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# मौसम विज्ञान विभाग समाचार IMD NEWS

INDIA METEOROLOGICAL DEPARTMENT  
(Ministry of Earth Sciences)



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## Important Events / Activities

### 143<sup>rd</sup> INDIA METEOROLOGICAL DEPARTMENT (IMD) FOUNDATION DAY, 2018



Dr. M. Rajeevan, Secretary, MoES, Dr. K. J. Ramesh, DG, IMD and Shri S. C. Bhan during the Lighting of Lamp



Dr. M. Rajeevan, Secretary, MoES and Dr. K. J. Ramesh, DG, IMD with the winners of Inter-school Painting, Speech & Quiz competitions

India Meteorological Department celebrated its 143<sup>rd</sup> Foundation Day on 15<sup>th</sup> January, 2018 at NCUI Auditorium, New Delhi. Dr. M. Rajeevan, Secretary, MoES presided over the function. Dr. K. J. Ramesh, DG, IMD delivered the welcome address and highlighted the achievements of IMD during the previous year. On this occasion, Inter-school Painting, Speech and Quiz competitions were organized as part of "IMD Foundation Day" celebrations. The awards were given to winner students of the competitions during Foundation Day. Dr. M. Rajeevan presented IMD awards for "Most Performed Regional Meteorological Centre (RMC, Guwahati), Most Performed Meteorological Centre (MC, Hyderabad)", Most Performed Meteorological Observatory (AWS/ARG Jammu, Radar Station Mumbai, M. O. Minicoy, M. O. Chandbali, M. O. Imphal, A.M.O. Mangalore), Best Performed RS/RW Station (Nagpur). Dr S. K. Srivastav, former Director General of Meteorology was felicitated on this occasion. Dr. M. Rajeevan, Secretary, MoES released various publications including 26<sup>th</sup> Issue of IMD's Hindi magazine मौसम-मंजूषा & quarterly research journal MAUSAM Vol. 69 No. 1 (January, 2018) and also released a book entitled "Carbon Utilization : Applications for the Energy Industry" Edited by Dr. Malti Goyal and Dr. M. Sudhakar on this occasion.

143<sup>rd</sup> IMD Foundation Day was also celebrated in sub offices of IMD, Like, RMC's, MC's and MO's. On this occasion, MC, Bhubaneswar organized an exhibition to create awareness about Weather and Climate services. School Teachers, Students, General Public and Media persons visited the Exhibition. IMD officials explained the function of various instruments installed in the observatory to visitors.



IMD Officials, School Teachers, Students during the exhibition

## Important Events

**Dr. K. J. Ramesh**, DG, IMD participated in the Parliamentary Standing Committee meeting on "Science And Technology, Environment and Forest (Air Pollution in Delhi NCR)" at Rajya Sabha Secretariat, New Delhi on 9<sup>th</sup> January, 2018.

**Dr. K. J. Ramesh**, DG, IMD was guest of honour in the Brainstorm Meeting on "Establishment of Bay of Bengal Coastal Observatory (BoBCO)" at IIT, Bhubaneswar on 17<sup>th</sup> January, 2018.

**Dr. K. J. Ramesh**, DG, IMD has been conferred the honorary degree D. Sc. at a special function organized in OUAT, Bhubaneswar on 17<sup>th</sup> January, 2018. He also delivered a lecture on Weather and Agriculture on this occasion. Dr. S. C. Sahu, Scientist 'F' and other Officials of M.C. Bhubaneswar attended the ceremony.

**Trial Flight Operation** at New Green Field Pakyong Airport, Pakyong, East Sikkim has started w. e. f. 24<sup>th</sup> February, 2018 and the necessary meteorological support is being provided to the concerned AAI, Pakyong. First METAR was issued with the aid of Portable Sensor Kit and Wind Instruments on 24<sup>th</sup> February, 2018. Consequently, TAF was issued by AMO Kolkata on the aforesaid date.

**14<sup>th</sup> All India Sports Meet** of IMD was organized during 26<sup>th</sup> February to 1<sup>st</sup> March, 2018 at Visakhapatnam. Three hundred two (302) Sport-persons of this office participated in the meet.

**National Centre for Coastal Research (NCCR)** formerly ICMAM has developed "Urban Flood Warning System for Chennai" under a project sanctioned by Principal Scientific Advisor (PSO) to Government of India under a multi-institutional mechanism including IMD, NCMRWF, IIT-Mumbai & Chennai. Dr. M. Mohapatra, Sc. 'G' participated in the meeting on development of this system held at Chennai on 7<sup>th</sup> March, 2018.

**Dr. Madhavan Nair Rajeevan**, Secretary MoES, Dr. K. J. Ramesh, DG, IMD in the august presence of various scientists inaugurated new indigenous Pilot GPS Sonde Observatory (PBO) on 23<sup>rd</sup> March, 2018 at IMD, Ayanagar to derive wind information vertically (~15km) through indigenous technology developed.

**Dr. M. Mohapatra**, Scientist 'G' participated as Guest of Honour in the Inaugural Ceremony of "Centre for Environment and Climate" in Siksha O Anusandhan (SOA) University, Bhubaneswar on 23<sup>rd</sup> March. The Indian Meteorological Society (IMS), Bhubaneswar Chapter and Center for Environment & Climate (CEC), Department of Civil Engineering, Siksha 'O' Anusandhan (Deemed University), Bhubaneswar jointly organized a workshop on the theme "Lightning, Thunderstorm & Heat Wave". Dr. M. Mohapatra, Scientist 'G' participated and presented a lead talk on "Multi-hazard Early Warning System".

**Dr. M. Mohapatra**, Scientist 'G' has been nominated as Chairman of the Expert Committee constituted by NDMA to deliberate entire gamut of cyclone management/risk mitigation issues and revise the guidelines to prescribe effective measures/norms and action plan thereof for effective implementation and result oriented outcome.

## NATIONAL SCIENCE DAY, 2017

**National Science Day** was celebrated on 28<sup>th</sup> February 2018 at IMD HQ and sub-offices of IMD to spread all over country. On this occasion, a large number of students, scientists, journalist and general public were attended at O/o CR&S, Pune.

**Shri M. A. Pachankar**, Met 'A' and **Shri S. Y. Wagmare**, S. A. participated in the Giant Metre wave Radio Telescope (GMRT) Science Exhibition - 2018" held on 28<sup>th</sup> February and 1<sup>st</sup> March 2018 at GMRT, Khodad, near Narayangaon, District Pune organized on the occasion of "National Science Day".



