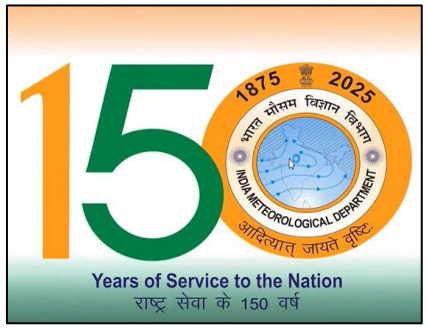
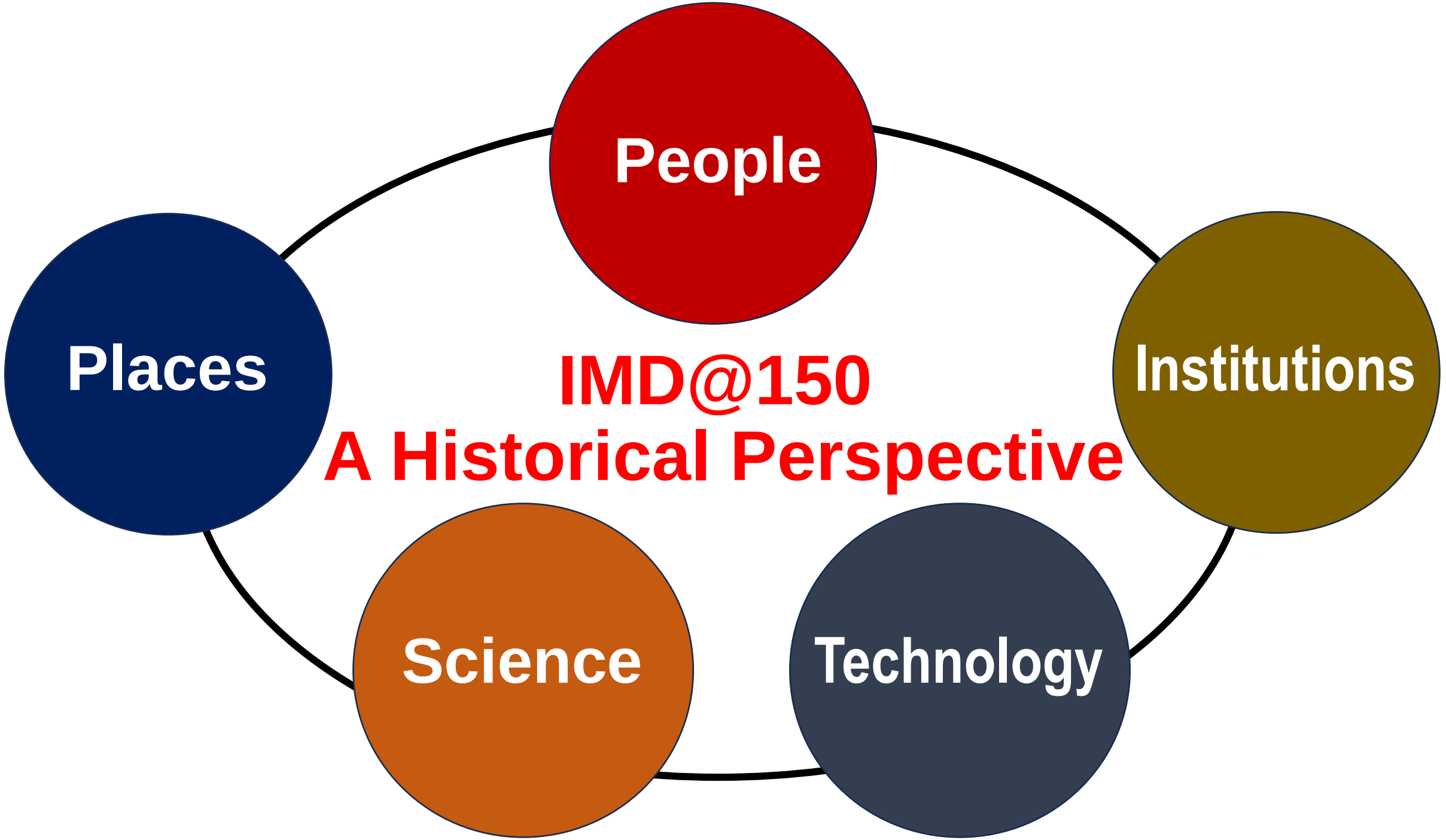


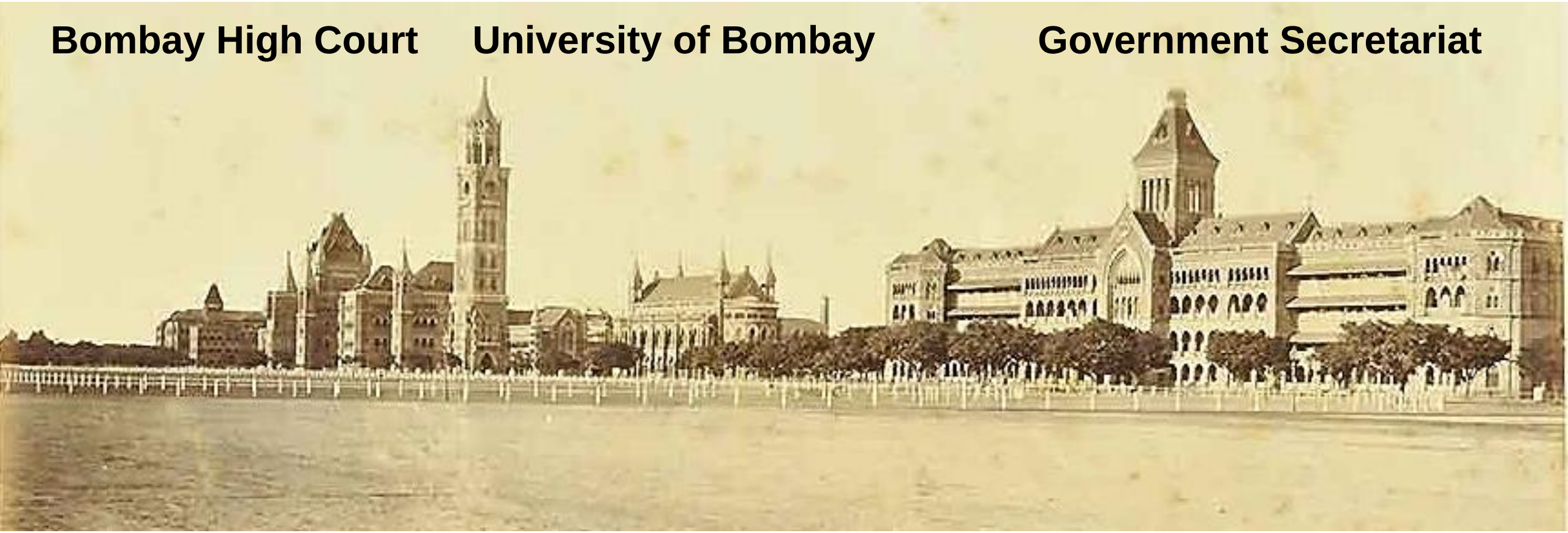
IMD@150
A Historical Perspective

Dr Ranjan R. Kelkar

Former Director General of Meteorology 1998-2003


People
Places
Institutions
IMD@150
A Historical Perspective
Science
Technology

IMD's History Began on 15 January 1875 in the City of Bombay (now Mumbai)



Henry Francis Blanford
Sailed into Bombay from England

Henry Blanford: Geologist-turned-Meteorologist

- Henry Blanford had come to India in 1855 with a degree from the Royal School of Mines, London
- He joined the Geological Survey of India and worked there until 1861
- He then became a Professor of physics at the Presidency College, Calcutta
- In 1864 he developed an interest in meteorology when a devastating cyclone hit eastern India
- In 1867 he was made the head of the Provincial Meteorological Department of Bengal

Blanford was Asked to Create the India Meteorological Department

- The British were fond of pompous titles
- Blanford was chosen to be the ”Imperial Meteorological Reporter to the Government of India” while on furlough
- He assumed charge of this new post on 15 January 1875 in Bombay
- Blanford then toured the country and submitted his vision document on 26 July 1875
- It was accepted and IMD was formally established on 27 September 1875

