



INDIA METEOROLOGICAL DEPARTMENT  
(Ministry of Earth Sciences)

JUL – SEP 2019

Volume 12

Number 3

## In this issue

Dr. Mrutyunjay Mohapatra assuming the charge of the DGM > P1

Important Events / Activities > P2

Conference / Seminar > P3

Trainings/Workshops > P4

Talk / Lectures > P5

Awards & Recognitions > P6

Research & Publication > P7

Media Interaction / Foreign visit > P8

Visitors > P9

Weather Summary > P10

### Dr. Mrutyunjay Mohapatra an eminent Scientist, has taken over the charge of Director General of Meteorology (DGM)



Dr. Mrutyunjay Mohapatra, Director General of Meteorology (DGM), IMD

Dr. Mrutyunjay Mohapatra joined as Director General of Meteorology, India Meteorological Department on 1<sup>st</sup> August, 2019. Dr. Mohapatra is also the Permanent Representative of India with WMO and has been elected as Member of Executive Council, WMO for the period 2019-23. With a Ph. D in Physics and 26 years of experience in meteorology, Dr. Mohapatra has made significant contributions in improvement of early warning services of IMD. He has brought laurels to the country with effective early warning of cyclones, especially Phailin, Hudhud, Vardah, Titli, Sagar, Mekunu and Fani in recent years. Dr. Mohapatra is popularly known as “The Cyclone Man of India”.

Dr. Mohapatra is the author of more than **80 research papers** published in peer reviewed journals and edited **3 books** and **7 Journals**. Dr. Mohapatra has received a number of recognitions, viz., Commendation certificate from Defence Research and Development Organisation for contribution in Integrated Guided Missile Development Programme in 1989, 25<sup>th</sup> Biennial Mausam Award, Young Scientist Award of Ministry of Earth Sciences, Government of India in 2009, Achievers Award from IMD for research and service contributions in the field of atmospheric sciences, Bharat Gourav Award, 2019 by Jay Bharat Foundation, Odisha, Gantantrik Nagrik Parishad, Bhadrak Odisha, Zila Biju Smruti Committee, Bhadrak Odisha, Zila Pragatisheel Sahitya Parishad, Odisha, Odisha Forum, New Delhi, Retired Employees Association, Ghanteswar, Bhadrak, Odisha etc.

### हिंदी पखवाड़ा / हिंदी दिवस 2019

भारत मौसम विज्ञान विभाग के महानिदेशक के कार्यालय, नई दिल्ली तथा उप-कार्यालयों में हिंदी पखवाड़ा 2-16 सितम्बर, 2019 के दौरान मनाया गया। भारत मौसम विज्ञान विभाग के मुख्यालय में हिंदी दिवस समारोह 16 सितम्बर, 2019 को आयोजित किया गया। हिंदी दिवस समारोह की अध्यक्षता महानिदेशक डॉ. मृत्युंजय महापात्र ने की। इस समारोह के मुख्य अतिथि संयुक्त हिंदी सलाहकार समिति के पूर्व सदस्य तथा श्रीराम कॉलेज ऑफ कॉमर्स दिल्ली विश्वविद्यालय के हिंदी विभाग के विभागाध्यक्ष डॉ. रवि शर्मा मधुप थे।



डॉ. मृत्युंजय महापात्र, वैज्ञानिक 'जी' एवं मुख्य अतिथिगण दीप प्रज्वलित करते हुए



मंच पर आसीन महानुभावों द्वारा 'मौसममंजूषा' के 29<sup>वें</sup> संस्करण का विमोचन

Published by

India Meteorological Department,  
Mausam Bhawan, Lodi Road,  
New Delhi - 110 003

Tel. : 011- 24651287

Telefax : 91-11-24699216 &

91-11- 24623220

email : mausamps@gmail.com

edited by

Dr. D. R. Pattanaik

compiled by

Staff of Editorial Office

## हिंदी पखवाड़ा / हिंदी दिवस 2019

समारोह का शुभारंभ दीप प्रज्वलन से हुआ। रंग बिरंगे फूलों से सजे और संगीतमय वृष्टि सभागार में इस कार्यक्रम का आयोजन किया गया। हिंदी दिवस समारोह के दौरान सांस्कृतिक कार्यक्रम का भी आयोजन किया गया। वृष्टि सभागार में उपस्थित सभी लोगों का सुश्री रेवा शर्मा, उपनिदेशक (राजभाषा) ने स्वागत, अभिवादन और अभिनन्दन किया।

वर्ष 2018-19 में हिंदी में सबसे अधिक पत्राचार करने के लिए राजभाषा चलशील्ड सामान्य अनुभाग को प्रदान की गई।



सामान्य अनुभाग के श्री पतिराज, मौसम विज्ञानी, राजभाषा चलशील्ड प्राप्त करते हुए

श्रीमती सरिता जोशी सहायक निदेशक (राजभाषा) ने सांस्कृतिक कार्यक्रम के लिए मंच का संचालन किया।



सांस्कृतिक कार्यक्रम के दौरान कलाकार



सांस्कृतिक कार्यक्रम के दौरान कलाकार नाटक प्रस्तुत करते हुए



मौसम केंद्र, अहमदाबाद में हिंदी दिवस समारोह

## Important Events / Activities

### Radar products for Chandrayaan-2 launch

Uninterrupted Doppler Weather Radar products were supplied on 22<sup>nd</sup> July, 2019 to SHAR, ISRO for GSLV MK III launch that successfully placed "Chandrayan 2" spacecraft into the Earth's orbit.



