

IMD Turns 150

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India Meteorological Department (IMD): Celebrating 150 Years

Context:

On **January 15, 2025**, the India Meteorological Department (IMD), the nation's primary weather forecasting agency, celebrated its **150th anniversary**. Established in **1875**, IMD has played a critical role in weather forecasting, seismology, and disaster management. Operating under the **Ministry of Earth Sciences**, it is a cornerstone in India's efforts to mitigate the impacts of weather-related events and improve climate resilience.

About IMD

Key Facts

1. **Established:** 1875
2. **Headquarters:** New Delhi
3. **Nodal Ministry:** Ministry of Earth Sciences
4. **Mandate:**
 - **Meteorological Observations:** Collect weather data across India.
 - **Forecasting:** Provide forecasts for weather-dependent sectors like agriculture, aviation, and shipping.
 - **Warnings:** Issue alerts for severe weather phenomena (e.g., cyclones, heatwaves).
 - **Statistics:** Offer data for national planning and industries.
 - **Research:** Promote studies in meteorology and allied sciences.

Historical Background

- The IMD was founded in response to devastating **cyclones in 1864**, which struck **Kolkata and the Andhra coast**, causing significant loss of life and property.
 - The absence of a structured atmospheric monitoring system led to its establishment.
 - **H.F. Blanford**, the first **Imperial Meteorological Reporter**, began its operations.
 - Under **Gilbert Walker** (appointed in 1903), the IMD advanced monsoon predictions and identified large-scale oscillations like **El Niño**.
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IMD's Journey Over 150 Years

Evolution and Milestones

- Began as a small organization with a single head; today, it operates **permanent observatories** and **automated weather stations** nationwide.
- Played a **pivotal role in cyclone forecasting**, especially after the 1999 Odisha super cyclone, leading to reduced casualties.
- Recognized as a **Regional Climate Centre for South Asia**, providing critical forecasts to **13 neighboring countries**.

Technological Advancements (2014-2024)

- **Doppler Weather Radars:** Increased from 15 to 39.
- **Automatic Weather Stations:** Expanded to 1,208.
- **Rainfall Monitoring Stations:** Rose to 6,095.
- **Satellite Monitoring:** INSAT 3DR and 3DS provide round-the-clock weather updates.
- **Forecast Accuracy:**
 - **Heatwave prediction:** Improved to **95% accuracy** for two days in advance.
 - **Cyclone track prediction:** Enhanced by **35-40%**, leading to **zero loss of human lives** in recent events.

Notable Contributions

- **Specialized Services:**
 - Support for elections, sporting events, and space launches.
 - Early warnings for disasters, reducing human and economic losses.
- **Global Collaborations:**
 - Contributes to the **United Nations' Early Warning for All** program, aiding over **30 countries**.

IMD's Vision for the Future

Vision Document 2047

The IMD aims to become a **weather manager** and evolve its capabilities by 2047, the **centenary year of India's independence**.

Goals:

- **Zero-Error Forecasts:** Achieve hyper-localized accuracy (5-6 km resolution) for **village-level predictions**.
- **Extended Forecast Accuracy:**
 - Five-day forecasts: **90% accuracy**.
 - 10-day forecasts: **70% accuracy**.
- **Eliminating Weather Fatalities:** Minimize deaths from severe weather events within the next **20 years**.

Weather Management Initiatives

- **Mission Mausam:**
 - Inaugurated by **PM Modi**, focusing on weather modification.
 - **Cloud Seeding Research:** Through the **Cloud Chamber** at IITM, Pune.
 - **Advanced Monitoring:**
 - Deployment of **UAVs**, **IoT-based sensors**, and regional **climate reference stations**.
 - Round-the-clock upper atmosphere monitoring with satellites and radars.
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Achievements and Impact

Enhanced Accuracy and Coverage

- **Cyclone forecasting** and disaster management have saved countless lives.
- Improved **thunderstorm detection** and **rainfall prediction** have mitigated economic losses.

Global Role and Recognition

- Serves as a model for meteorological services in **South Asia**.
 - Actively participates in international initiatives to address **climate change** and **disaster resilience**.
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Conclusion

The **150th anniversary** of the India Meteorological Department is a moment to celebrate its legacy and achievements. From its establishment in **1875** to becoming a **global leader in meteorology**, the IMD has consistently safeguarded lives and supported India's growth. As it looks ahead to **Vision 2047**, the IMD is set to redefine weather management, ensuring a **climate-smart and weather-ready India**.

