

## In This Issue

Important Events	P1
Significant Events	P2
Workshops	P3
Meetings/VC	P4
Trainings	P7
Lectures/Talk/Webinar	P7
Foreign Deputation/MoU	P9
Achievements/ Infrastructure Development	P10
राजभाषा	P11
Research & Publications	P12
Visitors	P13
Weather Summary	P15

## IMPORTANT EVENTS

### 20<sup>th</sup> WMO Attachment Training for Tropical cyclone Forecasters during 19-30 August 2024



Release of Souvenir by Secretary Ministry of Earth Sciences

India Meteorological Department organised 20<sup>th</sup> Annual Attachment Training for Tropical Cyclone Forecasters in 13 WMO/ESCAP Panel member countries (19-30 August). IMD is conducting this training regularly every year since 2005. There were a total of 43 international participants with 9 joining in -person and remaining 34 joining online apart from the participants from India. The training aimed at building capacity of the cyclone forecasters in the region by understanding the latest developments in observations, monitoring, modelling, prediction and early warning services of cyclones over the Bay of Bengal and the Arabian Sea region. The training covered all aspects of early warning system of cyclones through theoretical deliberations as well as detailed hands on sessions. It has enhanced the competency of the forecasters in the region leading to improved early warning service delivery by the member countries. It has resulted in significant reduction in death toll due to cyclones over the region and establishes the leadership of India Meteorological Department, Ministry of Earth Sciences in the region.



Group photograph of participants and delegates during the Inaugural ceremony

The Inaugural ceremony of the training was held at Ministry of Earth Sciences (MoES) on 19<sup>th</sup> August, 2024. Dr. M Ravichandran, Secretary Ministry of Earth Science inaugurated the training programme. While appreciating RSMC New Delhi for organising such training programmes, he highlighted the success in early warning of cyclones in the region. He urged upon the trainees to learn to utilise the latest tools & technology and the standard operation procedure. As the human intelligence is crucial inspite of all technological developments including even the Artificial Intelligence, the capacity building through training programs is very much essential.

On this occasion, RSMC New Delhi released a Souvenir highlighting its international responsibilities, role in capacity building, monitoring and forecasting of tropical cyclones and its achievements.

The training covered all aspects of detecting, monitoring, forecasting and products generation and dissemination of warning products in association with tropical cyclones with six special practical sessions by DG IMD.



### Published by

India Meteorological Department,  
MausamBhawan, Lodi Road,  
New Delhi - 110 003

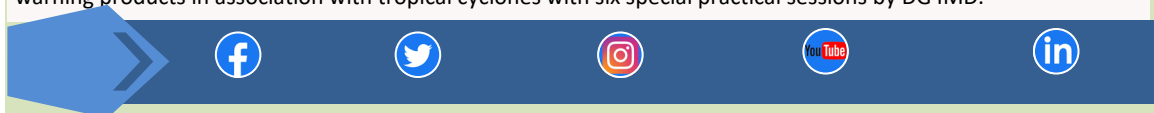
Tel. : 011- 24344298  
Telefax : 91-11-24699216 &  
91-11- 24623220  
<https://mausamjournal.imd.gov.in/>  
email : [mausamps@gmail.com](mailto:mausamps@gmail.com)

### Edited by

Dr.V.K. Soni

### Compiled by

Editorial Team



## Significant Events

**On the occasion of 150<sup>th</sup> Anniversary of India Meteorological Department, one day workshop for stakeholders was organized by Meteorological Centre Raipur on 29<sup>th</sup> August, 2024.**



**On the stage, Honorable Shri Ramen Deka, Governor of Chhattisgarh, Special Guest Shri Girish Chandel, Vice Chancellor Indira Gandhi Agricultural College Raipur, Dr. Mrityunjay Mahapatra, Director General of India Meteorological Department, Shri R. Balasubramaniam Head of Regional Meteorological Centre, Nagpur, and Mrs. Samanti Sarkar, Head of Office of Meteorological Centre, Raipur,**

**Dr. Mrutyunjay Mohapatra, Director General of India Meteorological Department, in his address, explained in detail about the history of India Meteorological Department and the current successes of the department. He gave information regarding the installation of Doppler Weather Radar in Raipur. Vice Chancellor of Indira Gandhi Agricultural College, Raipur briefs about issuing agricultural weather advisory in coordination with Meteorological Centre Raipur and Indira Agricultural College, Raipur.**

While inaugurating the one-day workshop organized by the Meteorological Department, Governor Shri Ramen Deka expressed his appreciation for the services of the department and said that due to the tireless services of the India Meteorological Department, today we are less aware of the risks related to natural disasters and climate change and are able to face them in the best way. He expressed confidence that India Meteorological Department will continue to successfully fulfill its mission in the coming years and play an important role in making the country a global power in weather and climate services.

On the occasion of the 150th Foundation Day of India Meteorological Department, a Memento was presented by Director General Dr. Mrityunjay Mahapatra to Honorable Chief Guest, Governor Shri Ramen Deka and Special Guest Shri Girish Chandel, to commemorate the 150<sup>th</sup> year of India Meteorological Department.

Scientific posters were displayed by various stakeholders in the workshop. On behalf of Meteorological Centre Raipur, Dr. Gayatri Vani Kanchibotla, Sc. 'C' briefs about the weather services being provided to various areas by Meteorological Centre Raipur.

Two technical sessions were also organized in the workshop. Technical talks were given by stakeholders from various departments like Agriculture, Health, Air Pollution, Ground Water, Water Resources Department, Central Water Commission.

After Technical session, a press conference was organized, in which Director General Dr. Mrityunjay Mohapatra answered the questions asked by the press regarding the weather and various disasters caused by it. A total of 55 print, electronic and digital media persons participated in the press conference.



**Dr. Mrityunjay Mohapatra DG, IMD during press conference**

**10th Meeting of World Meteorological Organization (WMO) Regional Steering Group (RSG) Asia Node on Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) and Workshop on Dust and Aerosol in New Delhi, India on 23-24 September 2024**



**Dr. M. Mohapatra warmly welcomed Dr. Takashi Maki in the august presence of Dr. M. Ravichandran, Secretary, MoES and Shri Rajendra Singh, Member and Head, NDMA**

India Meteorological Department organized 10th meeting of World Meteorological Organization (WMO) Regional Steering Group (RSG) Asia Node on Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) and Workshop on

Dust and Aerosol in Hybrid Mode in New Delhi on 23-24 September 2024. There were about 50 participants from different countries and organizations including WMO, Japan Meteorological Agency (JMA), Korea Meteorological Administration (KMA), Information and Research Institute of Meteorology, Hydrology and Environment Mongolia, China Meteorological Administration (CMA), National Center for Meteorology Saudi Arabia, Caribbean Institute for Meteorology and Hydrology, IIT Delhi, IIT Bhubaneswar, Aryabhata Research Institute of Observational Sciences (AIRES), Central Pollution Control Board (CPCB), Commission for Air Quality Management (CAQM), Ministry of Environment, Forest and Climate Change of India, National Disaster Management Authority (NDMA), National Center For Medium Range Weather Forecasting (NCMRWF), IITM Pune, University of Delhi, Delhi Technical University, Jawaharlal Nehru University, National Physical Laboratory of India.



**Participants of 10<sup>th</sup> meeting of World Meteorological Organization (WMO) Regional Steering Group (RSG) Asia Node on Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) and Workshop on Dust and Aerosol in New Delhi, India on 23-24 September 2024**

The experts discussed about the current activities, future plans as well as limitations regarding Sand and dust storm warnings in this region. Additionally, participants from different institutes also discussed the influence of dust and aerosol on monsoonal system, weather and climate. It has also been discussed the application Artificially Intelligence techniques to enhance the predictability of sand and dust storm warnings.

### Meteorological Centre Port Blair Celebrates Its 1<sup>st</sup> Anniversary as MCPort Blair

The Meteorological Centre Port Blair celebrated its first anniversary on 27th July, 2024 with great enthusiasm and a sense of achievement. The event was marked by a plantation drive and a cake-cutting ceremony, attended by the head of the centre and other esteemed officers.



**Staff of MC Port Blair and Guests**

All officers and staff of MC Shillong participated in a country-wide mass pledge against Drugs on 12th August, 2024 regarding the flagship mass awareness campaign "Nasha Mukti Bharat Abhiyan".



**Officials of MC Shillong taking pledge**

### Plantation drive "EK PED MAA KE NAAM".

Plantation drive "EK PED MAA KE NAAM" as per the orders of Headquarters New Delhi, a tree plantation program was organized in the courtyard of Regional Meteorological Centre, Nagpur under the "One Tree in the Name of Mother" drive on 13<sup>th</sup> September, 2024.



