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Important Events / Activities

Inauguration of IFLOWS-Mumbai



Hon'ble Minister of Science & Technology, Minister of Health & Family Welfare and Minister of Earth Sciences, Dr. Harshvardhan, Hon'ble Chief Minister of Maharashtra, Shri Uddhav Thackeray, Dr. M Rajeevan, Secretary, Ministry of Earth Sciences, Dr. M. Mohapatra, DG, IMD through VC during launching of IFLOWS-Mumbai

Integrated Flood Warning System for Mumbai (IFLOWS-Mumbai) was launched on 12th June, 2020 by Hon'ble Minister of Science & Technology, Minister of Health & Family Welfare and Minister of Earth Sciences, Dr. Harshvardhan and Hon'ble Chief Minister of Maharashtra, Shri Uddhav Thackeray, Dr. M Rajeevan, Secretary, Ministry of Earth Sciences through video conference (VC) which was also attended by Dr. M. Mohapatra, DG, IMD, Senior Officers of Government of Maharashtra & Ministry of Earth Sciences, Directors of IITM, NCCR and NCMRWF, Dr. S. D. Attri, Sc. 'F' and Shri K. S. Hosalikar, Sc. 'F'.

Sixteenth session of South Asia Climate Outlook Forum (SASCOF-16)

Sixteenth session of South Asia Climate Outlook Forum (SASCOF-16) and Climate Service Users Forum (CSUF) was conducted online from 20 to 22 April, 2020 and released consensus statement for South West Monsoon 2020 for South Asia. The summary of the climate statement is given below:

(i) The Sixteenth Session of South Asia Outlook Forum (SASCOF-16) online was conducted through video conference.

(ii) Normal rainfall is most likely during the 2020 southwest monsoon season (June - September) as a whole over most parts of South Asia. Geographically, above normal rainfall is most likely over the southern part and some areas of north-western parts of the region. However, below-normal rainfall is most likely over land areas around North Bay of Bengal and northern most parts of the region. Normal rainfall is most likely over the remaining areas.



SASCOF-16 online was conducted through video conference



Important Events / Activities

Unified Mobile Application for New-age Governance (UMANG) App



Dr. M. Rajeevan, Secretary, MoES and Shri Abhishek Singh, President and CEO of NeGD during launching of Mobile App-UMANG

Dr. M. Rajeevan, Secretary, MoES launched IMD's Mobile App-UMANG (Unified Mobile Application for New-age Governance) on 22nd May, 2020 in presence of **Dr. M. Mohapatra**, DG, IMD and **Shri Abhishek Singh**, President and CEO of NeGD and other many scientists.

(The App is available at Web:

<https://web.umang.gov.in/web/#/>,

Android:<https://play.google.com/store/apps/details...>, iOS:

<https://apps.apple>.

<https://apps.apple.com/in/app/umang/id1236448>).

Seven (7) services, like, current weather, nowcast, city forecast, tourism forecast, rainfall information, warnings and cyclones are updated features of **UMANG APP** hosted on <http://mausam.imd.gov.in> web site of IMD have been on-boarded on UMANG Mobile application.

IMD launched video capsule of current weather status and weather forecast for next two weeks on 12th June, 2020. The first video capsule was presented by **Dr. Mrutyunjay Mohapatra**, DG, IMD. The video capsule is uploaded on face book page of Weather India and Mausam NWFC every Friday in both English and Hindi languages.

Dissemination of Agromet. Advisories to the users' community through SMS and IVR technology is being continued in the country through Kisan Portal and private companies under **PPP mode**. At present, Agromet. Advisories are reaching to **40.3 million farmers** in the country through SMS directly.

New projects/ schemes/ programmes

Installation and configuration of HP server (ftp and http services) for Data Collection and monitoring of AWS and ARG station all over India.

Installation and configuration of HP server (ftp and http services) for Data Collection and monitoring of HWSR and DCWIS station at all airport Met. Offices and coastal weather station all over India.

IMD Rate contract for purchase of Tipping Bucket Rain gauge have been made for one year.

Installation of DCWIS system on 10 metre frangible mast at different airports is undertaken.

Fifteen (15) AWS have been installed in Kerala State [Kanjikkuzhy (Alappuzha), Adakkaputhur (Palakkad), Vallapadam (Kollam), Neyyattinkara (Thiruvananthapuram), Peerumedu (Idukki), Kakkayam (Kozhikode), Seethathode (Pathanamthitta), Vakkad (Malappuram), Vellarikkundu (Kasargode), Poringalkuthu (Thrissur), Chalakkudy (Thrissur), Irikkur (Kannur), Poonjar (Kottayam), Padinjaraathara Dam Site (Wayanad) and North Paravur (Ernakulam)].



AWS at Adakkaputhur (Palakkad)



AWS at Peerumedu (Idukki)

Revival of ARG Station

The revival / maintenance of Eight (8) Nos. of ARG stations such as KIIT College, Bhubaneswar, Mundali, Tigiria, Banki, Athgarh, Tangi, Begunia and Bolagarh with **installation of new Cellcomm Data Loggers** were completed by **Shri R. K. Mohapatra**, Met. 'A' and **Shri S. Biswal**, S.A. during the period 15th June, 2020 to 19th June, 2020.



ARG Station Begunua, Distt. Khordha

Airports: PC based Current weather instrument system having facility for generating Metar, Met. Report and other aviation reports installed at RWY 19L of Kolkata airport, Thiruvananthapuram airport and Patna airport.