### WMO recognition

World Meteorological Organisation (WMO) has recognised IMD - Chennai (Nungambakkam) observatory as a long-term observing station for more than 100 years of meteorological observations.



### MAUSAM Journal online

MAUSAM (Formerly Indian Journal of Meteorology, Hydrology & Geophysics), established in January 1950, is the quarterly research journal brought out by the India Meteorological Department (IMD).

This year the **Journal MAUSAM** has entered into **70<sup>th</sup> year of its publications**. We are glad to inform you that on the occasion of glorious seventy (70<sup>th</sup>) year, all the issues of MAUSAM with effect from 1950 to till date have been uploaded on IMD website for the benefit of scientists, researchers, students, forecasters and planners in the field of Meteorology, Hydrology, Geophysics and Allied Sciences.

Kindly visit MAUSAM web page <http://metnet.imd.gov.in/indmausam/> in IMD website for online access of the published research papers of Journal MAUSAM since 1950.

## Mobile Application

A **mobile application** for farmers named **MEGHDOOT** for Agrometeorology Advisory Services was launched.

## Swatchh Bharat campaign



Swatchh Bharat campaign at RMC, Chennai

**Swatchh Bharat Abiyaan** was organised at RMC Chennai and Meteorological centres at Bengaluru, Hyderabad and Thiruvananthapuram in July, 2019. Swachata Pakhwara was observed at MC Bengaluru in September, 2019.

## Swachhata Hi Seva (SHS)

**Swachhata Hi Seva (SHS)** was observed at M.C., Bhubaneswar during 11 September-2 October, 2019. Dr. H. R. Biswas, Sc. 'E', M.C. Bhubaneswar, Officers and Staff Members participated in the cleanliness drive for office rooms & premises, public places, like, Airport Main gate and Road in front of Office Main gate.

## Antarctic expedition



Dr. M. Rajeevan, Secretary, MoES, Shri Rohit Thapliyal, Sc. 'C' and other officers during participated in Antarctic expedition

**Shri Rohit Thapliyal**, Sc. 'C', MC, Dehra Dun participated in debriefing function for 36<sup>th</sup> (winter)/ 37<sup>th</sup> (Summer/Winter) and 38<sup>th</sup> (summer) Antarctic expedition on 20<sup>th</sup> August, 2019 at NCPOR, Goa.

## 7<sup>th</sup> Indian National Exhibition Cum - Fair 2019



Officials of RMC, Kolkata during exhibition

On behalf of MoES, **RMC, Kolkata** has participated in "7<sup>th</sup> Indian National Exhibition Cum - Fair 2019" organized by Bengal Human Resource Development - Foundation, held in Kolkata Metropolitan Development Authority (KMDA) Ground, Patuli, Garia, Kolkata, from 25-29 September, 2019.

## Destination Uttarakhand 2019



Shri Rohit Thapliyal, Sc. 'C' participated in the exhibition

**Shri Rohit Thapliyal**, Sc. 'C' participated as exhibitor in "Destination Uttarakhand 2019" exhibition in Dehradun from 18-20 July, 2019 organized by Friends Exhibition and Promotion Private Limited, New Delhi.

## New Projects / Schemes / Programmes Approved / Initiated / Completed

Site selection process for installation of **Current Weather Instrument System (CWIS)** at Jolly grant Airport Dehradun has been initiated.

**Nowcast Warning Page of Newly launched IMD website** for issue of three hourly nowcast warnings for severe weather, thereby increasing the total number of three hourly nowcast stations to 607.

**Dissemination of Agromet Advisories** to the users' community through SMS and IVR Technology is being continued through **Kisan Portal** and private companies under PPP mode. Presently, Agromet Advisories are reaching to 40.2 million farmers in the country through SMS directly.

## Human Resource Development Activities

### Conferences / seminar

**Shri S. K. Manik**, Sc 'C' attended the 6<sup>th</sup> Water Talk to promote information sharing among participants on variety of water related topics on 23<sup>rd</sup> August, 2019 at Dr. Aambedkar Auditorium, Telengana Bhawan, New Delhi. The seminar is organized by National Water Mission, MoWR.

**Dr. S. Bandyopadhyay**, Sc. 'F' attended a "International Conference on Sustainability Education (ICSE)" at Bidhan Chandra Krishi Vishwavidalaya, Kalyani on 3<sup>rd</sup> September, 2019.



Dr. S. Bandyopadhyay, Sc. 'F' and other officers during the seminar

Dr. Ranjeet Singh, Sc. 'F' attended "National conference on Agriculture for RABI Compain - 2019" on 20<sup>th</sup> September, 2019 at NASC, PUSA Complex, New Delhi.

Shri S. Sengupta, Sc. 'E' accompanied with Shri A. Shankar, Sc. 'B' attended One day seminar of Central Weather Commission Patna entitle "The Quality and Health of River Water" on 20<sup>th</sup> September, 2019.

Shri Anand Sharma, Sc. 'F' attended and participated in the "Indian Agriculture Outlook Forum" conference on 26-27 September, 2019. The conference was organised by Ministry of Agriculture, Cooperation and Farmers welfare.

Shri Y. K. Reddy, Sc. 'F' participated in International Conference on "Water Resources and Climate Change" at Institute of Public Enterprise, Osmania University, Hyderabad on 27<sup>th</sup> September, 2019 and chaired a Technical Session on Climate Change.

Shri D. K. Ashwin Raju, S.A participated in 39<sup>th</sup> AMS Radar Conference held in Nara, Japan from 16-20 September, 2019 and presented a paper titled "Advanced cosine Neighbour Algorithm for true wind retrieval from weather Radars".



