

In this issue

Important Events / Activities > P1

Human Resource Development Activities > P2

Workshops > P3

Lectures / Talk / Awards & Recognition > P4

Infrastructure Development & Installations > P5

Inter-Agency Meetings > P6

Media Interaction / Training > P7

Visit / Visitors / Tour > P8

Foreign Visits > P9

FAP / Weather Summry > P10

मौसम विज्ञान विभाग समाचार
IMD NEWS

INDIA METEOROLOGICAL DEPARTMENT
(Ministry of Earth Sciences)



OCT – DEC 2019

Volume 12

Number 4

Important Events / Activities

Visit of His Royal Highness Prince Charles to India Meteorological Department



Dr. M. Rajeevan, Secretary, MoES and Dr. M. Mohapatra, DG, IMD welcomes His Royal Highness Prince Charles



Dr. M. Mohapatra, DG, IMD presented on the cyclone warning system of IMD

His Royal Highness Prince Charles visited India Meteorological Department (IMD) on 13th November, 2019 for fascinated with the pin point accuracy of monitoring of cyclone FANI. His Royal Highness was in India during 13-14 November, 2019 for celebrating British-India connections. Dr. M. Rajeevan, Secretary, MoES and Dr. Mrutyunjay Mohapatra, DG, IMD welcomed His Royal Highness Prince Charles at IMD.

Dr. Mohapatra presented cyclone warning system of IMD which showcases India's technological abilities in monitoring of severe weather events including tropical cyclones and their +3p prediction and warning services. His Royal Highness appreciated the accurate predictions during cyclone FANI which crossed Odisha coast in May, 2019 and recent cyclone Bulbul which crossed West Bengal-Bangladesh coast on Nov., 2019. He specially complemented IMD which also acts as Regional Specialised Meteorological Centre, New Delhi for providing the advisory services to the countries in the region to effectively mitigate disaster associated with cyclones.

National Symposium on "Meteorological Advancement and its Utilisation based on Seventy years of Accomplishment of Mausam (MAUSAM)"



Dr. M. Rajeevan, Secretary, MoES, Dr. M. Mohapatra, DG and others during lighting of lamp

Publication Section, DGM office organized a 1-day National Symposium on the Theme "Meteorological Advancement and its Utilisation based on Seventy years of Accomplishment of Mausam (MAUSAM)" on 24th December, 2019 to commemorate completing seventy (70) glorious years of research journal Mausam in December, 2019 at Mahika Hall, Ministry of Earth Sciences, Lodi Road, New Delhi. Dr. M. Rajeevan, Secretary, MoES graced the occasion as Chief Guest. Dr. Mrutyunjay Mohapatra, DG, IMD & Chief Editor, MAUSAM and Prof. S. K. Dube, IIT Delhi addressed the distinguished delegates during the inaugural ceremony of the symposium.

Prof. S. K. Dube welcomed the panel discussion members (Dr. M. Mohapatra, Prof. U. C. Mohanty, Prof. S. K. Dash, AVM (Dr.) Ajit Tyagi) and invited the suggestions towards improvement of "MAUSAM".



Published by

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Important Events

Dr. D. R. Pattanaik co-ordinated the session. Dr. R. C. Dhiman, Dr. A. K. Sahai, Shri R. C. Bhatia, Shri S. C. Bhan and other members gave many suggestions for improvement of the quality of the journal. Finally, the meeting concluded with a decision that Roadmap for next five years should be prepared for improving (i) Impact Factor & (ii) Citation Index of "MAUSAM".

On this occasion a special issue of MAUSAM containing review articles and research papers and a Souvenir containing the overview of journey of the journal "MAUSAM" in last seven decades and the summary of the main research findings/papers published in the journal "MAUSAM" in the fields of Meteorology, Geophysics, Hydrology, Seismology and other allied subjects were released.



Dr. M. Mohapatra, DG, IMD alongwith other officials

Dr. Mrutyunjay Mohapatra, DG, IMD led Shramdan Programme on 2nd October, 2019. IMD employees participated in the programme in a huge number. On this occasion, Dr. Mohapatra highlighted the importance of cleanliness in all spheres of life. Special drive for cleaning the Mausam Vibhag campus and surrounding Lodi Road area was carried out by the employees. Dr. Mohapatra also urged the staff members to avoid using plastic items in day to day life to preserve environment.



Dr. M. Mohapatra, DG, IMD & other officials during led Shramdan Programme

Meteorological Centre, Bhubaneswar represented IMD, MoES at the 10th Krishi Fair, 2019 at Puri (a National level Agricultural Exhibition organized by Shree Shrikshetra Soochana, Puri) under the auspices of Ministry of Agriculture, Govt. of India

during 21-25 October, 2019. Shri R. K. Mohapatra, Met. 'A' and S. K. Mallick, Met. 'A' represented from M.C. Bhubaneswar. MoES Stall was awarded as the 3rd best Stall in the Exhibition.



10th Krishi Fair, 2019 at Puri

National Day

Dr. M. Mohapatra, DG, IMD attended the National Day for Disaster Reduction and Odisha State Disaster Preparedness Day on 29th October, 2019 convened by Govt. of Odisha at Ravindra Mandap, Bhubaneswar. He was felicitated by Hon'ble Chief Minister, Odisha, Shri Naveen Patnaik on the occasion. Dr. H. R. Biswas, Sc. 'E' also attended the function.