INTERNATIONAL YOGA DAY

International Yoga Day was celebrated at IMD, H.Q. and sub-offices of IMD on 21st June, 2020 as per guidelines issued by the government.

Memorandum of Understanding

MoU was signed between IMD and Govt. of Odisha for establishment of 15 Manual Surface Observatories at district H.Q. of Odisha on dated 22nd June, 2020. Shri H. R. Biswas, Sc. 'E' and Head, M. C. Bhubaneswar has signed on behalf of IMD.

Human Resource Development Activities

TRAINING

Shri Anand Shankar, Sc. 'B' participated in "The International Distance Training Course on Short-term Climate Monitoring and Prediction in Disaster Prevention and Mitigation" by China Meteorological Administration Training Centre during the Period from 18 to 31 May, 2020.

Online Information Technology (IT) Training on System Administration for the "South Asia Flash Flood Guidance System", from 17 June to 10 July, 2020. Overview of SAFFGS by regional trainer was held at 1500-1530 hrs on 18th June, 2020 through VC and 1st online session was held on 26th June, 2020 with Hydrologic Research Centre (HRC) and World Meteorological Centre (WMO). Sixteen (16) participants from different RMCs / MCs and Hydromet. division participated in the training. Dr. M. Mohapatra, DG, IMD chaired the online

inaugural session for IT Training of "South Asia Flash Flood Guidance (SAsiaFFG)" System on 26th June, 2020. The Session was attended by senior scientists of IMD, HRC USA and WMO.

Dr. Manish R. Ranalkar, Sc. 'E' and Shri U. K. Shende, Sc. 'E' attended online training conducted by Integrated training and Policy Research (ITPR), New Delhi for the purpose of "Public-procurement, e-procurement and GeM Portal" from 26-27 June, 2020.

AMTC Batch No. 180 phase II is being continued with 10 trainees (6 from Indian Navy, 2 from Indian Coast Guard & 2 from Mauritius Met. Services).

Forecaster's Training Course Batch No. 189 Post mid term commenced w. e. f. 15th June, 2020 online through skype.

LECTURES/TALK

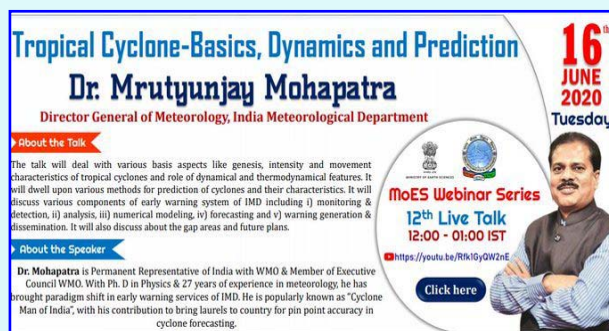
Dr. Kripan Ghosh, Sc. 'E' delivered a lecture on "Impact based Agromet Advisory Services in India" in online training on "Recent Advances and Instrumentation in Agricultural Meteorology" organized by Vasant Dada Naik Marathwada Agricultural University (VNMAV) Parbhani on 29th May, 2020.

Dr. S. D. Attri, Sc. 'F' delivered inaugural talk through VC on "Challenges of Climate Change and Biodiversity under Current Scenario" on the occasion of World Environment Day on 5th June, 2020 organised by MDU Rohtak.



Dr. S. D. Attri, Sc. 'F' during inaugural talk

12th Live Talk of MoES Webinar Series was given by Dr. Mrutyunjay Mohapatra, DG, IMD on Tropical Cyclone Basics, Dynamics and Prediction on 16th June, 2020. The discussion is available at the link: <https://youtu.be/Rfk1GyQW2nE>.



Dr. S. D. Attri, Sc. 'F' delivered invited talk in International webinar on **"Climate Change implications and management strategies"** on 23rd June, 2020 organised by Central University of Haryana and RPS College, Mahendergarh .

Dr. Sanjib Bandyopadhyay, Sc. 'F' delivered a special online lecture on 26th June, 2020 for the **M.Sc. Students**, Research Scholars and faculties of Department of Environmental Science and Department of Geography of The University of Burdwan on the topic **"Role of IMD in forecasting and dissemination of warning towards planning for an effective disaster Management"**.

MEETINGS

Dr. Mrutyunjay Mohapatra, DG IMD participated in the preparatory meeting for ensuing **Shri Amarnath Yatra** under the chairmanship of Home Secretary, Govt of India on 19th April, 2020 and briefed about the **"Preparedness of IMD for providing weather observation and forecast for Shri Amarnath Yatra"**.

Dr. M. Mohapatra, DGM, **Dr. S. D. Attri**, Sc. 'F' and **Dr. R. K. Giri**, Sc. 'E' attended RA II Management Group Meeting of World Meteorological Organisation through video conferencing on 24th April, 2020.

Dr. S. D. Attri, Sc. 'F' attended Online Meeting on **"Long Term Ecological Observatories"** organised by Ministry of Environment, Forests and Climate Change on 2nd May, 2020.

Shri Abhishek Anand, Sc. 'B' and **Shri Saurabh Kumar**, S.A. from M. C. Ranchi attended a meeting on 11th May, 2020 with the Director of Dept. of Agriculture, Govt. of Jharkhand for **"Technical discussion on the project of installation of 260 Nos. of AWS"** in Jharkhand.

Dr. Smt. Manorama Mohanty, Sc. 'E' attended Inter-state meeting through Video Conferencing on **"Flood Management & preparedness for Monsoon 2020 for Mahi, Sabarmati and Banas basins"** under the chairmanship of Chief Engineer, Mahi and Tapi basin organisations at CWC, Gandhinagar on 12th May, 2020.