Long Before 1875 Observatories were Functioning in India

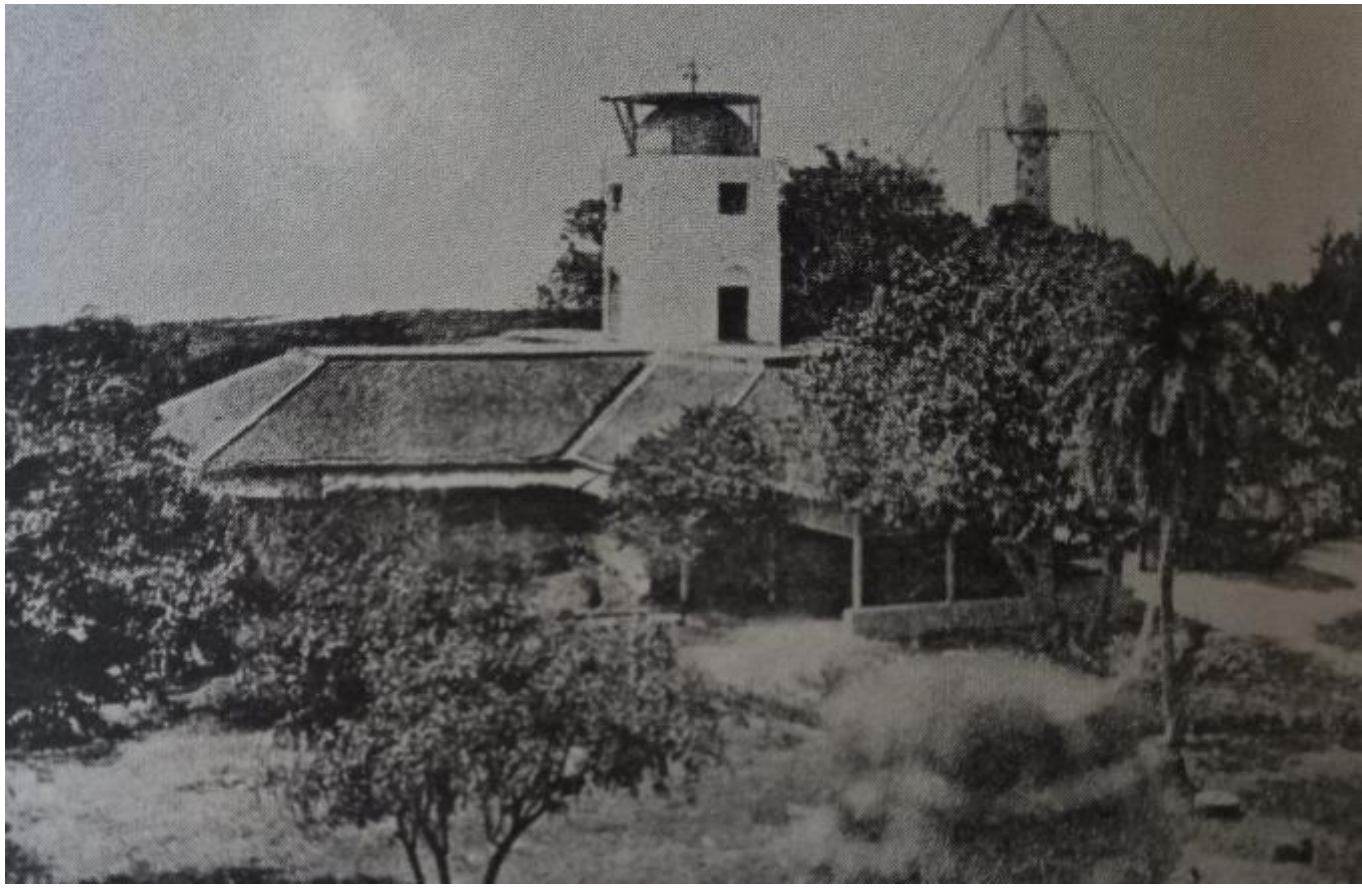
- The British had a natural fascination for observatories: astronomical, geomagnetic, seismo, meteorological
- Meteorological observatories had been set up by
  - East India Company and Provincial Governments
  - Organizations like Survey of India, Railways and Port Trusts
  - Amateurs and enthusiasts, college professors, medical doctors, Christian missionaries
  - Maharajas
- IMD brought them all under one umbrella

1792 - Astronomical Observatory Madras (now Chennai)

- 1796 - First meteorological observatory was set up in Madras
- India has continuous rainfall records spanning more than two centuries

1841 - Geomagnetic Observatory Colaba Bombay (now Mumbai)

- 1826 - Time keeping observatory
- 1841 - Geomagnetic Observatory
- Meteorological observatory



1841 - Meteorological Observatory Trivandrum (now Thiruvananthapuram)

- Established by the Maharaja of Travancore, Raja Balarama Varma
- A young progressive ruler and a patron of arts and sciences

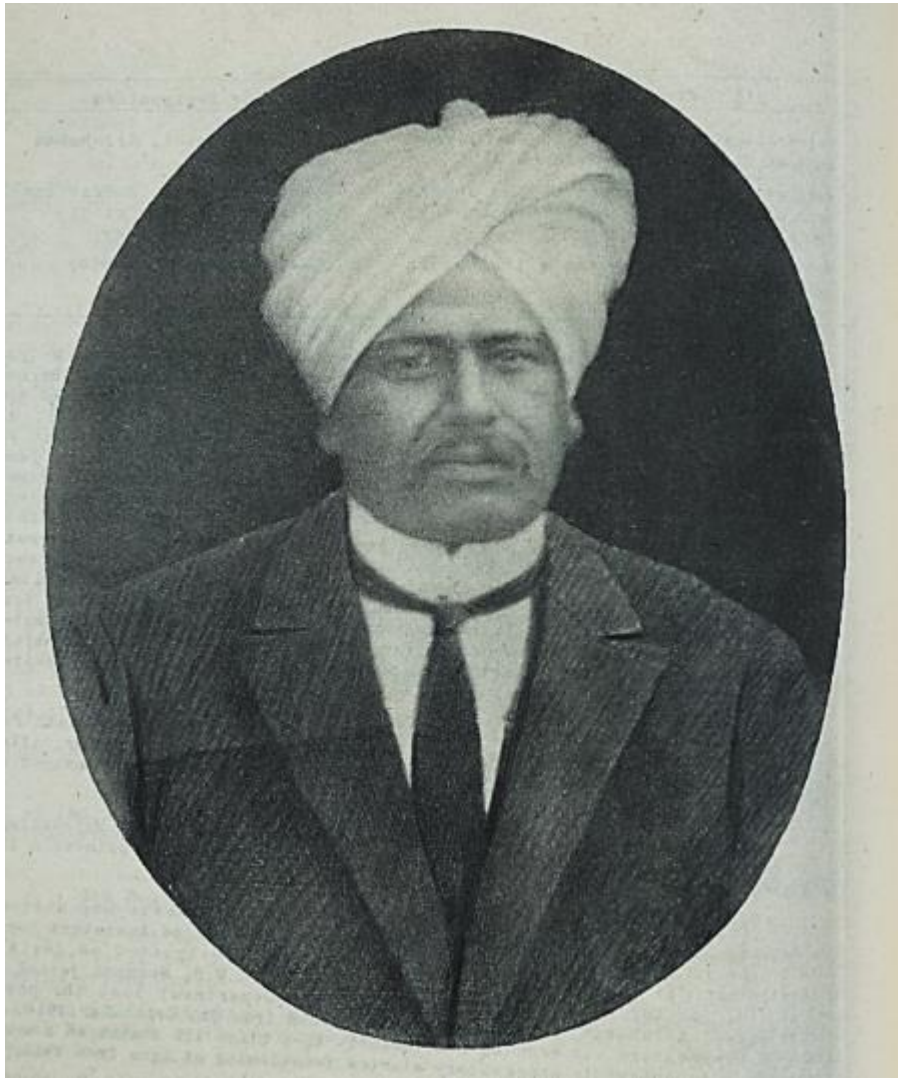
1829 - Meteorological Observatory Calcutta (now Kolkata)