Hon'ble Chief Minister, Shri Naveen Patnaik and Dr. M. Mohapatra, DG, IMD during the function

Human Resource Development Activities

CONFERENCE/ SYMPOSIUM/ SEMINARS

Dr. M. Rajeevan, Secretary, MoES, Dr. M. Mohapatra, DG, IMD and other higher officers of IMD attended the National Seminar on "Lightning Early Warning: It's Operationalisation and Safety Cum Awareness" at India Meteorological Department (IMD), Lodi Road, New Delhi during 3-4 October, 2019 organised by Indian Meteorological Society (IMS) in collaboration with IMD and Climate Resilient Observing-Systems Promotion Council (CROPC). Hon'ble Secretary, MoES inaugurated the event and Dr. Mrutyunjay Mohapatra, DG, IMD delivered the Key Note address during the event.



Dr. M. Rajeevan, Secretary, MoES and Dr. M. Mohapatra, DG, IMD and other officers during the seminar

Shri B. P. Yadav, Sc. 'F' attended the seminar regarding "Lightning Early Warning, its Operationalization and Safety cum Awareness" on 3-4 October, 2019 at IMD, New Delhi.

Dr. D. E. Surendran, Sc. 'C' and Dr. S. Y. Khedekar, Sc. 'B' participated in "Young Scientists' Conference – 2019", a part of India International Science Festival, held from 5-7 November, 2019 at Biswa Bangla Convention Centre in Kolkata and presented a poster on the topic "Seasonal Prediction of Rainfall and Temperature: Role and impact on various sectors affecting economy" and "Hiwayther- An advanced Intelligent Road & Transport Management System" respectively.

Dr. Mrutyunjay Mohapatra, DG, IMD attended two day Regional conference on "Jal Shakti and Disaster Management" organised by Governments of Tamil Nadu, Jammu & Kashmir and Ladakh during 30th November to 1st December, 2019. Dr. M. Mohapatra, DG, IMD also participated in the workshop and delivered an invited talk on "Urban Flooding: Forecasting and Early Warning Emergency Responses". During the Valedictory Session, Shri Farooq Khan, IPS and Advisor to Lt. Governor, Jammu & Kashmir applauded Dr. Mohapatra, DG, IMD for accurate early warning services in association with various severe weather events, particularly, cyclones.

Dr. S. D. Attri, Sc. 'F' participated in International Seminar on "Climate Smart Farming Systems" for BIMSTEC countries on 11th December, 2019 at NASC Complex, New Delhi.

Dr. M. Rajeevan, Secretary, MoES, Dr. Mrutyunjay Mohapatra, DG, IMD and other higher officers of IMD and other departments participated in National Symposium on "Land, Ocean and Atmosphere Interactive Processes in the Context of Weather and Climate" Jointly hosted by Indian Meteorological Society, Visakhapatnam Chapter and Department of Meteorology & Oceanography Andhra University, Visakhapatnam during 11-14 December, 2019 at Andhra University, Visakhapatnam, Andhra Pradesh.

TROPMET – 2019

Dr. Mrutyunjay Mohapatra, DG, IMD was conferred the "Honorary Fellowship of the Indian Meteorological Society" on 11th December, 2019 during TROPMET - 2019 at Visakhapatnam for his brilliance & expertise in "Cyclones

prediction that has led to significant reduction in loss of lives due to cyclones in recent years".



Dr. M. Rajeevan, Secretary, MoES, Dr. M. Mohapatra, DG, IMD, and other officers during TROPMET-2019

Dr. M. Mohapatra, DG, IMD attended as chief speaker in the Valedictory session in the National seminar organized by 11th Indian Climate Congress on "Climate change and world peace" on 27-29 December, 2019 at OUAT, Bhubaneswar.



Dr. M. Mohapatra, DG, IMD and others during the seminar

Dr. Mohapatra has been awarded with the 9th Satyasai Samman in a ceremony of the seminar. Dr. A. Kashyapi, Sc. 'F', Shri H. R. Biswas, Sc. 'E', Shri Umasankar Das, Sc. 'C', Shri P. K. Bal, Met. 'B', Shri P. K. Patra Met. 'A' and Ms. Anamika Mandal, S.A. also attended the seminar. Dr. A. Kashyapi presented W. S. keynote address entitled "Study of extreme rainfall events during Monsoon 2019 - An eye opener towards climate resilient planning".

WORKSHOPS

Shri B. P. Yadav, Sc. 'F' and Dr. O. P. Sreejith, Sc. 'E' participated in Brainstorming Workshop on "Asian High Mountain Third Pole Weather & Climate Monitoring Services" on 1st October, 2019 at IMD, New Delhi.

Shri B. P. Yadav, Sc. 'F' and Dr. A. K. Das, Sc. 'E' attended the one day workshop on "Management of Floods: Reservoir Management and other Preventable Measure" on 18th October, 2019 at New Delhi. Shri Yadav, Sc. 'F' delivered a lead talk on "Localised Hydrometeorological Services of IMD for Flood Forecast".



Dr. M. Mohapatra, DG, IMD, Dr. H. R. Biswas, Sc. 'E' and other Officers of M.C. Bhubaneswar attended 2nd National Conclave on "Climate Change and Water" at IITM, Bhubaneswar during 19-20 October, 2019.



Dr. M. Mohapatra, DG, IMD & other officers of IMD during the workshop

Dr. D. S. Pai, Sc. 'F', Dr. O. P. Sreejith, Sc. 'E' and Dr. D. E. Surendran, Sc. 'C' participated in one day National Workshop organized by Directorate of monsoon Mission on "CFS Modelling Approaches" at IITM, Pune on 29th October, 2019.

Dr. K. K. Singh, Sc. 'G' Dr. S. D. Attri, Sc. 'F', Shri S. C. Bhan, Sc. 'F', Shri R. Balasubramanian, Sc. 'E' attended meeting on "Operational Agromet Advisory Service for Addressing Floods and Drought Risks for Sustainable Crop Management in the country" in the International Conference on Sustainable Water Management held at Pune on 7th November, 2019.

