM, Dr. Rupa Kumar Kolli, President IMS and Mr. K. S. Hosalikar, Chairman IMSP.

3. Membership drive for adding more members to the IMS:

Scientists, researchers, PG students and persons interested in Meteorology/Atmospheric Sciences/Allied Sciences, if not still a member of Indian Meteorological Society (IMS), can become a Life Member of IMS through **submission of the Application Form** (directly or online submission of the scanned copy of the duly completed application form) **along with the required fee** (preferably, through online transfer to the given Bank account. **Become a Life Member (LM) of IMS, “Application Form for IMS LM Enrolment”** is provided in Pages 35-36 of this Bulletin.



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- 11. Professional Record (appointments held)**
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