Shri H. R. Biswas, Sc. 'E' attended the meeting under the chairmanship of **Chief Secretary, Govt. of Odisha** to review the status of **"Preparedness for the impending Super Cyclone in the Bay of Bengal"** on 15th May, 2020 at Secretariat (Lok seva

Bhawan), Bhubaneswar and briefed Time to time to Chief Minister's Office, Chief Secretary's Office, Special Relief Commissioner and other State Govt. Officials of Govt. of Odisha during the period.

Dr. M. Mohapatra, DG, IMD participated in the **National Crisis Management Committee meetings** held on 16th, 18th, 19th and 21st May, 2020 under the chairmanship of **Hon'ble Cabinet Secretary** and presented the current status and forecast of super cyclone **AMPHAN**.

Shri H. R. Biswas, Sc. 'E' attended the meeting to **"Review the status of preparedness for the impending Cyclone in the Bay of Bengal"** on 16th May, 2020 (1700 Hours IST) at Secretariat (Lok seva Bhawan), Bhubaneswar chaired by **Hon'ble Chief Minister, Odisha** and gave a presentation on Forecast, Warning and Impact on Odisha due to this system.

Dr. M. Mohapatra, DG, IMD presented the current status and forecast of **"Super cyclone AMPHAN"** in the review meeting chaired by Hon'ble Home Minister on 18th May, 2020.

Dr. S. D. Attri, Sc. 'F' and **Dr. R. K. Giri**, Sc. 'E' attended **"Executive Council Meeting of World Meteorological Organisation"** through video-conferencing on 19th May, 2020.

Dr. Kripan Ghosh, Sc. 'E', **Dr. O. P. Sreejith**, Sc. 'E', **Shri R. Balasubramanian**, Sc. 'E', **Ms. A. B. Bandgar** and Sc. 'C' attended the meeting on **"Kharif Campaign and Southwest monsoon 2020"** for Maharashtra organized by State Department of Agriculture, Government of Maharashtra on 21st May, 2020 through Video Conferencing.



Kharif Campaign and SW monsoon 2020 with Govt. of Maharashtra

Dr. M. Mohapatra, DG, IMD chaired the **"WMO Severe Weather Forecasting Programme-South Asia Meeting"** on 25th May, 2020 through video conference.

Dr. M. Mohapatra, DGM, IMD chaired the **"Annual Monsoon Review & Annual Cyclone Review Meetings 2020"** through Video conference on 29th May, 2020.

Dr. M. Mohapatra, DG, IMD attended and made presentation on the **"Cyclone over the Arabian Sea"** at Ministry of Home Affairs in a meeting chaired by Hon'ble Home Minister on 1st June, 2020.



Shri H. R. Biswas, Sc. 'E' briefed about the Super Cyclone AMPHAN

Dr. M. Mohapatra, DG, IMD attended meetings of the National Crisis Management Committee on the “**Preparedness for the cyclone NISARGA in the Arabian Sea**” convened at Rashtrapati Bhawan, New Delhi on 1st and 2nd June, 2020.

Dr. M. Mohapatra, DG, IMD attended tele-presence at MoES to discuss “**India’s Ensemble Prediction System**” on 4th June, 2020.

Shri Surender Paul, Sc. ‘F’ attended a video conference to review “**Flood preparedness in State Haryana - 2020**” on 4th June, 2020 under the Chairmanship of Hon’ble Chief Minister, Haryana at Civil Secretariat, Chandigarh.

Dr. M. Mohapatra, DG, IMD attended tele-presence meeting of “**Regional Integrated Multi-Hazard Early Warning System (RIMES)**” on 8th June, 2020.

Dr. O. P. Sreejith, Sc. ‘E’, **Dr. D. E. Surendran**, Sc. ‘C’, **Ms. A. B. Bandgar**, Sc. ‘C’ and **Dr. S. D. Sanap**, Sc. ‘C’, participated in “**SASCOF-17 Update Meeting**” on 8th June for “**Update of Consensus forecast for South Asia Region**”.

Shri Vivek Sinha, Sc. ‘F’, **Shri Anand Shankar**, Sc. ‘B’, **Shri Sandeep Kumar**, Met. ‘A’ and **Shri Sanjay Kumar**, Met. ‘A’ attended the “**Flood preparedness**” meeting on 9th June, 2020, chaired by the chief Secretary, Bihar through Video Conference.

Shri H. R. Biswas, Sc. ‘E’ attended the meeting on the proposal for transfer of State Drought Monitoring Cell (SDMC) from OSDMA to Agriculture and F. E. Department and on “**Procurement and installation of AWS and ARG covering all Gram Panchayats in Odisha**” chaired by Addl. Chief Secretary-cum-Development Commissioner and Agriculture Production Commissioner at Lok seva Bhawan on 12th June, 2020.

Dr. Sanjib Bandyopadhyay, Sc. ‘F’ attended a web based video conference on 12th June, 2020 with **Hon’ble Minister-in-Charge, Irrigation & Waterways Department, Govt. of West Bengal** to review the status of “**Flood preparedness and related inter-departmental issues for the ensuing Monsoon 2020**”.

Shri Vivek Sinha, Sc. ‘F’ and **Shri Anand Shankar**, Sc. ‘B’ attended the meeting on 13th June, 2020 chaired by **Hon’ble Chief Minister of Bihar** to review the “**Flood preparedness for the state**”.