IMD officials and visitors at Science Exhibition – 2018

## WORLD METEOROLOGICAL DAY, 2017

**World Meteorological Day (WM DAY) - 2018** was celebrated on 23<sup>rd</sup> March, 2018 at IMD HQ and its sub-offices all over India on the theme "Weather-Ready, Climate-Smart". O/o CR&S, Pune celebrated WMO Day which was well attended by large number of students, scientists, journalist and general public.



IMD officials, teachers and students during WM Day – 2018

**WMO Day, 2018** was celebrated at RMC Kolkata on 23<sup>rd</sup> March 2018 with lots of enthusiasm. Dr. Sanjib Bandyopadhyay, Scientist 'F', RMC Kolkata inaugurated the event by planting sampling of Magnolia Grandiflora in presence of IMD Officials, College/School students and media

personnels. He delivered a lecture and briefed media about the theme on “**Weather-Ready, Climate- Smart**” on this occasion. The Observatory, RIMC Unit, Barometer Room, ACWC Unit, Seminar Hall, and Exhibition hall was kept open from 1000 hrs (IST) to 1700 hrs (IST) for the visitors during the period. Approx. 600 no’s of visitors including School/ College students and teachers from different schools/Colleges visited the ALP, Observatory, Exhibition hall, Seminar Hall, ACWC, Barometer Room and RIMC Unit on that day. The electronic media Doordarshan, AIR, Private TV Channels including local Cable TV visited the Observatory and other units also and have widely published the report on the celebration in local News Papers and a short video report was also telecasted in the local news channel.

**World Meteorological Day** was celebrated at Meteorological Centre, Bhubaneswar on 23<sup>rd</sup> March, 2018 on the theme ‘**Weather- ready, Climate-smart**’. In this context an open house Exhibition and Demonstration on Meteorological Instruments and Weather Forecasting Techniques etc. was organized for the public, especially for the students.



Visitors at during WM Day – 2018 at RMC Kolkata



Visitors at during WM Day – 2018 at M.C. Bhubaneswar

**World Meteorological Day** 2018 with theme “Weather-Ready Climate-Smart” was celebrated at Met. Centre, Dehradun on 23<sup>rd</sup> March, 2018. Officers/staff of Met. Centre, Dehradun briefed the students/teachers of various schools and the public about various products and services of IMD focusing mainly on the Current year WMO theme.

World Meteorological Day was celebrated on 23<sup>rd</sup> March, 2018 by keeping the office open for general public and school students at MC, Bengaluru.



IMD officials, teachers and students during WM Day – 2018



Visitors at during WM Day – 2018 at M.C. Dehradun

**Important Policy Decisions Taken  
New Projects / Schemes / Programmes Approved / Initiated / Completed**

All **M.C.s** under **RMC Kolkata** (Patna, Bhubaneswar, Gangtok and Ranchi) also celebrated WMO Day 2018 on 23<sup>rd</sup> March, 2018 with lot of enthusiasm at M. C. Offices by arranging Exhibition, Seminar, and briefing the activities of IMD to the visitors, College/School students who all visited the offices.

**Dr. N. Chattopadhyay**, Scientist ‘F’ along with Shri R. Balasubramanian, Scientist ‘D’ visited Thirupathisaram, Kanyakumari, Tamil Nadu during 13-14 February, 2018 to have a preliminary discussion to establish Agromet Advisory Service Centre at KVK, Thirupathisaram under the scheme “Gramin Krishi Mausam Seva” so as to provide Weather Forecast Based Agromet Advisories to the farming community of Kanyakumari district.

**WMO day** was celebrated at M. C. Ahmadabad on 23<sup>rd</sup> March, 2018. On this occasion, Meteorological centre was kept open for students and public. An exhibition was also arranged in which various instruments and AWS model prepared by staff was displayed. WMO Banners and printed images of clouds were displayed. A TV programme was recorded by ETV channel, Ahmadabad team and it was telecast in its programme.

**Shri Bikram Singh**, Scientist ‘E’ attended a meeting with Joint Secretary, MoES, Govt. of India and Dr. Devendra Pradhan, DDGM, RMC New Delhi in connection with “Status of Radar procurement and site finalization for installation of Radars in Uttarakhand on 21<sup>st</sup> February, 2018 at New Delhi.

**Shri Bikram Singh**, Scientist ‘E’ attended Technical Evaluation Committee meeting on 7<sup>th</sup> March, 2018, for Procurement of



Hydro-Met instruments (AWS, ARG, ASG etc.) by Government of Uttarakhand at PIU, Dehradun.

**Shri M. M. Saklani**, Met. 'B' was on AWS tour on 22<sup>nd</sup> & on 28<sup>th</sup> March, 2018 to Mussoorie to make AWS Mussoorie functional. The battery & new GPS based Data logger were installed and AWS is now working satisfactorily. The Single Stevenson screen and ORG were also installed.

Inputs on **tropical cyclones over north Indian Ocean** during 2013-2017 were provided to World Meteorological Organisation for a report on Weather Extremes during the period.

The **real time NWP model data** supply to Kerala State Disaster Management Authority has been arranged for utilisation in decision making.

Inputs regarding salient features of **tropical cyclones** (life history and associated weather) during 2014-17 were provided to Ministry of Environment & Forests for Preparation of the Second Biennial Update Report for the United Nations Framework Convention for Climate Change (UNFCCC).

Inputs were provided to NDMA for updation of National Disaster Management Plan on **tropical cyclones**.

Inputs on the **cyclone prone districts of India** were provided to Building Materials & Technology Promotion Council (BMTPC), Ministry of Housing & Urban Affairs for updation of vulnerability Atlas of India.

Inputs on **best track data on tropical cyclones** during 1990-2016 were provided to Lanka Hydraulic Institute Ltd., Katubedda, Sri Lanka.

The **best track parameters for the cyclonic disturbances** during 2017 over the north Indian Ocean have been finalised by Best Track Committee under the chairmanship of Dr. M. Mohapatra, Scientist 'G' and has been approved for publication.

**Dissemination of Agromet Advisories** to the users' community through SMS and IVR technology is being continued in the country through Kisan Portal and under PPP mode. At present Agromet Advisories are reaching to 22.7 million farmers in the country through SMS directly.

## Human Resource Development Activities

## CONFERENCES/SEMINAR

**Dr. S. K. Peshin**, Scientist 'G' attended the Fukuoka - Delhi Friendship Agreement 10<sup>th</sup> Anniversary commemorative Event "Environmental Seminar on Air Pollution" on 17<sup>th</sup> January, 2018 at Le-Meridien, New Delhi organized by Government of NCT Delhi, India Fukuoka Prefectural Government, Japan and Japan International Cooperation Agency.

**Shri S. M. Metri**, Scientist 'E' and Shri N. Ramdoss, Met. 'B' attended seminar on "Savings Lives and Property through Severe Weather Alerting" based on Total Lightning Detection by the U.S. Commercial Service Bengaluru, U. S. Consulate General, Chennai and Earth Networks, USA with support from Skymet Weather Services on 8<sup>th</sup> February, 2018 at Plumeria, Taj West End, Race Course Road, Bengaluru.