Shri D. K. Ashwin Raju, S.A, DWR Chennai during the conference

## Trainings

A half day training programme was organized for 35 Members of Pragya in connection with use of "Agrimet Weather Forecast Products for farmers" and other services being provided by IMD in Uttarakhand. Shri Bikram Singh, Sc.'F' and Shri Rohit Thapliyal, Sc. 'C' delivered the lectures to the participants.

Dr. A. K. Mitra, Sc. 'E' attended the training programme on "Application of Geographic Information System in Disaster Risk Management" during 19-20 September, 2019 at Indian Institute of Surveying and Mapping, Hyderabad, Telengana.

## Workshops

Dr. S. Balachandran, Sc. 'F' participated in the workshop on Technical Assistance on Coastal Resilience "Developing New and Innovative Approaches in India and Bangladesh along the Bay of Bengal" held at NIOT, Chennai on 17<sup>th</sup> July, 2019

Dr. M. Mohapatra, Sc. 'G' participated as an expert in the one day workshop organized by Vigyan Prasar for planning the layout of science programme "Vigyanika" on 23<sup>rd</sup> July, 2019 at New Delhi.

Shri H. R. Biswas, Sc. 'E' attended as Guest of Honour in the workshop on "Restoration Strategies for Cyclone-affected Horticultural Crops" at Central Horticultural Experiment Station (ICAR-Indian Institute of Horticultural Research), Aiginia, Bhubaneswar on 25<sup>th</sup> July, 2019.

Dr. O. P. Sreejith, Sc. 'E' attended workshop on "Data Simulation" on 9<sup>th</sup> August, 2019 at NCMRWF, New Delhi.

Smt. S. Sunitha Devi, Sc. 'E' participated in the India-UK workshop on Science for disaster & emergency management on 29-30 Augus, 2019 at New Delhi and presented "Science for Disaster/emergency risk management: Capabilities, Institutional landscape, Science-Policy interface, opportunities & challenges, special reference to Cyclone Fani".

Dr. S. D. Attri, Sc. 'F' Chaired Session in the Workshop on "वायु तथा तटीय प्रदूषण: मानव एवं प्रकृति पर प्रभाव" organised by MoES on 13<sup>th</sup> September, 2019 in New Delhi.

One-week training course on "Maintenance and Servicing of Systems - Distant Indicating Wind Equipment (DIWE) and Digital Current Weather Indicating System (DCWIS)" was conducted for IMD staffs working at different airports under RMCs - Chennai, Guwahati, Mumbai, Kolkata and Nagpur from 16<sup>th</sup> September to 4<sup>th</sup> October, 2019 in three batches.



Trainees during Maintenance and Servicing of Systems

Dr. (Smt.) K. Naga Ratna, Sc. 'E' attended the Environment Projection, Training Research Institute (EPTRI)'s workshop on "State Action Plan on Climate Change (SAPCC) for the Telangana" on 19<sup>th</sup> September, 2019.

## South Asian Climate Outlook Forum (SASCOF-15)



Dr. M. Mohapatra, DG, IMD, senior officers of IMD and foreign & Indian delegates during SASCOF-15 workshop

Dr. M. Mohapatra, DG, IMD and Senior officers of IMD attended a “South Asian Climate Outlook Forum (SASCOF-15)” workshop during 23-25 September at Thiruvananthapuram, India. Consensus Statement on the Forecast for the 2019 October to December (OND) Season Rainfall and Temperatures over South Asia was issued in 15<sup>th</sup> Session of the South Asian Climate Outlook Forum (SASCOF-15).

A half-a-day Hindi workshop was organized at M.C. Bengaluru on 26<sup>th</sup> September, 2019. Mr. Damodaran, Dy Director, Hindi Cell, Coffee Board delivered speech on importance of Hindi in official Language.

### Talk/Lectures

Dr. Jayanta Sarkar, Sc. ‘F’ delivered a lecture on “Flood Early Warning System” at GIDM, Gandhinagar on 5<sup>th</sup> July, 2019.

Dr. Sanjib Bandyopadhyay, Sc. ‘F’ Kolkata delivered a lecture on “Functions of IMD” on 5<sup>th</sup> July 2019 to 40 number of participant of input dealers undergoing 1year course of “Diploma in Agricultural Extension Services for input Dealers (DAESI)” along with faculty members and staffs.

Shri Bikram Singh, Sc. ‘F’ delivered a lecture to officers of S.D.R.F Uttarakhand on establishment of “Hydro-Met Network” on 12<sup>th</sup> July, 2019.

Shri Virendra Singh, Sc. ‘F’ delivered lecture to the trainees of “Forecasters Training course Batch-18” at Pune during 15-17 July, 2019.

Dr. D. S. Pai, Sc. ‘F’ and Ms. A. B. Bandgar, Sc. ‘C’ participated and deliver lecture in the workshop on “Onset of Indian Summer Monsoon: Theory and Prediction” organized by Indian Institute of Science (IISc), Bengaluru, India from 25&26 July, 2019. The workshop was sponsored by the Future South Asia Regional Office at the Divecha Centre for Climate Change.

Dr. Jayanta Sarkar, Sc. ‘F’ delivered a lecture on “Climate Profile of India and Gujarat and trends of Weather Events” at GIDM, Gandhinagar on 25<sup>th</sup> July 2019.

Shri Amit Kumar, Sc. ‘C’ delivered lecture to the trainees of “IMTC training course Batch-6” at Pune during 6-9 August, 2019.

Dr. Jayanta Sarkar, Sc. ‘F’ delivered lectures on “Introduction to IMD weather forecast and storm & Cyclone forecast in Training on Flood Forecast” at SRTC, Gandhinagar on 19<sup>th</sup> August, 2019.