Dr. Jayanta Sarkar, Sc. ‘F’ attended a meeting chaired by the Chief secretary, Govt. of Gujarat, at Gandhinagar regarding “**Monsoon 2020 preparedness**” on 15th May, 2020 and made a presentation.

Dr. Jayanta Sarkar, Sc. ‘F’ attended a meeting with Honorable Chief Minister of Gujarat **Shri Vijaybhai Rupani** at Gandhinagar regarding “**Anticipated cyclone in Arabian Sea**” on 1st June, 2020.

Shri Sukumar Roy, Met. ‘A’ attended the “**41st SLCCCCI**” meeting organized by Agricultural Deptt., West Bengal at Nabanna on 16th June, 2020.

Dr. Sanjib Bandyopadhyay, Sc. ‘F’, **Dr. Kripan Ghosh**, Sc. ‘E’, **Shri R. Balasubramanian**, Sc. ‘E’ and **Shri Sukumar Roy**, Met. ‘A’ attended the online meeting on “**ARM, FASAL**” on 17th June, 2020.

Dr. M. Mohapatra, DG, IMD Chaired meeting on the “**Aviation Weather Decision Support System (AWDSS)**” on 19th June, 2020.

Dr. M. Mohapatra, DG, IMD attended meeting under Chairmanship of Secretary, MoES to discuss about the “**Development of Data Centres**” at MoES Institutes on 19th June, 2020.

Shri Vivek Sinha, Sc. ‘F’, **Shri Anand Shankar**, Sc. ‘B’, **Shri Sandeep Kumar**, Met. ‘A’, **Shri Sanjay Kumar**, Met. ‘A’ and **Ms. Aarti Gupta**, S.A. attended a Video Conference meeting on 23rd June, 2020, with State Agriculture Department regarding “**Value added F/C & advisory at Block level**”.

Shri G. N. Raha, Sc. ‘E’ attended “**Monsoon Preparedness Meeting**” on 24th June, 2020 organized by Sikkim State Disaster Management Authority (SSDMA), Gangtok, Sikkim.

Dr. Kripan Ghosh, Sc. ‘E’, **Shri R. Balasubramanian**, Sc. ‘E’ and AASD officials attended the Web Conference on “**Use of Agromet DSS for Automated Generation of Agromet Advisories**” organized by Watershed Organisation Trust (WOTR) on 26th June, 2020.

Shri H. R. Biswas, Sc. ‘E’ attended the “**Crop Weather Watch Group Committee Meeting (CWWGCM) of Kharif Crop**” at Krishi Bhawan, Bhubaneswar under the Chairmanship of Agriculture Production on 8th June 2020, 22nd June, 2020 and 29th June, 2020.

Dr. S. D. Attri, Sc. ‘F’ participated through VC in High Level Monitoring Committee Meeting of ICAR Flagship programme on “**National Innovations in Climate Resilient Agriculture**” chaired by Secretary, DARE and DG, ICAR on 23rd, June, 2020.

Dr. S. D. Attri, Sc. ‘F’ attended National Supercomputing Mission Project Review Meeting on “**Urban Meteorology**” organised by CDAC, Pune on 27th June, 2020.

Dr. M. Mohapatra, DG, IMD, **Dr. D. S. Pai**, Sc. ‘F’ and **Dr. Pulak Guhathakurta**, Sc. ‘F’ and other senior officers of IMD attended “**Monsoon Mission Review meeting**” (online) held by MoES on 29th June, 2020.

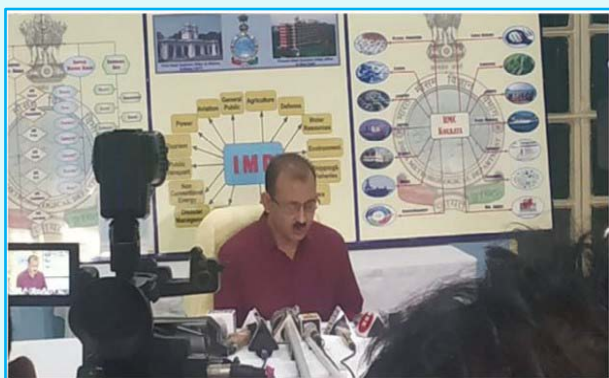
Dr. S. D. Attri, Sc. ‘F’ and **Dr. D. R. Pattanaik**, Sc. ‘F’ attending through VC the meeting of “**FAO Rome Desert Locust Information System**” on 29th June, 2020.

RADIO TALK/PRESS CONFERENCE

Dr. S. D. Attri, Sc. ‘F’ participated in telephonic All India Radio programme on “**Climate Change and Agriculture**” on 3rd May, 2020.

Dr. M. Mohapatra, DG, IMD and **Shri S. N. Pradhan**, DG, NDRF addressed joint press conference on 19th, 20th and 21st May, 2020 for briefing media and general public about the impact of super cyclone **AMPHAN**.

Dr. Sanjib Bandyopadhyay, Sc. 'F' on Press Meet at RMC, Kolkata on 20th May, 2020 about the Super Cyclonic Storm "**AMPHAN**" over the South East Bay of Bengal during 16-21 May, 2020.



Dr. Sanjib Bandyopadhyay, Sc. 'F' during the Press Meet

Shri C. S. Patil, Sc. 'D' delivered live talk on "**Cyclone**" over Radio city 93.3 Hubballi Live talk on 22nd, 2020.

Kalinga News, Odisha telecast a story "**AMPHAN predictions came true**" on 27th May, 2020. The same is available at the link <https://youtu.be/nL3zhHQpnwl>.