**Officials during Plantation Drive**

### Human Resource Development Activities

#### WORKSHOP

**Shri Raja Acharya**, Met. 'B' participated virtually in the the 18th WCRP/BSRN (Base Surface Radiation Network) Scientific Review and Workshop (HYBRID MODE) during the period (1-5 July 2024).

**Dr. Rajib Chattopadhyay**, Sc. 'E' attended the 5<sup>th</sup> WCSSP-India Annual Science Workshop from 2 - 5 July, 2024. Also, **Lekshmi S**, Senior Research Fellow participated and presented a talk on "Skill Analysis of Heatwaves Using IITM EPS and Other S2S Models".

**Shri Ramashray Yadav**, Sc. 'D', **Shri Pradeep Sharma**, Sc. 'D', **Shri Abhimanyu Chauhan**, Sc. 'C' and **Shri N.V. Patel**, Met. 'A' attended workshop on 11<sup>th</sup> July 2024 at CWC Gandhinagar to sensitize the CWC stake holders about IMD products and technical terms used by IMD.

On 24<sup>th</sup> July, 2024, **Dr. M. Mohanty**, Sc. 'F' and **Shri R. K. Mohapatra**, Met. 'B' attended Technical Workshop on UN-

Habitat's Quality of life initiative in collaboration with Bhubaneswar Municipal Corporation meeting.

**Dr. Chinmay Kumar Jena**, Sc. 'C', India Meteorological Department participated in the WMO and Integrated Carbon Observations System (ICOS) summer school on Greenhouse Gases, which was held in Wageningen, the Netherlands, 19-24 August 2024.



Participants of summer school of WMO and Integrated Carbon Observations System (ICOS) on Greenhouse Gases, which was held in Wageningen, the Netherlands, 19-24 August 2024.

**Dr. Ashutosh Misra**, Sc. 'D', participated in the training cum workshop on 'Framing Agriculture-Climate Connections' at the Anil Agarwal Environment Training Institute (AAETI) Nimli, Rajasthan, organised by Centre for Science and Environment (CSE), New Delhi from 21-23 August, 2024 and delivered a talk on "Weather-based Agro-advisories: Challenges and Possibilities" on 22<sup>nd</sup> August, 2024.

MC Shillong officers and staff attended the online one-day International Workshop on Dust and Aerosol organised by ESSO-IMD in collaboration with WMO Sand and Dust Storm Warning Advisory and Assessment System (SDS-WAS) Asia Node in New Delhi on 24<sup>th</sup> September, 2024.

**Raja Acharya**, Met. 'B' participated virtually in the "WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation (TECO-2024)" held during 23-26 September, 2024.

### MEETINGS / VIDEO CONFERENCES

**Dr. M. Mohanty**, Sc. 'F' attended the 4<sup>th</sup> weekly meeting of the **Crop Weather Watch Group Committee (CWWG) for Kharif-2024** at the Conference Hall of Krushi Bhawan on 1<sup>st</sup> July, 2024, 15<sup>th</sup> July, 2024 and 22<sup>nd</sup> July, 2024.

**Dr. Mrutyunjay Mohapatra**, DG, IMD participated in the meeting under the Chairmanship of Union Home Secretary to discuss about the network spread of IMD across the country at districts and block level on 2<sup>nd</sup> July, 2024.

**Dr. Mrutyunjay Mohapatra**, DG, IMD participated in the meeting with team from Civil Aviation Department, Govt. of Haryana headed by **Shri V. P. Agrawal**, Senior Member, (Ex.

Chairman, AAI), regarding installation of equipment & operations at Hisar Airport on 2<sup>nd</sup> July, 2024.

**Dr. Mrutyunjay Mohapatra**, DG, IMD and **Dr. V.K. Soni**, Sc. 'F' participated in the meeting to discuss issues related to **renewable energy forecasting** at Ministry of earth Sciences (MoES) in the presence of the Secretary (Power) and the Secretary (MoES) on 3<sup>rd</sup> July, 2024.

**Shri Sunil Narayan Thool**, Sc. 'E' attended a meeting on 3<sup>rd</sup> July, 2024 focused on "Prevention of Lightning & Heat" at the Bihar State Disaster Management Authority, Patel Bhawan, Patna.

**Dr. O.P. Sreejith**, Sc. 'F' attended the **first Monsoon Forum Meeting** for Assam state jointly organized by the United Nations World Food Program (WFP), Assam State Agriculture Department and IMD on 5<sup>th</sup> July, 2024 at Assam Administrative Staff College, Guwahati and delivered a lecture on "Review of 2023 climate and 2024 southwest monsoon Seasonal forecast for Assam "

**Dr. Mrutyunjay Mohapatra**, DG IMD participated in the **Global Energy and Water Exchanges Project (GEWEX) Conference** during 7 – 12 July, 2024 at Tokyo, Japan. He delivered a special lecture on "Evolution of Monsoon Research and Prediction in India".



Dr. Mrutyunjay Mohapatra, DG IMD delivering the lecture

**Shri Thangjalalhouvum**, Sc. 'D' attended online meeting with DGM(CAMD) regarding pending DGCA Audit points for AMS Barapani on 7<sup>th</sup> July, 2024. Latest ATR on HAWOS & DCWIS installation and commissioning was already sent to CAMD.

**Dr. Mrutyunjay Mohapatra**, DG IMD participated in the 5<sup>th</sup> Session of WMO's Task Force on Elections and Appointments through on 8<sup>th</sup> July, 2024.



Dr. Mrutyunjay Mohapatra, DG IMD during the session

**Dr. Satyaban B. Ratna**, Sc. 'E' attended (Online) the **Sixth Session of the CLIVAR/GEWEX Monsoons Panel and the Joint Meeting between MP& WG-AAM**, held in Japan on 11<sup>th</sup> July, 2024.

**Shri Rahul Saxena**, Sc. 'G' attended the meeting with Lt. Governor on 11<sup>th</sup> July, 2024 to discuss on "**Flood Preparedness for Delhi**".

**Dr. M. Mohanty**, Sc. 'F' attended a meeting under the Chairmanship of the Hon'ble Minister, Revenue & DM Deptt on the progress of work "**Construction of Doppler Weather Radar (DWR) Building at Balasore and Sambalpur**" in the office chamber of Hon'ble Minister, Revenue & DM Deptt. (Secretariate first floor conference hall) on 15<sup>th</sup> July, 2024.

**Dr. M. Mohapatra**, DG, IMD participated in the Joint Collaborative Board (JCB) Co-Chairs meeting to discuss the Agenda for the forthcoming Mariners Workshop at Paris in the month of September on 20<sup>th</sup> July, 2024.

**Dr. M. Mohapatra**, DG, IMD participated in the Annual Children's Meet organized by Odisha Welfare Association "**Bal Vikas Dhara**" as a Guest of Honour on 20<sup>th</sup> July, 2024.



**Dr. Mrutyunjay Mohapatra, DG IMD at the Annual Children's Meet**

**Dr. M. Mohapatra**, DG, IMD participated in the meeting under the Chairmanship of Union Home Secretary to discuss Proposal for Mitigation Project for Lightning Safety in on 22<sup>nd</sup> July, 2024.

**Dr. M. Mohapatra**, DG, IMD participated as Guest of Honour in the Workshop on High Altitude Platform for Near Space Applications at Ashoka Auditorium, Delhi Cantt. on 26<sup>th</sup> July, 2024.

**Dr. M. Mohapatra**, DG, IMD participated in the meeting with **Dr. Isao Kanda**, MD, **Mr. Takenori Suzuki**, General Manager and **Mr. Sridhara Nayak**, Japan Meteorological Corporation regarding collaboration of weather services between the two organisations on 27<sup>th</sup> July, 2024.

**Dr. M. Mohapatra**, DG, IMD participated in the **Second Meeting of the RA II Task Team** on review of the regional partnership and sub-regional cooperation (TT-RP) of WMO through VC on 29<sup>th</sup> July, 2024.

On 29<sup>th</sup> July, 2024, **Shri Umasankar Das**, Sc. 'D' attended the weekly meeting of **crop weather watch group committee (CWWG) for Kharif, 2024** under the chairmanship of Director of Agriculture & Food Production, Odisha in the 3<sup>rd</sup> floor conference hall, krushibhawan, Bhubaneswar.

**Dr. Mrutyunjay Mohapatra**, DG, IMD participated in the Meeting of WMO and IOC Joint Collaborative Board to discuss

about the major topics to be considered for discussion during the Paris Meeting on 30<sup>th</sup> July, 2024.