**Dr. S. Y. Khedikar**, Scientist 'B' attended Farmer Awareness Program (FAP) held at Kurle, Taluka Sangamner, Dist. Ahmadnagar on 24<sup>th</sup> February, 2018 organised by AMFU, Rahuri. He gave talk on Application of weather forecast in agriculture to the farmers.



**Dr. S. Y. Khedikar, Sc. 'B' during FAP**

**Dr. Kripan Ghosh**, Scientist 'E' participated in a State Level Seminar on "Climate change and farmers: Impact on agriculture" organised by People's Participation, a NGO in West Bengal at "Institute of Co-Operative Management for Agriculture & Rural Development (ICMARD)", Kolkata, West Bengal, supported by Government of India, Ministry of Earth Sciences, on 27<sup>th</sup> February, 2018 and interacted with the farmers for their awareness regarding use of agromet advisory services for improvement of crop production.

**Shri P. K. Beuria**, Meteorologist 'B' was on Aviation Tour to Cuttack and Arugul (IIT, Bhubaneswar) to support Meteorological Services to the Pilot in connection with VVIP-I Movement (Visit of Hon'ble President of India to Odisha) during 17-18 March, 2018.

## TRAININGS

**25 participants** of Advanced Training programme "Recent Developments in Statically Modelling and Forecasting in Agriculture" visited Satellite Meteorology Division on 9<sup>th</sup> January, 2018 for familiarization training in Satellite Meteorology.

**Dr. S. C. Sahu**, Scientist 'F', Director In Charge, M. C. Bhubaneswar, attended the orientation training programme for District Emergency Officers / Assistant Collectors (Emergency) on "Disaster management" convened by Special Relief commissioner, Govt. of Odisha at Gopabandhu Academy of Administration, Bhubaneswar on 10<sup>th</sup> January, 2018.

A **training workshop** on weather information for Power sector was organised by Manikaran Power Limited at New Delhi on 5<sup>th</sup> February, 2018. Experts from IMD provided the technical training to this Power Sector Users during the workshop.



**Dr. Lata Vishnoi, Scientist 'B' during training**

**Dr. Lata Vishnoi**, Scientist 'B' attended a Training Programme on "Agricultural Applications using Space Based Observations" course planned at SAC, Bhopal campus from 5-9 February, 2018.

**Dr. K. K. Singh**, Scientist 'F' and **Dr. Kripan Ghosh**, Scientist 'E' participated as resource person in training conducted on Development of Climate Risk Management Tool during 13-20 March, 2018 at NESSC, Umiam Meghalaya.

A **five day training workshop** on "Utilisation of Numerical Weather Prediction (NWP) Model products for weather forecasting" was organised for the forecasters of IMD at Meteorological Training Institute (MTI), Pune during 12-16, February, 2018. Resource persons from IMD and other Institutes delivered the lectures during the training. The workshop was inaugurated by Prof. Ravi Nanjundiah, Director, Indian Institute of Tropical Meteorology, Pune. The Valedictory ceremony was addressed by Dr. M. Rajeevan, Secretary, MoES and Dr. K. J. Ramesh, DG, IMD.



**Dr. M. Rajeevan, Secretary, MoES, Dr. K. J. Ramesh, DG, IMD and others during the Valedictory ceremony**

## REFRESHER COURSE ON ASTRONOMY



**Trainees during Refresher Course on Astronomy at PAC, Kolkata**

**PAC, Kolkata** organised a Refresher Course on "Astronomy" during 6 to 9 February, 2018 at PAC, Kolkata for officers of PAC Kolkata and RMC Kolkata, coordinated by Shri S. Sen, Scientist 'F'. Prof. G. M Ballabh, Retd. Prof. of Osmania University, Hyderabad was the Chief Guest during inaugural function. Dr. S. Bandyopadhyay, Scientist 'F' and Dr. D. R. Pattanaik, Scientist 'E' were also present during the inauguration programme. Shri A. K. Bhatnagar, Retd. ADGM of IMD, Dr. G. S. D. Babu, Retd Director of M. P. Birla Planetarium, Bangalore, Prof U. C. Joshi, Retd. Prof. of PRL Ahmedabad, Prof. Ranjan Gupta of IUCAA, Pune and Prof. Amalendu Bandyopadhyay of M. P. Birla Planeratum, Kolkata were the resource persons.

**One day Training and Familiarization on Doppler Weather Radar Products** was conducted on 12<sup>th</sup> February, 2018 for officials of NESAV and RMC Guwahati, Dr. D. Pradhan, Scientist 'G' and Shri K. C. Sai Krishnan, Scientist 'F' delivered lectures as resource person.

Experts from IMD and other organisations like IIT Delhi, NCMWRF, INCOIS, IITM, Andhra University etc. delivered lectures to the participants. Dr. M. Mohapatra, Scientist 'G', delivered lectures on synthesis of NWP model products with other observational guidance to issue the short to medium range forecast and another lecture on utilisation of NWP models for cyclone warning during 14-15 February, 2018. Senior officers of IMD participated in said training. Dr. D. R. Pattanaik, Sc. 'E', NWP and head HRD was the scientific co-ordinator for this refresher course.



**Participants and resource persons during NWP refresher course.**

**Shri Anand Sharma**, Scientist 'F' delivered lectures in training workshop was organised by Kumaon University on Meteorological issues pertaining to Agriculture, Forestry, Transportation and Environmental Management and Climate variability / change impacts" on 15-16 February, 2018.

**Shri S. C. Bhan**, Scientist 'F' participated in "SAARC Training Program on Heat Wave Preparedness and Response in SAARC Region Gandhinagar, India" during 8-10 March, 2018 and delivered an invited talk on "Heat Wave Warnings: Thresholds, Customization, Dissemination and Cooperation".



**Dr. K. J. Ramesh**, DG, IMD inaugurated a five day training workshop on “Utilisation of Synoptic & Diagnostic Meteorology for weather forecasting” for the forecasters of IMD at Meteorological Training Institute (MTI), Pune during 12-16 March, 2018. Resource persons from IMD and other Institutes delivered the lectures during the training. The Valedictory ceremony was chaired by Dr. M. Mohapatra, Scientist ‘G’. Prof. Ravi Nanjundiah, Director, Indian Institute of Tropical Meteorology, Pune and Prof. P.V. Joseph, who co-ordinated the training programme on behalf of IMD were the Guests of Honour. Dr. A. K. Sahai, Scientist ‘G’ also addressed the trainees. Dr. M. Mohapatra, delivered lectures on synthesis of NWP model products with other observational guidance to issue the short to medium range forecast and another lecture on Mesoscale models for short range forecasting.