Shri H. R. Biswas, Sc. 'E', Shri N. P. Kulkarni, Sc. 'B', Shri S. H. Bhagwat, Met. 'A' and Shri D. H. Dolas, S.A. attended "4th IMD Upper Air Network performance (UANP) Workshop – 2019" at New Delhi during 18-19 November, 2019.

Shri Anand Sharma, Sc. 'F' delivered the lead talk on "Kedarnath Disaster" at "Asia Pacific Hydrology Workshop" and was also co-chairman of technical session - 2 on 20-21 November, 2019. The workshop was organised by Indian Institute of Technology, Roorkee.

Dr. Mrutyunjay Mohapatra, DG, IMD participated in the the International Workshop on "Prediction of extreme precipitation events and Tropical Cyclones: Present status and



Dr. M. Mohapatra, DG, IMD during the workshop

future prospects (IP4) and Annual Climate Workshop" at Indian Institute of Tropical Meteorology, Pune on 28th November, 2019. During the workshop, Dr. Mohapatra presented a talk on cyclone warning system in India.

Dr. Kripan Ghosh, Sc. 'E' attended the workshop on "WCSSP-WP3 Impacts-based Forecasting (IBF)" and gave presentation on "Impact Based Agromet Advisory Services in India" held at Indian Institute of Tropical Meteorology (IITM), Pune from 29-30 November, 2019.

LECTURES/TALK

Dr. Mrutyunjay Mohapatra, DG, IMD convened a special session on "Natural Hazards" on 15th October, 2019 during the "2nd Triennial Congress of Federation of Indian Geosciences Associations (FIGA)" at CSIR- National Geophysical Research Institute (NGRI), Hyderabad.

Dr. O. P. Sreejith, Sc. 'E' delivered lecture on SASCOF-A mechanism for preparing Consensus Climate Forecast outlook during training programme on "Regional Service & Flash Flood Hazard Early Warning Mechanism" conducted by SAARC Disaster Management Centre (IU) at Gandhi Nagar, Gujarat on 16th October, 2019.

Dr. Soma Sen Roy, Sc 'E' participated in the release of "Monsoon 2019 Lightning Report" followed by a lecture during the two day National Lightning Symposium on Lightning Resilient India Campaign on 7-8 November, 2019 at Vrishti Auditorium, Mausam Bhawan, New Delhi.

Dr. M. Mohapatra, DG, IMD delivered a talk at an event hosted by Department of Physics, Utkal University, Bhubaneswar on 17th November, 2019. H.R. Biswas, Sc. 'E' also attended the programme.



Dr. M. Mohapatra, DG, IMD during the event

Shri P. S. Biju, Sc. 'E' delivered lecture on "AWS/Radiation" to the Officers from NAVY at MTI, Pune on 3rd December, 2019.

Awards & Recognitions

IMDs Mumbai office received "Letter of Appreciation" from Indian Air Force (IAF), Mumbai Base, for "Weather Forecasting Support Services rendered during last monsoon season for severe weather".

Dr. Mrutyunjay Mohapatra, DG, IMD was conferred the "Honorary Fellowship of the Indian Meteorological Society" on 11th December, 2019 during TROPMET - 2019 at Visakhapatnam for his brilliance & expertise in cyclones prediction that has led to significant reduction in loss of lives due to cyclones in recent years.



Dr. Mrutyunjay Mohapatra, DG, IMD receiving IMS Fellowship Award

Dr. Mrutyunjay Mohapatra, DG, IMD was conferred (a) the Satyasai Samman-2019 and (b) the Honorary Fellowship of Indian Climate Congress during the valedictory ceremony of the National Seminar on Climate Change and World Peace organised at the 11th Indian Climate Congress by Satyasai Charitable and Education Trust at Odisha University of Technology during 27-29 December, 2019.

Shri H. R. Biswas, Sc. 'E' was awarded "IMS Bhavanarayana Award" for best research paper in the Inaugural session of TROPMET-2019.



Shri H. R. Biswas, Sc. 'E' receiving award

Shri Ranjan Phukan, Sc. 'B' has received an Award for Recognition of Disaster Management Activities 2018-19 on Best Early Warning Dissemination - State Level from Government of Tripura.

Infrastructure Development & Installations

Shri A. K. Sharma, Sc. 'F' initiated Instagram account of Mausam NWFC and WordPress blog-page "Mausam by IMD" for increasing outreach on Social Media.

Shri Rajesh Yadav, S.A. and Shri Parashotam, S.A. installed "Integrated PC based Software System to DCWIS system" at Juhu Airport from 5-13 November, 2019.



Integrated PC based Software System to DCWIS system

Shri Rajesh Yadav, S.A. and Shri Parashotam, S.A. had installed "Drishti-AWOS on the new runway of Bangalore airport" from 27th November to 12th December, 2019.



Installation of Drishti-AWOS

S/Shri Ravi Kamble, Met. 'A' and Pramod Mehtre, S.A. installed "DCWIS system on 10 metre frangible mast" at Tirupati Airport from 8-16 December, 2019.



Installation of DCWIS system

S/Shri A. B. Sakhre, Met. 'B', S. D. Doke, S.A. and Ms. Poonam Chaurasiya, SA installed "DCWIS system on 10 metre frangible mast at Shirdi Airport" from 16-20 December, 2019.

S/Shri P. D. Kokate, Met. 'A' and S. K. Gupta, Met. 'A' conducted a tour to M.C. Ahmedabad for installation of "Solar Tracker and Calibration of Radiation sensors and to AET Anand for installation of Net Radiation sensor".