**Dr. Kripan Ghosh**, and **Dr. Ashutosh Misra**, Sc. 'D', attended an online meeting with RBI officials to discuss "**various scientific and technical aspects**" under the chairmanship of Head, CR&S, IMD, Pune on 2<sup>nd</sup> August, 2024.

**Dr. Mrutyunjay Mohapatra**, DG, IMD participated in the meeting under the Chairmanship of Secretary, Ministry of Panchayati Raj at Secretary's Chamber to review the progress of the IMD Weather Forecast at Gram Panchayats level on 5<sup>th</sup> August, 2024.

**Dr. Mrutyunjay Mohapatra**, DG, IMD participated in the meeting of **Task Force of WMO on Elections and Appointments Preparation** on 5<sup>th</sup> August, 2024.

**Dr. Kripan Ghosh**, Sc. 'F' attended the "**18<sup>th</sup> meeting of the Project Monitoring and Advisory Committee (PMAC) IMD**" to monitor the periodic progress of the projects under ACROSS-IMD and to suggest suitable remedial measures for successful implementation of the activities through virtual mode on 6<sup>th</sup> August, 2024.

**Shri Satyendra Kumar**, Met. 'A' and **Shri Donald M. Dkhar**, S. A. attended the meeting conducted by The Commissioner & Secretary, Revenue & Disaster Management Department to discuss matters relating to Impact Based Forecast Bulletins on the 6<sup>th</sup> August, 2024 at Main Secretariat Building, Meghalaya.

**Sh. S. K. Manik**, Sc. 'D' attended the meeting for final submission of the Committee report headed by Chairman, CWC related to joint flood management study of river Yamuna for its reach between Hatnikund to Okhla barrage on 14 Aug., 2024 at CWC, R K Puram, New Delhi.

One-day Stakeholders Consultation Meeting on "**Implementation of Emergency Action Plan (EAP)**" for Tilaiyadam of Damodar Valley Corporation (DVC) at Tilaiya dam, Dist. Koderma Jharkhand attended by Dr. Somenath Dutta Scientist-G (Head, Regional Meteorological Centre, Kolkata) and Shri Abhishek Anand Scientist C (Head, Meteorological Centre, Ranchi) on 23<sup>rd</sup> August, 2024 on behalf of Hydromet Division.

**Dr. Kuldeep Srivastava**, Sc. 'F' participated in fifteenth meeting of Geospatial Information Sectional Committee, LITD 22 with its Panels on 29<sup>th</sup> August, 2024 in online mode.

**Dr. Kuldeep Srivastava**, Sc. 'F' and **Dr. Sankar Nath**, Sc. 'F', has participated in Meeting with Ministry of Civil Aviation, Indian Meteorological Department, and BISAG-N to discuss data requirement for Airport Planning by MoCA on 7<sup>th</sup> August, 2024 in virtual mode. The meeting aimed to discuss the data requirements for airport planning, focusing on the need for specific data from IMD, such as the wind data, temperature data, climatic trends, and other relevant data points.

**Shri Anand Shankar**, Sc. 'D' attended a joint meeting with Farmers regarding impact of deficient rain on Kharif Crops on 12<sup>th</sup> August, 2024 at Doordarshan, Patna.

**Shri Abhishek Anand**, Sc. 'C' and **Shri Jeevan Baske**, SO-I attended the Meeting of Airport Advisory Committee 2024, under the chairmanship of **Shri Sanjay Seth**, Hon'ble MP and Minister of State for Defence cum Chairman, Airport Advisory Committee, on 24.08.2024.

**Dr. Mrutyunjay Mohapatra**, DG, IMD participated in the Inaugural ceremony of IMD-WMO Group Fellowship Training on "Development of Competency in Weather Forecasting" at MTI, Pune on 25<sup>th</sup> August, 2024. India Meteorological Department signed a Memorandum of Understanding (MoU) with Integrated Research and Action for Development on 30<sup>th</sup> August Secretary MoES inaugurated the programme. **Dr. M. Ravichandran**, Secretary MoES released a Souvenir on WMO Regional Training Centres in India.

**Dr. Kripan Ghosh**, **Dr. Ashutosh Misra**, Sc. 'D' and **Dr. Jaya Dhami Parihar**, Sc. 'D' attended the inaugural program of the Joint WMO-IMD International Fellowship Training on "Development of Competency in Weather forecasting", hosted by Meteorological Training Institute (MTI), IMD Pune at IITM, Pune on 26<sup>th</sup> August, 2024.



**Dr. M. Mohapatra, DG, IMD and others during program**

**Sh. Bikram Singh**, Sc. 'F' attended a meeting under the Chairmanship of **Additional Chief Secretary**, Govt. of Uttarakhand regarding "Hon'ble Vice President visit to Uttarakhand" at Secretariat, Dehradun on 30<sup>th</sup> August, 2024 and briefed about the likely weather conditions.

**Dr. Kuldeep Srivastava**, Sc. 'F' and **Ms. Suman Gurjar**, Sc. 'D' have participated in **National Spatial Data Infrastructure (NSDI) Executive Committee (EC)** on 6<sup>th</sup> September, 2024 at Technology Bhavan, Department of Science and Technology, New Delhi. This meeting happened in physical mode.

**Shri Rahul Saxena**, Sc. 'G' and **Ms. Hemlata Bharwani**, Sc. 'D' **Sh. Asok Raja S. K.**, Sc. 'D', **Sh. S. K. Manik**, Sc. 'D', **Ms. Yashika Garg**, Met. 'A', **Sh. Chandan Kumar**, S. A. and **Sourabh Singha**, S. A. attended the ESRI USER India Conference on 6<sup>th</sup> September 2024. **Sh. Saxena**, Sc. 'G' was invited panelist in the 'Leveraging GIS Technology to Mitigate Climate Risks' session.

**Dr. Mrutyunjay Mohapatra**, DG IMD participated in the Stakeholders Meeting organized by Regional Weather Forecasting Centre, Mumbai on 15<sup>th</sup> September.



**Dr. Mrutyunjay Mohapatra, DG IMD during the meeting**

**Dr. Mrutyunjay Mohapatra**, DG IMD participated as Guest of Honour at the Inaugural Function of the International Conference on "Building Small holder Climate Resilience for Achieving Sustainable Food Systems" at Odisha University of Agriculture and Technology, Bhubaneswar on 17<sup>th</sup> September.



**Dr. Mrutyunjay Mohapatra, DG IMD at the conference**

**Dr. Mrutyunjay Mohapatra**, DG IMD participated in the Stakeholders Meeting commemorating 150 Years of the India Meteorological Department and 50 Years of Cyclone Warning Centre, Visakhapatnam and Hindi Sangoshti on completion of 50 years of Cyclone Warning Centre, Visakhapatnam on 24<sup>th</sup> September. During the ceremonies a Souvenir on "Golden Jubilee" celebrations of CWC Visakhapatnam was released by the Guests of Honour.



**Dr. Mrutyunjay Mohapatra, DG IMD at CWC Visakhapatnam**

## TRAININGS

**Dr. Kuldeep Srivastava**, Sc. 'F' attended a virtual training on **Cyber Security Basics** by Microsoft organised by DoPT (Mission Karmayogi Bharat) on 22<sup>nd</sup> July, 2024.

**Shri Atul Kumar Singh**, Sc. 'D' attended a joint IMD-WMO Fellowship Training Program on **"Development of Competency in Weather Forecasting"** from 26<sup>th</sup> August-27<sup>th</sup> September 2024 at Meteorological Training Institute Pune (Recognised as WMO Regional Meteorological Training Centre for RA-II) along with 16 participants from 11 countries of RA-II.



**Shri Atul Kumar Singh Scientist D participated in joint IMD-WMO as resource person**

**Dr. M. Mohanty**, Sc. 'F' attended Training Programme for Veterinary Officers arranged by OSDMA in collaboration with State Fishery and Animal Husbandry Department on Disaster management at Veterinary Officers Training Institute and delivered Lectures on **"Weather Forecasting and Early Warning"**, on 07.08.2024, 21.08.2024 and 28.08.2024.

**Mr. Ajay Kumar Rai**, S. A. successfully completed the training for the 44<sup>th</sup> Indian Scientific Expedition to Antarctica (ISEA). The training spanned from August 14, 2024, to September 20, 2024, and took place at several locations in India.



**44<sup>th</sup> Pre-Antarctic Snow Ice Acclimatization Course Batch-II**

**Dr. G. N. Raha**, Sc-E, Head M.C. Gangtok has attended the "Stakeholder's meeting to explore the modalities of weather-based Crop insurance scheme for plantation crops" at the Conference Hall of Krishi Bhawan on 02.09.2024.