- In 1829, the Survey of India set up an observatory in the compound of the Office of the Surveyor General on Park Street in Calcutta
- From 1852 to 1862, Radhanath Sikdar, was in charge of this observatory, the first Indian to occupy such a position in British India
- Radhanath Sikdar had earlier computed the precise height of Mount Everest

First Indian to Join IMD: Lala Ruchi Ram Sahni

- Blanford appointed two Indians, Lala Ruchi Ram Sahni and Lala Hem Raj to assist him in his scientific work
- Lala Ruchi Ram Sahni joined IMD in 1885 in Calcutta initially and then worked for a year in Simla
- In 1887 he took up a teaching job at Government College, Lahore, from where he had graduated earlier
- His son Birbal Sahni became a world-renowned paleobotanist

Second Indian to Join IMD: Lala Hem Raj



- In 1887, Lala Hem Raj was appointed in IMD at Simla and he continued to work there
- Promoted to the senior position of Imperial Meteorologist in 1911
- Died in 1920 while in service

First Indian Directors General

- Many Indians were inducted into senior positions in IMD in the 1920's
- Dr S. K. Banerji and V. V. Sohoni
- Dr Banerji became the DG of IMD much before independence
- Sohoni succeeded him

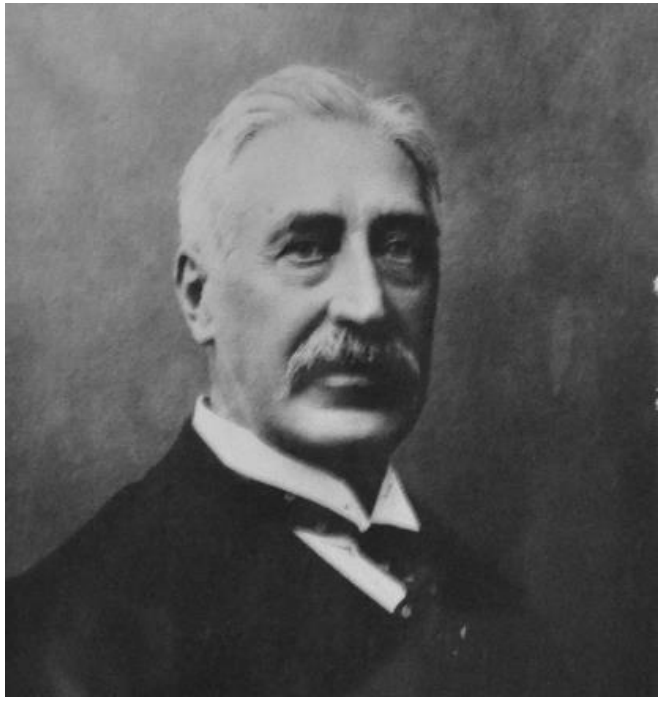
Dr S. K. Banerji
Dir Gen 1944-50

V. V. Sohoni
Dir Gen 1950-53

Change of Designation of the IMD Head

1875
Henry Blanford
"Imperial Meteoro-logical Reporter"

1899
John Eliot
"Director General of Observatories"



1975
Y. P Rao
"Director General of Meteorology"

1875 - IMD Established its Headquarters at Calcutta (now Kolkata)

- IMD's HQ office first functioned in a leased accommodation on Russell Street in Calcutta
- 1877 Alipore observatory building
- 1899 IMD built its own office building in the compound of the Alipore observatory

1905 - IMD Moved its Headquarters to Simla

- Simla was the summer capital of colonial India
- IMD found it convenient to move its HQ there
- It functioned in an old bungalow named ‘Constantia’
- Now houses the YWCA

1928 - IMD Moved its Headquarters again to Poona (now Pune)

- After going from one temporary place to another in Simla, IMD moved to Poona
- This imposing building is a landmark of Pune City
- Simla Office

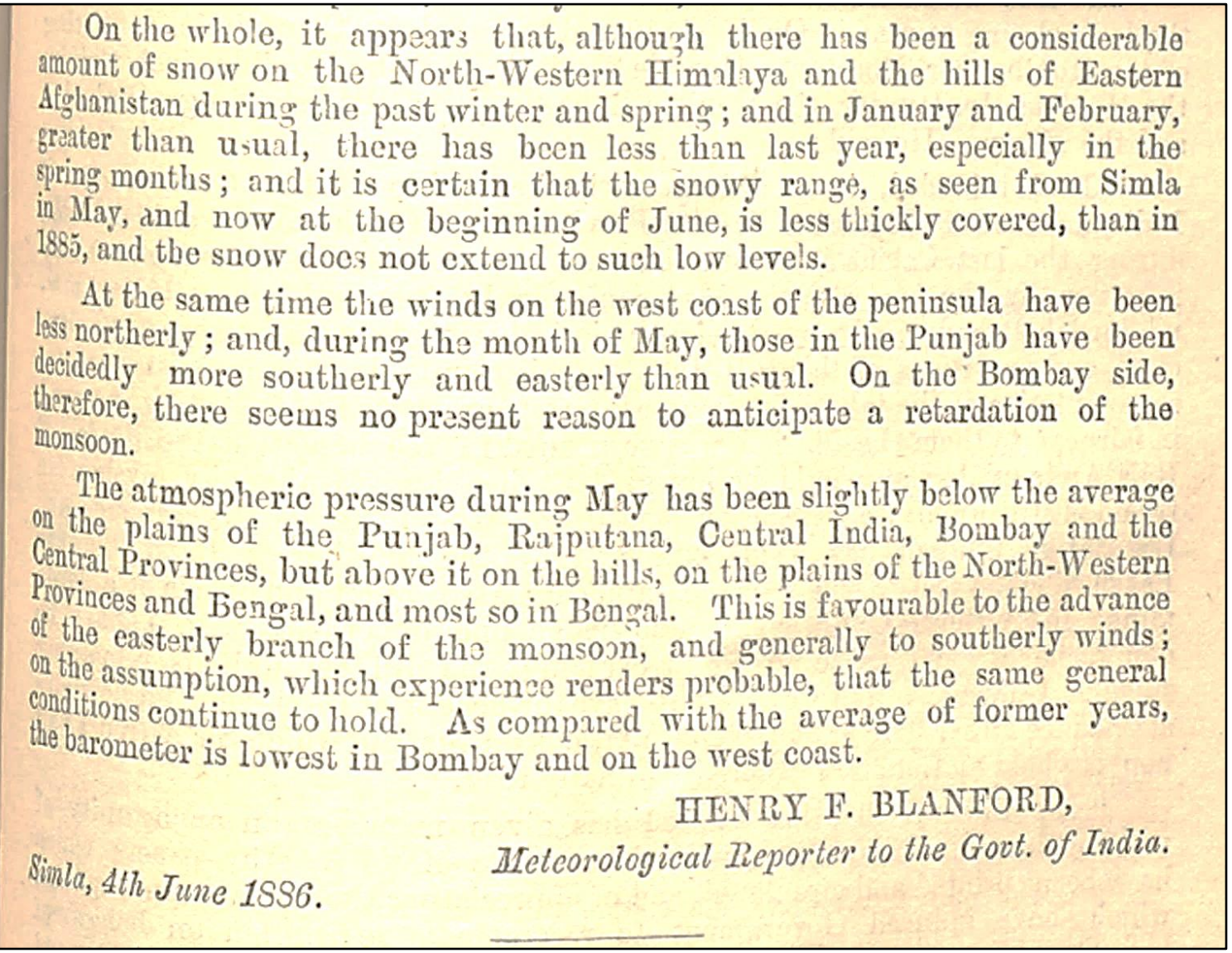
1944 - IMD Shifted its Headquarters Finally to Delhi

- The headquarters office functioned in the Aerological Observatory building

- 1975 Mausam Bhavan was constructed

IMD Core Activities: Monsoons and Cyclones

First Long Range Forecast of Monsoon



On the whole, it appears that, although there has been a considerable amount of snow on the North-Western Himalaya and the hills of Eastern Afghanistan during the past winter and spring; and in January and February, greater than usual, there has been less than last year, especially in the spring months; and it is certain that the snowy range, as seen from Simla in May, and now at the beginning of June, is less thickly covered, than in 1885, and the snow does not extend to such low levels.