Installation of Solar Tracker and Calibration of Radiation sensors

S/Shri S. D. Bhondve, Met. 'B' and A. R. Konde-Deshmukh S.A. were on tour to GAW Ranichauri for installation of "Ordinary rain gauge" from 23 - 26 December, 2019.

Inter-Agency Meetings

Dr. A. K. Das, Sc.'E' and Shri A. Raja, Sc. 'C' attended the 5th Inter-Ministerial Coordination meeting of "Brahmaputra river monitoring in TAR segment" on 3rd October, 2019 at Kailash Hall NSCS, New Delhi.

Shri S. S. Mairal, Met. 'B' attended quarterly meetings on "Publication of Shetkari Masik in Agricultural Technology Management Agency (ATMA)" Sabhagruha at Sakhar Sankul, Shivajinagar, Pune on 11th October, 2019.

Dr. S. L. Singh, Sc. 'F' participated in the meeting of LITD 22 held on 16th October, 2019 at BIS Headquarters, New Delhi to discuss the "Various International and National Geospatial standards".

Dr. P. Guhathakurta, Sc. 'F' attended a "State Level Governing Body and Task Force" for "Climate Change and Human Health (CCHH)" meeting held at Mumbai on 17th October, 2019.

Shri B. P. Yadav, Sc.'F', Dr. A.K. Das, Sc. 'E' and Shri S. K. Manik, Sc. 'C' attended the meeting on "Upgradation of Hydromet Services under Chairmanship of DGM" on 23rd October, 2019 at New Delhi.

Shri H. R. Biswas, Sc. 'E' attended meeting on "Construction of Doppler Weather Radar Building at Balasore" convened by SRC Govt. of Odisha at, Rajiv Bhawan, Bhubaneswar on 25th October, 2019.

Dr. K. Sathi Devi, Sc. 'F' participated in the meeting of the MoES Review meeting of "Program and Plan of Activities for 2019-20" held at CMLRE, Kochi during 31st October-1st November, 2019.

Shri H. R. Biswas, Sc 'E' attended the Review Meeting on VSCS "Bulbul" through Video Conference with Principal Secretary, PMO on 8th November, 2019 at Lokseva Bhawan, Bhubaneswar to review the situation and status of preparedness for impending Cyclone 'Bulbul' chaired by Chief Secretary, Odisha.

Shri H. R. Biswas, Sc. 'E' represented IMD at the "NDMA Preparatory meeting for 2nd BIMSTEC Disaster Management Exercise 2019-20" at Puri on 14th November, 2019 .

Dr. O. P. Sreejith, Sc. 'E', Dr. D. E. Surendran, Sc. 'C' and Smt. A. B. Bandgar, Sc. 'C' attended meeting organized by SRMC of "Monsoon Mission on Physics of the monsoon and its interannual Variability" on 4-5 December, 2019 at IITM, Pune.

Dr. S. D. Attri, Sc. 'F', Dr. A. K. Baxla, Sc. 'E' and Mr. Sanjiv Kumar Sagar, Met. 'A' participated in "Fasal Review Meeting (Value for Money)" held under the chairmanship of CEO, NRAA on 5th December, 2019 at Krishi Bhawan, New Delhi.

Dr. Kripan Ghosh, Sc. 'E' participated as a member in Technical Evaluation Committee (TEC) meeting on 12th December, 2019 for "Evaluation of performance of Agro AWS systems" of the vendors for procurement of two hundred Agro AWS systems under Gramin Krishi Mausam Sewa.

Smt. S. Sunitha Devi. Sc. 'E' attended meeting on "Synoptic systems of the southwest monsoon" held under the National monsoon mission programme and presented "Nature of the synoptic systems during the summer monsoon" on 17th December, 2019 at IITM, Pune.

Gramin Krishi Mausam Sewa (GKMS) and FASAL



Dr. M. Mohapatra, DG, IMD and other dignitaries during meeting

Dr. Mrutyunjay Mohapatra, DG, IMD participated in the 13th Annual Review Meeting of "Gramin Krishi Mausam Sewa (GKMS) and FASAL" as Chief Guest at Gwalior on 18th December, 2019. While addressing the participants, he highlighted the role of agromet advisory services in recent years in managing the crop/live stock. These advisories help the farmers take the advantage of benevolent weather and minimize the adverse impact of malevolent weather. These services have contributed significantly in enhancing farm productivity and thus improved the food security in India.

Research & Publications

ENSO bulletin for October to December and Seasonal Climate Outlook for South Asia for the months of October, 2019 to January, 2020 were issued.

ENSO bulletin for the month of November and Seasonal Climate Outlook for South Asia for the months of November, 2019 to January, 2020 were issued.

Climate Diagnostics Bulletin of India from September to October, 2019 was brought out and same was **uploaded on IMD Pune website.**

Seven (7) review articles and seven (7) research papers were published in quarterly research journal **MAUSAM Vol. 70, No. 4 (October, 2019) on the occasion of 70th years publication as a special issue.**

Media Interaction

Dr. Mrutyunjay Mohapatra, DG, IMD participated as expert in the special programme on flood fury in Bihar at DD news. The programme is available at the link: https://www.youtube.com/watch?v=5roUEMV8UrY&feature=youtu.be&fbclid=IwAR0tZ3Gm2l_41155m121r46Nw6U6rbu56sfFIDUv0dOs7gLNuEU-8dH8tlw



National Geographic Channel aired a story on **“The Mega Cyclone FANI”** on 7th October, 2019. The story highlighted the role of **Dr. Mrutyunjay Mohapatra**, DG, IMD in monitoring of cyclone FANI and the role of Odisha State Government in mitigating the disaster associated with FANI cyclone.



