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भारत मौसम विज्ञान विभाग समाचार IMD NEWS



INDIA METEOROLOGICAL DEPARTMENT
(Ministry of Earth Sciences)

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Important Events / Activities

Foundation stone laying ceremony for establishment of National Centre for Coastal Research (NCCR) & Training Facility (IMD & NCCR) at CWC Visakhapatnam



Hon'ble Minister for Earth Sciences, Dr. Harsh Vardhan, Dr. M. Rajeevan, Secretary, MoES, Dr. K. J. Ramesh, DG, IMD and other officers during the Foundation stone laying ceremony

Foundation Stone for the establishment of National Centre for Coastal Research & Training Facility (IMD & NCCR) was laid at IMD Visakhapatnam on 2nd November, 2018 by the Hon'ble Minister for Earth Sciences, Dr. Harsh Vardhan. Dr. M. Rajeevan, Secretary, MoES, Dr. K. J. Ramesh, DG, IMD, Dr. S. Balachandran, Sc. 'F', RMC Chennai and Shri K. Ramachandra Rao, Sc. 'D', CWC Visakhapatnam also participated in the programme.

ESTABLISHMENT OF CYCLONE WARNING CENTRE (CWC) AT THIRUVANANTHAPURAM



Inauguration of Cyclone Warning Centre at Thiruvananthapuram on 23rd Oct., 2018

Cyclone Warning Centre started functioning at MC Thiruvananthapuram w.e.f. 1st October 2018. It was formally inaugurated on 23rd October, 2018 by Dr. M. Rajeevan, Secretary, MoES in the presence of Dr. K. J. Ramesh, DGM, Shri P. H. Kurian IAS, Addl. Chief Secretary, Government of Kerala, Dr. M. Mohapatra, Scientist 'G', Dr. S. Balachandran, DDGM, RMC Chennai and Shri K. Santosh, Sc. 'F', MC Thiruvananthapuram. The 4th Cyclone Warning Centre (CWC) in the country under Area Cyclone Warning Centres (ACWC), has been established at Meteorological Centre, Thiruvananthapuram, India Meteorological Department w.e.f. 1st October, 2018 to monitor and issue warnings about cyclones / depressions and other disastrous weather events affecting the coastal area / states of Kerala, Karnataka & Lakshadweep.

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Important Events

Shri Rajnath Singh, Honourable Union Home Minister, Govt. of India, flagged off inaugural flight from Dehradun to Naini Saini Airport, Pithoragarh under UDAN Scheme on 8th October, 2018. All arrangements for aeronautical met. services were made by **M.C. Dehradun with the help of R.M.C. New Delhi, A.M.O. Palam and S. I. Pune.**

Shri J. P. Gupta, Sc. 'F', signed a **Memorandum of understanding (MoU) with Vice-Chancellor**, Narendra Dev University of Agriculture and Technology (NDUAT) Kumarganj, Faizabad on 2nd November, 2018 for providing space free of cost for PBO, Bahraich at crop research centre Bahraich.



Shri J. P. Gupta, Sc. 'F', is signing MoU with **Prof. Jeet Singh Sandhu, Vice-Chancellor NDUAT**

"**Met-briefing and the hourly weather forecast**" was provided for the visit of Honourable Prime Minister of India, Shri Narendra Modi, during his visit to Shri Kedarnathji on 7th November, 2018.

Dr. K. J. Ramesh, D. G., IMD and Dr. S. Balachandran, Sc. 'F' participated in the "**Mobile app release and MoU for weather forecasts for mobile app**" held at National Centre for Coastal Research, Chennai on 15th November, 2018.

Shri J. P. Gupta, Sc. 'F', signed a **MOU with Airport Director**, CCS Airport, Lucknow on 2nd December, 2018 regarding construction of new MC Building free of cost at DWR Complex of equivalent area as old MC building.

Human Resource Development Activities

CONFERENCE/ SYMPOSIUM/ SEMINARS

Dr. Shirish Y. Khedikar, Sc. 'B' attended the Young Scientist's Conference under "India International Science Festival 2018" from 5-8 October, 2018 held at Indira Gandhi Pratisthan, Lucknow, Uttar Pradesh.

Dr. A. K. Sahai, Sc. 'G', **Dr. A. Kashyapi, Scientist 'F'**, **Dr. S. L. Singh, Sc. 'F'**, **Dr. Vijaya Bhaskar, Sc. 'E'**, **Shri Manish Ranalkar, Sc. 'E'**, **Mrs. Samanti Sarkar, Sc 'E'**, **Shri R. Balasubramanian, Sc. 'D'**, **Shri M. Danish, Sc. 'B'**, **Dr. D. M. Rase, Met. 'B'**, **Smt. Sandhay Ravikiran, Met. 'B'** etc. participated in National

Symposium on "**Understanding Weather and Climate Variability : Research for Society - TROPMET 2018**" organised by Indian Meteorological Society (IMS) in association with Department of Geophysics, Banaras Hindu University (BHU), Varanasi during 24-27 October, 2018.

Dr. K. J. Ramesh, DG, IMD, was the Guest of Honour in the "Valedictory Session of 10th National Seminar on Climate Change and World Peace (10th Indian Climate Congress)" from 27-29 December, 2018 at OUAT, Bhubaneswar. **Dr. Shashi Kant, Sc. 'B'**, **Shri Uma Shankar Das, Sc. 'B'**, **Shri L. D. Mohapatra, Met. 'B'** and **Shri P. K. Nath, Met. 'A'** were also participated in Seminar.