Shri C. S. Patil, Sc. ‘D’ delivered a Lecture on “Intensity and distribution of rainfall over the country” on 27<sup>th</sup> August, 2019 at The Institution of Engineers (India) Karnataka State Centre, Bengaluru.

Shri Anand Kumar Sharma, Sc. ‘F’ delivered an invited lecture on “Challenges of weather prediction in the mountains” on 5<sup>th</sup> September, 2019 at the Senior Met Officers conference at Shillong. The training program was organised by Head Quarters Eastern Air Command, Shillong.



Shri Anand Kumar Sharma, Sc. ‘F’ at H. Q. Eastern Air Command, Shillong

Shri Anand Sharma, Sc. ‘F’ delivered an invited lecture on Atmospheric Science Education program - IMPLORE on 9<sup>th</sup> September, 2019 at the “International Conference on Sustainable Education” at India Habitat Centre, New Delhi.

Dr. Geeta Agnihotri, Sc. ‘E’ delivered a lecture on “Weather Forecasting System During Floods” to Home Guards and Civil Defence Academy, Bengaluru on 19<sup>th</sup> September, 2019.

Dr. S. D. Attri, Sc. ‘F’ attended and delivered talk in National Round Table Meet on “Doubling of Income of Farmers - Role of Stakeholder” chaired by Secretary, DARE and DG, ICAR and attended by Senior Officials from Centre and State Govt. Universities, PSUs, Co-operatives, NGOs etc. on 21<sup>st</sup> September, 2019 at Ahmedabad.

Shri Y. K. Reddy, Sc. ‘F’ delivered a lecture at MANAGE, Rajendra Nagar, Hyderabad, on “AGROMET Services & FASAL Crop Forecasting” on 25<sup>th</sup> September, 2019.

Smt. S. Stella, Sc. ‘E’ as permitted to deliver lecture on “Weather and Environment” to the trainees of three-day training programme on “Environment Laws and Enforcement” organised by AP Human Resource Development Institute (APHRDI) at Bapatla on 25<sup>th</sup> September, 2019.

Dr. S. D. Attri, Sc. ‘F’ delivered lead talk on “Sustaining Climate Change Impacts-Challenges and Opportunities” in 6<sup>th</sup> India Water Week on 27<sup>th</sup> September, 2019 at Vigyan Bhawan, New Delhi and served as Co-chair also.



Dr. S. D. Attri, Sc. 'F' during the talk at Vigyan Bhawan, New Delhi



Integrated PC based Aviation Weather Observing System

## Awards & Recognitions

Dr. M. Mohapatra DG, IMD was awarded "Bharat Gaurav Samman-2019" at the 20<sup>th</sup> Bharat Prativa Samman Ceremony organized by Jay Bharat Foundation, Cuttack, Odisha on 2<sup>nd</sup> September, 2019.



Dr. M. Mohapatra DG, IMD awarded "Bharat Gaurav Samman-2019"

M. C., Dehradun is providing weather information for public information through "Digital Display Boards" installed at IOCL & HPCL petrol pumps at 7 different places in Dehradun city.



Digital Display Boards at M. C., Dehradun

Dr. S. Balachandran, Sc. 'F' was on tour to M.O. Kavali during 13-15 September, 2019 in connection with installations of GPS based radiosonde systems and inspection at M.O., Kavali.



Dr. S. Balachandran, Sc. 'F' during the implementation of GPS based radiosonde ascent at M.O., Kavali

## MoES AWARD 2018-2019

Dr. S. Bandyopadhyay, Sc. 'F' and Dr. Ram Kumar Giri, Sc. 'E' are awarded the "Certificate of Merit" for their outstanding contributions in the field of Atmospheric Science & Technology.

MoES Best Employee Award 2018-19. The following officials of IMD have been selected by MoES for Best Employee Award for the year 2018-19 to be conferred on MoES Foundation Day on 27<sup>th</sup> July 2019. (i) Shri A. Prasad, Met. 'A', RMC Chennai (ii) Shri Pramod Kumar, S.A., DGM Office, New Delhi (iii) Shri Srimanta Halder, S.A., RMC Kolkata (iv) Shri Vivek Dhawan, S.A., MC Chandigarh (vi) Shri I. D. Sharma, M.O. Gr. 'I', HMO Kalpa (vii) Shri Ajay Shakti, Mech. Gr. I, M.C. Lucknow (viii) Shri G. J. Kazi, MTS, MO Parbhani (viii) Shri S. K. Bhoi, MTS, MC Raipur.

## Infrastructure Development & Installations

Automatic Weather Observing System (AWOS) and Dristi Transmissometer damaged by ESCS 'FANI' was re-installed at Runway Site in BPI Airport, Bhubaneswar by Touring Party from NAL, Bengaluru and CRS, Pune during 16-21 July, 2019. Also DIWE along with Display Unit has been re-installed at BPI Airport, Bhubaneswar during 18-22 July, 2019

Installation of new Integrated PC based Aviation Weather Observing System at New ATC Tower at IGI, Delhi.

## Inter-Agency Meetings

Shri H. R. Biswas, Sc. 'E' attended "Drought Monitoring Meeting" at OSDMA, Rajiv Bhawan, Bhubaneswar on 2<sup>nd</sup> July, 2019 and 16<sup>th</sup> July, 30<sup>th</sup> July, 2019 and 17<sup>th</sup> September, 2019.