Dr. D. R. Pattanaik, Sc. ‘E’ took part in the discussion on **“El-Nino, La-Nina and Monsoon”** in Rajya Sabha TV (RSTV) in the programme **Desh Deshantar** on 2nd November, 2019.



Dr. D. R. Pattanaik, Sc. ‘E’ and others during media discussion

A **documentary film** of 30 minutes duration was released in **“DISHA”** on Naxatra News highlighting experiences of **Dr. Mrutyunjay Mohapatra**, DG, IMD & future plans of IMD.

In connection with International Training Workshop on **“Operational Climate Services”** at MTI Pune, a **Press release**, duly approved by DG, IMD was circulated among media. Media personnel also attended the inauguration of the **International Workshop** and gave publicity in local newspaper.

State Government (G.O.M.) Flood committee alongwith Shri K. S. Hosalikar, Sc. ‘F’, Dr. R. R. Kelkar, former DGM, Dr. Deshpande, Scientist from IITM visited CRS, Pune and had a meeting with similar scientist of IMD, viz., Shri K. N. Mohan, Sc. ‘F’, Dr. P. Guhathakurta, Sc. ‘F’, Dr. A. Kashyapi Sc. ‘F’, and Dr. O. P. Sreejith, Sc. ‘E’, on 15th October, 2019 regarding usefulness of new activity viz., **“River basin rainfall monitoring and prediction in flood”** monitoring of Maharashtra.

Shri Anand Sharma, Sc. ‘F’ organised half a day meeting with officers of **“DD Kisan and senior officers and heads of various divisions of IMD”** on 4th November, 2019 to increase outreach of IMD products and services. The meeting was Chaired by **Dr. M. Mohapatra**, DG, IMD, New Delhi. **Shri Anil Shrivastava**, ADG, DD Kisan also participated.

Trainings

Dr. Kripan Ghosh, Sc. ‘E’ and Shri R. Balasubramanian, Sc. ‘E’ attended and delivered lectures on **“(i) Agromet Advisory Services and Agromet Product’ and (ii) Use of crop simulation models in crop yield forecasting”** to the students of **National Training Programme on “Recent Advances in Crop Micrometeorology”** at Mahatma Phule Krishi Vidyapeeth, Department of Agricultural Meteorology, Centre of Advanced Faculty of Training in Agricultural Meteorology (CAFT), College of Agriculture, Pune on 1st & 3rd October, 2019.

Dr. M. Mohapatra, DG, IMD addressed the **trainees of District Agro-Meteorological Unit (DAMU)** and also reviewed the work of **M.C. Hyderabad** on 15th October, 2019. Training was imparted to **SMS Agrimet and Agromet observers** from 15-17 October, 2019 at M.C. Hyderabad.

Shri H. R. Biswas, Sc. ‘E’ delivered lecture on the subject **“TAF writing using recently developed NWP products for Aviation application”** in the **Refresher Training Course on Aviation Meteorology** at MTI, Pune on 20th November, 2019.

Dr. M. Mohapatra, DG, IMD, addressed and **Dr. Pulak Guhathakurta**, Sc. ‘F’, Dr. D. S. Pai, Sc. ‘F’, Dr. Kripan Ghosh, Sc. ‘E’, Dr. D. E. Surendran, Sc. ‘C’, Smt. A. B. Bandgar, Sc. ‘C’ and Latha Sridhar Met. ‘A’ delivered lecture to the trainees in the **“International Training workshop on Operational Climate Service”** jointly organized by India Meteorological Department and Regional Integrated Multi-Hazard Early Warning System, Bangkok, Thailand held at Meteorological Training Institute (MTI), Pashan, Pune 9-20 December, 2019.



Dr. M. Mohapatra, DG, IMD and others during the Training workshop

An educational tour group comprising 55 students of B. Sc. Hons. of Department of Environmental Science, Berhampore Girl's College, Murshidabad, West Bengal along with faculty members visited MC, Bhubaneswar on 22nd November, 2019.

Forty Nine (49) Met. Trainees along with two Instructors (IPT COURSE IPT 02/ 18) from Air Force Station, Tambaram visited DWR Chennai on 26th November 2019 as part of their curriculum. They were explained about the principles of DWR and utility of products in weather forecasting.

A Delegation from Mozambique led by Mr. Aderito Celso Felix Aramuge, Director General of Mozambique National Meteorology Institute (INAM) and PR of Mozambique with WMO visited Ministry of Earth Sciences (MoES) and India Meteorological Department (IMD), New Delhi to learn about "India's best practices on Cyclone Forecasting and end to end Early warning system for effective disaster management" on 6th December, 2019.

Visits/Visitors

Delegation from National Centre for Meteorology, United Arab Emirates visited MoES & IMD, New Delhi on 8th November, 2019 for initiating bilateral collaboration between the two agencies.



Dr. M. Mohapatra, DG, IMD along with senior officers of IMD and delegation from United Arab Emirates

Mr. Sanjeev Kumar Jindal, IAS, Joint Secretary (Disaster Management), Ministry of Home Affairs and his team visited National Weather Forecasting Centre (NWFC), IMD at H.Q., New Delhi to have an overview of monitoring of VSCS Bulbul on 9th November, 2019. Dr. M. Mohapatra, DG, IMD explained the overall monitoring and forecasting procedure for monitoring and prediction of tropical cyclones and various types of bulletins issued from the centre.