**Dr. Kuldeep Srivastava**, Sc. 'F' has to attend Joint IMD - WMO Training Course on Techniques and technology commonly used in forecast offices on 26<sup>th</sup> September, 2024 at IMD Pune.

## LECTURES/ TALK/ WEBINAR

**Dr. Kripan Ghosh**, Sc. 'F', **Dr. Ashutosh Misra**, Sc. 'D', **Dr. Jaya Dhami Parihar**, Sc. 'D' and **Dr. Asha Latwal**, Sc. 'C' attended the WCSSP India Annual Meeting 2024 Webinars on following themes:

- i. Developing seamless ensemble coupled systems across scales (work package one) on 2<sup>nd</sup> July, 2024.
- ii. Risk based forecasting of high-impact weather events (work package four) on 3<sup>rd</sup> July, 2024.
- iii. Evaluation and understanding of monsoon processes and hazards (work package two) on 4<sup>th</sup> July, 2024.
- iv. Observing the environment to improve predictions (work package three) on 5<sup>th</sup> July, 2024.

**Sh. Rohit Thapliyal**, Sc. 'D' participated as a Speaker for State-Level Workshop on "Climate Change and Human Health" organized by Directorate of Medical Health & Family Welfare, Govt. Of Uttarakhand in Chander Nagar, Dehradun on 02.07.2024. Sh. Rohit Thapliyal, Scientist-D delivered a talk on **"Climate Change, Extreme Events, and Uttarakhand: Present Vulnerability and Projected Changes"** in the said workshop.

**Dr. Kripan Ghosh**, Scientist 'F' delivered an online talk on **"Impact Based Forecast (IBF) for Agriculture"** in the Work Package 4<sup>th</sup> session (Risk based forecasting of high-impact weather events) of WCSSP India Annual Meeting on 3<sup>rd</sup> July, 2024.

**Dr. Somenath Dutta**, Sc. 'G' had delivered a talk in the National Seminar on **"Challenges in Climate Change and Sustainable Development – Indian Perspective"** at BC Roy Engineering College, Durgapur, WB organised by Durgapur Viswagandha Science Society on 24<sup>th</sup> July, 2024.

**Dr. O.P. Sreejith**, Sc-F attended the Meeting with the Reserve Bank of India (RBI) on 26<sup>th</sup> July 2024 at RBI, New Delhi and delivered a lecture **"Status of Monsoon 2024 & Seasonal Outlook issued by IMD for the 2024 Southwest Monsoon Season (June - September)"**.

**Dr. Kripan Ghosh**, Head Agrimet Division delivered a guest lecture on "Agromet Advisory Services in India for Risk Management in Agriculture" in an online training programme on **"ECHO Disaster Management and Mitigation Strategies in Agriculture and Allied Sectors"** on 31<sup>st</sup> July, 2024.

**Dr. Mrutyunjay Mohapatra**, DG IMD delivered an Invited Talk on **Space Applications for Operational Meteorology** at the National Space Day 2024 celebrated by INCOIS, Hyderabad.

**Dr. Mrutyunjay Mohapatra**, DG IMD participated and delivered Opening Remarks during the meeting regarding Navigating Climate Challenges, Insights and Strategies for the Global South on 9<sup>th</sup> August.

**Dr. Ashok Kumar Das**, Sc. 'F' delivered a lecture on **"Hydromet support for Flood Forecast"**, on 10<sup>th</sup> August 2024 during the Inauguration of c Narmada and stake holders meet at Gandhinagar.

**Dr. Mrutyunjay Mohapatra**, DG IMD delivered the valedictory speech at the closing session of the One Day Workshop on Monsoon Variability and Climate Change on 12<sup>th</sup> August organised by National Disaster Management Authority (NDMA).

**Sh. Ramashray Yadav**, Sc. 'D' delivered a lecture on Meteorology & Forecasting", online mode to IIPH Gandhinagar trainees on 12<sup>th</sup> August, 2024.

**Sh. Debabrata Bandyopadhyay**, S. O. -I participated in National Space Day celebration on 20<sup>th</sup> August, 2024 at CWC Asansol and give a presentation on Meteorological satellites and Payloads. He explained the importance of meteorological satellites in weather forecasting, predicting weather patterns, including storm systems and cloud patterns.

**Dr. Kuldeep Srivastava**, Sc. 'F', **Dr. Sankar Nath**, Sc. 'F' and **Mr. Sunny Chug**, Sc. 'D' delivered lecture on Met Data communication and processing for Decision Support System (DSS), WIS, Networking, communication and video Conference data communication in IMD in **"A Short-term Refresher Course"** in Met Telecommunication on 22<sup>nd</sup> August 2024 in online mode.

**Ms. Suman Gurjar**, Sc. 'D' has participated as facilitator in Joint IMD - WMO Training Course on Forecast Competency program from 27-29 August 2024 at IMD Pune. She also gave presentation on communication/dissemination during Western Disturbances (text, audio, video, graphics, sector specific and user specific bulletins, GIS & Web-GIS products) & Forecast and warning generation to press and electronic media through press conference and press briefing.

**Dr. Sankar Nath**, Sc. 'F' attended Joint IMD-WMO Training Course on Forecast Competency program during 28-29 August, 2024 at IMD Pune. He has given lecture to participants to prepare warning using Common Alert Protocol.

**Dr. Praveen Kumar**, Scientist C, delivered a talk as **Invited Speaker** over the topic **"Weather Forecast and Weather Warning to Stakeholders: Impact and Preparedness"** organised during DAKSH by Disaster Management Relief and Rehabilitation Department, Nagpur Commissionaire on 30<sup>th</sup> August 2024.



Dr. Praveen Kumar during the talk

**Mrs. Shanta Unnikrishnan** (Assistant Director of Official Language) and **Shri P.S. Chinchole**, Met. 'B' participated and presented a talk during All India Inter-Ministerial/Inter-Departmental Hindi Sangosthi organized at the Meteorological Center, Visakhapatnam.

**Dr. Mrutyunjay Mohapatra**, DG IMD participated in the meeting of Joint Collaborative Board (JCB) as the Chairman at Paris, France during 4 – 6 September, 2024. The meeting aimed to identify the priority areas of work where the JCB can provide strategic advice on joint work between World Meteorological Organisation (WMO) and Inter-governmental Oceanographic Commission (IOC) of UN, including proposing new actions and technical and scientific recommendations for WMO and IOC subsidiary bodies.

**Dr. H.R. Biswas**, Sc-F, RMC Kolkata attended **"Joint IMD - WMO Training Course on Forecast Competency"** programme as resource person during 4-6 September, 2024 at Pune.

**Dr. O. P. Sreejith**, Sc. 'F' and **Dr. Satyaban Ratna**, Sc. 'E' attended the webinar on **"Enhancing Health Actions in the Climate Crisis: Tackling the Health Impacts of El Niño and La Niña in the WHO South-East Asia Region"** on 10<sup>th</sup> September, 2024.

**Dr. Mrutyunjay Mohapatra**, DG IMD delivered a Public Lecture on **"Rising Phenomenon of Urban Flooding: Causes, Consequences & Sustainable Solutions"** organized by Toxics Link, New Delhi on 11<sup>th</sup> September, 2024.

**Dr. Somenath Dutta**, Sc. 'G' delivered a talk as a speaker on **"Services of MoES in the field of Ocean and Atmospheric Science"** on behalf of Secretary, MoES at the inaugural ceremony of 27<sup>th</sup> National Science Exhibition on the theme of **"India Developed Nation by 2047"** at Science City, Kolkata on 11.09.2024. **Dr. Anwesa Bhattacharya**, Sc. 'C', **Smt. Manika Kar**, Met. 'A', **Shri Milan Kanti Das**, Met. 'A', **Shri Soumitra Ghosh**, Met. 'A', participated in the Exhibition in MoES pavilion during 11-14 September, 2024.





Dr. Somenath Dutta delivering the talk

Dr. Shraavan Kumar Muppa, Sc. 'E' attended the National Seminar on Current Trends in Atmospheric and Oceanic Processes related to Climate Change Studies (CURTAIN RAISE-2024), held at Andhra University, Visakhapatnam during 18<sup>th</sup>-20<sup>th</sup> September, 2024 and presented an oral talk entitled "Development of a new forecasting tool for the thunderstorm detection over the east and north-eastern Indian region".

## FOREIGN DEPUTATION

Dr Ashok Kumar Das was on deputation to participate in KICT Korea during 1-2 July, 2024.

Dr. R.K. Jenamani and Mr. Shobhit Katiyar were on deputation to participate in WCSSP Annual Science Meeting during 1-5 July, 2024.