Kanak News, Odisha telecast a story "**Know about Cyclone Man Mrutyunjay Mohapatra childhood story**" on 28th May, 2020. The same is available at the link https://youtu.be/YamkvLVy_84.

Interviews of **Dr. M. Mohapatra**, DG, IMD were telecast on RSTV, Republic TV, Odisha TV, Zee TV, NDTV, RSTV, K News, O TV, Kanak TV, India Science etc.

Dr. Geeta Agnihotri, Sc. 'E' and **Shri S. C. Patil**, Sc. 'D' briefed on All India Radio on Depression/Cyclone (Nisarga) over Arabian Sea and its influence over Karnataka State on 1st June, 2020.

Dr. M. Mohapatra, DG, IMD attended Skype interview with Economic Times on 4th June, 2020.

Dr. S. D. Attri, Sc. 'F' participated in programme through VC on "**Monsoon and Agriculture**" at DD Kisan, New Delhi on 11th June, 2020.

Dr. M. Mohapatra, DG, IMD delivered Talk on "**Tropical Cyclones - Basics, Dynamics and Prediction**" during MoES webinar series 12th Live Talk on 16th June, 2020.

Dr. Geeta Agnihotri, Sc. 'E', **Shri S. M. Metri**, Sc. 'E' and **Shri C. S. Patil**, Sc. 'D' answered about Weather Enquiries by Electronic and Print Media during the period.

OUTREACH PROGRAMME

MoES started a new live event series on Facebook. In the first event, **Dr. M. Mohapatra**, DG, IMD appeared live on Facebook account of MoES (<https://www.facebook.com/moesgoi>) on 18th May, 2020 at 5.00 PM to share his insights and answer the queries of the viewers on Tropical Cyclones. A large number of visitors (around 900) participated in the discussion.



Dr. M. Mohapatra, DG, IMD live on Facebook account of MoES

Rajya Sabha Television aired Monsoon Special Episode with Dr. Mrutyunjay Mohapatra on 6th June, 2020. The programme is available at the link: <https://www.youtube.com/watch?v=BH5i1Q6i8Qk&fbclid=IwAR2dV8HJkGSFz0VLiaPdpistfs5OOFWtltB1qVpVbLqN-iMAQqWfXVYXoU>



An article entitled "**Keeping a Weather Eye on Cyclones with IMD Chief**" was published by e-magazine My City Links on 8th June. In the interview **Dr. Mohapatra**, DG, IMD explained the

intricacies involved in weather prediction particularly the cyclones. The article is available at the link:
<https://www.mycitylinks.in/keeping-a-weather-eye-on-cyclones-with-imd-chief?fbclid=IwAR3Q3isR1P5ciQVhJTONy8HUKQGPM4dhSdHvoU8qlQD3KiV37Fxy2ZmB2OFqFWnDI>



The Week Magazine published an interview entitled “Urban Meteorology is the next big thing” with Dr. Mrutyunjay Mohapatra, DG, IMD on 18th June, 2020. The detailed interview is available at the link:
https://www.theweek.in/news/sci-tech/2020/06/18/urban-meteorology-is-the-next-big-thing.html?fbclid=IwAR3Q3isH9q79ChxolNphGaizHNhvFOzt-KA5VR0rHZfyFV1_kYZqBA99jms



On the directive of DGM, New Delhi, a whatsapp group named “AGRO WEATHER GROUP_WB” was created on 29th June, 2020, comprising of all observers/TO/Nodal officers of AMFUs of WB, SMS/Observers/Nodal officers of DAMUs of WB, officer of ATARI Kolkata, some ADAs of W.B. Govt. to disseminate extreme weather events like lightning & thunder etc. at the earliest to the farming community to save their lives and property. KVK Scientists of W.B. and DDA of W. B. Govt. will also be included in this group. The first lightning and thunder warning msg. for East Midnapore & S-24 Parganas was disseminated at 0825 hrs IST on 30th June, 2020. This very quick action by SAMC, Kolkata was praised by Dr. K. K. Singh, Sc. 'G'.

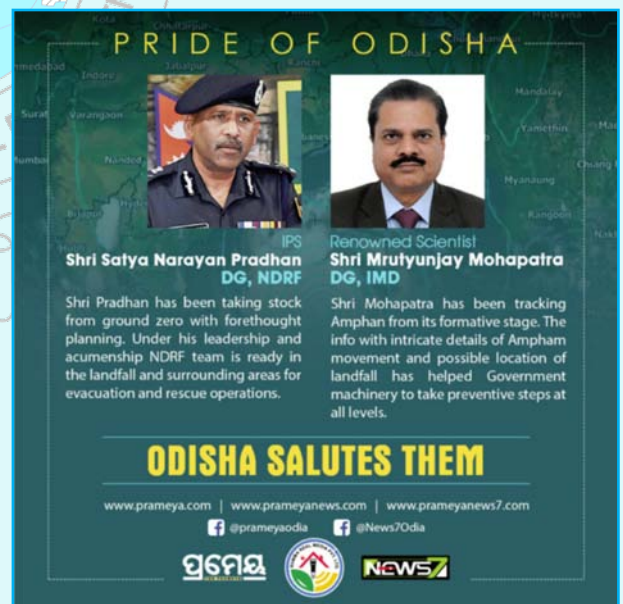
VISITORS

Nine (9) Scientists from IMD participated virtually in **Web-Ex CGMS-48** Working Group meeting commenced during 25-29th May 2020 at Eumetsat Office Darmstadt, Germany.