Dr. M. Mohapatra, DG, IMD, Mr. Sanjeev Kumar Jindal, IAS, MHA and officers of IMD

A delegation from Govt. of Odisha led by Principal Secretary, Disaster Management, Managing Director, OSDMA and Special Relief Commissioner, Odisha, Shri Pradeep Kumar Jena, IAS visited IMD, on 16th November, 2019 and held meeting with IMD Scientists led by Dr. M. Mohapatra, DG, IMD to enhance the "Collaboration between IMD and Odisha state for early warning services". On this occasion, the Principal Secretary appreciated the forecast and warning issued by IMD during last cyclone Bulbul.



Dr. M. Rajeevan, Secretary, MoES and Dr. M. Mohapatra, DG, IMD along with Delegation from Mozambique

Dr. M. Rajeevan, Secretary, MoES visited RMC Mumbai office to review the ongoing projects of CFlows-Mumbai, Veravali IMD Doppler Radar and 4 X-band radar for Mumbai through IITM. A detailed presentation of all the activities (achievements) along with future plans of RMC Mumbai was made by Shri K. S. Hosalikar, Sc. 'F' and officials from IITM, Pune also participated in his Review meeting on 14th December, 2019.

Tour

MMR-Online was made operational at all surface observatories w. e. f. 1st October, 2019. In this connection, Shri A. D. Tathe, Sc. 'E' was on tour to TS of RMCs Mumbai and Chennai for implementation and resolving issues related to MMR-Online.

Dr. D. S. Pai, Sc. 'F' was on tour to Calicut and Kannur from 21-23 October, 2019 to visit flood and landslide affected areas, i.e., Kavalapara, Kalepetta, Wayanad, Puthumala and Banasarasagar dam etc.

Dr. D. S. Pai, Sc. 'F' was on tour to Thiruvanthapuram from 2-4 December, 2019 to attend the meeting regarding "Rainfall flood & Landslide Committee" meeting with Kerala State Govt.

Foreign Visits

Dr. Siddhartha Singh, Sc. 'E' was on foreign deputation to **Irene, South Africa** during 7-18 October, 2019 to participate in **"WMO/UNEP 5th Southern Africa Dobson Spectrophotometer Inter-comparison(IC) Meeting"**.

Mrs. Sunithadevi Santhamma, Sc. 'E' was on foreign deputation to **Tokyo, Japan** during 10-11 October, 2019 to participate in the **"Conference regarding High-Level Dialogue on Tropical Cyclone"**.

Ms. K. Sathi Devi, Sc. 'F' was on foreign deputation to **Pretoria, South Africa** during 14-18 October, 2019 to participate in the Meeting of the **"Steering Group for Severe Weather Forecasting Demonstration Project (SWFDP)"**.

Mrs. Sampada Mahesh Lohogaonkar, S.A. was on foreign deputation to **Hopenpeissenberg (Zugspitze), Germany** during 14-25 October, 2019 to participate in the **"37th GAWTEC Training Course on Total Atmospheric Deposition at Environmental Research Station Schneefernerhaus and the Observatory"**.

Dr. Sankar Nath, Sc. 'E' was on foreign deputation to **Mexico city** during 16-18 October, 2019 to participate in **"Common Alerting Protocol (CAP) 'Train the Trainers' Session and CAP Implementation Workshop"**.

Dr. D. R. Pattanaik, Sc. 'E' was on foreign deputation to **Kathmandu, Nepal** 22-23 October, 2019 to participate in the **Regional Knowledge Forum on Early Warning for Flood and High Impact Weather Events** in **"The International Centre for Integrated Mountain Development (ICIMOD)"**.

Dr. S. D. Attri, Sc. 'F' was on foreign deputation to **Singapore** during 29-31 October, 2019 to participate in the **"Joint Management Group Meeting for Asia & the South-West Pacific"**.



Dr. S. D. Attri, Sc. 'F', during "Joint Management Group Meeting for Asia and the South-West Pacific"

Shri Brahm Prakash Yadav, Sc. 'F' and **Shri Asok Raja, Sc. 'C'** were on ex-India deputation to **Antalya, Turkey** during 3-8 November, 2019 to participate in **"Flash Flood Guidance System Regional Centres meeting & Global Flash Flood Guidance System Workshop"**. **Shri B. P. Yadav, Sc. 'F'** also made presentation on the **status of functioning of South Asia Flash Flood Guidance System**.

Dr. Sankar Nath, Sc. 'E' was on ex-India deputation to **Tokyo, Japan** during 13-15 November, 2019 to participate in the **"OSCAR/Surface updated activities and training course for RA-II National Focal Points (East Asia)"**.

Dr. Mrutyunjay Mohapatra, DG, IMD was on ex-India deputation to **Kathmandu, Nepal** during 19-21 November, 2019 to participate in **"South Asia Hydromet Forum-II"**. **Dr. Mohapatra** participated in a **Panel Discussion with Heads of National Meteorological & Hydrological Services of South Asian countries and World Bank Representative during South Asia Hydrometeorological Forum** aimed to explore and promote pathways for regional collaboration on 19th Nov., 2019.



Dr. M. Mohapatra, DG, IMD at Kathmandu, Nepal

Dr. S. Balachandran, Sc. 'F' was on ex-India deputation to **Tokyo, Japan** during 27-29 November, 2019 to deliver lecture in **"ESCAP/WMO Typhoon Committee Attachment Training at RSMC"**.



Dr. S. Balachandran, Sc. 'F' at Tokyo, Japan during lecture

Shri M. I. Ansari, Sc. 'E' was on ex-India deputation to **Lindenberg, Germany** during 3-5 December, 2019 to participate in the meeting of **"WMOs CIMO Task Team on Upper Air Inter-compression (TT-UAL-2021)"**.