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

**5-days national level training programme** on “Challenges in Effective Communications during Disasters and its management” was organised by National Institute of Disaster Management during 19-23 March, 2018. Dr. M. Mohapatra, Scientist ‘G’ presented an invited talk on “Case Studies of Early Warning System for Cyclones (Phailin, Hudhud and Ockhi)” on 22<sup>nd</sup> March, 2018.

**Shri Virendra Singh**, Scientist ‘F’ attended the training on “Preparation of Parliament annual report / introduction of Parliament terminologies etc.” at Parliamentary and Administrative Research Institute, New Delhi during 20-23 March, 2018.

## WORKSHOPS

**Dr. A. K. Sahai**, Scientist ‘G’ attended the workshop in connection with “India UK Water Centre Workshop on “Improving Fresh Water Monitoring Frameworks for Data and Research Management” from 23-25 January, 2018 at Kochi.

**Dr. Sanjib Bandyopadhyay**, Scientist ‘F’ attended Workshop on “A climate change resilient and carbon neutral West Bengal” on 30<sup>th</sup> January, 2018 at Saltlake, Kolkata organized by Department of Environment, Government of West Bengal.

**Dr. G. N. Raha**, Scientist ‘D’ attended a workshop on “Developing Disaster Resilience Action Plan for Gangtok” on 6<sup>th</sup> February, 2018, at Gangtok organized by Integrated Research and Action for Development (IRADe) and North-Eastern Space Applications Centre (NESAC), with support from

Ministry of Environment, Forests & Climate Change (MoEFCC) under National Mission on Himalayan Studies.

**Shri S. C. Bhan**, Scientist ‘F’ attended National workshop on “Preparedness, Mitigation and Management of Heat wave” held at Vijayawada on 21-22 February, 2018 and delivered an invited talk on “Operational issues: Temperature threshold cooperation and dissemination”.

**Dr. K. K. Singh**, Sc. ‘F’ and Dr. S. D. Attri, Sc. ‘F’ participated in “KVK Workshop 2018” held during 16-17 March, 2018 which was inaugurated by Hon’ble Prime Minister of India.

**Dr. M. Mohapatra**, Scientist ‘G’ and Dr. Sathi Devi, Scientist ‘F’ participated in the Indo-Japan Workshop on “Disaster Risk Reduction” during 19-20 March, 2018 at Vigyan Bhawan.

**Dr. S. C. Sahu**, Scientist ‘F’, participated in the workshop on “Regional Environment and Climate in Odisha: Lighting, Thunderstorm and Heat wave (RECO 2018)” jointly organized



**Dr. S. C. Sahu, Scientist ‘F’ during the workshop**

by Indian Meteorological Society (IMS), Bhubaneswar Chapter and Centre for Environment and Climate, ITER, Siksha ‘O’ Anusandhan University, Bhubaneswar on 23-24, March, 2018.

## LECTURES/TALK

**Dr. Jayanta Sarkar**, Scientist ‘F’ delivered lecture on “Heat Wave Preparedness and Response in SAARC Region” at GIDM, Gandhinagar on 3<sup>rd</sup> January, 2018.

**Dr. K. K. Singh**, delivered lecture on “Overview of Yield Estimation by IMD” in the training programme organized by MNCFC (Mahalanobis National Crop Forecast Centre) in the training programme organized by MNCFC for capacity building of newly recruited analyst during 8-12 January, 2018

**Dr. S. C. Sahu**, Scientist ‘F’ delivered lecture in refresher Course of Geography Department in Utkal University, Vani Vihar, Bhubaneswar on 18, 27 & 28 January, 2018 on “Weather Forecasting” and 24 February, 2018 on “Climate Change”.

**Dr. N. Chattopadhyay**, Scientist ‘F’ invited by “The Energy and Resources Institute (TERI), Mumbai” to deliver lecture on “Overview of Changing Climate and Significance of Climate Smart Agriculture” to the participants of the training workshop for the Mahatma Phule Krishi Vidyapeeth, Rahuri held at Agricultural College, Pune on 22<sup>nd</sup> February, 2018.



**Dr. N. Chattopadhyay, Scientist 'F' during the lecture**

**Dr. Sanjib Bandyopadhyay**, Scientist 'F' delivered a lecture on "ICT in Agriculture" at the National seminar on "Trends & Applications of ICT in Agriculture (TRACT)" organized by Centre for Development of Advanced Computing, Kolkata and IMS on 13<sup>th</sup> March, 2018.

**Dr. S. C. Sahu**, Scientist 'F', attended as Guest of Honour and delivered a lecture on "Coping Climate Change Impacts through Climate Resilient Agriculture" organized by DFID and CTRAN Consulting Ltd. at KIIT University Campus, Bhubaneswar on 13<sup>th</sup> March, 2018.

**Shri R. Balasubramanian**, Scientist 'D' delivered lecture on "Agriculture Aspects of South West Monsoon - 2017" in monsoon workshop organized by IMSP (Indian Meteorological Society Pune) at IITM (Indian Institute of Tropical Meteorology) Pashan, Pune on 27<sup>th</sup> March, 2018.

**Shri Anand Sharma**, Scientist 'F', delivered an invited interactive talk on "Empowering Rural communities through Weather based agro- advisories" on 27<sup>th</sup> March, 2018 in the Faculty Development Programme of Rural Community Engagement at Jawaharlal Nehru University (JNU), New Delhi.



त्यमेव जयते

**Twenty Eight (28)** officials from IMD participated in 11 events of "Inter-Ministry Music, Dance and Short-play Competition" organised by Central Civil Services Cultural and Sports Board (DoPT) during 19-23 February, 2018 at New Delhi. **This office won three (3) gold and one (1) silver medal.**

**ISO certification received for RMC Guwahati office and MC Agartala ISO 9001:2015.**

## Infrastructure Development & Installations



**Installation of "Drishti RVR"**

"**Drishti RVR**" was installed at AMO KIAL, Bengaluru at 9 and 27 runway on 21<sup>st</sup> January, 2018. 23 Officers and staff participated in the training programme in installation of Drishti RVR from 17-22 January, 2018.

**Shri B. P. Sethi**, Special Relief Commissioner, Government of Odisha attended the function for installation of "New Korean GPS based Radio Sounding System (JINYANG)" at M.C. Bhubaneswar on dated 23<sup>rd</sup> February, 2018. The same was successfully installed at M.O. Port Blair, M.O. JHARSUGUDA.