Dr. K. J. Ramesh, DG, IMD and other officers during the seminar

TRAININGS

Trainees from **RMC Chennai and RMC Mumbai** participated in the training on "**Operation and Maintenance of Radiation Instruments**" conducted at Central Radiation Laboratory, Pashan during 22-26 October, 2018.

Training on "**Operation, Maintenance & servicing of Airport Meteorological Instruments**" was imparted to 15 Air Force personnel at **CRS, Pune** from 22-26 October, 2018.

One day training/refresher course in Aeronautical Meteorology organized by **IMD** on 26th October, 2018 for all Airlines Operators and Flight Dispatchers at **M.C., Ahmedabad.**

A half-a-day capsule training course on "**Doppler Weather Radar - Technology and Utilization**" was conducted for the Meteorology Branch Officers of IAF from Bidar, Hakimpet, Bengalure and Dindigul stations on 29th October, 2018 at **M.C., Hyderabad.**

WORKSHOPS

Dr. Kripan Ghosh, Sc. 'E' attended the "Extended Range Forecast Systems (ERFS) Training Workshop" as resource person and delivered lectures and hands on training to the participants from 8-10 October, 2018 at Indian Institute of Technology, Bhubaneswar, Odisha.

Dr. Shirish Y. Khedikar, Sc. 'B' and **Shri Nilesh Wagh, JRF** attended the workshop on "Regional Knowledge Forum on Drought earth observations and climate services for food security and agricultural decision making in south Asia"

for poster presentation organized by Regional Knowledge Forum by International Centre for Integrated Mountain Development (ICIMOD), Kathmandu at Nepal from 8-10 October, 2018.

Dr. Somenath Dutta, Sc. 'F' participated in the two day workshop organized by The Energy & Resources Institute (TERI) on "Climate and Health" held at India Habitat Centre, Lodhi Road, New Delhi, from 23-24 October, 2018 and gave a presentation on the recent initiatives taken in IMD towards Climate Services for health.

Shri H. R. Biswas, Sc. 'E' attended the Final Dissemination Workshop of "Deltas, Vulnerability and Climate Change: Mitigation and Adaptation (DECCMA) Project (PADIF)" at New Marrison Hotel, Bhubaneswar on 1st November, 2018.

Mrs. Priyanka Singh, Sc. 'B' participated in "Kick-Off Workshop of the International Cooperation Project East Africa Peru India Climate Capacities - EPICC" held at India Habitat Center, New Delhi during 1-2 November, 2018.

Dr. K. K. Singh, Sc. 'F' participated in one day workshop on "Enhancing Climate Services in Agriculture in Bihar State" on 2nd November, 2018 at Patna, Bihar.

Dr. A. K. Sahai, Sc. 'G' attended one day workshop and technical aspect of "Climate Forecast" held at New Delhi on 3rd November, 2018.

Dr. S. D. Attri, Sc. 'F' attended IAAPC National Workshop on "Impact of Air Pollution on Monuments and Conservation" and gave a talk on "Impact of Meteorological/climatic factors on monuments" on 3rd November, 2018 at New Delhi.

Dr. Pulak Guhathakurta, Sc. 'F' attended workshop on "Improving Flood & Drought Risk Estimation and Prediction in data sparse region" organised by Centre for Ecology and Hydrology, UK, at IIT Powai, Mumbai on 26th November, 2018 and gave a presentation on "Suitability of Ideal Method in estimation of PET in real time flood/drought monitoring in India".



Dr. Pulak Guhathakurta, Sc. 'F' during the Workshop

Dr. S. L. Singh, Sc. 'F' participated in workshop on "Cloud Security" at Cert In, Shastri Park, Delhi on 20th December, 2018.

LECTURES

Dr. Shirish Y. Khedikar, Sc. 'B' delivered a lecture on "Day and night radiation, humidity, temperature, wind and CO₂ profiles in crop canopies" during National Training Programme on advances in crop micrometeorology on 15th October, 2018 held at Department of Agricultural Meteorology, College of Agriculture, Pune.

Shri Y. K. Reddy, Sc. 'F' delivered a lecture on "Rainfall indices and effects of Climate Change on Drought" for the trainees of a short course organised by NIDM, APHRDI, Bapatla on 22nd October, 2018. He also visited SRM University and discussed about the infrastructure requirements for establishment of MC Amaravathi on 23rd October, 2018.

Dr. O. P. Sreejith, Sc. 'D' delivered lecture on "Monsoon Variability & Climate Vulnerability" on 23rd October, 2018 during "Climate Change and Rainfed Agriculture" organized by Vasant Rao Naik Marathwada Krishi Vidhyapeeth, Parbhani.

Shri Anand Sharma, Sc. 'F' delivered an invited talk on "Advances in Agro-meteorological services for farmers in India" on 26th October, 2018 at the TROPMET-2018: National Symposium on "Understanding Weather and Climate Variability: Research and Society" at BHU, Varanasi from 23-27 October, 2018.

Dr. M. Mohapatra, Sc. 'G' delivered a talk in the "Plenary Session during TROPMET-2018" held at Varanasi on 27th October, 2018 and participated in the Panel Discussion and Valedictory Function of TROPMET 2018.

Dr. S. D. Attri, Sc. 'F' delivered lead talk on "CLIMATE CHANGE OVER INDIA: IMD PERSPECTIVE" in Kick-Off Workshop of the International Cooperation Project "East Africa Peru India Climate Capacities - EPICC", held at India Habitat Center, New Delhi during 1-2 November, 2018.