Shri H. R. Biswas, Sc. 'E' attended "Crop Weather Watch Group Committee Meeting" at Krushi Bhawan, Deptt. of Agriculture and Farmer's Empowerment, Govt. of Odisha on 1<sup>st</sup>, 8<sup>th</sup>, 15<sup>th</sup>, 22<sup>nd</sup> July, 2019; 19<sup>th</sup>, 26<sup>th</sup> August, 2019 and 16<sup>th</sup> & 23<sup>rd</sup> September, 2019.

Shri Virendra Singh, Sc. 'F' participated in the meeting of "RSMC Tokyo and RSMC New Delhi" to discuss the activities

and finalization of SOP for Tropical Cyclone border and enhancement of co-operation between two RSMC during 2-3 July, 2019 at IMD New Delhi.

**Dr. N. Puviarasan**, Sc. 'E' attended the "Interview meeting for the selection of Observer" as a committee member to represent IMD held on 4<sup>th</sup> July, 2019 at Madras Veterinary College, Chennai under GKMS Scheme.

**Dr. Jayanta Sarkar**, Sc. 'F' attended "Weather watch group meetings" at State Emergency Operation Centre, Govt. of Gujarat, Gandhinagar regarding "Monsoon – 2019" on 2<sup>nd</sup>, 9<sup>th</sup>, 16<sup>th</sup> and 24<sup>th</sup> July, 2019.

**Dr. Kripan Ghosh**, Sc. 'E' and **Shri R. Balasubramanian**, Sc. 'E' attended the meeting with the team members from National Council of Applied Economic Research (NCAER), New Delhi regarding the "Assessment of India Meteorological Department Services", particularly the impact of Gramin Krishi Mausam Sewa (GKMS) scheme on the livelihood of farmers in the country at Head CR&S chamber, IMD, Pune on 15<sup>th</sup> July, 2019.

**Shri B. P. Yadav**, Sc. 'F' and **Dr. A. K. Das**, Sc. 'E' attended "4<sup>th</sup> meeting of Expert Committee on Scientific Assessment of Flood Prone Areas of India" on 26<sup>th</sup> July, 2019 at CWC, Sewa Bhawan, New Delhi.

**Shri R. Balasubramanian**, Sc. 'E' and **Shri S. S. Mairal**, Met. 'B' attended the meeting under the Chairmanship of Hon'ble Minister of Agriculture, Government of Maharashtra, on the subject of opening "India Meteorological Department, Regional Centre for Agromet Field unit (AMFU)" at Morshi, Amravati, Maharashtra at Mantralaya, Mumbai on 30<sup>th</sup> July, 2019.

**Dr. Jayanta Sarkar**, Sc. 'F' attended interview at AMFU, Dantiwada as a member of interview panel for recruitment of Research Associate under "GKMS Project of IMD" on 31<sup>st</sup> July, 2019.

**Shri Anand Shankar**, Sc. 'B' and **Shri Sandeep Kumar**, Met. 'A' briefed about status of "Monsoon and upcoming forecast" in a High level Cabinet meeting headed by the Chief Minister, Govt. of Bihar on dated 18<sup>th</sup> August, 2019.

**Shri Bikram Singh**, Sc. 'F' attended the meeting presided over the Chief Secretary, Government of Uttarakhand with the Inter-Ministerial Central Team constituted at the Government of India level in connection with the recommendation of grant from the "National Disaster Relief Fund" on 30<sup>th</sup> August, 2019.

**Dr. M. Mohapatra**, DG, IMD and **H. R. Biswas**, Sc. 'E' attended the meeting with State Government Officers was conducted regarding "Met. Services in the state of Odisha" on 2<sup>nd</sup> September, 2019.

**Shri Virendra Singh**, Sc. 'F', **Dr. R. K. Giri**, Sc. 'E' and **Shri Amit Kumar**, Sc. 'C' attended the meeting on 3<sup>rd</sup> September, 2019 with Delegation of Scientists from Finish Meteorological Institute on "Planning Air Quality Forecasting using FMI-SILAM and ENFUSER" under the Chairmanship of DG, IMD at conference hall, Mausam Bhawan, New Delhi.

**Dr. S. D. Attri**, Sc. 'F' participated in meeting on "Hydro-climate services to improve decision - making on drought" at COP-14 of United Nations Convention to Combat Desertification organised by Centre for Ecology & Hydrology, Oxfordshire, UK and ADPC Bangkok on 12<sup>th</sup> September, 2019 at Greater Noida, Uttar Pradesh.

**Shri Anand Kumar Sharma**, Sc. 'F' attended a meeting with Vice Chancellor, Y. S. Parmar University of Horticulture and Forestry, Solan on 17<sup>th</sup> September, 2019 regarding recruitment of staff for AMFU, Seobagh and Solan and also delivered lectures to M.Sc./ Ph. D students of the university on weather and climate issues.

**Brainstorming Meet at RMC, Chennai**



Officers during Brainstorming meet at RMC Chennai



Shri Anand Kumar Sharma, Sc. 'F' during the meeting

Under the joint auspices of Indian Meteorological Society, Chennai Chapter and Regional Meteorological Centre, Chennai, a "Brainstorming Meet" on Chennai Water Management was held on 3<sup>rd</sup> August, 2019 at RMC Chennai.

**Shri Virendra Singh**, Sc. 'F' attended the meeting to "Explore the possibility to open Asia Agro Meteorological centre" chaired by DG, IMD on 14<sup>th</sup> August, 2019.

**Dr. S. D. Kotal**, Sc. 'E' attended a meeting with Additional Chief Secretary, Department of Disaster Management, Govt. of Jharkhand regarding "Declaring drought as a result of weak monsoon in 2019" on 25<sup>th</sup> September, 2019.