At the same time the winds on the west coast of the peninsula have been less northerly; and, during the month of May, those in the Punjab have been decidedly more southerly and easterly than usual. On the Bombay side, therefore, there seems no present reason to anticipate a retardation of the monsoon.

The atmospheric pressure during May has been slightly below the average on the plains of the Punjab, Rajputana, Central India, Bombay and the Central Provinces, but above it on the hills, on the plains of the North-Western Provinces and Bengal, and most so in Bengal. This is favourable to the advance of the easterly branch of the monsoon, and generally to southerly winds; on the assumption, which experience renders probable, that the same general conditions continue to hold. As compared with the average of former years, the barometer is lowest in Bombay and on the west coast.

HENRY F. BLANFORD,

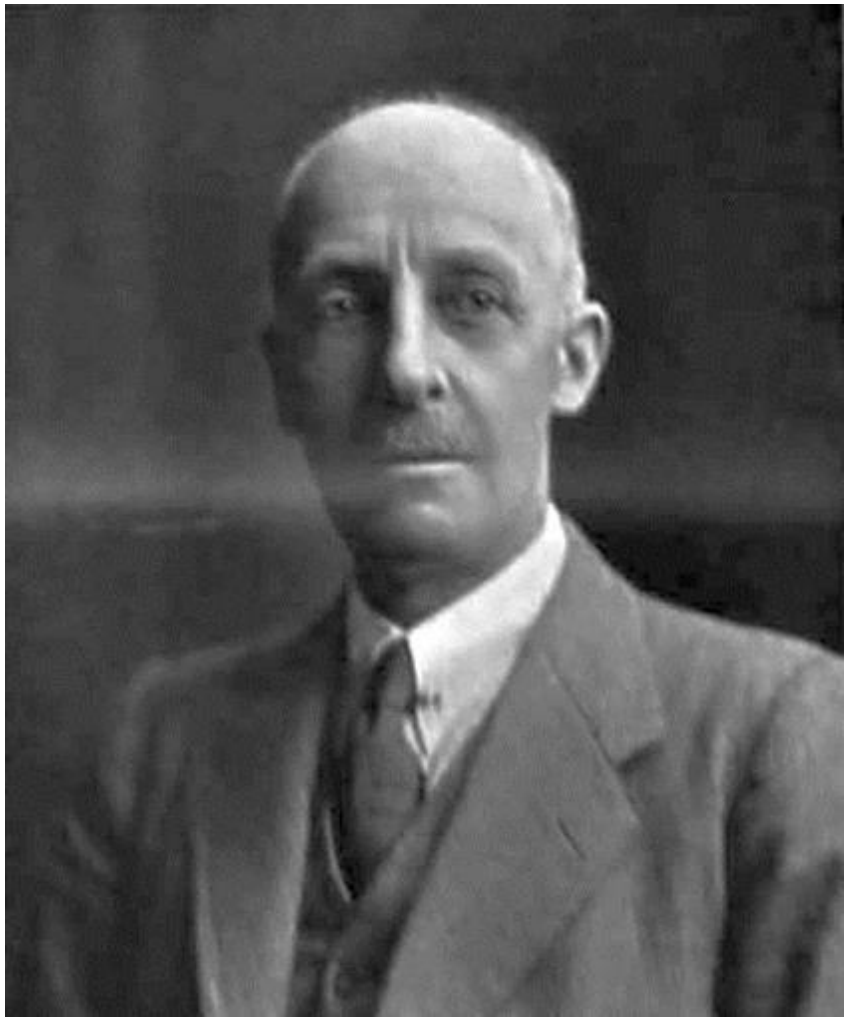
Meteorological Reporter to the Govt. of India.

Simla, 4th June 1886.

- 4 June 1886
- Henry Blanford
- Based on the amount of Himalayan snowfall in winter
- Qualitative

Sir Gilbert Walker

- Director General for 20 years
- Simla 1904 to 1924
- Mathematician with varied interests
- Identified a hundred global connections of the monsoon and used them for making statistical long range forecasts
- Discovered the Southern Oscillation with which we now link the El Nino
- Walker Circulation named after him
- For a long time, LRF remained low key