Shri Anand Sharma, Sc. 'F' delivered an invited talk on "Augmentation and Dissemination of Weather based Agro Advisory Services under GKMS" on 13th November, 2018 at the "National seminar on Mountain Communities and Adaptive Sustainable Livelihood Strategies" at Jawahar Lal Nehru University, New Delhi.

Shri C. S. Patil, Sc. 'D' gave a lecture on "Forecasting and Early Warning of Hydro-Meteorological disasters" at Administrative Training Institute, Mysore on 14th November, 2018.

Shri S. C. Bhan, Sc. 'F' and **Shri A. K. Baxla**, Sc. 'D' give lead lectures in Trainings on "Preparation of Agromet Advisories at Block Level under Gramin Krishi Mausam Sewa (GKMS) Scheme" to Subject Matter Specialist (Agrometeorology) and Agromet Observers recruited at KVKS to set up DAMUs under GKMS scheme at ATARI, Patna for 22-27 November, 2018.



Shri Anand Sharma, Sc. 'F' delivered an invited talk on "Agro advisories, Extreme Weather Events and its impact at the Disaster Risk Reduction" workshop organised by Haryana Institute of Public Administration (HIPA) on 5th December, 2018 at Gurugram.

Shri Anand Sharma, Sc. 'F' delivered an invited talk on "Weather Forecasting and Disaster Risk Reduction" at the training course on Disaster Management organised by Special Centre for Disaster Research (SCDR), Jawaharlal Nehru University (JNU), New Delhi on 19th December, 2018.

Dr. M. Mohapatra, Sc. 'G' delivered an invited talk at Lal Bahadur Shastri National Academy of Administration, Mussoorie on 20th December, 2018 during the training programme on "Disaster risk reduction" for IAS Officers.

Awards & Recognitions

Dr. M. Mohapatra, Sc. 'G' has been nominated as "Member of the Cyclone Resistant Structure Sectional Committee (CED-57)", Bureau of Indian Standards for development of guidelines for design and construction of Cyclone Shelters/ Tsunami Shelters. Mrs. Neetha K. Gopal has been nominated as the alternate member.

Infrastructure Development & Installations

Two Drishti Transmissometer systems were installed at Hyderabad and one at Kochi airport.

Aviation Weather Observing System including Drishti for Auto generation of METAR & Met. report installed at Kannur airport.

Laser Ceilometer systems were installed at Bengaluru and Bajpe (Mangalore) airports to determine the height of cloud ceiling or cloud base.



Installation of Laser Ceilometer Bengaluru

DCWIS System was installed at Patna airport.

Agro-Meteorological Instruments were installed of at AMFU Chintapalle, Andhra Pradesh.

New Aviation Met. Station has been made operational at Naini Saini Airport Pithoragarh with installation current weather Met. Equipments.

Net Radiometer was installed at AET Rahuri in November, 2018.



Net Radiometer installed at AET Rahuri

Four **AWS systems** were installed at the Prayag Raj of Allahabad District in December for serving Online Live weather data along with forecast for Kumbha mela.



Installation AWS systems at the Prayag Raj

Inter-Agency Meetings

Dr. Shashi Kant, Sc. 'B' attended the meeting of the State Level Technical Committee (SLTC) for implementation of "PMFBY during Kharif 2018 and Rabi 2018-19" at Agriculture Directorate, Bhubaneswar on 3rd October, 2018.

Shri S. S. Mairal, Met. 'B' attended the Quarterly meeting of Shetkari Magazine organized by Commissioner Agriculture Department, Maharashtra State on 4th October, 2018 held at Pune.

Shri H. R. Biswas, Sc. 'E' M. C. Bhubaneswar Attended the meeting on "Pre-Cyclone Exercise and Preparedness for the Impending Cyclone" under the chairmanship of Chief Secretary, Govt. of Odisha at Secretariat, Bhubaneswar on 9th October, 2018.

Dr. Kripan Ghosh, Sc. 'E' attended the meeting for discussion on "Various activities under agromet at Pune and Delhi and its ways for enhancing technology applications in Agromet Advisory Services" from 10-12 October, 2018 at Agromet Advisory Service Division, New Delhi.

Shri H. R. Biswas, Sc. 'E' attended the review meetings on "Cyclonic Storm/Rainfall Situation" chaired by Hon'ble Chief Minister, Odisha at Secretariat, Bhubaneswar on 10-13 October, 2018.

Shri H. R. Biswas, Sc. 'E' attended the meeting to review the status of "VSCS-TITLI" at Secretariat, Bhubaneswar on 11th October, 2018.

Dr. M. Mohapatra, Sc. 'G' participated in the "19th Project Steering Committee Meeting of National Cyclone Risk Mitigation Project (NCRMP) Phase-I" held at NDMA, New Delhi on 12th October, 2018.

Shri U. R. Joshi, Sc. 'E' attended a meeting held on 12th October, 2018 at INCOIS, Hyderabad as an expert member to review the "Costing and Pricing Data and Data Products of INCOIS".

Dr. K. K. Singh, Sc. 'F' and **Dr. S. D. Attri**, Sc. 'F' participated in Meeting of "TTS at Ministry of Information Technology" on 14th October, 2018.

Shri Anand Sharma, Sc. 'F', delivered Presidential Address at the State Level Users Meet on "Agromet Advisory Services under the GKMS Scheme" on 15th October, 2018 and also made a presentation on "Agro-Meteorological Services by IMD: Current and Future: Gramin Krishi Mausam Seva (GKMS)" at the Technical session-1 of the Meet.