AWARDS & RECOGNITION/APPECIATION

IMD as a regional leader provides tropical cyclone advisories to 13 WMO/ESCAP Panel countries including Oman and Yemen. Another cyclonic disturbance developed into a depression over south Oman and adjoining east Yemen during 29th May-1st June, 2020. IMD successfully monitored and predicted this system. A total of 11 national bulletins for fishermen plying in deep sea areas of westcentral Arabian Sea and 11 special tropical weather outlooks about track, intensity wind and heavy rainfall warnings were issued in association with this system. DG, IMD earned **appreciation worldwide for accurate monitoring and prediction** of genesis, intensification, landfall & associated adverse weather that helped in effective mitigation of disaster in the COVID era, containing loss of lives in double digit. The services of IMD were appreciated by international community in this regard.

Odisha Govt. thanked IMD Chief for accurate predictions of **AMPHAN**. The detailed article published by Hindustan Times on 21st May, 2020 is available at :
<https://www.hindustantimes.com/india-news/odisha-govt-thanks-imd-chief-for-accurate-forecast-of-cyclone-amphan/story-afbvMgt8fh1eLnfXMFNZGM.html>



WMO sent appreciation letter to Dr. Mrutyunjay Mohapatra, DG, IMD on 2nd June, 2020 for accurate prediction of Super Cyclonic Storm “**AMPHAN**” that immensely helped in early response and actions. WMO wrote that the services provided by IMD/RSMC New Delhi, showcased excellent lesson and best practices in tropical cyclone forecasting & warning services and response actions for effective mitigation of disaster. The news was aired in various leading national TV channels & newspapers.

Excerpt of Appreciation from World Meteorological Organisation

The accurate prediction of Super Cyclonic Storm "AMPHAN" immensely helped in early response & actions. The services provided by the India Meteorological Department/Regional Specialised Meteorological Centre, New Delhi showcased excellent lesson and best practices in tropical cyclone forecasting & warning services and response actions for effective mitigation of disaster.

Appreciation from WMO

The Chief Disaster Risk Reduction Centre, United Nations Development Programme, Chief Minister of Odisha & West Bengal, Director General, National Disaster Response Force, media and general public **appreciated cyclone forecasting services of IMD. Life profile of DG, IMD** was published in various leading newspapers of the country.

Prameya News, Odisha appreciated DGM IMD for accurate cyclone warning services during **AMPHAN**.

Indian Air Force appreciated IMD for precise and accurate predictions during **AMPHAN**.

Government of West Bengal appreciated the role of IMD in providing accurate and frequent updates on super cyclone **AMPHAN** that helped minimize loss of lives.

DG, NDRF appreciated accurate forecast of super cyclone **AMPHAN** that helped disaster managers effectively mitigate the disaster associated with super cyclone **AMPHAN**.

Ommcomm News, Odisha published article "**The story of Cyclone Man of India whose efforts saved lives**" on 24th May. The same is available at the link: https://ommcomnews.com/odisha-news/the-story-of-india-s-cyclone-man-whose-efforts-saved-millions-of-lives/odia?fbclid=IwAR3DMLYLWAKznNVLLnRlslybaUJEXh8y7rxH6m94BGMbNyxVX5_KzKwduA

IMD managed to successfully provide uninterrupted weather and climate services including observations, modeling, forecasting, communication and warning services to various stake holders, disaster managers, media and general public in the current scenario due to COVID-19.

Research & Publication

Fourteen (14) research papers published in quarterly research journal **MAUSAM Vol. 71, No. 2, April (2020) issue**.

New Normal Dates of Onset/Progress and Withdrawal of Southwest Monsoon over India http://www.imdpune.gov.in/Clim_Pred_LRF_New/Reports.html

Climate Diagnostics Bulletin of India for February to March, Winter Season (January-February) and Annual Climate Summary 2019 were brought out and same are uploaded on IMD Pune website.

CRS Research Report No. 001/2020 entitled "**Development of a new (10 x 10) (1981-2019) Monthly gridded rainfall data set over South Asian region**" by CR&S was brought out. http://www.imdpune.gov.in/Clim_Pred_LRF_New/Reports.html

ENSO and IOD bulletin for the month of April, May & June and South Asia monthly climate outlook 2020 were issued and Seasonal Climate Outlook for South Asia for the month May to August 2020 & of June to September 2020 were issued. (QuickLink. : www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)

An interview entitled "**Intensification of Cyclones a problem : The Cyclone Man**" was published in the Indian Express dated the 24th May 2020.

Articles were published by various leading newspapers in Odisha on life profile of **Dr. M. Mohapatra** and successful tracking of **AMPHAN**.

United Nations/ESCAP published an article entitled "**COVID 19 and AMPHAN**" on 27th May, 2020.

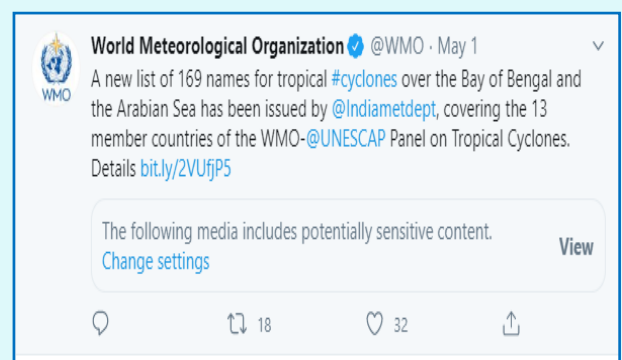
M. C. Patna submitted Preliminary report on "**Finding of Meteorological condition associated with Acute Encephalitis Syndrome**" to state Govt. on 11th May, 2020.