**Shri S. M. Metri**, Scientist 'E', L. Ramesh Babu, Scientist 'E' and S. N. R. Gopal, Met. 'B' visited UAS Dharwad to establish North Karnataka Agro Meteorological Forecasting and Research Centre (NKAFC) and ZIMC 16<sup>th</sup> March, 2018.

**In collaboration with Turkey Meteorological service**, a visualisation tool called "Met Cap Plus" has been installed in IMD for visualisation of all meteorological observations including conventional/AWS/Satellite/Radar observations and NWP model products.

## Awards & Recognitions

**Dr. Dr. S. D. Attri**, Scientist 'F' was awarded "Pride of University" by Guru Jambheshwar University of Science & Technology, Hisar.



**Dr. S. D. Attri, Scientist 'F' receiving award**

An **Appreciation letter** was received from **Hon'ble Chief Minister, Gujarat Shri Vijay Rupani** state for "Exemplary services provided by IMD Ahmedabad" during Ockhi cyclone and Monsoon - 2017.

## Inter-Agency Meetings

**Dr. A.K. Sahai**, Scientist 'G' was on tour to IISc Bangalore to attend a meeting on 4<sup>th</sup> January, 2018 regarding "Planning possible future collaborations between USA and Indian scientists to study the sub-seasonal variability in the Monsoons".

**Dr. Jayanta Sarkar**, Scientist 'F' attended meeting with participants from SAARC Member States to discuss the training on "SAARC Disaster Management Centre" at GIDM, Gandhinagar on 4<sup>th</sup> & 9<sup>th</sup> January, 2018.



**Dr. K. K. Singh**, Scientist 'F', **Dr. S. D. Attri**, Scientist 'F', **Dr. N. Chattopadhyay**, Scientist 'F' and **Dr. Kripan Ghosh**, Scientist 'E' attended "WMO-IMD-IITM Inception Meeting on Development of Climate Services Toolkit for National Centre for Hydrology and Meteorology (NCHM), Bhutan and support to be provided for the overall improvement in the climate services in Bhutan" at Pune, during 17-18 January, 2018.

**Shri Anand Sharma**, Scientist 'F', invited and participated and contributed in the meeting to develop "Contingency plans for Kharif, 2018 in regard to El Nino and Drought" on 31 January - 1 February, 2018 at Jalagam, Dehra Dun under the Watershed development program.

## 26<sup>th</sup> Standing Advisory Committee meeting of PAC



Officers during 26<sup>th</sup> Standing Advisory Committee meeting

The 26<sup>th</sup> Standing Advisory Committee meeting of PAC, Kolkata was held on 5<sup>th</sup> February, 2018 at PAC Kolkata office under chairmanship of Prof. G. M. Ballabh, Retd. Prof., Osmania University, Hyderabad. The meeting was attended by other distinguished members of the Committee. **Dr. D. R. Pattanaik**, Scientist 'E' of DGM, New Delhi, **Dr. S. Bandyopadhyay**, Scientist 'E' were also present in the meeting as special invitee. **Shri S. Sen**, Scientist 'F', PAC Kolkata acted as member secretary. The Committee made some important recommendations for overall improvement in the functioning of the Centre.

**Shri K. Santosh**, Scientist 'F' attended meeting of State food secretaries under the chairmanship of Secretary (F&PD), Govt of India at Krishi Bhavan on 15<sup>th</sup> February, 2018 to discuss the arrangements for procurement of wheat & rice/paddy and briefed about weather forecast and monsoon situation of the country.

**Dr. K. J. Ramesh**, DG, IMD and **Dr. K. K. Singh**, Scientist 'F' invited and participated in the session on "Science & Technology intervention" on 19-20 February, 2018 organised by Ministry of Agriculture and Farmers Welfare under "Agriculture-2022, New initiatives" at National Agriculture Science Complex (NASC), Pusa, New Delhi.

**Dr. N. Chattopadhyay**, Scientist 'F' and IMD officers attended the meeting with **Dr. Adam Griffin**, Hydrological Statistician, Centre for Ecology & Hydrology (CEH), Wallingford, Oxon, United Kingdom and his team during their visit to IMD Pune on 26<sup>th</sup> February, 2018 regarding the current progress of the project on "Flood and rainfall frequency estimation in

Maharastra State" between CEH, Wallingford, Oxon, U. K., Indian Institute of Technology, Mumbai and IMD Pune.

**Dr. S. C. Sahu**, Scientist 'F', attended the "Technical Sub Committee Meeting of SDMC" for the Installation of AWS and ARG in the state at OSDMA, Rajib Bhawan, Bhubaneswar on 27<sup>th</sup> February, 2018.

**Dr. M. Mohapatra**, Scientist 'G' and **Dr. A. K. Mitra**, Scientist 'D' participated in 4<sup>th</sup> Meeting of Indian Space Research Organisation (ISRO) - MoES sub-committee on "Advances in Atmospheric Research" on 28<sup>th</sup> February, 2018 through video conference.

**Dr. S. D. Attri**, Scientist 'F' participated in meeting of the "Steering Committee on Sustainable Livelihoods and Adaptation to Climate Change (SLACC) Project" held under the chairmanship of Secretary, Rural Development on 5<sup>th</sup> March, 2018 at Krishi Bhawan, New Delhi.

**Dr. N. Chattopadhyay**, Scientist 'F', **Shri R. Balasubramanian**, Scientist 'D', **Dr. S. Y. Khedekar**, Scientist 'B' and staff members of NAASC Section attended "State level stake holders' meeting on Agromet Advisory Services in Maharashtra" held on 14<sup>th</sup> March, 2018 at College of Agriculture, Pune organised by Mahatma Phule Krishi Vidhyapith, Rahuri, India Meteorological Department, Pune and Department of Agriculture, Government of Maharashtra.



Dr. N. Chattopadhyay, Sc. 'F' and other officers during the meeting

**Dr. K. J. Ramesh**, DG, IMD, **Dr. M. Mohapatra**, Scientist 'G' and scientists from NWP Division participated in a meeting organised by MoES under the chairmanship of Secretary, MoES to "Plan block level forecast from this monsoon season 2018" on 26<sup>th</sup> March, 2018.

## STATE LEVEL AGROMET ADVISORY COMMITTEE MEETINGS

The State Level Agromet Advisory Committee Meetings with officials of state department of agriculture were arranged in Agrimet Division in January (on 2<sup>nd</sup>, 9<sup>th</sup>, 16<sup>th</sup>, 23<sup>rd</sup>, & 30<sup>th</sup> January, 2018), in February (on 6<sup>th</sup>, 12<sup>th</sup>, 20<sup>th</sup> & 27<sup>th</sup> February, 2018) and in March (on 6<sup>th</sup>, 13<sup>th</sup>, 20<sup>th</sup> & 27<sup>th</sup> March, 2018) for discussion on realised rainfall, weather forecast and relevant Agromet Advisories and the same were communicated to AMFUs for the preparation and dissemination of Agromet Advisories.