Shri H. R. Biswas, Sc. 'E' attended the 3rd meeting for the year 2018-19 of the "State Executive Committee constituted under the Disaster Management Act, 2015" at Odisha Secretariat, Bhubaneswar on 22nd October, 2018.

Dr. M. Mohapatra, Sc. 'G' participated in the Ministry of Earth Sciences Review Meeting at "National Centre for Earth Science Studies, Thiruvananthapuram" during 22-23 October, 2018. Dr. M. Mohapatra also participated in the inaugural ceremony of Cyclone Warning Centre at Thiruvananthapuram on 23rd October, 2018.

Dr. Sourish Bondyopadhyay, Sc. 'B' attended meeting on 1st November, 2018 with Secretary (statistics) A&N Administration to discuss the "Status of weather APP for A&N Islands".

Dr. S. D. Attri, Sc. 'F' and Mrs. Priyanka Singh, Sc. 'B' attended meeting on "Updating weather related information on Kisan Suvidha Apps" held under Chairmanship of JS (IT) at Krishi Bhawan on 2nd November, 2018.

Dr. S. D. Attri, Sc. 'F' participated in meeting for "Finalisation of Biannual Update Reports" held under Chairmanship of Secretary, MoEF&CC on 8th November, 2018 at Indira Paryavaran Bhawan, New Delhi

Dr. K. K. Singh, Sc. 'F' participated in RAC meeting of "CRIDA" on 10-11 November, 2018 at ICAR-CRIDA, Hyderabad.

Dr. S. Balachandran, Sc. 'F' participated in a meeting convened by the Chief Secretary, Govt. of Tamil Nadu on 12th November, 2018 at Secretariat, Chennai to discuss about the "Preparedness for Gaja Cyclone".

Shri M. M. Saklani, Met. 'B' attended a meeting regarding "Progress in installation of Hydro-met network in Uttarakhand at PIU, Uttarakhand" on 16th November, 2018.

Dr. S. Bandyopadhyay, Sc. 'F' attended a meeting with Secretary, Disaster Management, Govt. of WB on 19th November, 2018 for general discussion regarding "Preparedness to meet any contingencies".

Dr. S. L. Singh, Sc. 'F' and **Shri Sankar Nath**, Sc. 'E' attended a meeting on 20th November, 2018 on Subject "Meeting for finalization of draft Standard Operating Procedure (SOP) for implementation of Common Alerting Protocol (CAP) and Priority Call Routing (PCR) system in Disaster Management" at NDMA Bhawan, Safdarjang Enclave, New Delhi.

Shri H. R. Biswas, Sc. 'E' attended a meeting of "Stakeholders on finalization of flood hazards atlas for Odisha" at OSDMA, Rajiv Bhawan, Bhubaneswar on 26th November, 2018.

Dr. S. D. Attri, Sc. 'F' presented progress on future plan of AASD in meeting chaired by Secretary, MoES on 14th November, 2018 at Prithvi Bhawan, New Delhi.



Dr. S. D. Attri, Sc. 'F' during the meeting

"Gramin Krishi Mausam Sewa"

A State level Review meeting on "Gramin Krishi Mausam Sewa" was held on 20th November, 2018. Dr. Prabhat Kumar, IAS, APC (Agriculture Production Commissioner) was the Chief Guest of the event. Scientists/ officers of concerned departments viz. KVK (Krishi Vigyan kendra) , Agriculture, Horticulture, AMFU (Agro Met Field Unit), National Bureau of Fish Genetics, ATARI, Remote Sensing, IISR (Indian Institute Sugarcane Research) ,

BSNL, DD, AIR, NIC, IFFCO, Kisan Sanchar Limited, DAO (District Agriculture officer), Nodal Officers of various Agriculture Universities along with farmers attended the meeting.



State level review meeting on gramin krishi mausam sewa

Dr. K. K. Singh, Sc. 'F', **Dr. S. D. Attri**, Sc. 'F', **Shri S. C. Bhan**, Sc. 'F', **Dr. (Ms.) Geeta Agnihotri**, Sc. 'E', **Dr. Kripan Ghosh**, Sc. 'E', **Shri R. Balasubramanian**, Sc. 'D' and **Shri A. K. Baxla**, Sc. 'D' participated in "12th Annual Review Meeting (ARM) and 9th Annual Review Meeting (ARM) of GKMS and FASAL respectively at Regional Agricultural Research Station (RARS) Angravi, Tirupati, Andhra Pradesh from 3-6 December, 2018.

Dr. (Ms.) Geeta Agnihotri, Sc. 'E' attended "12th Annual Review Meeting on Gramin Krishi Mausam Seva" during 3-5 December, 2018 held at RARS, Tirupati, Andhra Pradesh.

Dr. Geeta Agnihotri, Sc. 'E' convened a meeting on "Establishing 150 Telemetric Rain Gauges and 22 Automatic Weather stations under National Hydrology Project in Karnataka" on 6th December, 2018 in the chambers of Chief Engineer, WRDO, Bengaluru.

Dr. M. Mohapatra, Sc. 'G' participated in the meeting of the "Peer Group for Updation and Revision of Vulnerability Atlas of India" at Building Materials and Technology Promotion Council, New Delhi on 12th December, 2018.