Dr. M. Mohapatra, DG, IMD and Dr. D.R. Pattanaik, Sc. 'F' were on deputation to participate in (GEWEX) Open Science Conference at Keio Plaza Hotel, Sapporo, Japan during 9-10 July, 2024 and 7-12 July, 2024 respectively.

Dr. M. Mohanty, Sc. F and Dr. S.K. Goroshi, Sc. 'E' were on deputation to attend RIMES Regional Training Workshop for the SAHF Forum Expanded Service Support and IBF WG Meeting, 29-31 July 2024, Thailand.



Dr. M. Mohanty delivering the talk on Cyclone 'Tauktae'

## MEMORANDUM OF UNDERSTANDING (MoU)

Signing of Memorandum of Understanding (MoUs) with stakeholders: IMD signed the MOU's with following organizations.

- Climate Resilient Observing-Systems Promotion Council (CROPC) on 29th July.
- All India Disaster Mitigation Institute, Ahmedabad on 25<sup>th</sup> July.
- Survey of India on 29<sup>th</sup> July.
- Jaypee Institute of Information Technology, Noida.

IMD signed a Memorandum of Understanding (MoU) with Reliance Foundation on 12<sup>th</sup> August, 2024 to enhance cooperation and collaboration between the two agencies.

A Letter of Agreement was signed between India Meteorological Department and SWASTI on 27<sup>th</sup> August, 2024 at IMD, HQ to collaborate on analysis and use of weather services on good health and wellbeing for the most vulnerable communities in the Indian subcontinent.

An application "Precision Action towards Climate and Health (PATCH)" developed jointly by IMD and SWASTI was launched on 27<sup>th</sup> August, 2024. Its objective is to identify correlations between weather patterns and disease alarms, providing a proactive approach to public health management amidst climate-related threats.

Dr. Mrutyunjay Mohapatra, DG IMD signed a Memorandum of Understanding (MoU) between IMD and Space Application Centre (SAC) Ahmedabad to promote collaborative activities between the two organisations and delivered Dr. Satish Dhavan Memorial Lecture on "Recent Advances in Weather Forecasting and Future Plans" organized by SAC, Ahmedabad and Indian Meteorological Society, Ahmedabad on 30<sup>th</sup> September, 2024.



Dr. Mrutyunjay Mohapatra, DG IMD during the signing ceremony

## NOMINATIONS

Shri Atul Kumar Singh Sc. 'D' has been nominated as a member of the State Agriculture Advisory Committee of Uttar Pradesh vide UP Govt. office order dated 10<sup>th</sup> September, 2024.



State Agriculture Advisory Committee Meeting on 20th September, 2024

Shri H.S. Sawhney, Scientist 'E' has been nominated by DGM as Nodal Officer from IMD regarding saturation of Government Buildings with Rooftop Solar under "PM Suryaghar :MuftBijliYojna" and for the Special Campaign 4.0 of the Department of Administrative Reforms and Public Grievances (DARPG), as mandated by the Ministry of Personnel, Public Grievances and Pensions for carrying out the tasks outlined in the Special Campaign 4.0 for institutionalizing Swachhata and minimizing pendency in Government Offices. Preparatory phase of the later campaign executed from 16<sup>th</sup> September to 30<sup>th</sup> September 2024.



DCWIS (at RWY 05) and PWD (RWY 23) Systems installed at Rajahmundry airport

### ACHIEVEMENTS /APPRECIATIONS /AWARDS RECEIVED

Appreciation letter has been received from Commanding Officer, INS Porbandar for invaluable contribution by IMD Scientist Sh. Abhimanyu Chauhan, Sci-'C', during the HADR workshop held on 10-11<sup>th</sup> June at Naval Station Porbandar.

Appreciation letter dated-12-07-2024 is received from Chief Engineer, CWC for support & presentation in the knowledge sharing workshop held on 11<sup>th</sup> July, 2024.

IMD feels proud to announce that its employees participated in Inter Ministry Music, Dance and Short Play Competition 2024-25 organized by Central Civil Services Cultural & Sports Board (CCSCSB) (DoPT) and the following officials won medals:

Name of event	Name of winners	Position/Medal acquired
Short Play	Ms. Banashri Bandyopadhyay	Gold (Best actress – Female)
	Ms. Monika Pernal	
	Ms. Deepti Koli	
Group Folk Dance	Ms. Priyanka Jha	Bronze
	Ms. Twinkle Grover	
	Ms. Sonia	
	Ms. Krishna	



DCWIS (at RWY 05) and PWD (RWY 23) Systems installed at Rajahmundry airport

### Infrastructure Development & Installations

#### NEW PROJECTS/SCHEMES INITIATED

DCWIS (at RWY 05) and PWD (RWY 23) Systems were installed at Rajahmundry airport in July, 2024.

An H-AWOS was installed at Kedarnath ji for providing aviation met services on 06.09.2024 by touring party from CRS, Pune in collaboration with Meteorological Center Dehradun and Uttarakhand Civil Aviation Development Authority, Govt. of Uttarakhand. The newly installed H-AWOS at Kedarnath ji was inaugurated by the Secretary, Ministry of Earth Sciences, Govt. of India on 29.09.2024. On this occasion Sh. Bikram Singh, Head/Scientist-F, Meteorological Center, Dehradun, Officials from MoES & senior officials of the Govt. of Uttarakhand were also present.



H-AWOS installation at Kedarnath ji



Mast of Automated Weather Observing System (AWOS) (Carrying Wind Sensor, ATRH Sensor and Pressure Sensor)



H-AWOS installation at Kedarnath ji

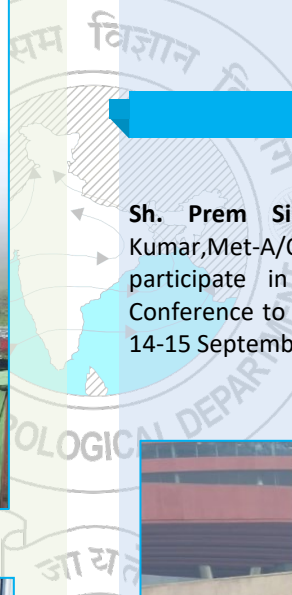


H-AWOS installation at Kedarnath ji

The three new Automatic Weather Observing Systems (AWOS) have been installed at Runway-27, Runway-Mid and Runway-09 of CCSI Airport Lucknow during August' 2024 to enhance the quality of RVR observation and Meteorological data required for Aviation.



सत्यमेव जयते



## राजभाषा अनुभाग

Sh. Prem Singh, SO-I participated and Shri Satyendra Kumar, Met-A/Officials from IMD offices went to tour to participate in two (02) days All India Official Language Conference to be held at Bharat Mandapam, New Delhi during 14-15 September, 2024.



All India Official Language Conference

Research & Publications

Rastogi, Arpita; Krishnan, K. C. Sai; Chauhan, Anshul; Madan, Ranju and Ansari, M. I., 2024, "An innovative approach of meteorological observation integration to develop a state-of-the-art web-based visualization tool", *MAUSAM*, 75, 3, 841-850, DOI:10.54302/mausam.v75i3.6204.

Raj, Y. E. A. and Amudha, B., 2024, "A re-assessment study on the onset and withdrawal dates of Indian northeast monsoon for the decade 2011", *MAUSAM*, 75, 3, 747-758, DOI: 10.54302/mausam.v75i3.6159.

Sharma, Rahul; Kumar, Shiv; Giri, R. K.; Pathak, Laxmi and Yadav, Ramashray, 2024, "Maximum cloud zone monitoring through INSAT Outgoing Long Wave Radiation (OLR) data", *MAUSAM*, 75, 3, 851-862, DOI: 10.54302/mausam.v75i3.5915.

Bhawna; Singh, Charan and Kanaujiya, Brajesh Kumar, 2024, "Analysis of heat wave and mean maximum temperature for the months of March to June over Vidarbha during last 50 years", *MAUSAM*, 75, 3, 691-702, DOI: 10.54302/mausam.v75i3.6177.

Musale, Madhuri; Sharma, Tanu; B. Ratna, Satyaban; Sabeerali, C.T.; Rohini, P.; Bandgar, Arti; Sreejith, O. P. and Hosalikar, K. S., 2024, "Triple-dip La Niña (2020-2022) and its influence on Indian Summer Monsoon Rainfall: Insight from the monsoon mission coupled forecasting system", *MAUSAM*, 75, 3, 769-782, DOI: 10.54302/mausam.v75i3.6283.

Kumar, Amit; Kumar, Yogesh; Bhardwaj, Mamta and Giri R. K., 2024, "Evaluation of INSAT-3DR Hydro-Estimator product for monsoon season rainfall at block-level and its utility in forecast verification: A case study in Karnal district, India", *MAUSAM*, 75, 3, 759-768, DOI: 10.54302/mausam.v75i3.6216.