## ACR/AMR MEETING

**Shri Bikram Singh**, Scientist 'E' attended a meeting on "Review of seismic threat in Uttarakhand and recent earthquake tremors" at Uttarakhand Secretariat organized by Disaster Management Department, Govt. of Uttarakhand on 4<sup>th</sup> January, 2018.

**Dr. Devendra Pradhan**, Scientist 'G', and Shri Bikram Singh, Scientist 'E' attended a meeting with Chief Secretary, Govt. of Uttarakhand in connection with "Status of Radar procurement and site finalization for installation of Radars in Uttarakhand on 11<sup>th</sup> January, 2018.

**Dr. K. J. Ramesh**, DG, IMD had a meeting through video conference on "Weather and Climate Science for Service Partnership (WCSSP) – India" involving Ministry of Earth Sciences (MoES) and UK-Met Office on 5<sup>th</sup> February, 2018.

**Dr K. J. Ramesh**, DG, IMD had meeting with Professor Alan Jenkins from Centre for Ecology & Hydrology, UK on issues of "Research co-operation" on 20<sup>th</sup> February, 2018 at IMD HQ. He discussed issues of River - basin Hydrology that will be part of joint Indo-UK Projects currently under formulation.

**Dr. K. J. Ramesh**, DG, IMD chaired the meeting on "Implementation of Hurricane Weather Research & Forecast - Hybrid Ocean Coupled Model (HWRF-HYCOM) Modelling System on real time basis" in IMD through collaboration of IMD, INCOIS and National Centre for Medium Range Weather Forecasting (NCMRWF) at IMD, HQ on 23<sup>rd</sup> February, 2018.

## IIRS USER INTERACTION MEET (IUIM-2018)

Indian Institute of Remote Sensing (IIRS), Dehradun organised IIRS User Interaction Meet (IUIM-2018) on the theme "Government Institutions-Universities - Industries Partnership for enhancing Geospatial Applications" during 26-27 February, 2018. Dr. M. Mohapatra, Scientist 'G' presented an invited talk on "Application of Geospatial Technology in Weather and Climate Monitoring and Forecasting". Dr. M. Mohapatra, Scientist 'G' also participated in Brain Storming Meeting on Urban Flooding organised by IIRS, Dehradun on 26<sup>th</sup> February, 2018. He co-chaired a Plenary Session on Geospatial and Ground based data for Urban Studies on 26<sup>th</sup> February, 2018. He also gave a presentation on "Urban Flood Warning System" in the Technical Session on "Urban Flood Management-Policies, Guidelines and Mitigation" on 26<sup>th</sup> February, 2018.

## ANNUAL CYCLONE/MONSOON REVIEW MEETING

India Meteorological Department organised Annual Cyclone/Monsoon Review Meeting to review it's activities on monsoon and cyclones during the past year and plan for the season ahead at Ahmadabad during 4-5 March, 2018. The participants included officers of IMD at state/regional/HQ levels and representatives from Indian Institute of Tropical



**Dr. K. J. Ramesh, DG, IMD and officers of IMD during the meeting**

Meteorology (IITM) Pune/ National Centre for Medium Range Weather Forecasting (NCMRWF)/ Indian National Centre for Ocean Information Services (INCOIS) / National Institute of Ocean Technology (NIOT). Dr. M. Mohapatra, Scientist G & Head (Services) made a presentation on "Lessons learnt during Cyclone Ockhi".

**Meeting for development of collaborative mechanism** for Weather and Climate Science for Service Partnership (WCSSP) India between MoES and UK Met. Office was organised at Prithvi Bhawan during 20-21 March, 2018. Dr. M. Mohapatra, Scientist 'G' participated in this meeting alongwith Dr. K. J. Ramesh, DG, IMD, Dr. D. S. Pai, Scientist F, Dr. A. K. Sahai, Scientist 'G' and Dr. Somenath Dutta, Scientist 'F'. Dr. M. Mohapatra gave a presentation on "Impact based forecasting and risk based warning by IMD".

## Research & Publications

Attri, S. D., Singh, V. and Naresh Kumar, 2018, "Long-term changes in monsoon rainfall patterns over arid region of India", *Journal of Agrometeorology*, 20, 1, 78-79.

Singh, A. K., Singh, V., Singh, K. K., Tripathi, J. N., Kumar, A., Soni, A. K., Sateesh, M. and Khadke, C., "A Case Study: Heavy Rainfall Event Comparison Between Daily Satellite Rainfall Estimation Products with IMD Gridded Rainfall Over Peninsular India During 2015 Winter Monsoon", *Journal of the Indian Society of Remote Sensing*, 1-9.

Fifteen (15) research papers were published in quarterly research journal **MAUSAM Vol. 69 No. 2 (April, 2018)**.

## Media Interaction

**Shri Anand Sharma**, Scientist 'F' was interviewed by D D Kisan TV on 1<sup>st</sup> and 3<sup>rd</sup> January, 2018 on "Wrap up of weather of 2017 and Weather and Agriculture" in their Vichar Vimarsh Programme respectively.

**Dr. Sanjib Bandyopadhyay**, Scientist 'F' chaired a workshop with Media Personnel which was organized by ACWC Kolkata on 9<sup>th</sup> March, 2018. Dr. Sanjib Bandyopadhyay, DDGM briefed to the media personnel about the "Severe weather during all the seasons and importance of their role with regard to dissemination of

weather forecast and warnings” issued by IMD in the interest of stakeholders at large. Dr. G. K. Das, Scientist ‘D’ elaborately discussed in the workshop about the severe weather activity over eastern region during pre-monsoon season seasonal outlook for temperature during March to May 2018.



**Dr. S. Bandyopadhyay, Sc. ‘F’ with Media Personnel**

**Shri Anand Sharma**, Scientist ‘F’ was interviewed by AIR, Jalandhar on WMO Day, 23<sup>rd</sup> March, 2018.

## Foreign Visitors

**Public Health experts** from Colombia University visited **M. C., Ahmadabad** on 5<sup>th</sup> January, 2018 and Dr. Jayanta Sarkar, Scientist ‘F’ delivered lecture to them regarding weather Forecasting / Heat action plan Ahmedabad.

**Dr. Adam Griffin**, Hydrological Statistician, Centre for Ecology and Hydrology (CEH), UK visited IMD Pune office with his team and had meeting with IMD and IIT Bombay on 26<sup>th</sup> February, 2018 on the subject regarding the project on “Flood and rainfall frequency estimation in Maharashtra State”.