**Research & Publications**

Fourteen (14) research papers and a article on Cyclone and depressions over the north Indian Ocean during 2018 have been published in quarterly research journal **MAUSAM Vol. 70 No. 3 (July, 2019)**.



A research paper entitled “**Statistical characteristics of the cloud cells in the categories of pre-convective, convective - initiation and convective-enhancement in the contrasting monsoon seasons over the rain-shadow region of peninsular India**” co-authored by Shri Y. K. Reddy has been published in *Climate Dynamics*, (August, 2019), **53**, 3-4, 2355-2374.

A research paper entitled “**Operational Perspectives on Tropical Cyclone Intensity Change Part-1: Recent Advances in intensity guidance**” by Joseph B. Courtney, Dr. S. D. Kotal & Co-authors, published in international Journal *Tropical Cyclone Research & Review*, September-2019, **8**, 3, 123-133.

A research paper entitled “**Meso Analysis and Nowcasting of Severe Local Storms with Squall at Kolkata (Alipore) that occurred in 2013**” by Shri Ranjan Sarkar published in *Paripex - Indian Journal of Research*, **8**, 9, September, 2019.

**Climate Diagnostics Bulletin** of India for June - August, 2019 and Pre-monsoon (March - May) 2019 were brought out and same are uploaded on IMD Pune website.

**ENSO bulletin** for the month of July, 2019 and **Seasonal Climate Outlook for South Asia** for the period of June to September, 2019 were issued. ENSO bulletin for the month of August, 2019 and Seasonal Climate Outlook for South Asia for the months of August-November, 2019 were issued. ENSO bulletin for the month of September, 2019 and Seasonal Climate Outlook for South Asia for the months of September to December, 2019 were issued.

### Media Interaction

A team from Vigyan Prasar visited IMD on 13<sup>th</sup> July, 2019 to shoot a documentary film on **Dr. M. Mohapatra**, Sc. ‘G’ on “**Vigyan Ki Baat - Dr. M. Mohapatra Ke Saat**”. The film was telecast on Doordarshan on 1<sup>st</sup> August on the occasion of Dr. Mohapatra assuming the charge of Director-General of Meteorology. The film aims to showcase the achievements of Dr. Mohapatra and vision for next 5 years for developing a Weather & Climate Smart Organisation.

**Dr. Geeta Agnihotri**, Sc. ‘E’ and Shri C. S. Patil, Sc. ‘D’, **M.C., Bengaluru** attended State Level Mass Media Core Committee Meeting on 2 August, 2019.

### Foreign Visit

**Shri Bibraj Raj**, Sc. ‘C’ is on foreign deputation to USA (Colorado State University) for the period 15<sup>th</sup> July, 2019 to 14<sup>th</sup> October, 2019 to attend the three month’s training course on “**Advanced Dual Polarisation Radar**”.

**Dr. S. L. Singh**, Sc. ‘F’ was on foreign deputation to Offenbach, Germany during the period 26-29 August, 2019 to participate in the Meeting of the Task Team on “**Global Information System Centres (TT-GISC)**”.

**Dr. V. K. Soni**, Sc. ‘E’ was on foreign deputation to Bangkok, Thailand during the period 27-28 August, 2019 to participate in the “**Asian and Pacific Centre for the Development of Disaster Information Management (APDIM) Side Event on Sand and Dust Storms in United Nations Conference Centre (UNCC)**”.

**Dr. Rajendra Kumar Jenamani**, Sc. ‘F’ was on foreign deputation to Bangkok, Thailand during 24-27 September, 2019 to participate in Meeting of the Regional Sub-project Management Team (RSMT) for “**Severe Weather Forecasting Demonstration Project Southeast Asia (SWFDP-Sea)**”.

**Mrs. S. Sunitha Devi**, Sc. ‘E’ was on foreign deputation to Myanmar during 9-13 September, 2019 to participate in 46<sup>th</sup> Session of “**WMO/ESCAP panel on Tropical Cyclones (PTC-46) at Nay Pyi Twa**”.

### Tour

**Shri Y. K. Reddy**, Sc. ‘F’ was on tour to M.O. Kavali for understanding and fixing issues related to “**Setting-up of RS/RW Observatory and inspecting the Observatories of MO - Ongole and MO. Nellore**” during 21-24 July, 2019.

**Shri Y. K. Reddy**, Sc. ‘F’ was on tour to Meteorological Training Institute, Pune to attend the meeting of the Committee for “**Final review of the IMD Training Syllabi**” from 11-12 September, 2019.

**Shri M. M. Saklani**, Met. ‘B’ was on tour of Pithoragarh from 8-30 September, 2019 for managing the work of “**A.M.S. Pithoragarh under UDAN scheme**”.

**Shri Bikram Singh**, Sc. ‘F’ was on tour to Mukteshwar, district Nainital from 28-30 September, 2019 to inspect the progress made so far for commissioning the “**X-band Doppler weather Radar**”.

### Visit

**Dr. M. Mohapatra**, DG, IMD visited RMC Chennai on 22<sup>nd</sup> August, 2019. **Dr. S. Balachandran**, Sc. ‘F’, **Shri Y. K. Reddy**, Sc. ‘F’, **Shri K. Santosh**, Sc. ‘F’, **Dr. Geeta Agnihotri**, Sc. ‘F’, **Smt. S. Stella**, Sc. ‘E’, **Shri P. S. Kannan**, Sc. ‘E’, **Dr. B. Amudha**, Sc. ‘E’, **Shri B. Arul Malar Kannan**, Sc. ‘E’, **Shri N. Meenakshinathan**, Sc. ‘E’.