Mishra, Anoop Kumar; Mitra, Ashim K. and Bhan, Subhash Chander, 2024, "On the Changes in Precipitation Spectrum Over India Using High-Resolution Precipitation Estimates from Remote Sensing Observations", *JOURNAL OF THE INDIAN SOCIETY OF REMOTE SENSING*, 52, 8, 1857-1857, DOI:10.1007/s12524-024-01834-0.

Kotal, S. D. and Mohapatra, M., 2024, "An analysis of minimum potential visibility and forecasting of fog for Indira Gandhi international airport, New Delhi (India)", *NATURAL HAZARDS*, AUG 2024, DOI: 10.1007/s11069-024-06858-w.

Parihar, Shailesh; Singh, Neeti and Giri, R. K., 2024, "Validation of cloud mask product from multi-channel satellite INSAT-3DR", *ADVANCES IN SPACE RESEARCH*, 74, 3, 1134-1139, DOI: 10.1016/j.asr.2024.04.060.

Prakash, Satya; Pai, D. S. and Mohapatra, M., 2024, "Meteorological Sub-Divisional Scale Comparison Between Two Indian Rain Gauge-Based Rainfall Datasets for the Southwest Monsoon Season", *PURE AND APPLIED GEOPHYSICS*, 181, 8, 2613-2630, DOI: 10.1007/s00024-024-03540-x.

Das, Sunit; Mohapatra, Mrutyunjay; Sahoo, Uttam K. and Baisya, Himadri, 2024, "High-intensity rainfall over northeast India: Spatial pattern, short-term fluctuations and associated multiscale oscillations", *INTERNATIONAL JOURNAL OF CLIMATOLOGY*, 44, 10, 3315-3327, DOI: 10.1002/joc.8525.

Naskar, Pravat Rabi; Mohapatra, Mrutyunjay and Singh, Gyan Prakash, 2024, "Variations in air-sea heat fluxes during lifetime of intense tropical cyclones over the Bay of Bengal", *METEOROLOGY AND ATMOSPHERIC PHYSICS*, 136, 4, DOI: 10.1007/s00703-024-01026-y.

Rakshit, Gargi; Chakravarty, Kaustav; Mohapatra, Mrutyunjay and Krishnan, K. C. Sai, 2024, "Unraveling the influence of varied airflow patterns on atmospheric instabilities, rain microphysics, and cloud features over Delhi, the capital city of India", *ADVANCES IN SPACE RESEARCH*, 73, 8, 4202-4212, DOI: 10.1016/j.asr.2024.01.026.

Naskar, Pravat Rabi; Mohapatra, Mrutyunjay and Singh, Gyan Prakash, 2024, "CMIP6 projections of surface latent heat flux over the North Indian Ocean", *THEORETICAL AND APPLIED CLIMATOLOGY*, 155, 8, 8067-8076, DOI: 10.1007/s00704-024-05114-2.

Rakshit, Gargi; Mohapatra, Mrutyunjay; Krishnan, K. C. Sai and Maitra, Animesh, 2024, "Investigating Monsoon Raindrop Sizes in Relation to Associated Atmospheric Parameters over the Indian Region", *ATMOSPHERIC RESEARCH*, 304, DOI: 10.1016/j.atmosres.2024.107397.

Tiwari, Arpit; Nanjundan; Preethi; Kumar; Ravi Ranjan and Soni, Vijay Kumar, 2024, "A framework for natural resource management with geospatial machine learning: a case study of the 2021 Almora forest fires", *FIRE ECOLOGY*, 20, 1, DOI: 10.1186/s42408-024-00293-9.

Mohan, Vignesh; Soni, Vijay Kumar and Mishra, Rajeev Kumar, 2024, "Geographical variability of ultrafine particle concentrations in urban and background regions in India", *URBAN CLIMATE*, 56, DOI: 10.1016/j.uclim.2024.102066.

Kumar, Vinay; Sahu, Dipak K.; Simonsen, Katelyn and Gonzalez, Sabrina, 2024, "Deciphering East Atlantic Low-Pressure System Formations: Exploring the Nexus of Tropical Jet Streams and Active Monsoon Phases", *ATMOSPHERE*, 15, 7, DOI: 10.3390/atmos15070862.

Tomar, Chander Singh; Bhatla, Rajeev; Singh, Nand Lal; Kumar, Vivek; Rai, Pradeep Kumar; Soni, Vijay Kumar and Giri, Ram Kumar, 2024, "Evaluation of atmospheric precipitable water vapour distribution and trend over India", *THEORETICAL AND APPLIED CLIMATOLOGY*, 155, 8, 8361-8377, DOI: 10.1007/s00704-024-05110-6.

Awasthi, Arpit; Sinha, Baerbel; Hakkim, Haseeb; Mishra, Sachin; Mummidivarapu, Varkrishna; Singh, Gurmanjot; Ghude, Sachin D.; Soni, Vijay Kumar; Nigam, Narendra; Sinha, Vinayak and Rajeevan, Madhavan N., 2024, "Biomass-burning sources

**control ambient particulate matter, but traffic and industrial sources control volatile organic compound (VOC) emissions and secondary-pollutant formation during extreme pollution events in Delhi**", *ATMOSPHERIC CHEMISTRY AND PHYSICS*, 24, 18, 10279-10304, DOI: 10.5194/acp-24-10279-2024.

Bhagavathiammal, Ganesan; Beig, Gufran; Korhale, Nikhil; Singh, Siddhartha and Murthy, Bandaru Sathya, 2024, "Impact of lockdown emission scenario on fine particulate matters (PM<sub>1</sub>) and its comparison with PM<sub>2.5</sub> within Indian megacities", *NATURAL HAZARDS*, 120, 9, 9093-9105, DOI: 10.1007/s11069-024-06568-3.

Anilkumar, K.; Shankar, D. and Suprit, K., 2024, "The water budget of the Mahadayi river and its implications for the inter-state dispute", *JOURNAL OF EARTH SYSTEM SCIENCE*, 133, 4, DOI: 10.1007/s12040-024-02389-x.

Sukumaran, Jithin; Pillai, Dhanyalekshmi; Thilakan, Vishnu; Lekshmi, Saradambal; Udayakumar, Gokul; Mathew, Thara Anna; Ravi, Aparna and Manoj, M. G., 2024, "How Critical Is the Accuracy of the Atmospheric Transport Modeling to Improve the Urban CO<sub>2</sub> Emission in India?-A Lagrangian-Based Approach", *JOURNAL OF GEOPHYSICAL RESEARCH-ATMOSPHERES*, 129, 13, DOI: 10.1029/2023JD039680.

Sumana Chatterjee, 2024, "Weather Prediction Using Logistic Regression (AI/ML) Techniques", *International Journal of Scientific Research in Engineering and Management (IJSREM)*, 8, 9.

Karrevula, Narayana Reddy; Boyaj, Alugula; Sinha, P.; Nadimpalli, Raghu; Mohanty, U. C.; Islam, Sahidul; Kaginalkar, Akshara and Vinoj, V., 2024, "Role of planetary boundary layer physics in urban-scale WRF model for predicting the heat waves over tropical city Bhubaneswar" *JOURNAL OF EARTH SYSTEM SCIENCE*, 133, 3, DOI: 10.1007/s12040-024-02384-2.

Shah, Vyom; Patel, Nishil; Shah, Dhruvin; Swain, Debabrata; Mohanty, Manorama; Acharya, Biswaranjan; Gerogiannis, Vassilis C. and Kanavos, Andreas, 2024, "Forecasting Maximum Temperature Trends with SARIMAX: A Case Study from Ahmedabad, India", *SUSTAINABILITY*, 16, 16, DOI: 10.3390/su16167183.

Rajewar, Shubham; Asoka, Akarsh; Sreejith, K. M.; Agrawal, Ritesh; Puviarasan, N.; Krishnan, K. C. Sai; Mathur, Mudit; Gahalaut, Kalpna and Gahalaut, Vineet K., 2024, "Cause of ground subsidence in Machhliapatnam region", *CURRENT SCIENCE*, 127, 3, 281-283.

Khan, Pathan Imran; Ratnam, Devanaboyina Venkata; Prasad, Perumal; Saheb, Shaik Darga; Jiang, Jonathan H.; Basha, Ghouse; Kishore, Pangaluru and Patil, Chanabasanagouda S., 2024, "The Influences of Indian Monsoon Phases on Aerosol Distribution and Composition over India", *REMOTE SENSING*, 16, 17, DOI: 10.3390/rs16173171.

