



# मौसम विज्ञान विभाग समाचार IMD NEWS



INDIA METEOROLOGICAL DEPARTMENT  
(Ministry of Earth Sciences)

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### Important Events / Activities

#### Inter-School Speech and Slogan Making Competition on the Occasion of Earth Day - 2016



Slogan Making Competition

In order to create awareness amongst school children about caring the Mother Earth, an Inter-school Speech and Slogan Making competition on the theme "Caring Mother Earth" was organised on Earth Day, i.e., 22<sup>nd</sup> April, 2016 as part of celebration of "Swachhta Pakhwada".

In all 78 students from 20 schools of Delhi and NCR registered their names for the competition. Participation certificates, gifts and refreshments were given to all the contestants. Dr. K. J. Ramesh, Advisor MoES was the Chief Guest and the panel of judges comprised of Dr. D. Pradhan, Scientist 'G', Gr. Captain Ravinder Vishen, Scientist 'E' and Dr. Kamaljit Ray, Scientist 'F'. The entire programme was organised under the chairmanship of Dr. S.I. Laskar, Scientist 'D' and took place at the "Vrishti Hall" Mausam Bhawan. The prize distribution ceremony was held on 26<sup>th</sup> April, 2016. Dr. L. S. Rathore, DGM gave away the prizes. He congratulated the winners and lauded the efforts of all the participants.



Prize Distribution Ceremony

#### Felicitation to DGM for efficient Meteorological Services at IGI Airport

Delhi's Indira Gandhi International Airport (IGIA) has bagged the first position in the world for the second consecutive year in 25-40 Million Passengers Per Annum category. The rankings were announced by the Airports Council International for the "2015 Airport Service Quality Awards" in February, 2016. It is also named as the second best airport for Asia Pacific region in all categories and services. As a follow up action to share this world recognition and credibility with all major stake holders including staffs and officers of local Met Watch Offices who have been working tirelessly with best of their capacity, a grand felicitation program was organized on 7<sup>th</sup> June, 2016 at New Delhi by Delhi International Airport Limited - the joint venture consortium of GMR Group, Airport Authority of India and DGM Frankfurt Airport. Respected Union Ministers Shri Arun Jaitley, Shri M. Venkaiah Naidu, Dr. Mahesh Sharma, Shri Ashok Gajapathi Raju, Shri Kiren Rijiju and GMR founder chairman Shri Grandhi Malikarjuna Rao graced the occasion with their presence. Dr. L. S. Rathore, DGM, Dr. R. K. Jenamani, Scientist 'F' and Mr. Narendra Nigam, Scientist 'E' represented IMD in this felicitation function. On behalf of IMD, Dr. L. S. Rathore, DGM was felicitated by Shri Arun Jaitley, Union Minister of Finance and Corporate Affairs for providing needful Meteorological Infrastructure and for efficient Aviation Meteorological Services at IGI airport.



Shri Arun Jaitley felicitating the DGM

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The **Pre-Cyclone Exercise** for ensuing cyclone season was conducted at New Delhi during 25-26 April, 2016. Various stakeholders and users including Indian Air Force, Navy, National Disaster Management Authority, National Disaster Response Force, National Centre for Medium Range Weather Forecasting and experts from IMD participated in the exercise. As a part of the exercise the state preparedness was reviewed and awareness lectures were delivered. Telephone numbers, mobile numbers, Fax, Email-ids were updated for warning dissemination.

The **43<sup>rd</sup> Session of World Meteorological Organisation/ Economic and Social Commission for Asia and the Pacific (WMO/ESCAP) Panel on Tropical Cyclones** was held at New Delhi during 2-6 May, 2016. A total of 65 delegates from India and abroad participated in the session. The session was inaugurated by Dr. M. Rajeevan, Secretary, Ministry of Earth Sciences (MoES). Dr. L.S. Rathore, Director General of Meteorology, chaired the session. During the inaugural ceremony following books and dedicated webpage on regional guidance were released:

1. Tropical Cyclone Activity over the North Indian Ocean.
2. Report on Cyclonic Disturbances over the North Indian Ocean during 2015.
3. Dedicated webpage on Severe Weather Forecast Demonstration Project over Bay of Bengal (SWFDP-BoB).

During the 43<sup>rd</sup> session Yemen was accepted as ninth member of WMO/ESCAP Panel. The session reviewed and adopted various actions of Panel including Tropical Cyclone Operational Plan (TCP) for 2016-19, Co-ordinated Technical Plan for 2016-19 and Annual Operational Plan for 2016. The session also reviewed various activities of member countries under various themes including meteorology, hydrology, disaster risk reduction, publication, research and training activities in the region.