**Dr. M. Mohapatra, DG, IMD during visit at RMC Chennai**



Shri N. Puviarasan, Sc. 'E', Dr. K. Ramachandra Rao, Sc. 'D', Dr. K.V. Balasubramanian, Met. 'B', Shri A. Roiden, Met. 'B', Shri M. Mohan Babu, Admn. Officer-II, attended the Regional Review Meeting presided over by DG, IMD.

**Dr. M. Mohohapatra**, DG, IMD visited M.C., Thiruvananthapuram and had an interactive session with officers and staff on 25<sup>th</sup> September, 2019.

### Visitors

**Two scientists from RSMC Tokyo** visited **IMD, H.Q.** during 2-3 July, 2019 to discuss the "Standard operating procedure for cyclones migrating into other's domain area and to explore bilateral understanding between the two RSMCs w.r.t. sharing of knowledge".

Eighty (80) students (40 students each day) of Jaipuria School, Vaundhara, Ghaziabad visited **IMD, H.Q.** during 8-9 July, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Fourteen (14) students of Institute of Public Administration visited **IMD, H.Q.** on 11<sup>th</sup> July, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Seven (7) Doctor Students of AIIMS visited **IMD, H.Q.** on 15<sup>th</sup> July, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Ten (10) newly commissioned officers of Indian Air Force Meteorological Branch visited **IMD, H.Q.** on 16<sup>th</sup> July, 2019 for familiarization with the activity of "Satellite Meteorology Division".

**Hon. Minister of Agriculture (Govt. of Maharashtra) Dr. Anil Bonde** visited **CR&S, Pune** office on 19<sup>th</sup> July, 2019 and had meeting with senior officials of IMD.

**Mr. Sunao Sato and Mr. Chaiki Kudo** from Japan Meteorological Agency (National weather service of Japan) visited **IMD, H.Q.** on 19<sup>th</sup> July, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Twenty Five (25) M.B.B.S. (6<sup>th</sup> Semester) students along with 2 faculty members from Govt. Doon Medical College, Dehradun visited **M.C., Dehradun** on 22<sup>nd</sup> July, 2019. Students were shown "Met. Observatory & briefed about functioning of the observatory".



M.B.B.S. students at M.C., Dehradun

Twenty Five (25) students along with 2 teachers of Grade V from Pragati school, Ahmedabad visited **Met. Centre, Ahmedabad** on 23<sup>rd</sup> July, 2019. They were briefed about forecasting procedure and taking "Surface and u/a observation".

Forty Seven (47) students along with 2 faculty members from Gyananda School for Girls Dehradun visited **M.C., Dehradun** on 22<sup>nd</sup> August, 2019. Students were shown "Met. Observatory and briefed about functioning of the observatory".

Fifteen (15) sailors from School of Naval Oceanography & Meteorology, Kochi visited **CR & S Pune** for "Familiarization" on 23<sup>rd</sup> July, 2019

Fifty (50) Graduate/Post Graduate students of Manav Rachna Vishavvidyalaya, Faridabad visited **IMD, H.Q.** on 26<sup>th</sup> July, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Sixty One (61) Forecasters course trainees of Air Force Administrative College Coimbatore visited **IMD, H.Q.** on 1<sup>st</sup> August, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Thirty Five (35) students along with 2 teachers of Botany, School of Science, Gujarat University, Ahmedabad visited **Met. Centre, Ahmedabad** on 8<sup>th</sup> August, 2019. They were briefed about "Forecasting procedure and taking Surface and u/a observation".

Twenty One (21) students of Delhi Public school visited **IMD, H.Q.** on 20<sup>th</sup> August, 2019 for familiarization with the activity of Satellite "Satellite Meteorology Division".

Eighteen (18) class VII students of Vega Gurugram Haryana **IMD, H.Q.** on 28<sup>th</sup> August, 2019 for familiarization with the activity of "Satellite Meteorology Division".

Twenty Five (25) students along with 2 teachers from River Side School, Ahmedabad visited **Met. Centre, Ahmedabad** on 25<sup>th</sup> September, 2019. They were briefed about "Forecasting procedure and taking surface and u/a observation".

**Shri M. Ramachandrudu**, I.A.S, Additional secretary and **Shri Amod Kumar Sharan**, Additional secretary, of Disaster Management Department, Govt. of Bihar visited **Doppler Weather Radar** on 28<sup>th</sup> September, 2019. Shri Anand Shankar, Sc. 'B' briefed them about the "Weather forecasting service provide by India Meteorological Department (IMD) along with functioning of DWR".

### National / International Collaboration

A **web page** has been planned for real time dissemination of **nowcast warning** through **SMS** by the joint collaboration of **Disaster Management Department, Govt. of Jharkhand, M.C. Ranchi** and **Mobile service provider**.

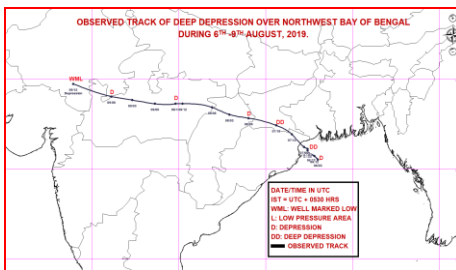
## Weather Summary

**Forecast for the Rainfall** during the Second Half (Aug-Sept.) of the 2019 Southwest Monsoon Rainfall issued on 1<sup>st</sup> August, 2019. Summary of the forecasts are as follows:

The rainfall during August is likely to be  $99 \pm 9\%$  of as was predicted in June. Quantitatively, the rainfall for the country as a whole during the second half of the season is likely to be 100% of LPA with a model error of  $\pm 8\%$ . The probabilistic forecast suggests that the rainfall over the country as a whole during second half of southwest monsoon season (August to September) is most likely to be normal (94 -106% of LPA) with a probability of 45%. The season (June to September) rainfall over the country as a whole is likely to be normal ( $96\% \pm 4\%$  of LPA) as was predicted in June.