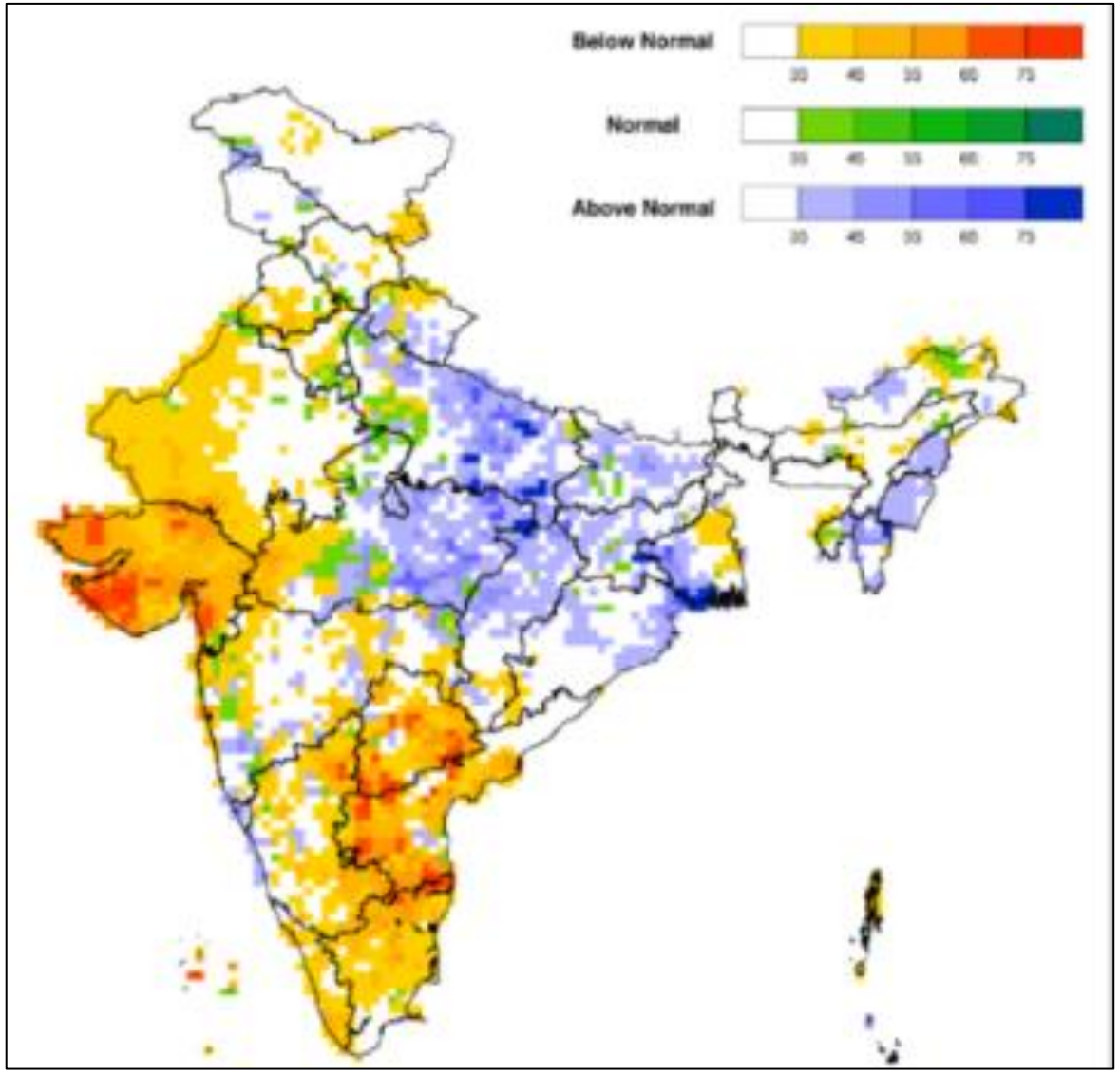


Dr Vasant Gowariker

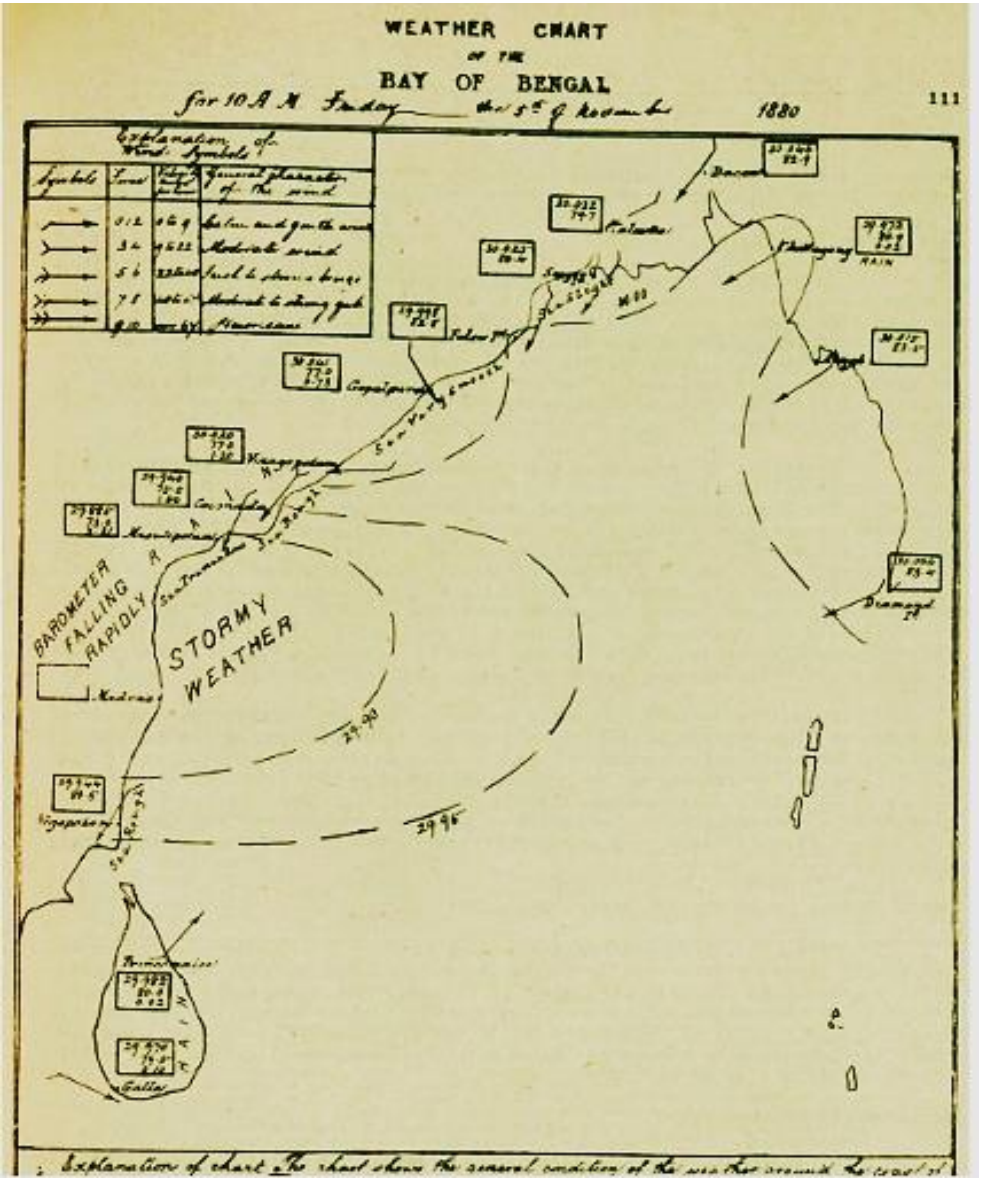
- In 1988, Dr Vasant Gowariker, Secretary, Department of Science and Technology, led an IMD team to develop the 16-Parameter Statistical Model
- Model worked well for 13 years which were all years of normal monsoon
- Long Range Forecasts of the monsoon were made public
- Brought credibility to IMD’s forecasts
- Changed the public perception of IMD
- Failed to predict the drought of 2002

Monsoon Mission

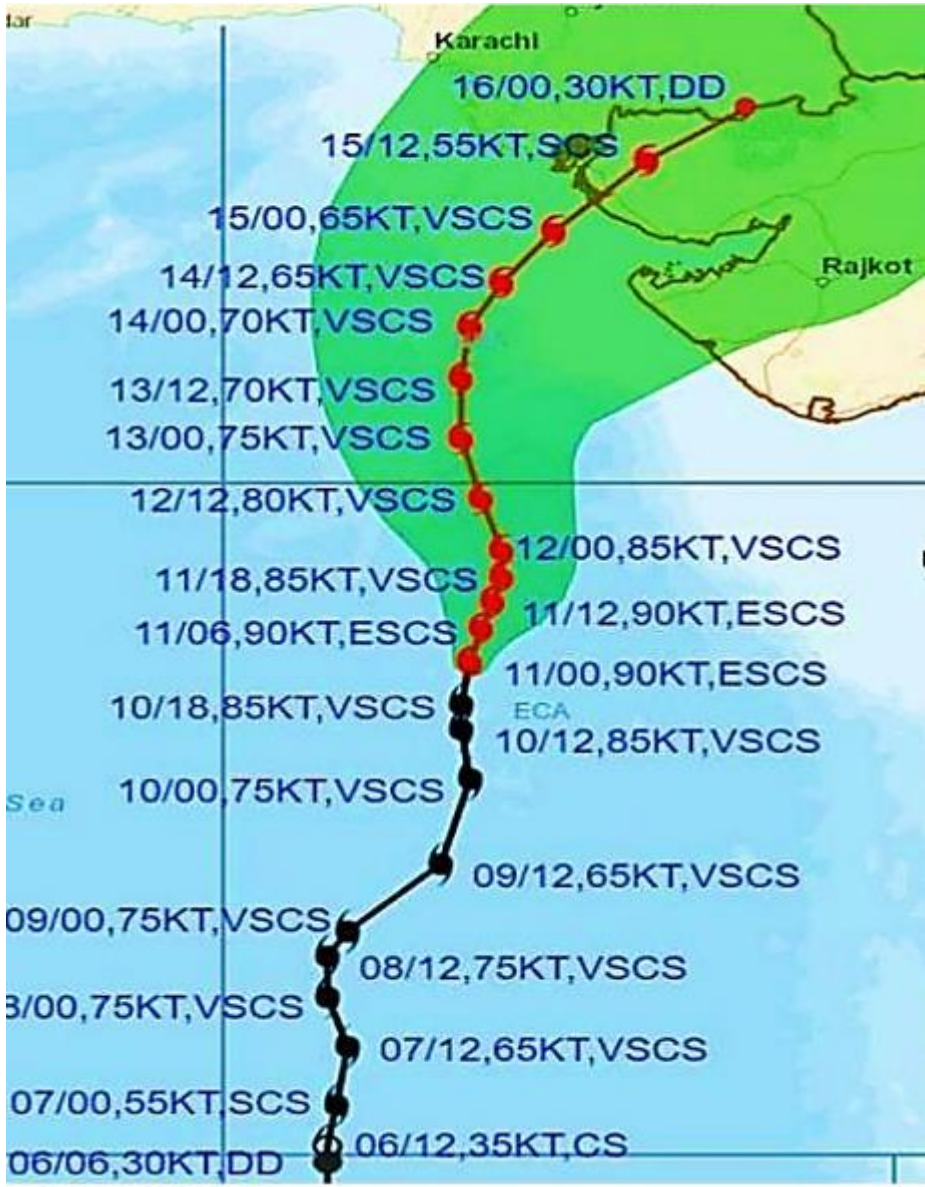
- Monsoon Mission was launched in 2012-13
- IMD now has three types of models of monsoon prediction
  - Statistical
  - Dynamical
  - Probabilistic
- Different spatial and time scales
- Seasonal prediction



Cyclone Prediction



- 1880 Ports would be warned of stormy weather
- Thousands would perish
- 2023 Entire path of cyclone Biporjoy predicted
- Loss of life near zero