Participants at 43<sup>rd</sup> Session of WMO/ESCAP Panel

O/o ADGM(R), Pune issued following documents during April – June, 2016:

1. The first stage forecast for the year 2016 South-west monsoon rainfall for the country as a whole was issued on 12<sup>th</sup> April, 2016.
2. The verification of winter forecast (January to March 2016) over North India was prepared, the actual rainfall being one category below the forecasted rainfall.

3. ENSO bulletin and Seasonal Climate Outlook for South Asia for the months of April to June were issued.

4. The forecast for the date of monsoon onset over Kerala was issued on 15<sup>th</sup> May, 2016.

5. Long range forecast update for 2016 southwest monsoon rainfall was issued on 2<sup>nd</sup> June, 2016.

**April 2016 issue of the quarterly research journal Mausam (vol. 67, No. 2)** comprising of 15 full length research papers, 2 shorter contributions, 2 letters to the editor and a report on “Hot weather season” was brought out.

**Shri A. K. Sharma**, Scientist ‘G’, participated in the Hindi parliamentary committee inspection of MO Santacruz by Committee of Parliament on Official Language on 19<sup>th</sup> May, 2016.

The **Second Sub-Committee of Parliamentary Committee on Official Language** visited Flood Meteorological Office, Jalpaiguri during 20- 21 June, 2016 for inspection and to assess the status of implementation of official language policy. Dr. G. C. Debnath, Scientist ‘F’ alongwith Shri N. Chaturvedi, Jr. Translator, represented RMC Kolkata in the meeting. Shri H.L. Meena, Dy. Secretary, MoES, Dr. D. Pradhan, Scientist ‘G’ and Ms. Reva Sharma, Sr. Hindi Officer were also present during the event.



Visit of second Sub-Committee of Parliamentary Committee on official Language, at FMO Jalpaiguri during 20-21 June 2016

## Important Policy Decisions Taken

A meeting on “**Proposed IMD Integrated Operational Forecast System**” was held at HQ on 9<sup>th</sup> June, 2016 which was attended by Scientists from HQ New Delhi and other officers of IMD.

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

**Development of Web Enabled GIS based Agromet tools** is initiated for Maize crop of Telangana region. Under this initiation following tools would be developed:

- Growing Degree Day maps for inferring crop stages using extended range weather forecast.
- Soil moisture index map using 10 days forecasted values for crop stress identification and irrigation scheduling.

## Up-gradation of Pilot Balloon (PB) stations

Upper Air Laboratory, O/o DDGM(UI), New Delhi upgraded the pilot balloon (PB) observatories at Gangtok, Pune and Ratnagiri into Radiosounding/Radiowind (RS/RW) observatories. GPS based radiosounding systems were installed at Gangtok during 2-6 May, 2016, at Pune during 16-18 June, 2016 and at Ratnagiri during 20-22 June, 2016. These PB stations were observing upper air profile of wind direction and wind speed employing optical theodolite manually. After upgradation, these stations are capable to get upper air profile of Temperature, Humidity, Pressure/geo-potential height, Wind direction and Wind speed. The systems installed are fully automatic and capable to provide profile up to 35 Km height, depending on meteorological balloon used.



Radiosounding System at (i) PBO Ratnagiri (ii) PBO Pune

## Residential complex at Meteorological Centre Dehradun

consisting of one Type-V, two Type IV, four Type III & four Type II quarters was inaugurated by Dr. L. S. Rathore, DGM on 26<sup>th</sup> June, 2016 in the presence of Shri Anand Sharma, Scientist 'F'; Shri Bikram Singh, Scientist 'E'; officers & staff of Meteorological Centre Dehradun and Central Public Works Division.



Dr. L. S. Rathore inaugurating the residential complex at MC Dehradun

**Design Storm Studies** for Radhanagari Hydroelectric Project, Maharashtra was completed and detailed Project Report of the following five projects has been prepared:

- Doimukh Hydroelectric Project, Arunachal Pradesh
- Sirkaribhyol Rupsiabagar Hydroelectric Project, Uttarakhand

- Gulf of Khambhat Development Project (Kalpasar Project), Gujarat
- Rukni Irrigation Project, Assam
- Sonai Irrigation Project, Assam

## Human Resource Development Activities

### Conferences

**Dr. Somenath Dutta**, Scientist 'F' participated in the Brain Storming session for preparation of MoES strategy documents on Atmospheric Science as a lead author of the MoES, theme being 'Human resource development' at Indian Institute of Tropical Meteorology on 1<sup>st</sup> April, 2016.