Shri H. R. Biswas, Sc. 'E' attended the meeting on "Demonstration of Common Alerting Protocol (CAP) for sending SMS to able to disseminate early warning/alert messages to targeted citizens" at OSDMA, Rajiv Bhawan, Bhubaneswar on 18th December, 2018.

Shri Bikram Singh, Sc. 'F' Meteorological Centre, Dehra Dun attended a meeting at Office of Secretary, Disaster Management, under the chairmanship of members of NDMA on 20th December, 2018 and briefed about progress of "Radar network installation in Uttarakhand and progress of Hydro-met network installation" by State Govt. under the technical guidance of IMD, Dehradun.

Dr. Sanjib Bandyopadhyay, Sc. 'F' attended a meeting on 21st December, 2018 with **Shri Bratya Basu**, Minister-in-Charge, Department of Science & Technology and Bio-technology, Govt. of West Bengal to discuss on issues related to "Problems requiring solutions based on

Science & Technology through collaborative programmes or otherwise".

Shri H. R. Biswas, Sc. 'E' attended the "Project Inception Meeting on Operational Systems for Integrated Disaster Risk Management for Odisha" at OSDMA, Rajiv Bhawan on 26th December, 2018.

Research & Publications

U. C. Dumka, **S. Tiwari**, **D. Kaskoutis**, **V. K. Soni**, **P. Safai**, **S. D. Attri**, 2018, "Aerosol and pollutant characteristics in Delhi during a winter (2015-16) research campaign, Environmental Science and Pollution Research (ESPR)" (Accepted - November 2018) (Impact Factor - 2.8).

Daily all India Weather Summary and Weekly Weather Reports are being brought out on routine basis.

ENSO bulletin for October 2018 and **Seasonal Climate Outlook for South Asia** for the month of October, 2018 to January 2019, December 2018, Seasonal Climate Outlook for South Asia for the months of November 2018 to February 2019 and for November 2018 and Seasonal Climate Outlook for South Asia for the month of November to January 2019 were issued.

Climate Diagnostics Bulletin of India for September, October & November and Monsoon Season were brought out.

Consensus Statement on the Forecast Outlook for the Winter Season (December 2018 - February 2019) Precipitation and Temperatures over South Asia were issued. (Quick Link: www.imdpune.gov.in/Clim_Pred_LRF_New/Products.html)

Monthly Aridity Anomaly Map for the month of Sep-Oct, 2018 have been prepared and uploaded on IMD Web-site.

Research paper "Objective Analysis of wind data of Automatic Weather Station over Tamilnadu" was presented by **M. Danish**, Sc. 'B' in National Symposium on Undertaking Weather & Climate Variability, TROPMET- 2018 from 24-27 October, 2018.

Research paper entitled "Climate Trends in Rainfall Pattern and impacts towards Lichen Availability in two Himalayas Districts of India" authored by **Kuldeep Srivastava** and **Prof. P. Bhattacharya** has been accepted for publication in the Journal of Physical Science and Environment Studies.

Media Interaction

Shri Anand Sharma, Sc. 'F' was interviewed by DD Kisan TV (Phono and live) for weather forecast on daily basis during October, 2018.

Shri C. S. Patil, Sc. 'D' gave live talk on weather in Akashwani Dharwad on 5th October, 2018.

Dr. M. Mohapatra, Sc. 'G' IMD participated in a live discussion on simultaneous occurrence of two very severe cyclonic storms over Bay of Bengal & Arabian Sea on 12th October, 2018 for Lok Sabha TV channel.

Dr. S. D. Attri, Sc. 'F' participated as Expert in one hour "Vichar Vimarsh" programme on DD Kisan, New Delhi which was telecast on 12th October, 2018.



Dr. S. D. Attri, Sc. 'F' during the programme

Dr. M. Mohapatra, Sc. 'G' was interviewed by a team from National Geographic Channel for a "Documentary film on Kerala Floods" on 18th October.

The achievement of IMD in monitoring & prediction of cyclonic storms Luban & Titli was telecast in the Science Express News Section in the programme Science Monitor/Gyan Vigyan on 20th October, 2018 by Rajya Sabha TV.

An article entitled "Mohapatra: IMD's 'cyclone man' who tracked violent Titli" was published by Press Trust of India in many newspapers on 26th October, 2018.

Dr. K. J. Ramesh, DGM, **Dr. M. Mohapatra**, Sc. 'G' and other senior scientists were interviewed on various aspects related to Monsoon Mission on 5th November, 2018 for development of film on "Monsoon Mission and Improved Prediction".

Shri Anand Sharma, Sc. 'F' was interviewed and telecast on 7th November, 2018 by DD Kisan TV on Frost and Innovative techniques to prevent it.

Shri C. S. Patil, Sc. 'D' gave live talk in Radio City of Cyclone Gaja, its effects over Karnataka, Tamilnadu and Andhra Pradesh on 12th November, 2018.

Dr. S. D. Attri, Sc. 'F' participated in One Hour TV programme of Vigyan Prasara, DST, New Delhi on 16th November, 2018

Shri C. S. Patil, Sc. 'D' gave a live talk in All India Radio, Dharwad on Weather Forecast on 4th December, 2018.

comments and suggestions, if any. NCCR has also been asked to collaborate with IMD to improve weather forecasting services of IMD.

10 persons (Unit Aircrew and Sailors) from Coast Guard Air Enclave (BSR), BPI Airport, Bhubaneswar had Familiarization visit to **IMD Bhubaneswar** on 13-16 November, 2018. An interaction class was conducted for the visitors. **Shri H. R. Biswas**, Sc. 'E', M. C. Bhubaneswar delivered lecture on Aviation and Weather Forecasting for the visitors.



