

## AIR Spotlight - Weather and Climate Change

AIR Spotlight is an insightful program featured daily on the All India Radio Newsonair. In this program, many eminent panellists discuss issues of importance which can be quite helpful in the [IAS exam](#) preparation. This article discusses the various initiatives and achievements of the India Met Dept.

### Participants:

- Dr Mrityunjay Mohapatra, Director General of Indian Meteorological Department on Weather and Climate Science.
- Sanjay Jha, Journalist.

### Context:

This article will discuss various achievements of the [India Meteorological Department \(IMD\)](#) over time.

### Background:

- India is celebrating 75 years of independence and during these 75 years, India has witnessed massive progress and technological advancements in many aspects particularly in the field of weather analysis and predictions.
- Earlier we were totally dependent on rain. With the passage of time, the meteorological department has adopted new technologies, new mechanisms of predictions that are used by farmers and fishermen.

### India Meteorological Department:

#### Introduction:

- In the year 1875, the Government of India established the India Meteorological Department, bringing all meteorological work in the country under a central authority.
- However, the rapid progress in the science of Meteorology and conversion of science to the service of the society started after the independence of India.
- From a modest beginning in 1875, IMD has progressively expanded its infrastructure for meteorological observations, communications, forecasting and weather services and it has achieved a parallel scientific growth.
- All departments including the disaster management, power sector, health sector, etc. depend on the observations of the IMD.

#### Achievements in the field of agriculture:

- In 1945, the state level weather services started in the country for the farmers.
- In 1976, a combined initiative by the Ministry of Agriculture and the India Meteorological Department was taken to provide a package of information on weather and its impact on agriculture to the farmers.

- In 1991, the IMD started Agro-Meteorological Services for 127 climatic zones. By that time the IMD had identified the climatic behaviour of the country and on the basis of that 127 climatic zones were identified.
- In 2008, the IMD started district level agro-meteorological advisory services.
- In 2018, the block level agro-meteorological advisory service was started by the IMD.

These above-mentioned achievements show how India which was mainly an agrarian country had witnessed improvements in weather and climate to support the socio-economic activities of the society including farmers.

#### **Achievements in other areas:**

- In the 1940s and 1950s, the IMD introduced open-air operations by releasing balloons and sensors that are tracked by the radars.
- Fast radars were used for monitoring the weather in the 1950s and during the same time, it was supported by the augmentation of observations by radiosonde and rawinsonde.
- During the 1970s, the IMD introduced eleven cyclone detection radar systems.
- This progress continued with the establishment of satellite-based observations in the 1980s.
- In the 1990s, the IMD came up with observational tools for the movements in oceans.
- The IMD had also developed the Numerical Weather Prediction (NWP) Models and at present, the IMD operates seven NWP models every day twice to get the observations in the morning and evening.

The above-mentioned achievements show that the IMD had started with providing services to the agricultural sector but over the years, it has also contributed a lot towards other aspects of society as well.

#### **Services to the neighbours:**

- The IMD also tries to help the neighbouring countries in the Bay of Bengal and the Arabian Sea.
- India being a regional leader, is recognized worldwide as a regional specialized meteorological centre for providing guidance, warning and services to all the countries in South-Asia and also in the Middle East.
- By providing advisory services and early warnings on [cyclones](#), heavy rainfalls, etc. to the neighbours, India helps them to take up necessary steps to minimize the losses created by these disasters.
- In addition to that, India with the help of the Maritime Distress Frequency System provides guidance about the weather conditions that are dangerous for shipping activities.
- As the Centre of Global Distress Mitigation, India provides the guidance and forecast every day round the year to all the countries involved in shipping activities in the Bay of Bengal and the Arabian Sea.
- IMD provides a crucial service to the national and international civil aviation sector in fulfilment of the requirements prescribed by the [International Civil Aviation Organisation \(ICAO\)](#) and the Director-General of Civil Aviation of India (DGCA).

- India also acts as a regional meteorological planning centre to provide training to weather forecasters from Asia and Africa.

This shows that India not only provides early warning services but it also provides capacity building services in the region to build the capacity for handling disasters.

### **Climate Change:**

- Climate Change is posing a serious threat to countries including developed and developing. India is also experiencing the impacts of climate change.
- Climate change has various aspects, the first and foremost aspect of climate change is the monitoring and detection of climate change.
- India's meteorological department is responsible for the detection of climate change by providing accurate observations of temperature, rainfall, etc. and all other relevant parameters for climate change and climatology.
- In that way, every year IMD provides a statement about the climate conditions of the country. The statement becomes part of the [World Meteorological Organization \(WMO\)](#) for the entire globe.
- A state-of-the-art Centre for Climate Change Research was established at the Indian Institute of Tropical Meteorology (IITM) Pune to better understand the science of climate change over the Tropics and enable improved assessments of the regional climate responses to global climate change.
- IMD also provides basic data with respect to adaptations and mitigations especially.

### **The role of society:**

- Weather forecasting is an applied science and the data on it is collected by each and every person in society.
- It is a science that directly demonstrates how knowledge can be converted to the betterment of society.
- People should be made aware of the tools and techniques for weather forecasting, how IMD provides weather forecasting, what are the ways and means by which this forecasting is used by different sectors, and how we can utilize it for the betterment of society.
- The awareness of these things will enable people to help each other to minimize the losses generated by the disasters.

### **Weather forecasting in future:**

- If we look at the past, weather predictions have undergone major changes.
- It started with just normal forecasting by analyzing the weather conditions in the last 24 hours to dynamic meteorology of the Numerical Weather Prediction System.
- After 10 to 20 years, it is expected that the improvements of the modelling system will be so high that the output will be directly provided to the general public for their day-to-day use.

### **Conclusion:**

IMD has continuously ventured into new areas of application and service, and steadily built upon its infrastructure in its history of 140 years. It has simultaneously nurtured the growth of meteorology and atmospheric science in India. Today, meteorology in India is poised at the threshold of an exciting future.

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