**Shri A. K. Sharma**, Scientist 'G', Smt. Suman Goyal, Scientist 'E' and Dr. A. K. Mitra, Scientist 'D' attended 10<sup>th</sup> SPIE Asia-Pacific Remote sensing (APRS) symposium during 04-07 April, 2016 at New Delhi. Dr. A. K. Mitra, Scientist 'D' presented two scientific papers during the conference.

A video conference with **Dr. Harsha Vardhan**, Hon'ble Minister of Science & Technology and Earth Sciences, focusing on Government's achievements during 2014-16 was organized on 24<sup>th</sup> May, 2016 at local Press Information Bureau offices. Shri S. M. Metri, Scientist 'D' represented MC Bengaluru, Shri Rahul M, Scientist 'B' represented MC Goa, Smt. S. Stella, Scientist 'D' represented RMC Chennai and Shri S. Sudevan, Scientist 'E' represented MC Thiruvananthapuram in the conference.

**Dr. K. K. Singh**, Scientist 'F', Mr. A. K. Baxla, Scientist 'E' and Ms. Priyanka Singh, Scientist 'B' attended a forum on 'Climate Resilient Development in Himalayan and Downstream Regions' during 16-17 June, 2016 at India Habitat Centre, New Delhi organized by Institute of Economic Growth, Delhi International Centre for Integrated Mountain Development, Kathmandu, and Ministry of Agriculture and Farmers Welfare.

**Shri K. R. Das**, AM - I attended a video conference programme of the Hon'ble Prime Minister with all state authorities regarding Flood Preparedness and other issues at Secretariat, Goa on 29<sup>th</sup> June, 2016.

**Shri B. Mukhopadhyay**, Scientist 'G' attended the "Brain Storming Session on Lightning Network" held at Indian Institute of Tropical Meteorology, Pune on 30<sup>th</sup> June, 2016.

### Trainings

**Dr. G. C. Debnath**, Scientist 'F' inaugurated the Intermediate Met. Training Course Batch No. 240 at RMC Kolkata Training Centre at Salt Lake, on 11<sup>th</sup> April, 2016. Dr. Sanjib Bandyopadhyay, Scientist 'E', Course Director, and Dr. Sanjib Sen, Scientist 'E' were also present.



**Inauguration of Intermediate Met. Training Batch No.240 at RMC Kolkata Training Centre on 11<sup>th</sup> April, 2016**



**Agricultural Engineering students at IMD Pune**

**Shri Vivek Sinha**, Scientist 'E' imparted Aviation Competency Training at RMC Guwahati on 6<sup>th</sup> May, 2016.

A short duration course on "Agrometeorology" for foreign trainees was conducted during 9 - 20 May, 2016 in Agrimet Division, Pune.

A training programme was organized by Hydromet Division at New Delhi during 26 - 27 May, 2016 on revised **mkRAIN software** for processing of rainfall data to prepare rainfall statistics for the districts, met-subdivisions and states of India.



**Dr. L.S. Rathore with trainees during mkRAIN software training programme**

**Dr. A.K. Das**, Scientist 'D' attended the four weeks hands-on Hydrometeorological & Hydrologic services training at Bureau of Meteorology, Australia during 30<sup>th</sup> May - 25<sup>th</sup> June, 2016.

**Agromet Service Cell** conducted one month training of Met- II trainees of Agromet discipline on Crop Yield Forecasting Modelling, Agricultural statistics, Drought Monitoring, challenges of medium range weather forecast, climate change and agriculture with effect from 6<sup>th</sup> June, 2016.

O/o ADGM(R), Pune conducted "Summer Placement Course" for Agricultural Engineering students during 6<sup>th</sup> June to 1<sup>st</sup> July, 2016. Eighteen students from different agricultural engineering colleges underwent the training.



Forty Nine students of B. Tech. / M. Tech. / M. Sc. of various institutes joined Delhi HQ for six weeks **Summer Internship** and eleven student joined RMC Guwahati for four weeks Summer Internship during June, 2016.

**Dr. P. Khare**, Scientist 'E' attended "Aviation Competency Assessment" training conducted by Central Aviation Meteorological Division, New Delhi during 20 - 22 June, 2016.