Officers and visitors at M. C. Bhubaneswar

About 65 class XI students along with their teachers of DPS Kalinga, Bhubaneswar had a Field Study Trip to **IMD Bhubaneswar** to be familiarized with Met Instruments and Weather Forecasting on 14th November, 2018.



Students during the visits

Visitors

Scientists from National Centre for Coastal Research & National Institute of Ocean Technology, Chennai visited IMD and submitted RFP development of Decision Support System for Cyclones. The same has been circulated to all members for



Students and teachers from Jawahar Navodaya Vidyalaya, Khordha, Odisha visited IMD Bhubaneswar for getting information regarding National Children Science Congress on 19th November, 2018 .

A group of 22 Students of B. Sc. (Agriculture) along with 2 faculty member from Himalyan Institute of Technology, Dehradun visited M. C. Dehradun on 29th November, 2018. Students were shown Met. Observatory and briefed about functioning of the observatory. A lecture on Weather and Climatology and Operational Meteorological products was delivered to the students and faculty members by Shri Bikram Singh, Sc. 'F' Meteorological Centre, Dehra Dun.



Group of B.Sc. (Agriculture) students with Director, M.C. Dehradun

Approx. 1200 visitors visited CRS, Pune office on various activities of the Climate, Agrimet and Instruments division.

28 students from third year Degree course in Agricultural Science, UAS Dharwad, Karnataka visited CRS, Pune.

24 students from final year Engineering of B.Tech in Agricultural Engineering Navsari, Gujrat, visited CRS, Pune.

Two M.Sc. (Atmospheric Science) students from Central University of Rajasthan, visited IMD Bhubaneswar on 15th November, 2018. They visited Meteorological Observatory and learned on operational forecasting methods .

Students from BJEM Public School, Bhubaneswar visited IMD Bhubaneswar on 7th December, 2018 for educational project work on earthquake proof structures .

Tour

Shri Bikram Singh, Sc. 'F' inspected sites for "Installation of AWS/SFO at Gairsain and Gauchar in Chamoli district" on 2nd October, 2018, under Hydro-met project, Govt. of Uttarakhand.

S/Shri Pramod Mehtre, S. A. and S. D. Bankar, S. A. proceeded on tour to Patna for installation of Drishti Transmissometer on 27th October, 2018.

Shri Uday K. Shende, Sc. 'D' was on tour to M. C. Amaravati for the installation of Manual weather observatory including Agro sensors and AWS of DIWE on 26th November, 2018.

Dr. K. J. Ramesh, DG, IMD visited Meteorological Centre, Dehradun on 6th December, 2018. Shri Bikram Singh, Sc. 'F' Meteorological Centre, Dehra Dun accompanied him to India Geospatial Leadership Summit, organized by Survey of India at Dehradun.

Shri Bikram Singh, Sc. 'F' visited Surkanda Devi Temple on 26th December, 2018 for "demarcation of land for the installation of DWR".

Foreign Visits

Dr. K. J. Ramesh, DG, IMD was on foreign deputation to Incheon, Republic of Korea during 1-5 October, 2018 to participate in the "48th Session of Intergovernmental Panel on Climate Change (IPCC)".

Shri Ashish Kumar, Sc. 'B' was on foreign deputation to Germany during 7-20 October, 2018 to participate in the 35th Global Atmosphere Watch Training & Education Centre (GAWTEC) Training course on Reactive Gases.

Dr. D. R. Pattanaik, Sc. 'E', Dr. Shirish Khedekar Sc. 'B', Shri Ved Prakash Sc. 'B' and Shri Nilish Wagh, JRF were on foreign deputation to Kathmandu, Nepal during 8-10 October, 2018 to participate in "Regional Knowledge Forum on Earth Observation and Climate Services for Food Security and Agricultural Decision Making in South and Southeast Asia".

Shri Uday Shende, Sc. 'D' was on tour to Amsterdam, Netherlands for oral & poster and presented two papers entitled "IOT based modern surface meteorological observatories" by U. K. Shende, Rakesh Kumar, M. Danish and R. R. Mali and "Calibration Facilities, standards available at IMD's renowned calibration Lab" by Shri. U. K. Shende, P. S. Budhkar, K. V. Padgalwar and R. R. Mali at TECO-2018, WMO conference from 8-11 October, 2018.

Dr. Rajendra Kumar Jenamani, Sc. 'F' on foreign deputation to Hong Kong, China during 8-12 October, 2018 to participate in "Voluntary Cooperation Programme (VCP) Contribution of Hong Kong, China Workshop on Meteorology - Air Traffic Management Integration (MET-ATM) and 4th WMO's Aviation Research Demonstration Project (AvRDP) SSC Review Meeting".

Dr. Siddharth Singh, Sc. 'E' and Dr. Ananda Kumar Das, Sc. 'E' were on foreign deputation to Finland during 8-20 October, 2018 to attend the co-operation visit at the "Finish Meteorological Institute for training on Operationalization Air Quality Models for India and Delhi/NCR".

Dr. D. Pradhan, Sc. 'G' was on foreign deputation to Amsterdam, Netherlands during 12-16 October, 2018 to attend "7th Session of Commission for Instruments and Methods of Observation (CIMO-XVII)".