Dr. Suman Goyal, Sc. 'F' and **Mr. H. R. Biswas, Sc. 'E'** was on ex-India deputation to **Melbourne, Australia** during 2-7, December, 2019 for participation of **"10th Asia/Oceania Meteorological Satellite Users Conference (AOMSUC-10)"**.

Dr. O. P. Sreejith, Sc. 'E' was on ex-India deputation to **San Francisco, CA, USA** during 7-13 December, 2019 to participate in **"WCRP Climate Science Week – AGU Fall Meeting"**.



AGROMET ADVISORY

Farmers Awareness Programme (FAP)

AMFU, Raipur, Chhattisgarh and Krishi Vigyan Kendra, Durg jointly organized one day FAP by Department of Agrometeorology, IGKV, Raipur on 1st October, 2019 at Santra village. Shri J. L. Chaudhary, Nodal Office informed about weather forecasting and GKMS activities.



Shri J. L. Chaudhary during FAP at Raipur

AMFU, Basar, Arunachal Pradesh organized FAP on "Current erratic climate and role of Agromet Advisory Services" at Soi village, Leparada district, Arunachal Pradesh on 28th November 2019.



AMFU, Basar, Arunachal Pradesh at Soi village

AMFU, Kalyani, West Bengal organised FAP at Krishi Mela, Dhaniakhali Krisak Mandi, Block - Dhaniakhali on 29th December 2019 to explained objectives of GKMS project. Dr. Mahasweta Bhowmick Dutta, Technical Officer explained weather forecasting, weather based Agromet Advisory, usefulness of Bulletin, SMS and special forecast.



Dr. Mahasweta Bhowmick Dutta during FAP at Krishi Mela

WEATHER SUMMARY

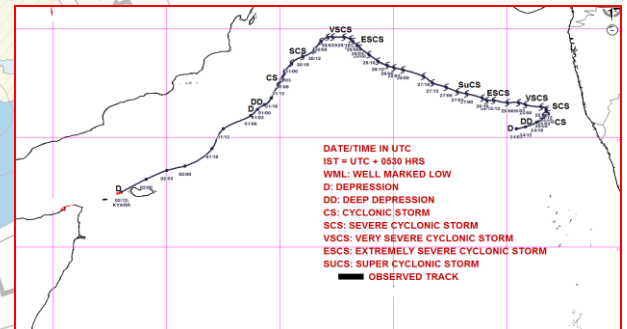
Significant Weather System

October witnessed the formation of two Cyclonic Storms over the Arabian Sea, viz., Super Cyclonic Storm 'Kyarr' and Very

Severe Cyclonic Storm (VSCS) 'Maha'. VSCS 'Maha' formed as a Depression over Maldives – Comorin areas on 30th October, intensified into a Cyclonic Storm and crossed Lakshadweep Islands and Continued till November.

Super Cyclonic Storm 'Kyarr' (24 Oct - 2 Nov, 2019)

Super cyclonic storm Kyarr developed from a depression which formed over eastcentral Arabian Sea on 24th October, 2019. Under favourable environmental conditions, it intensified into a deep depression on 24th evening and into a cyclonic storm "KYARR" in the early morning of 25th. Moving north-northeastwards, it further intensified into a severe cyclonic storm in the same evening. Thereafter, it recurved west-northwestwards and intensified into a very severe cyclonic storm in the early morning of 26th. Thereafter, it intensified rapidly into an extremely severe cyclonic storm on 26th night and into a Super Cyclonic Storm (SuCS) in the morning of 27th. From 28th night, it entered into unfavourable environment and started weakening. It weakened into an extremely severe cyclonic storm in the morning of 29th. The system continued to lose its strength and gradually weakened into a well marked low pressure area near Somalia in the midnight of 2nd November. The observed track of the system is given below:

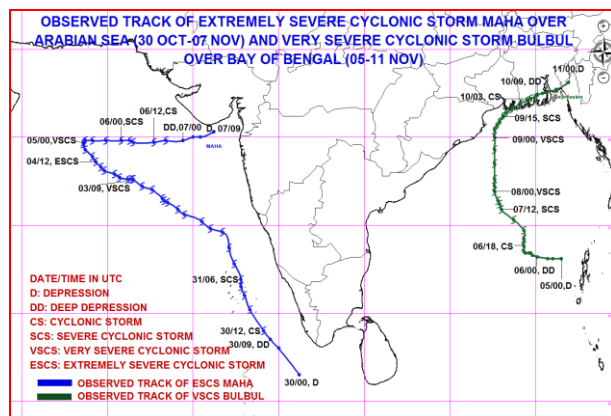


Observed track of Super Cyclonic Storm "KYARR"

Extremely Severe Cyclonic Storm 'Maha' (30 Oct-7 Nov, 19) & Very Severe Cyclonic Storm 'Bulbul' (5-11 Nov, 2019)