Training of Agro-meteorological field unit officers on "**Modelling cum climate risk management**" was held at Jorhat from 20 - 24 June, 2016. Mr. A. K. Baxla and Dr. Kripan Ghosh were the resource persons for the same.

## Higher Qualification Acquired

**Smt. V. K. Mini**, Scientist 'D' has been awarded the Ph.D. degree in Physics by the University of Kerala on the topic 'Study of Wind Fluctuations in the Troposphere'.

## Workshops

**Dr. Pulak Guhathakurta**, Scientist 'F' participated in the Brain Storming Workshop of MoES at National Centre for Antarctic and Ocean Research, Goa during 13 - 14 April, 2016 regarding "Polar Sciences and Global Change in Water Cycle".

**Dr. K. K. Singh**, Scientist 'F', Mr. A. K. Baxla, Scientist 'E' and Ms. Priyanka Singh, Scientist 'B' attended a workshop on "Climate Change and Agriculture" at National Agricultural Science Complex, New Delhi during 28-29 April, 2016 organised by Department of Science and Technology's Knowledge Network and Indian Council of Agricultural Research.

**Dr. G. N. Raha**, Scientist 'D' attended a consultation cum workshop on "Building Climate Resilience and Mainstreaming Disaster Risk Reduction Developmental Planning" organized by Sikkim Disaster Management Authority on 6<sup>th</sup> May, 2016.

**Dr. D. M. Rase**, AM-I participated in one day Regional symposium on Excellence in Training organized by Department of Personnel and Training & Yashwantrao Chavan Academy of Development Administration (YASHDA), Pune on 16<sup>th</sup> May, 2016.



**Dr. S. D. Attri**, Scientist 'F' chaired the Session on "Computation of Air Pollution in North India" at a workshop organized by IIT Delhi from 20-21 May, 2016 at Chandigarh.

**Dr. V. K. Soni**, Scientist 'E' attended a workshop on "Evaluation of Research for Planning the 36<sup>th</sup> Indian Scientific Expedition to Antarctica" held during 9-10 June, 2016 at National Centre for Antarctic and Ocean Research, Goa and presented IMD's plan on 36<sup>th</sup> Indian Scientific Expedition to Antarctica for Maitri and Bharati Stations, Antarctica.

## Lectures

**Dr. S. C. Sahu**, Scientist 'F' delivered a lecture on "Flood early warning system, Warning receive & warning dissemination" at Gopabandhu Academy of Administration, Bhubaneswar on 18<sup>th</sup> April, 2016.

**Dr. G. N. Raha**, Scientist 'D' delivered a lecture on "Integrated Agro-meteorological services in India" in a workshop conducted by SAMETI Sikkim in collaboration with MANAGE, Hyderabad at SAMETI building, Tadong on 13<sup>th</sup> May, 2016.

**Dr. Geeta Agnihotri**, Scientist 'E' delivered a lecture on "Weather system forecasting during Floods" for 73<sup>rd</sup> All India Watermanship Course at Home Guard and Defence Academy on 20<sup>th</sup> May, 2016.

**Ms. B. Amudha**, Scientist 'D', Dr. B. Geetha, AM-II, Dr. K. V. Balasubramanian, AM-I and Smt. Sumathi, AM-II delivered lectures on "Disaster management and Mitigation measures" on 2<sup>nd</sup>, 16<sup>th</sup>, 23<sup>rd</sup> and 28<sup>th</sup> June, 2016 respectively at RMC Chennai to 146 trainees comprising district administrators and disaster managers of Tamil Nadu.

**Dr. M. Mohapatra**, Scientist 'G' (Services) participated in a seminar on the theme "Global Initiatives and Indian Environment" organized by Delhi School of Economics, University of Delhi on the eve of World Environment Day and presented a talk on "Role of Early Warning System for disaster risk reduction in India" on 4<sup>th</sup> June, 2016.

## Awards & Recognitions

**Dr. K. K. Singh**, Scientist 'F' is recognized as the Recruitment Analysis Council member of:

- (i) Sam Higginbottom Institute of Agriculture, Technology and Sciences. Allahabad.
- (ii) Central Research Institute for Dryland Agriculture, Hyderabad.

**Dr. M. Mohapatra**, Scientist 'G' (Services) has been nominated as the Editor of the International Journal "Tropical Cyclone Research and Review (TCRR)".