NEW LIST OF NAMES OF TROPICAL CYCLONES OVER NORTH INDIAN OCEAN

IMD prepared a new list of **169 names of tropical cyclones with 13 names each from all the 13 WMO ESCAP Panel member countries** including Bangladesh, India, Iran, Maldives, Myanmar, Oman, Pakistan, Qatar, Saudi Arabia, Sri Lanka, Thailand, United Arab Emirates and Yemen under the Chairmanship of **Dr. Mrutyunjay Mohapatra**, DG, IMD. This list will come into effect from the ensuing Cyclone Season, after the remaining one name in the existing list gets exhausted. A report in this regard was also prepared and submitted to World Meteorological Organization.

WMO uploaded the same on WMO public website and WMO twitter links (<https://public.wmo.int/en/media/news/new-list-of-names-issued-tropical-cyclones-over-north-indian-ocean>).

IMD issued press release on 28th April, 2020 in this regard:



WEATHER SUMMARY

SEASONAL OUTLOOK FOR TEMPERATURES (APR-JUN, 2020)

IMD issued Press Release on 30th March, 2020 about Seasonal Outlook for Temperatures during **April to June, 2020**. The highlights are given below:

- The April-May-June (AMJ) seasonal average maximum temperatures are likely to be warmer than normal by 0.5 °C to 1 °C over some of the meteorological sub-divisions of northwest India and western peninsular India.
- The April-May-June (AMJ) seasonal average minimum and mean temperatures are also likely to be warmer than normal by 0.5 °C to 1 °C over most of the sub-divisions of northwest, west, central, east and western peninsular India.
- Frequency of heat waves in the core heat wave (HW) zone is likely to be slightly above normal during the season. Core HW zone covers the states of Punjab, Himachal Pradesh, Uttarakhand, Delhi, Haryana, Rajasthan, Uttar Pradesh, Gujarat, Madhya Pradesh, Chhattisgarh, Bihar, Jharkhand, West Bengal, Orissa and Telangana & meteorological subdivisions of Marathwada, Madhya Maharashtra and Coastal Andhra Pradesh.

LONG RANGE FORECAST FOR SW MONSOON SEASON RAINFALL

IMD issued Press Release on 15th April, 2020 Long Range Forecast for SW Monsoon Season Rainfall during 2020. **Dr. M. Rajeevan, Secretary, MoES** and **Dr. Mrutyunjay Mohapatra, DG, IMD** briefed the press through Online Video Conferencing/Live Streaming from the National Media Centre, New Delhi. The highlights are given below:

- Southwest monsoon seasonal (June to September) rainfall over the country as a whole is likely to be normal (96-104%).
- Quantitatively, the monsoon seasonal (June to September) rainfall is likely to be 100% of the Long Period Average (LPA) with a model error of $\pm 5\%$. The LPA of the season rainfall over the country as a whole for the period 1961-2010 is 88 cm.
- Neutral El Nino Southern Oscillation (ENSO) conditions are prevailing over the Pacific Ocean and Neutral Indian Ocean Dipole (IOD) conditions are prevailing over the Indian Ocean.

NEW NORMAL DATES OF ONSET/PROGRESS AND WITHDRAWAL OF SOUTHWEST MONSOON OVER INDIA

IMD issued Press Release on 15th April about New normal dates of onset/progress and withdrawal of southwest monsoon over India. The normal dates of onset are revised based on data during 1961-2019 and normal dates of withdrawal are revised based on data during 1971-2019. Monsoon onset over Kerala remains the same, i.e., 1st June. However, new monsoon advance dates over the states like Maharashtra, Gujarat,

Madhya Pradesh, Chattisgarh, Telangana, Andhra Pradesh, Odisha, Jharkhand, Bihar and parts of Uttar Pradesh are delayed by 3-7 days compared to existing normal dates. However, over extreme northwest India, the monsoon arrives now little earlier on 8th July compared to the existing date of 15th July. There are appreciable changes in the monsoon withdrawal dates, especially over Northwest and Central India.

OPERATIONAL LONG RANGE FORECASTS ISSUED DURING APRIL TO JUNE 2020

During April to June, 2020, Operational Long Range Forecasts were issued as shown in Table 1.

TABLE 1

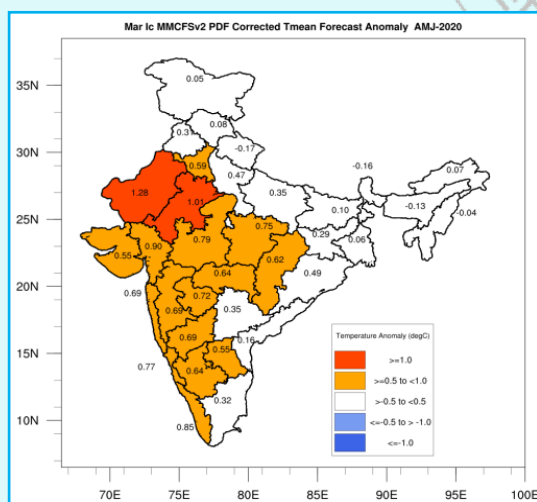
Operational Long Range Forecasts issued from April to June, 2020