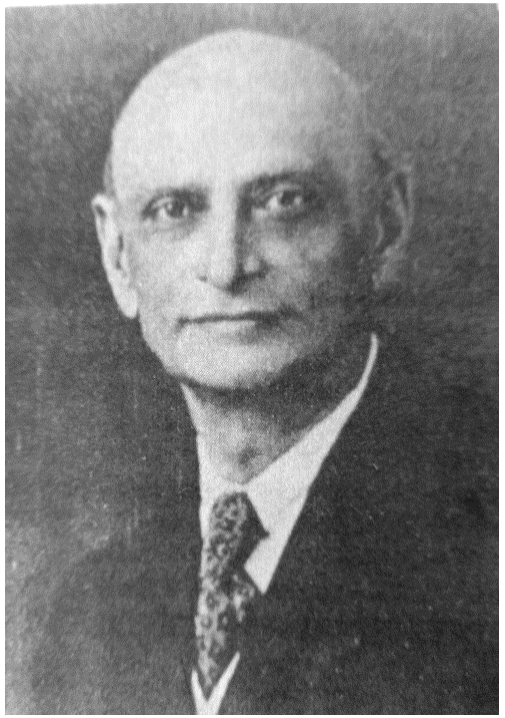


Indian Institute of Tropical Meteorology, Pune

- In 1962 IMD established the Institute of Tropical Meteorology at Pune as its own unit, with Dr P. R. Pisharoty as its Director
- In 1971 it became an autonomous institution

Indian Institute of Geomagnetism, Panvel, Navi Mumbai

- Dr N. A. F. Moos did pioneering work at Colaba and Alibag Geomagnetic Observatories
- In 1971 IIG was carved out of IMD as an autonomous body



Indian Institute of Astrophysics, Bangalore

- In 1971 IMD's astrophysics activity was separated into an autonomous institution with Dr M. K. Vainu Bappu as Director

National Centre for Medium Range Weather Forecasting, Noida

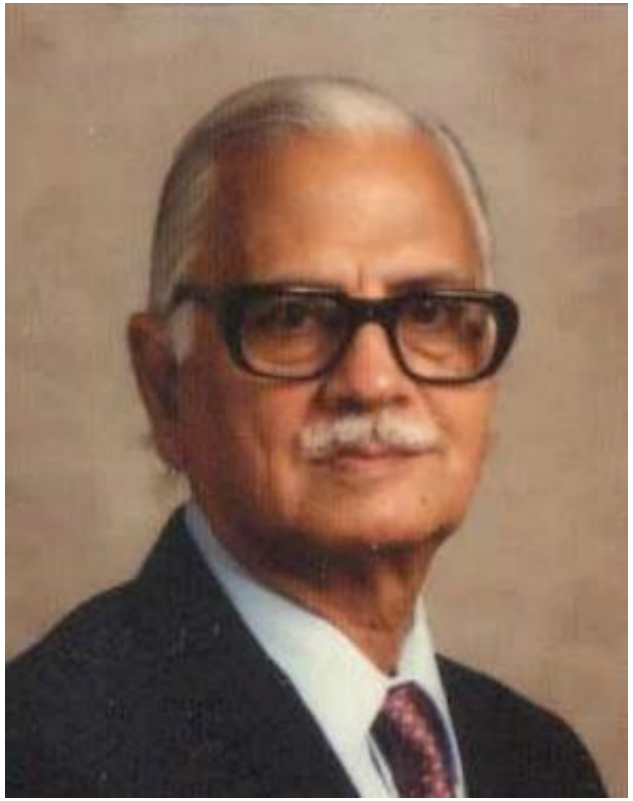
- Dr P. K. Das, one of the IMD DGs, introduced numerical weather prediction in IMD
- NCMRWF now functions as the operational NWP centre in India

Centre for Atmospheric Sciences Indian Institute of Technology Delhi

- In 1979, during the tenure of Dr P. K. Das, IMD sponsored the establishment of a Centre for Atmospheric Sciences in IIT Delhi

National Center for Seismology, New Delhi

- Dr A. N. Tandon, an associate of Prof Richter, did pioneering work in seismology as a part of IMD's activities
- Seismology has now been taken over by NCS in New Delhi



Physical Research Laboratory, Ahmedabad

- Dr K. R. Ramanathan joined IMD in 1925 and did pioneering work in the measurement of atmospheric ozone
- After retirement from IMD in 1948, he became the Director of the Physical Research Laboratory at Ahmedabad, founded by Dr Vikram Sarabhai

Indian Statistical Institute, Kolkata

- Dr P. C. Mahalanobis, Meteorologist at Alipore between 1922 and 1926, established the Indian Statistical Institute in Calcutta in 1931

6 IMD Scientists have been Bestowed with National Honours

Padma Vibhushan

- Dr K. R. Ramanathan
- Dr P. C. Mahalanobis

Padma Bhushan

- Dr P. Koteswaram
- Dr M. K. Vainu Bappu

Padma Shri

- Dr P. R. Pisharoty
- Dr R. Ananthakrishnan

1950 - India Became a Founder-Member of World Meteorological Organization, Geneva

Three IMD DGs have been WMO Vice-Presidents

Dr P. Koteswaram

Dr N. Sen Roy

Dr M. Mohapatra

Participation in International Expeditions and Field Experiments

- International Indian Ocean Expedition (IIOE) 1959-1965
- Monsoon Experiment (MONEX-79)
- ISMEX-73
- MONSOON-77
- Monsoon Trough Boundary Layer Experiment (MONTBLEX) 1990
- Land Surface Processes Experiment (LASPEX) 1997-98
- Bay of Bengal Monsoon Experiment (BOBMEX) 1999
- Arabian Sea Monsoon Experiment (ARMEX) 2002-05
- Continental Trough Convergence Zone Experiment (CTCZ) 2008-10

IMD's Antarctic Connection Dates Back to 1910

- George Simpson joined IMD as Imperial Meteorologist at Simla in 1906
- From 1910 to 1912, he worked in Antarctica as a meteorologist with the British Expedition to the South Pole led by Robert Falcon Scott
- He had carried meteorological instruments from India
- In 1920 he returned home to become the Head of the U. K. Met Office

IMD's Antarctic Connection was Reinforced in 1982

The first Indian Expedition to Antarctica which landed there on 9 January 1982 had two IMD members, A. K. Sharma and K. N. Katyal

The 20th Indian Summer Expedition to Antarctica had S. Stella as first woman member from IMD

Women in IMD

1948: 1 Now: 15% of IMD's Workforce

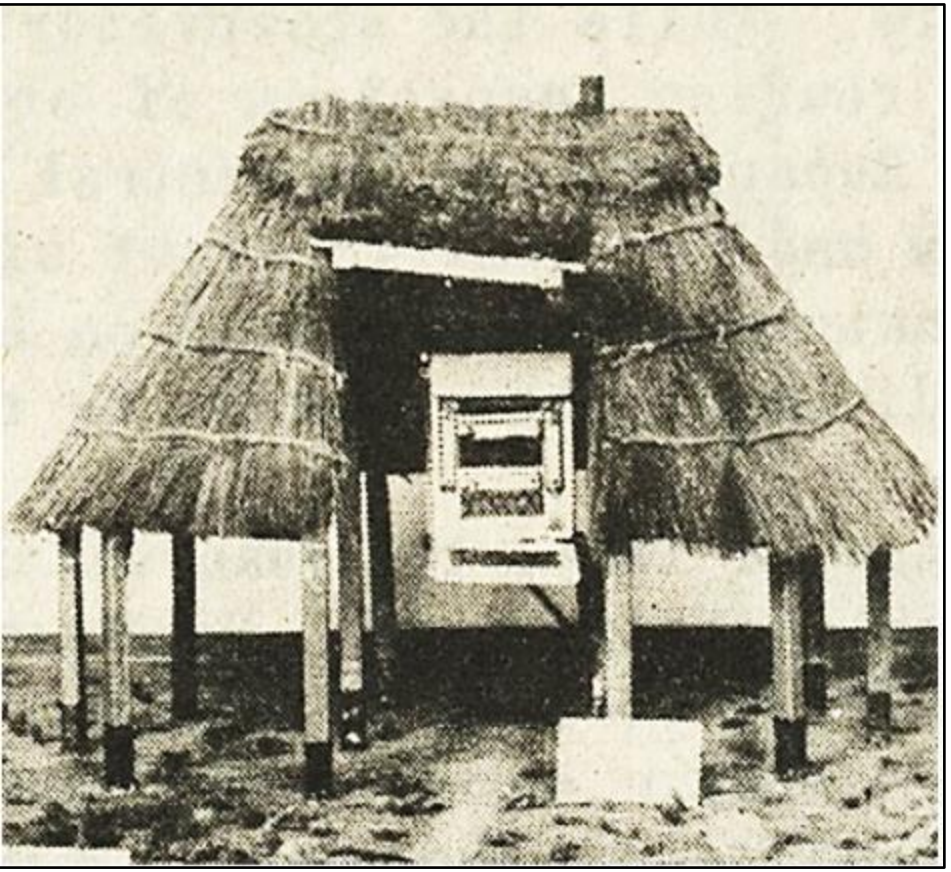
Anna Mani - First woman meteorologist in IMD - joined in 1948