Dr. K Sathi Devi, Sc. 'F' was on foreign deputation to Tokyo, Japan during 13-15 October, 2018 to participate in the "2nd Indo-Japan Workshop on Disaster Risk Reduction".

Shri Meenatchinathan Nagami, Sc. 'E' was on foreign deputation to Saint-Mande, France during 23-25 October, 2018 to participate in the 3rd meeting of "The Coordination Group for the Direct Broadcast Network for Near Real-time Relay of Low Earth Orbit Satellite Data (DBNet)".

Dr. (Mrs.) K. Sathi Devi, Sc. 'F', was on foreign deputation to Hong Kong, China during 30 October to 2 November, 2018 to participate in "Common Alerting Protocol (CAP) Training Session & CAP Implementation and Filtered Alert Hub (FAH)".

Dr. V. K. Soni, Sc. 'E' was on Ex-India deputation to Tehran during 5-6 November, 2018 to participate in the "Expert Consultation on Regional Cooperation for Building Resilience to Slow-Onset Disasters, including Sand and Dust Storms, and Information Management for Cross-border Disasters in Asia and the Pacific".

Shri Sankar Nath, Sc. 'E' was on Ex-India deputation to Beijing, China during 6-8 November, 2018 to participate in a workshop on the "WMO Integrated Global Observing System (WIGOS) in Regional Association II (RA-II)".

Dr. Arvind Kumar Srivastava, Sc. 'F' was on Ex-India deputation to Tokyo, Japan during 12-16 November, 2018 to participation in "11th Annual Atmospheric Circulation Reconstructions over the Earth (ACRE) meeting, ACRE China-3, ACRE Asia-2, ACRE Japan".

Dr. A. K. Srivastava, Sc. 'F' was on ex-India deputation to Japan to attend the "ACRE meeting in Tokyo" from 12-17 November, 2018.

Dr. D. R. Pattanaik, Sc. 'E' and **Dr. V. R. Durai**, Sc. 'E' were on Ex-India deputation to Darwin, Australia during 13-16



Dr. D. R. Pattanaik, Sc. 'E' during the workshop

November, 2018 to participate in the "Third Convective Scale Modelling Workshop".

Smt. Sunitha Devi, Sc. 'E' was on Ex-India deputation to Seoul, South Korea during 19-21 November, 2018, to participate in the "Second KMA/WMO Workshop on Impact-based Forecasts in Asia".

Dr. Soma Sen Roy, Sc. 'E' was on Ex-India deputation to Tsukuba, Japan during 20-21 November, 2018 to participate in the "Sixth Meeting of the WMO SDS-WAS Regional Steering Group (RSG) for ASIA"

Dr. Somenath Dutta, Sc. 'F' was on Ex-India deputation to Geneva Switzerland during 27-30 November, 2018 to participate in "Review of Basic instructional Package for Meteorologists (BIP-MT) -and Basic Instructional Package for Meteorological Technicians(BIP-MT) and WMO Global Campus initiative from at WMO, Geneva, Switzerland".

Dr. M. Mohapatra, Sc. 'G' was on Ex-India deputation to Colombo, Sri Lanka from 28 November - 8 December, 2018 to participate in the "First meeting of Regional Sub-management Team (RSMT) of SWFDP Bay of Bengal" and as an expert lecturer for one week training workshop on severe weather and impact based forecasting and delivery of warning services.

Dr. D. S. Pai, Sc. 'F' was on Ex-India deputation to Geneva, Switzerland from 3-7 December, 2018 to participate in the "Long Range Forecasting Guidance Authors Writeshop".

Dr. (Mrs.) K. Sathi Devi, Sc. 'F' and **Shri Akhil Srivastava**, Sc. 'B' were on Ex-India deputation to Honolulu, USA during 3-7 December, 2018 to participate in the "9th International Workshop on Tropical Cyclones (IWTC-9)".

Dr. S. Balachandran, Sc. 'F' served as a working group member and provided inputs on the "External influences on Tropical Cyclone intensity change for the Ninth International Workshop on Tropical Cyclones (IWTC-9)" held at Honolulu, Hawaii, USA during 3-7 December, 2018.

Shri Krishna Mishra Sc. 'B' and **Shri Shobhit Katiyar** Sc. 'B' were on Ex-India deputation to Sri Lanka 3-8 December, 2018 to participate in "One week training workshop on severe weather and impact based forecasting and delivery of warning services".

Dr. V. K. Soni, Sc. 'E' India was on Ex-India deputation to Beijing, China during 13-14 December, 2018 to participate in the "Implementation Planning Meeting of the Third Pole Regional Climate Centre Network".

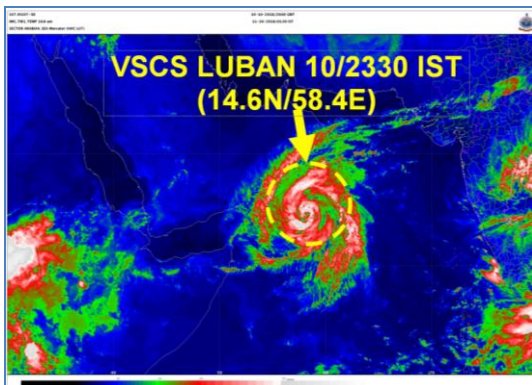
Shri S. C. Bhan, Sc. 'F' was on Ex-India deputation to Hong Kong, China during 17-20 December, 2018 to participate in the "1st Global Forum for Heat and Health held in Hong Kong, China".