**Shri Hiroshi Ishihara**, Senior Forecaster, Japan Meteorological Agency visited IMD during 26-27 March, 2018 to discuss various trans-boundary issues between Regional Specialised Meteorological Centre-Tokyo & Regional Specialised Meteorological Centre, New Delhi and to enhance bilateral co-operation between the two RSMCs. Dr. M. Mohapatra, Scientist ‘G’ presented various activities of RSMC New Delhi to the visiting delegate. Shri Ishihara also visited various workstations of IMD during his visit to IMD. Mr. Ishihara also delivered a presentation on “Activities of RSMC Tokyo” in a seminar organised on 27<sup>th</sup> March at IMD.

## Foreign Visits

**Shri Akhil Srivastava**, Scientist ‘B’ was on deputation to attend “HWRF-HYCOM training at NOAA Centre for Weather and Climate Prediction”, Maryland, USA, during 23<sup>rd</sup> January, 2018 to 3<sup>rd</sup> February, 2018.

**Dr. M Mohapatra**, Scientist ‘G’ was on deputation to Tehran, I. R. of Iran to participate as keynote speaker and presented a talk on “Monitoring, Forecasting and Early Warning System for

Marine Weather Hazards in the 4<sup>th</sup> Persian Gulf Conference” during 17-18 February, 2018.

**Shri Rahul Madathilath**, Scientist ‘B’ was on deputation to Doha, Qatar to participate in “Asia Middle East Dialogue (AMED) Crisis Management Training” during 26<sup>th</sup> February, 2018 to 1<sup>st</sup> March, 2018.

**Shri Mohammad Danish**, Scientist ‘B’ was on deputation to Bhutan to participate in the “Installation and Training of MCH Database Management System” during 12-16 March, 2018.

**Shri Chinmay Rajendra Khadke**, Scientist ‘B’ was on deputation to Muscat, Oman to attend the “Thirteenth Satellite Application Course (SAC) focus on Tropical Cyclone” during 11-15 March, 2018.

**Shri Vivek Sinha**, Scientist ‘F’ was on deputation to Bangkok, Thailand to attend the “Sixteenth Meeting of Asia/Pacific Meteorological Information Exchange Working Group (Met/IE WG/16)” during 19-21 March, 2018.

**Dr. D. R. Pattanaik**, Scientist ‘E’ was on deputation to National Center for Hydrology and Meteorology (NCHM), Bhutan to participate as an “Expert for capacity building on Extended Range Prediction (ERP)” during 19-21 March, 2018.



**Dr. D. R. Pattanaik, Sc. ‘E’ on deputation at Bhutan**

**Dr. Naresh Kumar**, Scientist ‘E’ was on deputation to Kittila, Finland to participate in the “Eighth Session of the Executive Council Panel of Experts on Polar and High Mountain Observations, Research and Services (EC-PHORS-8) and meeting the Antarctic Task Team” during 20-23 March, 2018.

**Dr. V. K. Soni**, Scientist ‘F’ was on deputation to Geneva, Switzerland to “Participate in the Scoping Meeting on the Implementation of Third Pole Regional Climate Network” during 27-28 March, 2018.

**Shri S. K. Asok Raja**, Scientist ‘B’ & Ms. Hemlata Motiram Bharwani, Scientist ‘B’ were on deputation to San Diego, USA to attend training under “South Asia Flash Flood Guidance System (SAsiaFFGS) Operational Training (Step 3)” during 5-30 March, 2018.

## Visitors

**22 students** from GMERS Medical College, Sola, Ahmedabad visited **Met. Centre, Ahmedabad** on 1<sup>st</sup> & 2<sup>nd</sup> January 2018 and they were briefed regarding the activities of IMD.

**50 students** from Valia Polytechnic College, Valia, Bharuch visited **Met. Centre, Ahmedabad** on 25<sup>th</sup> January 2018.

**A group of 43 Students along with 3 faculty member** from Banaras Hindu University, Varanasi visited **M. C. Dehradun** on 27<sup>th</sup> January, 2018. Students along with faculty members were briefed about different instruments of Meteorological observatory and a general lecture on weather and climate was given by the staff members of M.C. Dehradun.



**50 students** from B. J. Medical College, Ahmadabad visited **Met. Centre, Ahmadabad** on 5<sup>th</sup> February, 2018.

**A group of 11 Students alongwith 2 faculty member** from Pt. Lalit Mohan Sharma Government PG College, Rishikesh visited **M. C. Dehradun** on 27th March, 2018. Student's alongwith faculty members were briefed about different instruments of Meteorological observatory and a general lecture on weather and climate was given by the staff members of M.C. Dehradun.

Total 115 students in January, 2018, 110 students in February, 2018 and 52 students in March, 2018 from different schools of New Delhi and NCR visited **Sat. Met. Division** for familiarization with the activity of Satellite Meteorology.

## Weather Summary

### MAIN FEATURES OF THE SEASON OF WINTER SEASON - 2018

#### Highlights

Cold wave conditions were rather moderate during the season and prevailed only for few days during the season. Rainfall during the season was third lowest since 1901. Over Northwest region, maximum temperature (22.32 °C) was above normal by 2.14 °C, which is second highest for the region since 1901, over central India it was fourth highest since 1971.

#### Cold Wave / foggy conditions

Cold wave conditions were moderate during the season. Severe Cold wave conditions were observed over parts of Bihar during first fortnight of the January. Dense to very dense foggy

conditions prevailed at a few places over the northern parts of the country during February. Dense to very dense foggy conditions prevailed at a few places over Assam and Meghalaya one or two days during last week of the February.

#### Rainfall Features

Rainfall activity over the country as a whole during the season was substantially below normal (38% of LPA). It was very much below normal during January (15% of LPA) and below normal during February (57% of LPA). Rainfall activity was mainly observed over Andaman & Nicobar Islands, parts of Marathwada and Vidarbha. During the season, out of 36 meteorological subdivisions, 1 received large excess rainfall, 2 received normal rainfall, 10 received deficient rainfall, 22 received large deficient rainfall. One sub-divisions did not receive any rain (Fig. 1).

Northern, extreme north-eastern parts of the country, central India, eastern parts of south peninsular India and Andaman & Nicobar Islands received more than 20 mm of rainfall. Parts of Arunachal Pradesh, Jammu & Kashmir and Andaman & Nicobar Islands received more than 100 mm rainfall. Except for some parts of extreme northeastern region, few parts of Central India and south peninsula and Andaman & Nicobar Islands the rainfall anomaly was negative over most parts of the country. Negative rainfall anomaly was more than 50 mm over parts of

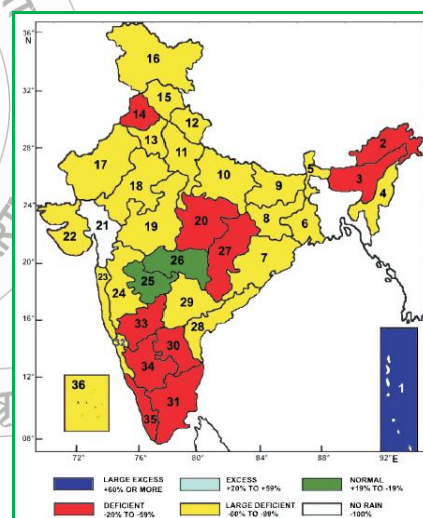


Fig. 1. Sub-divisionwise rainfall percentage departures

Jammu & Kashmir, Himachal Pradesh, Uttarakhand, Tamil Nadu & Puducherry and Sub-Himalayan West Bengal & Sikkim.