Dr Narendran Jayanthi - Additional Director General 2006-07

Dr B. Amudha –Winner of WMO Vilho Vaisala Award 2016

IMD Has Come a Long Way

- 1875
- Thermometer Huts



- 1930
- Stevenson screen

- 1982
- AWS

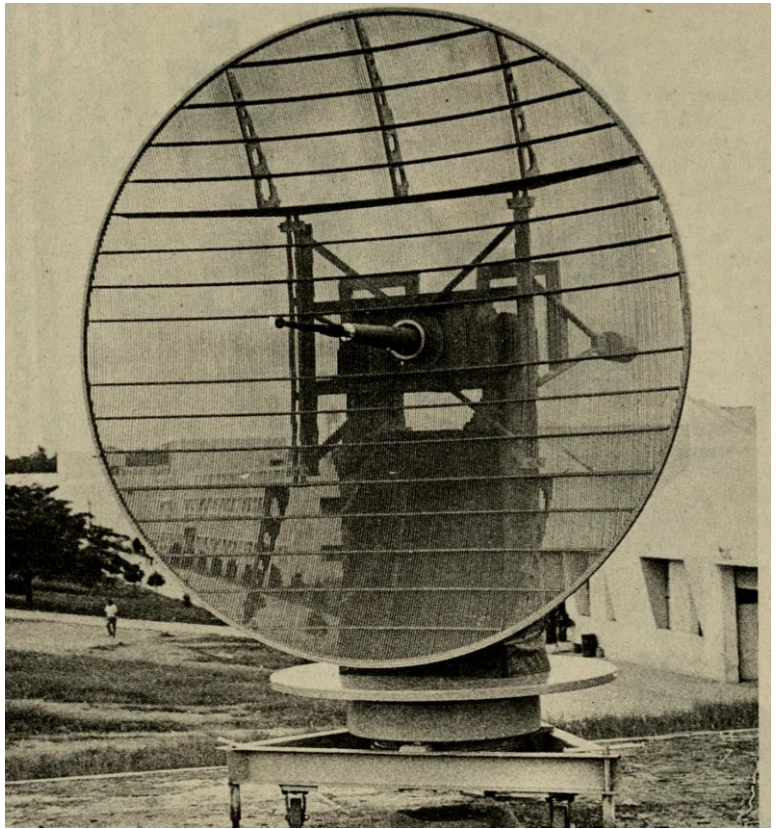
IMD Has Come a Long Way

- 1914
- Upper Air Observatory at Agra

- Now soundings are made even in Antarctica

IMD Has Come a Long Way

- 1954 First weather radar at Dum Dum airport

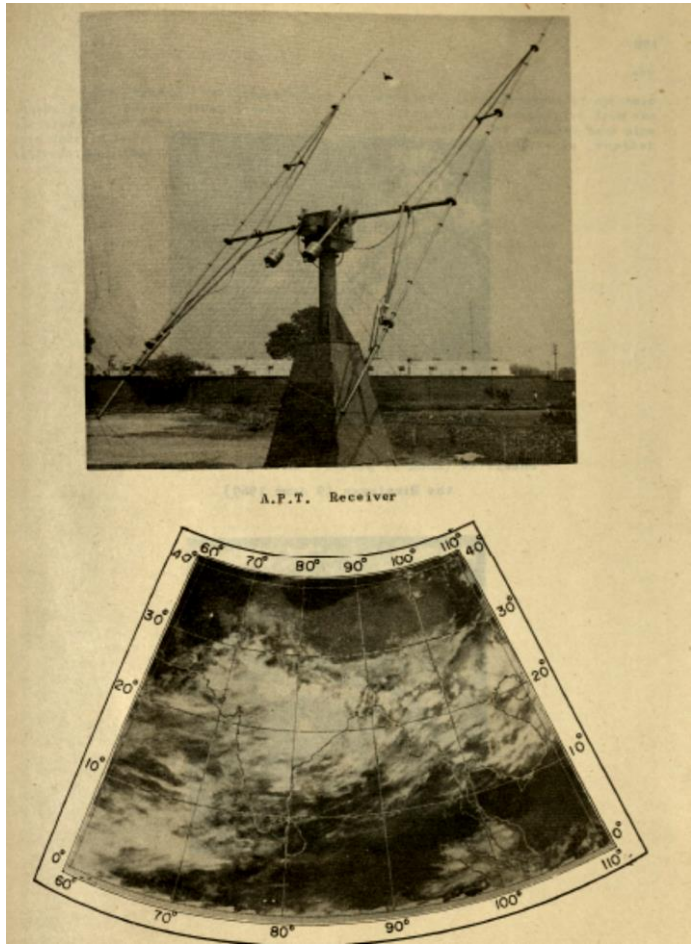


- 1969 First cyclone detection radar at Visakhapatnam

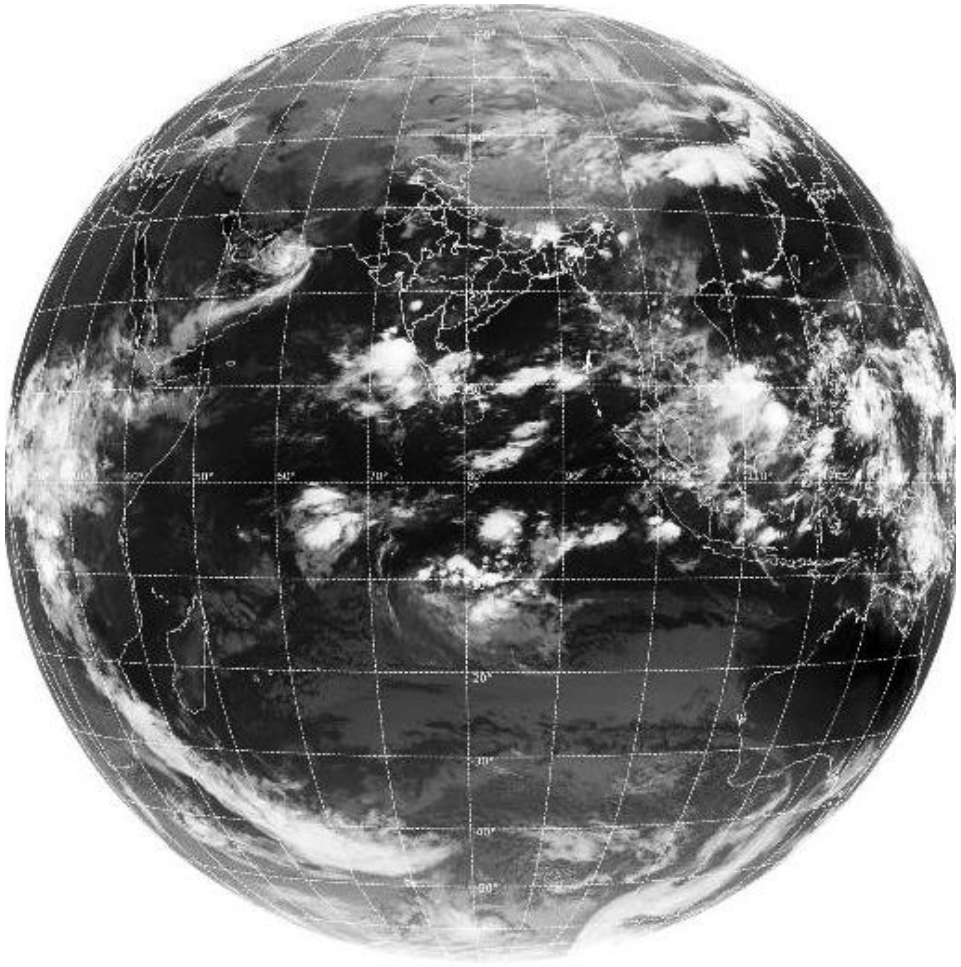
- 2002 First Doppler Weather Radar at Chennai