Rose, M. S.; Sunil, P. S.; Sooraj, A.; Sunil, A. S.; Kunnummal, Priyesh; George, K. Amal; Ajith, K. K.; Thomas, Dhanya and Mini, V. K., 2024, "Multi-wave characteristics associated with January 15, 2022 Hunga-Tonga volcanic eruption: A global observation", *JOURNAL OF ATMOSPHERIC AND SOLAR-TERRESTRIAL PHYSICS*, 261, DOI: 10.1016/j.jastp.2024.106283.

Karrevula, Narayana Reddy; Nadimpalli, Raghu; Sinha, P.; Mohanty, Shyama; Boyaj, Alugula; Swain, Madhusmita and Mohanty, U. C., 2024, "Performance Evaluation of WRF Model in Simulating Extreme Rainfall Events Over Bhubaneswar Urban Region of East Coast of India", *PURE AND APPLIED GEOPHYSICS*, DOI: 10.1007/s00024-024-03572-3.

Riihimaki, Laura D.; Cronin, Meghan F.; Acharya, Raja; Anderson, Nathan; Augustine, John A.; Balmes, Kelly A.; Berk, Patrick; Bozzano, Roberto; Bucholtz, Anthony; Connell, Kenneth J.; Cox, Christopher J.; di Sarra, Alcide G.; Edson, James; Fairall, C. W.; Farrar, J. Thomas; Grissom, Karen; Guerra, Maria Teresa; Hormann, Verena; Joseph, K. Jossia; Lanconelli, Christian; Melin, Frederic; Meloni, Daniela; Ottaviani, Matteo; Pensieri, Sara; Ramesh, K; Rutan, David; Samarinas, Nikiforos; Smith, Shawn R.; Swart, Sebastiaan; Tandon, Amit; Thompson, Elizabeth J.; Venkatesan, R.; Verma, Raj Kumar; Vitale, Vito; Watkins-Brandt, Katie S.; Weller, Robert A.; Zappa, Christopher J.; Zhang and Dongxiao, 2024, "Ocean surface radiation measurement best practices", *FRONTIERS IN MARINE SCIENCE*, 11, DOI: 10.3389/fmars.2024.1472720.

## VISITORS

31 resident Doctors(M.D. Medicine) group from B.J. Medical College visited M.C. Ahmedabad on 9<sup>th</sup> July 2024 for familiarization with Met Services.



Doctors(M.D. Medicine) group from B.J. Medical College visited M.C. Ahmedabad

Students from Himalayan Institute of Medical Sciences, Dehradun were allowed to visit Meteorological Centre Dehradun premises on 26.07.2024, 20.08.2024 & 20.09.2024. Sh. Bhaumik Indrawal, Met. 'A', Sh. Ashutosh Kala, Met. 'A' and Sh. Ankit Sharma, Met. 'A' showed the students the activities of weather forecasting section and Sh. Akash Chandra, Met-A briefed them about RS/RW observation & surface met. Observatory.



Students from Himalayan Institute of Medical Sciences, Dehradun visiting MC Dehradun

Dr. Divesh Choudhury, Sc. 'D' gave brief lecture on Agriculture and Sri Sukumar Roy, Met. 'B' gave a lecture on Agromet Instruments and activities of GKMS, to students of ATC SAMETI WB, Ramkrishna Mission Ashram, Narendrapur on 31<sup>st</sup> July, 2024.



Students of ATC SAMETI WB, Ramakrishna Mission Ashram, Briefed about Agro-meteorology by Dr. Divesh Choudhury

Around 50 students with 5 faculty members from St. Edmund's College Shillong, Department of Geography visited MC Shillong for their field study on 13<sup>th</sup> August, 2024.



Students from St. Edmund's College Shillong, Department of Geography visited MC Shillong

Director, Space Applications Centre, visited IMD and had a familiarization of various operational centres of IMD on 16<sup>th</sup> August, 2024.

Visit of Students and Faculty from various Institutes for the familiarization with different activities related to weather observation and forecast at RMC Nagpur.



Students from KISS-DU at IMD Bhubaneswar

About 183 visitors, including students of Tagore International School, ITL Public School, ICAR Pusa Institute, ARSD College Delhi University, Miranda House College Delhi University, and OJT Trainees visited the Central Hydromet Observatory from July 2024 to September 2024.



ARSD College, Delhi University



ICAR (IARI) PUSA INSTITUTE



ITL PUBLIC SCHOOL, NEW DELHI



## MEDIA INTEARCTION

IMD issued daily weather forecasting video of about 5 minutes duration in English & Hindi through YouTube, Facebook, Twitter and IMD website.

## Weather Summary

India Meteorological Department (IMD) organized monthly Press Conference on Temperature and Rainfall Outlook for July, 2024 on 1st July. The highlights of the Press Release issued in this regard are presented below:

**(a) Rainfall over India** – Monthly rainfall over the country as a whole during July 2024 is most likely to be above normal (>106 % of LPA). During July, normal to above normal rainfall is most likely over most parts of the country except many parts of northeast India and some parts of northwest, east and southeast peninsular India where below normal rainfall is likely.

**(b) Surface Air Temperature over India** – During July 2024, monthly minimum temperatures are most likely to be above-normal over many parts of the country except some parts of northwest and adjoining areas of central India and some pockets of south-eastern peninsular India where normal to below normal minimum temperatures are likely. The maximum temperature is likely to be normal to below normal over many parts of the Northwest India and south peninsular India except West coast. Above normal maximum temperatures are likely over many parts of central India, east and northeast India and along west coast.

**(c) Sea Surface Temperature (SST)** - Currently El Nino-Southern Oscillation (ENSO) neutral conditions are observed over the equatorial Pacific. The sea surface temperatures (SSTs) are above average in the equatorial western and central Pacific Ocean, and below-average over the eastern equatorial Pacific Ocean. The latest Monsoon Mission Climate Forecast System (MMCFS) indicates that the La Nina conditions are likely to develop during second half of the monsoon season. At present, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean.

**(d)** The latest climate model forecasts indicates neutral IOD conditions are likely to continue during the monsoon season.

**(e)** IMD issued the forecast for the rainfall during the second half of the season (August + September 2024) and for the month of August towards the end of July 2024.

India Meteorological Department organized regular Press Conference on Monthly Outlook of Rainfall and Temperature during September, 2024 on 31st August. The highlights of the press release issued in this regard are given below:

**a. Rainfall over India** - Above-normal rainfall is likely over most parts of India, except some parts of the extreme north India, many parts of south Peninsular India, and most parts of northeast India where normal to below-normal rainfall is likely.

Monthly rainfall for September 2024 over the country as a whole is most likely to be above normal (>109 % of the Long Period Average (LPA)).

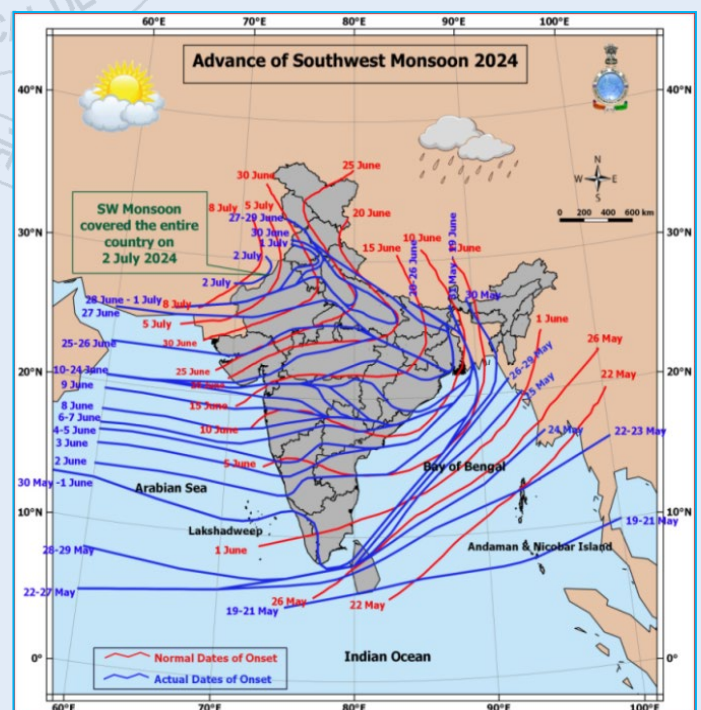
**b. Surface Air Temperature over India** - Above-normal maximum temperatures are likely over most parts of the country, except for some areas in northwest India, south peninsular India, and some pockets of east-central India, where normal to below normal maximum temperatures are likely. Above-normal minimum temperatures are likely over most parts of the country, except for some isolated pockets of northwest India, foothills of Himalayas and south Peninsular India, where normal to below normal minimum temperatures are likely.