S. No.	Forecast for	Region for which forecast issued	Date of Issue	Method/ Model
1.	Hot Weather Season Temperature for (April-June 2020) seasons	Sub-division wise	30 th March 2020	MMCFS
2.	SW Monsoon Season (June to September 2020) Rainfall	Country as a whole	15 th April 2020	Statistical & MMCFS
3.	South-West Monsoon Onset 2020	Kerala	15 th May 2020	Statistical
4.	SW Monsoon Season (June to September 2020) Rainfall	Country as a whole	1 st June 2020	Statistical & MMCFS
5.	SW Monsoon Season (June to September 2020) Rainfall	Four broad geographical regions: NW India, NE India, Central India and South Peninsula	1 st June 2020	Statistical
6.	SW Monsoon Monthly Rainfall for July and August 2020	Country as a whole	1 st June 2020	Statistical

HOT WEATHER SEASON TEMPERATURE FORECAST FOR APRIL TO JUNE 2020 SEASON

The country experienced hot weather primarily during March to July. During this season, many parts of the country experienced heat wave conditions (days with warmer than normal temperatures) with many adverse consequences. Abnormally above normal temperatures can have devastating effects on human health, water resources and power generation and outage. There is a marked relationship between human mortality and thermal stress.

The forecast for 2020 pre-monsoon season (March to May) was prepared using 43 ensemble member forecasts, based on the 2020 March initial conditions. IMD had issued the following seasonal forecast for April to June (AMJ) 2020. During the 2020, Hot Weather Season (April to June), seasonal average maximum temperatures were warmer than normal by 0.5 °C to 1 °C over some of the meteorological subdivisions of northwest India and western peninsular India. The April to June (AMJ) seasonal average minimum and mean temperatures were warmer than normal by 0.5 °C to 1 °C over most of the subdivisions of northwest, west, central, east and western peninsular India. The frequency of heat waves in the core heat wave (HW) zone was slightly above normal during the season.

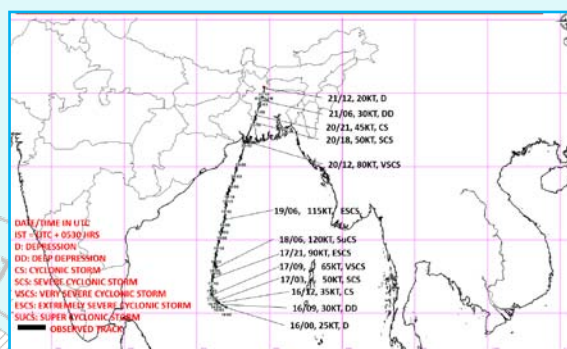


Sub-division wise maximum, minimum and mean temperatures forecast issued by IMD for the 2020 summer season (April to June)

SUPER CYCLONIC STORM “AMPHAN” OVER THE SOUTHEAST BAY OF BENGAL (16-21 MAY, 2020)

The Super Cyclonic Storm (SuCS) “AMPHAN” (pronounced as UM-PUN) was the first SuCS over the BoB, after the Odisha SuCS of 1999. It originated from the remnant of a Low Pressure Area (LPA) which occurred in the near Equatorial Easterly wave

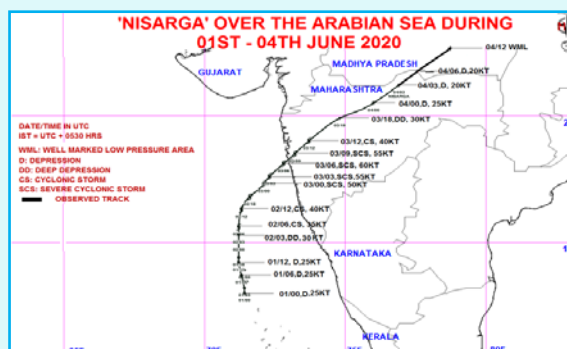
over south Andaman Sea and adjoining southeast Bay of Bengal (BoB) on 13th May. It concentrated into a depression (D) over southeast BoB in the early morning of 16th May and further intensified into a deep depression (DD) in the same afternoon. It moved north-northwestwards and intensified into the Cyclonic Storm “Amphan” over southeast BoB in the evening of 16th May, 2020. It underwent rapid intensification and intensified into an SuCS around noon of 18th May, 2020. It weakened slightly and crossed West Bengal-Bangladesh coasts as a very severe cyclonic storm across Sundarbans, during 1530-1730 hrs IST of 20th May, with maximum sustained wind speed of 155-165 kmph gusting to 185 kmph. Moving nearly north-northeastwards across West Bengal and Bangladesh, it weakened into a well marked low pressure area over north Bangladesh and neighbourhood around mid-night of 21st May.



Observed track of super cyclonic storm AMPHAN during 16-21 May, 2020

SEVERE CYCLONIC STORM "NISARGA" OVER ARABIAN SEA (1-4 JUNE, 2020)

It was also the fourth cyclone crossing Maharashtra coast during the 1961-2020. The severe cyclonic storm, Nisarga originated from a Low Pressure Area which formed over southeast & adjoining eastcentral Arabian Sea and Lakshadweep area on 31st May, 2020. It concentrated into a depression in the early morning of 1st June, 2020. Under favourable conditions, it further intensified into cyclonic storm “NISARGA” in the noon of 2nd June. It further intensified into a severe cyclonic storm in the early morning of 3rd June, 2020. Moving northeastwards, it crossed Maharashtra coast close to south of Alibag as a Severe Cyclonic Storm (SCS) with a maximum sustained wind speed of 110-120 kmph gusting to 130 kmph during 1230-1430 hrs IST of 3rd June. Moving further northeastwards across Madhya Maharashtra, Vidarbha, it weakened into a well marked low pressure area over southeast Uttar Pradesh and adjoining Bihar on 5th June.



Severe cyclonic storm Nisarga over Arabian Sea during 1-4 June, 2020