WEATHER SUMMARY

Significant Weather System

Very Severe Cyclonic Storm "Luban" over southeast and adjoining eastcentral Arabian Sea (6-15 October, 2018)

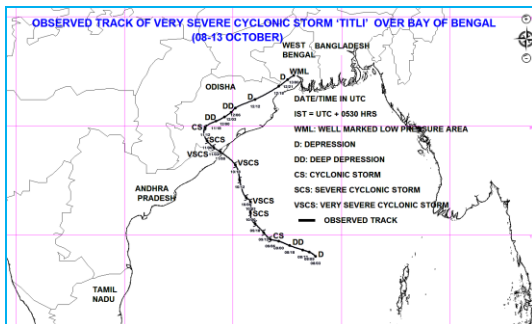
Very Severe Cyclonic Storm (VSCS) Luban originated from a low pressure area (LPA) which formed over southeast Arabian Sea (AS) and neighbourhood in the morning (0830 IST/0300 UTC) of 5th October. It lay as a well marked low pressure area (WML) over southeast and adjoining eastcentral AS in the morning (0530 IST/0000 UTC) of 6th October. Under favourable environmental conditions, it concentrated into a Depression (D) over southeast and adjoining eastcentral AS in the afternoon (1430 IST/0900 UTC) of 6th October. Moving west-northwestwards, it intensified into a deep depression (DD) over the same region in the afternoon (1430 IST/0900 UTC) of 7th October. It further intensified into a cyclonic storm (CS) "Luban" in the early morning (0530 IST/0000 UTC) of 8th Oct. over westcentral and adjoining south & eastcentral AS.



Typical satellite imagery for VSCS Luban over Arabian Sea

Very Severe Cyclonic Storm "Titli" over eastcentral Bay of Bengal (8-13 October, 2018)

Very Severe Cyclonic Storm (VSCS) Titli originated from a low pressure area (LPA) which formed over southeast Bay of Bengal (BoB) and adjoining north Andaman Sea in the morning (0830 IST) of 7th October, 2018. It lay as a well marked low pressure area (WML) over the same region in the same evening (1730 IST). Under favourable environmental conditions, it



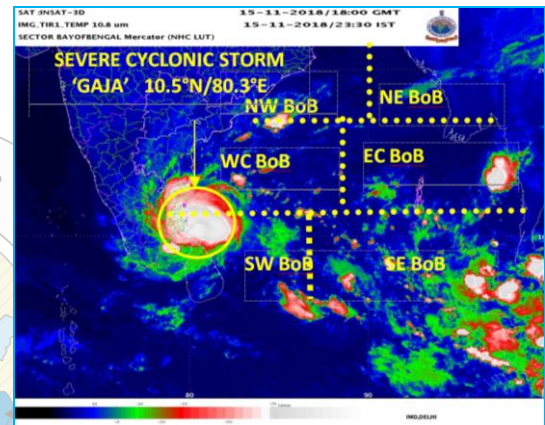
Observed track of VSCS Titli over BoB (8-13 October, 2018)

concentrated into a Depression (D) over eastcentral BoB in the morning (0830 IST) of 8th Oct. Moving nearly west-northwestwards, it intensified into a deep depression (DD) over east-

central BoB in the mid-night (2330 IST) of 8th Oct and further into a cyclonic storm (CS) "Titli" around noon (1130 IST) of 9th Oct.

Severe Cyclonic Storm "Gaja" over Bay of Bengal (10-19 November, 2018)

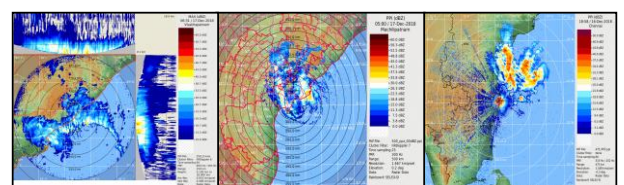
Severe Cyclonic Storm (SCS) Gaja originated from a low pressure area (LPA) which formed over over Gulf of Thailand and adjoining Malay Peninsula in the morning (0830 IST) of 8th November. It lay as a well marked low pressure area (WML) over north Andaman Sea and neighbourhood in the evening (1730 IST) of 9th November. Under favourable environmental conditions, it concentrated into a Depression (D) over southeast BoB in the morning (0830 IST) of 10th November. Moving west-northwestwards, it intensified into a deep depression (DD) over southeast & adjoining central BoB in the same evening (1730 IST).



Typical Satellite imagery based on 2330 IST of 15th Nov., 2018

Severe Cyclonic Storm "Phethai" over Bay of Bengal (10-19 December, 2018)

The Severe Cyclonic Storm (SCS) Phethai originated from a low pressure area (LPA) which formed over Equatorial Indian Ocean (EIO) and adjoining central parts of south Bay of Bengal (BoB) in the evening (1730 IST) of 9th December. It lay as a well marked low pressure area (WML) over central parts of south BoB and adjoining EIO in the morning (0830 IST) of 11th December. Under favourable environmental conditions, it concentrated into a Depression (D) over southeast BoB in the early morning (0530 IST) of 13th December. Moving north-northwestwards, it intensified into a deep depression (DD) over southeast BoB in the same mid-night (2330 IST) of 13th December. It intensified into a cyclonic storm (CS) "Phethai" (Pronounced as Pay-ti) in the evening (1730 IST) of 15th December and into a severe cyclonic storm (SCS) in the afternoon of 16th December, 2018.



Typical Radar imagery from DWR Visakhapatnam, Machilipatnam and Chennai for SCS Phethai over BoB