IMD Has Come a Long Way

- 1965 APT images from U.S. and Soviet satellites

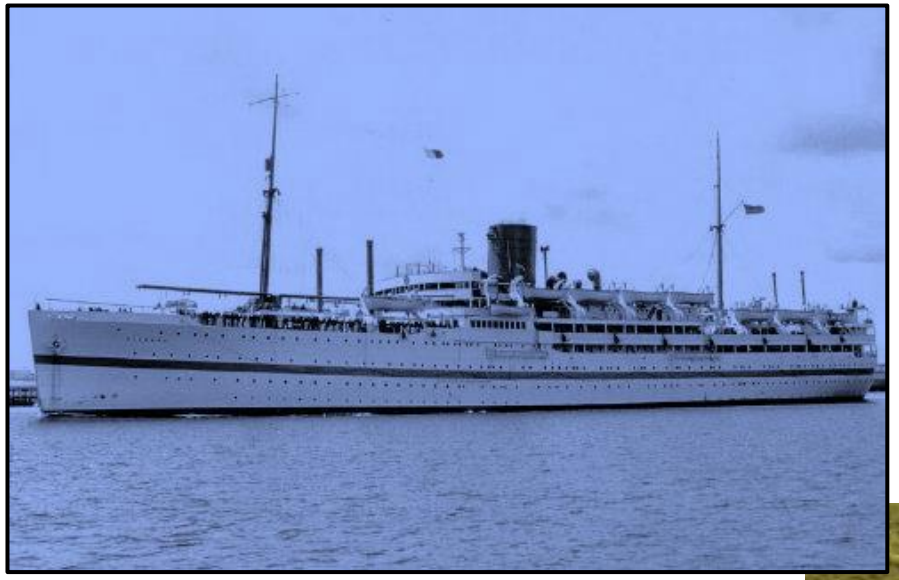


- 1982 India got its own INSAT satellite



What the Nation Needed, IMD Provided

- 19th Century Priority Areas
  - Shipping
  - Agriculture



What the Nation Needed, IMD Provided

- 20th Century
  New Priority areas
  - Civil Aviation
  - Flood Management
  - Tourism

What the Nation Needs, IMD Provides

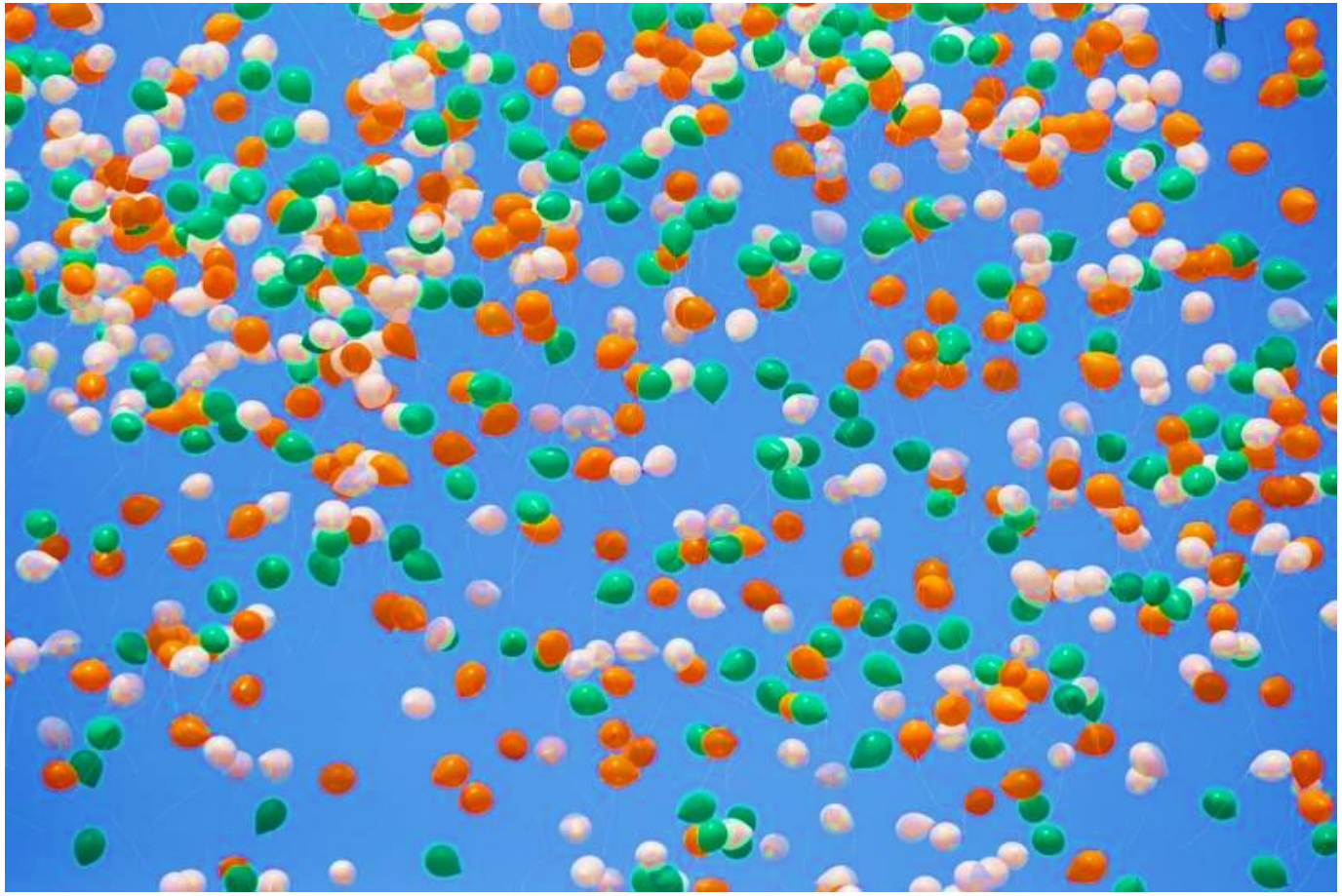
- 21st Century
  More Priority Areas
  - Disaster Mitigation
  - Energy Exploitation
  - Health and Air Pollution

Learning from History

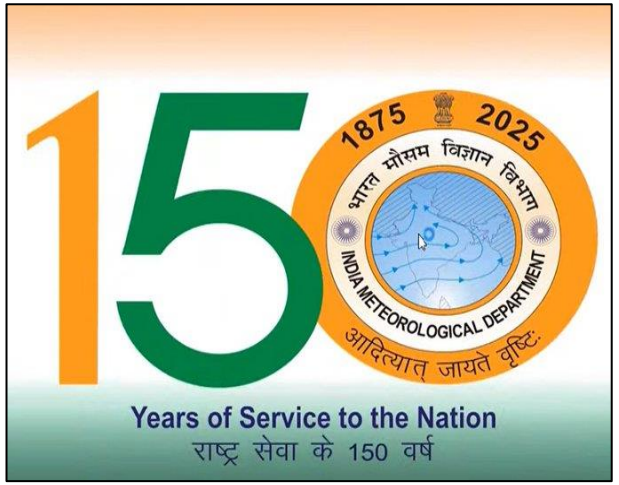
- IMD has always had India at its heart
- Quick to discard its colonial legacy
- IMD scientists were pioneers and visionaries
- IMD has been an engine of growth
- Led to the creation of 8 scientific institutions
- IMD has contributed to the nation’s prosperity

I wish IMD a bright future

- Prayers and Blessings



Thank You


150
1875
2025
भारत मौसम विज्ञान विभाग
INDIA METEOROLOGICAL DEPARTMENT
आदित्यात् जायते वृष्टिः
Years of Service to the Nation
राष्ट्र सेवा के 150 वर्ष