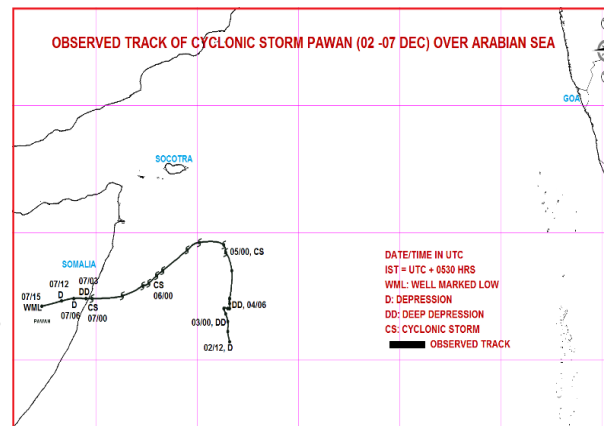
The Extremely Severe Cyclonic Storm (ESCS) 'MAHA' originated as a Low Pressure Area (LPA) over Equatorial Indian Ocean off south Sri Lanka coast in the forenoon (0600 UTC) of 28th October. It laid as a Well Marked Low pressure area (WML) over Comorin Area & adjoining Equatorial Indian Ocean in the early morning (0000 UTC) of 29th October. Moving west-northwestwards, under favourable environmental conditions, it concentrated into a Depression (D) over Maldives-Comorin Area in the early morning (0000 UTC) of 30th October. Moving northwestwards, it intensified into a Deep Depression (DD) over Lakshadweep and adjoining Southeast Arabian Sea & Maldives Area in the afternoon (0900 UTC) of 30th October. It moved further northwestwards and intensified into a Cyclonic Storm (CS) 'MAHA' in the evening (1200 UTC) of 30th October over Lakshadweep and adjoining Southeast Arabian Sea & Maldives Area. An anticyclone located to the northeast of the system, steered it in west-northwest direction till 4th Nov.

After maintaining the intensity of ESCS for 27 hours, it entered into a COL region which made it move nearly north-northwestwards and coming under the influence of colder SSTs and increased vertical wind shear it weakened into a VSCS in the morning (0300 UTC) of 5th November over WC & adjoining EC AS. The observed tracks of cyclones Maha over Arabian Sea and Bulbul over Bay of Bengal is given below:



Observed Tracks of cyclones Maha & Bulbul

PAVAN) in the early morning (0530 hrs IST) of 5th Dec., 2019 over southwest Arabian Sea. Moving west-southwestwards, it crossed Somalia coast near latitude 7.4° N and longitude 49.6° E during 0730 to 0830 hrs IST of 7th Dec. 2019 as a cyclonic storm with a wind speed of 60-70 kmph gusting to 80 kmph. The observed track of the system is given in the figure:



Observed track of CS Pawan

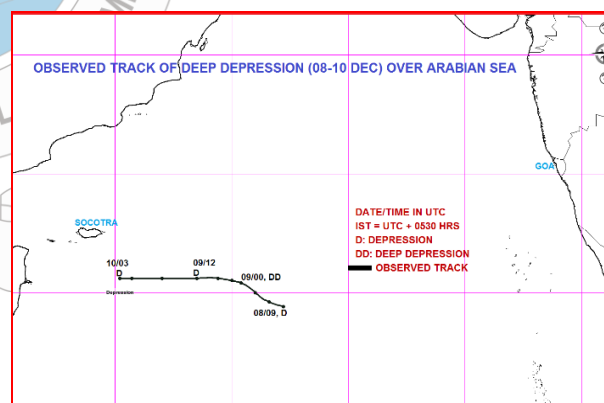
The Very Severe Cyclonic Storm (VSCS) "BUL BUL" originated from the remnant of Severe Tropical Storm 'MATMO' (28 Oct - 2 Nov) over west Pacific Ocean emerged into north Andaman Sea. It was formed as a low pressure area over north Andaman Sea in the early morning (0000 UTC) of 4th Nov. Moving west-northwestwards, under favourable environmental conditions it concentrated into a Depression (D) over east central and adjoining southeast Bay of Bengal (BoB) in the early morning (0000 UTC) of 5th Nov. Moving nearly west-northwestwards, it intensified into a deep depression (DD) over east central and adjoining southeast BoB in the early morning (0000 UTC) of 6th Nov. It moved north-northwestwards and intensified into cyclonic storm "BUL BUL" in the late night (1800 UTC) of 6th Nov over eastcentral and adjoining southeast BoB. It continued to move nearly northwards until the afternoon (0900 UTC) of 9th Nov and then started to re-curve northeastwards from the evening (1200 UTC) of the same day. Continuing to move northeastwards, it weakened into a cyclonic storm over coastal Bangladesh & neighbourhood in the early morning (0000 UTC) of 10th November as shown in the observed track of VSCs Bulbul.

Cyclonic Storm 'Pawan' (2-7 Dec., 2019)

A low pressure area developed over southwest Arabian Sea (AS) and adjoining equatorial Indian Ocean in the early morning (0530 hrs IST) of 30th Nov., 2019. It laid as a well marked low pressure area over the same region in the early morning (0530 hrs IST) of 2nd Dec. Under favourable environmental conditions, it concentrated into a depression over southwest Arabian Sea & adjoining equatorial Indian Ocean in the same evening (1730 hrs IST). Moving north-northwestwards, it further intensified into a deep depression over southwest Arabian Sea & adjoining equatorial Indian Ocean in the early morning (0530 hrs IST) of 3rd December. It intensified into the cyclonic storm "PAWAN" (pronounced as

Deep depression over SW Arabian Sea (8-10 Dec., 2019)

A low pressure area formed over southeast Arabian Sea and adjoining equatorial Indian Ocean in the early morning (0530 hrs IST) of 7th Dec., 2019. It laid as a well marked low pressure area over southeast & adjoining southwest Arabian Sea in the early morning (0530 hrs IST) of 8th Dec. It concentrated into a depression in the same afternoon (1430 hrs IST) over southwest Arabian Sea. The observed track of the system is given below:



Observed track of the deep depression over southwest Arabian Sea

Statistics of bulletins issued by IMD headquarter in association with these systems

A total of 44 bulletins for National level disaster managers and special tropical weather outlook/tropical cyclone advisories were issued for WMO/ESCAP Panel member countries in association with these systems including 9 Press Release for media group. Regular warnings for fishermen in deep Seas of south and central Arabian Sea and along & off west coast of India were issued since 2nd December onwards.