**c. Sea Surface Temperature (SST)** - Currently, El Nino-Southern Oscillation (ENSO) neutral conditions are observed over the equatorial Pacific. The latest MMCFS forecast indicates higher likelihood of La Niña conditions are likely to develop during end of monsoon season. At present, neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean. Most global climate models suggest that neutral IOD conditions are likely to continue during the remaining period of the monsoon season.

**d.** IMD will issue the forecast for the rainfall during Post-Monsoon (Oct-Dec) season, 2024 and for October, 2024 towards the end of September 2024.

## Significant Weather

**Southwest Monsoon covered the entire country on 2<sup>nd</sup> July 2024:** Southwest Monsoon covered the entire country on 2<sup>nd</sup> July, against the normal date of 08th July (6 days before the normal date of covering the entire India).The isochrones in respect of the advance of Southwest Monsoon 2024 is given in the Figure below:



Advance of Southwest Monsoon 2024

### Silent features of SW Monsoon 2024

Rainfall over the country as a whole during the 2024 southwest monsoon season (June-September) was 108% of its long period average (LPA). Thus, the seasonal rainfall was above normal (>104% of LPA) as per the IMD forecast. Seasonal rainfalls over Northwest India, Central India, South Peninsula, and Northeast (NE) India were 107%, 119%, 114%, and 86% of respective LPA.

- The southwest monsoon seasonal (June to September) rainfall over the monsoon core zone, which consists of most of the rain-fed agricultural regions in the country, received 122% of LPA.
- Out of the total 36 meteorological subdivisions, 2 subdivisions received large excess rainfall (9% of the total area of the country), 10 subdivisions constituting 26% of the total area received excess, 21 subdivisions received normal rainfall (54% of the total area), and 3 subdivisions (Arunachal Pradesh, Punjab, J & K, and Ladakh) constituting 11% of the total area received deficient seasonal rainfall.
- Monthly rainfall over the country as a whole was 89% of LPA in June, 109% of LPA in July, 115% of LPA in August, and 112% of LPA in September.
- Southwest monsoon current advanced over the south Andaman Sea and Nicobar Islands in time (19 May 2024, nearly two days before the normal date). It set in over Kerala on 30th May 2024 against the normal date of 1st June and covered the entire country on 2nd July 2024 against its normal date of 8th July. Monsoon withdrawal commenced from west Rajasthan on 23rd September (delay of 6 days).
- The forecast for monsoon onset over Kerala for this year was correct, which is the nineteenth consecutive correct forecast for this event, except for the year 2015 since the commencement of this forecast in 2005. The forecast date of monsoon onset over Kerala was 31st May with a model error of  $\pm 4$  days, and monsoon set in over Kerala on 30th May.
- The forecast for the rainfall over the country as a whole during the season was correct, as the realized rainfall is 108% of LPA against the forecast of  $106\% \pm 4\%$ .

### Monthly Outlook for the Temperature and Rainfall during July 2024: -

**Rainfall :** Monthly rainfall over the country as a whole during July 2024 is most likely to be above normal (>106 % of LPA). The LPA of rainfall over the country as a whole during July based on data from 1971-2020 is about 280.4 mm.

The probabilistic forecast for the spatial distribution of tercile rainfall categories (above normal, normal and below normal) over the country for July 2024 is shown in Fig.1. The normal to above normal rainfall is most likely over most parts of the country except many parts of northeast India and some parts of

northwest, east and southeast peninsular India where below normal rainfall is likely.

**Temperature:** During July 2024, monthly minimum temperatures are most likely to be above-normal over many parts of the country except some parts of northwest and adjoining areas of central India and some pockets of south-eastern peninsular India where normal to below normal minimum temperatures are likely. The maximum temperature is likely to be normal to below normal over many parts of the Northwest India and south peninsular India except West coast. Above normal maximum temperatures are likely over many parts of central India, east and northeast India and along west coast.

### Monthly Outlook for the Temperature and Rainfall during August and August-September 2024: -

**Rainfall:** The rainfall averaged over the entire country from August to September is likely to be above normal (>106% of the Long Period Average (LPA)). The LPA of rainfall over the country as a whole during the August to September period, based on historical data of 1971 to 2020 is about 422.8 mm. During the second half of the monsoon season, normal to above normal rainfall is most likely over most parts of the country except many parts of northeast and adjoining areas of east India, Ladakh, Saurashtra & Kutch, and some isolated pockets of central and peninsular India where below normal rainfall is likely.

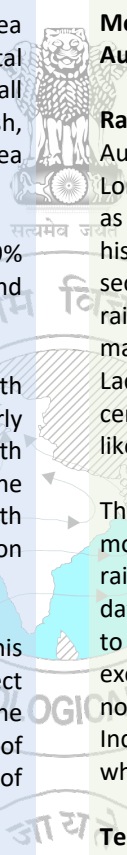
The rainfall averaged over the entire country for August 2024 is most likely to be normal (94 to 106 % of LPA). The LPA of the rainfall over the country as a whole during August, based on data of 1971-2020 is 254.9 mm. During the August, the normal to above normal rainfall is likely over many parts of the country, except many areas in southern parts of central and adjoining northern peninsular India, northeast and adjoining areas of east India, some parts of northwest and south peninsular India, where below normal rainfall is likely.

**Temperature:** Above-normal minimum temperatures are likely over most parts of the country except southeast Peninsular India, where normal to below-normal minimum temperatures are likely during August 2024.

During August, above-normal maximum temperatures are likely over many parts of the country, except for some areas in the Gangetic plains, central India, and the southeast coast of India, where normal to below-normal maximum temperatures are likely.

### Monthly Outlook for the Temperature and Rainfall during September 2024: -

**Rainfall:** -The rainfall averaged over the country as a whole during September 2024 is most likely to be above normal (>109 % of LPA). The LPA of rainfall over the country during the month of September, based on data from 1971-2020, is about 167.9 mm. The spatial distribution suggests that above-normal rainfall





is likely over most parts of India, except some parts of the extreme north India, many parts of south Peninsular India, and most parts of northeast India where normal to below-normal rainfall is likely.


**Temperature:** -Above-normal minimum temperatures are likely over most parts of the country, except for some isolated pockets of northwest India, foothills of Himalayas and south Peninsular India, where normal to below normal minimum temperatures are likely during September.

In September, above-normal maximum temperatures are likely over most parts of the country, except for some areas in northwest India, south peninsular India, and some pockets of east-central India, where normal to below-normal maximum temperatures are likely.




The rainfall statistics was prepared for the Monsoon Season-2024. The rainfall for the country as a whole, for the season has been recorded as 934.8 mm which is 108% of its Long Period Average (LPA) of 868.6 mm. In all, category wise, 02 Met sub-divisions in LARGE EXCESS, 10 Met sub-divisions in EXCESS, 21 Met sub-divisions in NORMAL, 03 in DEFICIENT and no any Met sub-divisions in LARGE DEFICIENT and "NO RAIN" category of rainfall.

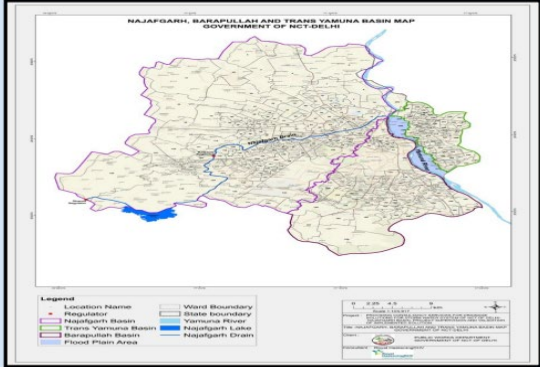
Technical report on Design Storm projects completed during 2023 has been published and uploaded in IMD website.




भारत मौसम विज्ञान विभाग (पृथ्वी विज्ञान मंत्रालय)  
India Meteorological Department  
(Ministry of Earth Sciences)




### Intensity Duration Frequency (IDF) Curves of Palam Station (Drainage Plan for Najafgarh Basin)



Prepared by:  
Design Storm Unit  
Hydromet Division, New Delhi  
August 2024



भारत मौसम विज्ञान विभाग (पृथ्वी विज्ञान मंत्रालय)  
India Meteorological Department (Ministry of Earth Sciences)



## DESIGN STORM STUDY For SARAMBALA MEDIUM IRRIGATION PROJECT (MAHARASHTRA)

Prepared by  
Design Storm Unit  
Hydromet Division, New Delhi  
September, 2024