### Deep Depression over northwest Bay of Bengal off north Odisha- West Bengal coasts during 6-9 August, 2019

A low pressure area formed over north Bay of Bengal (BoB) and adjoining coastal areas of Bangladesh & West Bengal on 5<sup>th</sup> August, 2019. It concentrated into a Depression over northwest BoB off north Odisha - West Bengal coasts in the morning (0830 hrs IST) of 6<sup>th</sup>. It moved north-westwards and intensified into a Deep Depression over the same region in the early morning (0530 hours IST) of 7<sup>th</sup>. Moving northwestwards, it crossed north Odisha-West Bengal coasts close to north of Balasore in the same afternoon (1330-1430 hrs IST) of 7<sup>th</sup>. Thereafter, it moved west- northwestwards from the evening (1730 hrs IST) of 7<sup>th</sup> and weakened into a depression over northeast Chhattisgarh & neighbourhood in the early morning (0530 hrs IST) of 8<sup>th</sup> August. It moved northwestwards and weakened into a well marked low pressure area over southeast Rajasthan & neighbourhood in the evening (1730 hrs IST) of 9<sup>th</sup> August, 2019. It further weakened into a low pressure area over northwest Arabian Sea and neighbourhood in the evening (1730 hrs IST) of 12<sup>th</sup>. The observed track of the system is presented below:

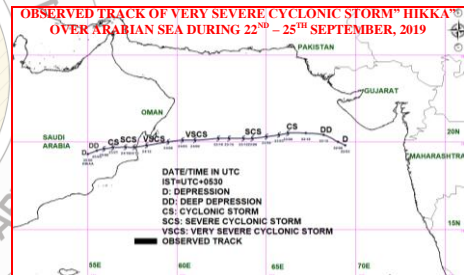


Observed Track of Deep Depression over NE BoB & neighbourhood

### Very Severe Cyclonic Storm 'Hikaa' over the Arabian Sea (22-25 September, 2019)

Very Severe Cyclonic Storm (VSCS) "HIKAA" originated from a low pressure area (LPA) which formed over eastcentral Arabian Sea (AS) off north Maharashtra coast in the morning (0830 IST) of 20<sup>th</sup> September. It lay as a well marked low pressure area (WML) over eastcentral and adjoining northeast AS off south Gujarat coast in the evening (1430 IST) of 21<sup>st</sup> September.

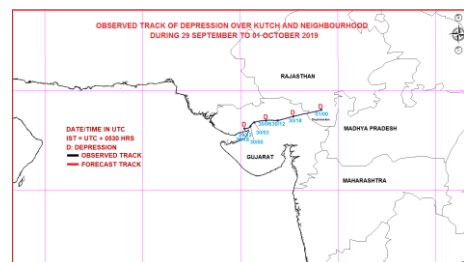
Under favourable environmental conditions, it concentrated into a Depression (D) over eastcentral and adjoining northeast AS off Gujarat coast in the morning (0830 IST) of 22<sup>nd</sup> September. Moving nearly west-northwestwards, it intensified into a Deep Depression (DD) over northeast and adjoining eastcentral AS off Gujarat coast in the same evening (1730 IST). It moved nearly westwards and intensified into Cyclonic Storm "HIKAA" in the early morning (0530 hours IST) of 23<sup>rd</sup> over northeast and adjoining eastcentral AS. It then moved west-southwestwards and intensified, into a Severe Cyclonic Storm (SCS) in the same afternoon (1430 hours IST) over northeast and adjoining northwest & central AS. Moving nearly westwards, it further intensified into a VSCS in the early morning (0530 hours IST) over northwest and adjoining westcentral AS. It then moved west-southwestwards and crossed Oman coast near latitude  $19.7^\circ$  N & longitude  $57.7^\circ$  E, close to north of Duqm in the same evening (between 1930 and 2030 hours IST of 24<sup>th</sup>) as a VSCS with maximum sustained surface wind speed of 120-130 kmph gusting to 145 kmph. Continuing to move westwards, it weakened into a Cyclonic Storm over Oman in the early hours (0230 hours IST), into a DD over Oman in the morning (0830 hours IST), a D around noon (1130 hours IST) over Oman and into a WML over south Oman and adjoining Saudi Arabia in the afternoon (1430 hours IST) of 25<sup>th</sup> Sept., 2019. The observed track of the system is shown below:



Observed track of VSCS HIKAA over eastcentral & adjoining NE AS

### Land Depression over Kutch and adjoining areas (29 September-1 October, 2019)

A low pressure area formed over northeast Arabian Sea & adjoining coastal areas of Saurashtra & Kutch on 28<sup>th</sup> September, 2019. It concentrated into a Depression over Kutch and neighbourhood and lay centered at 1730 hours IST of 29<sup>th</sup> September, 2019 near latitude  $23.1^\circ$  N and longitude  $70.2^\circ$  E, close to Kandla (Gujarat). It moved east-northeastwards and weakened into a well marked low pressure area over southeast Rajasthan & neighbourhood at 0830 hours IST of 1<sup>st</sup> October, 2019. The Observed track is shown below:



Observed track of Land Depression over Kutch and adjoining areas (29 September-1 October, 2019)