#### Temperature

Maximum temperature was above normal over most parts of the country, except some parts of northern plains, eastern parts and some isolated places of peninsular India. It was above normal by 3 °C over extreme northern and extreme northwestern parts. Maximum temperature was below normal by more than 1-2 °C over parts of Gangetic West Bengal, Jharkhand, Bihar and east Uttar Pradesh. Minimum temperature was above normal over parts of the west central,



northwestern and extreme northeastern region, while it was below normal over parts of eastern region, northern plains and extreme south peninsula and Lakshadweep. Minimum temperature was above normal by 2 °C over parts of east Jammu & Kashmir and adjoining north Himachal Pradesh, parts of West Rajasthan, north Gujarat region & Saurashtra & Kutch.

### Low Pressure Systems

A low pressure area formed over the Bay of Bengal in the month of January. It formed over southeast Bay of Bengal and adjoining south Andaman Sea in the month of January on 6<sup>th</sup> and became less marked on 9<sup>th</sup> January.

### Significant Weather events

**Cold Wave** : Due to severe Cold wave, 136 persons reportedly died during the season. 135 persons reportedly died from Uttar Pradesh during the period 3<sup>rd</sup> to 13<sup>th</sup> January.

**Snowfall (Avalanche)** : Total 18 persons reportedly died from Baramulla & Kupwara districts of Jammu & Kashmir during different incidences on 5<sup>th</sup> January and 2<sup>nd</sup>, 16<sup>th</sup>, 24<sup>th</sup> February.

**Hailstorm** : Total 4 persons reportedly died, many birds perished from Bhandara, Jalna, Washim districts of Maharashtra during 11<sup>th</sup> to 13<sup>th</sup> February.

**Lightning** : 6 persons reportedly died from Uttar Pradesh on 12 February.

Srilanka-south Tamilnadu coasts on 10<sup>th</sup> March and it became well marked low pressure area on 12<sup>th</sup> and became depression on 13<sup>th</sup> March.

### Significant Weather events

**Lightning** : Total 3 persons reportedly claimed died during the month. One person from Coimbatore, Tamil Nadu (16<sup>th</sup> March) and 2 persons from Shimoga & Uttar Kannada districts of Karnataka (18<sup>th</sup> March and 20<sup>th</sup> March) respectively.

**Heavy Rain** : Rabi crops, some houses damaged due to heavy rain in the second fortnight of the month from Chennai, Thoothukudi districts of Tamil Nadu (during 14<sup>th</sup> to 16<sup>th</sup> March), Nellore, Andhra Pradesh (19<sup>th</sup> March) and parts of Telangana (19<sup>th</sup> March).

## DEPRESSION OVER SOUTHEAST ARABIAN SEA & ADJOINING EQUATORIAL INDIAN OCEAN (13-15 MARCH, 2018)

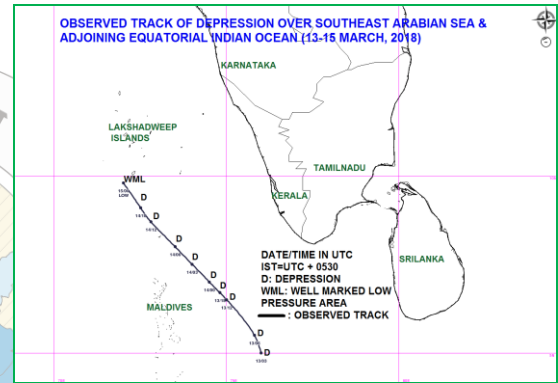


Fig. 2. Observed track of depression over southeast Arabian Sea and adjoining equatorial Indian Ocean

## MAIN FEATURES OF THE MONTH MARCH-2018

### Highlights

The mean temperature for the month for the country this year (26.26 °C) was above normal by about 0.89 °C.

**Heat wave conditions** : Heat wave to severe heat wave conditions prevailed over larger parts of northern India during the last week of the month. Severe heat wave/heat wave conditions over the country for the period 25-31 March, 2018.

**Rainfall Features** : Rainfall activity over the country as a whole was below normal during the month. Meteorological subdivisions of south peninsula, Assam & Meghalaya, Sub-Himalayan West Bengal & Sikkim and the islands received large excess/excess/normal rainfall, while subdivisions of northern, central and western region of the country received deficient/scanty/no rainfall. Out of 36 meteorological subdivisions, 6 received large excess rainfall, 2 received excess rainfall, 4 received normal rainfall, 3 received deficient rainfall and 19 received large deficient rainfall.

**Low Pressure Systems** : One Depression formed during the month over the Arabian Sea. The Depression was first seen as a low pressure area over south west Bay of Bengal off

A low pressure area formed over equatorial Indian Ocean and adjoining southwest Bay of Bengal (BoB) and south Sri Lanka coast on 10<sup>th</sup> March. Moving west-northwestwards it lay as a Well Marked Low Pressure Area over Equatorial Indian Ocean and adjoining south Sri Lanka & Maldives-Comorin area on 12<sup>th</sup>. It concentrated into a depression in the morning (0830 hrs IST) of 13<sup>th</sup> March, 2018 over southeast Arabian Sea and adjoining equatorial Indian Ocean. Moving north-northwestwards, it lay as a depression over southeast AS in the morning (0830 hrs IST) of 14<sup>th</sup>. Moving northwestwards, it weakened into well marked low pressure area over Lakshadweep and adjoining southeast AS in the early morning of 15<sup>th</sup> March (0530 hrs IST), a low pressure area over Lakshadweep Area and adjoining southeast AS on 16<sup>th</sup> and became less marked on 17<sup>th</sup> March. Observed track of depression over BoB is presented in Fig. 2.

IMD continuously monitored the system since its inception over southwest Bay of Bengal on 10<sup>th</sup> March. IMD issued regular bulletins to WMO/ESCAP Panel member countries including Maldives and Sri Lanka, National & State Disaster Management Agencies of Tamil Nadu, Kerala, Karnataka and Lakshadweep Islands, general public and media.