**Ms. B. Amudha**, Scientist 'D' has bagged the "World Meteorological Organisation - Professor Vilho Vaisala Award 2016" for the development and implementation of the instruments and methods of observation in developing countries for her work entitled "Survey on alternatives for dangerous and obsolete instruments: evaluation of the questionnaire and recommendations for alternatives" on the technical document WMO – IOM - 117. The award is to be shared with the co-author, Ms. Rabia Merrouchi from Morocco.

## Career Advancement

**Dr. K. Nanda Gopal**, S. A. has been granted permission to register as Guide (Research Supervisor) in Adikavi Nannayya University, Rajahmundry, Andhra Pradesh.

## Infrastructure Development & Installations

**Shri A. K. Sharma**, Scientist 'G', Dr. A. K. Mitra, Scientist 'D' and Ms. Shailesh Parihar, JRF were on tour to Bhuj, Gujarat for establishment of a calibration and validation site for INSAT- 3D Satellite data at Bhuj during 18-24 April, 2016.

**Shri S. Sudevan**, Scientist 'E' was on tour to KVK Kollam on 21<sup>st</sup> April, 2016 for ascertaining the feasibility of starting District Agromet Unit for implementing block level forecast.

**Dr. S. I. Laskar**, Scientist 'D' and Shri Satendra Kumar, AM-II were on tour to MC Chandigarh during 20-25 May 2016 and to RMC Nagpur during 22-27 June, 2016 for installation of the Nowcast software, Warning Decision Support System- Integrated Information (WDSS-II).

Two new **Flood Meteorological Offices** started at RMC Chennai and MC Bengaluru with effect from 1<sup>st</sup> June, 2016 to monitor flood activities in the major river basins of Tamil Nadu, Karnataka and Kerala. FMO bulletins are issued twice daily on operational basis.

Surveillance audit in respect of **ISO Certification of Meteorological Watch Office Kolkata** was conducted by MS Certification Services Pvt. Ltd. on 13<sup>th</sup> June, 2016.

**Dr. Geeta Agnihotri**, Scientist 'E' visited Krishi Vigyan Kendra, Bengaluru in connection with establishment of District Agromet Unit on 20<sup>th</sup> June, 2016.

**Shri S. N. R. Gopal**, AM-II visited Krishi Vigyan Kendra, Mandya district of Karnataka in connection with establishment of District Agromet Field Unit under Gramin Krishi Mausam Sewa project on 29<sup>th</sup> June, 2016.

Installation of radome and antenna for **Doppler Weather Radar at MC Goa** has been completed. Installation of Transmitter, receiver and other indoor units of DWR are in progress.





Doppler Weather Radar Goa

## ISO Certification:

MC Ahmedabad, RMC Guwahati office and MC Agartala have been awarded ISO Certification.

## Inter-Agency Meetings

**Dr. S. O. Shaw**, Scientist 'E' attended a meeting on preparedness of flood at the office of Chief Secretary of Assam, on 12<sup>th</sup> April, 2016.

**Dr. G. C. Debnath**, Scientist 'F', **Shri S. Sengupta**, Scientist 'E' and sixteen members of Damodar Valley Corporation, Central Water Commission and Bharat Sanchar Nigam Limited participated in the 63<sup>rd</sup> Annual Meeting of the Damodar Valley Corporation Advisory Committee (Met) held at DVC Tower, Kolkata on 13<sup>th</sup> April, 2016 for reviewing the activities of DVC Met. Unit during 2015-2016 and to chalk out action plan for 2016-2017

**Dr. S. C. Sahu**, Scientist 'F' attended meeting with Chief Minister of Odisha (i) regarding heat wave and drinking water issues at Odisha Secretariat on 19<sup>th</sup> April, 2016 and (ii) for the preparedness of Cyclone "ROANU" at Bhubaneswar on 19<sup>th</sup> May, 2016.

**Shri N. T. Nyas**, Scientist 'C' attended State Level Technical Committee meetings on Crop Insurance convened by Director of Agriculture, Thiruvananthapuram on 21<sup>st</sup> April, 28<sup>th</sup> April, 18<sup>th</sup> May and 25<sup>th</sup> June, 2016.

**Dr. K. K. Singh**, Scientist 'F', **Mr. A. K. Baxla**, Scientist 'E' and **Ms. Priyanka Singh**, Scientist 'B' attended 4<sup>th</sup> National Steering Committee Meeting of the Climate Change Knowledge Network in Indian Agriculture (CCKN-IA) Project on 25<sup>th</sup> April, 2016 at New Delhi organized by a German institution, GIZ and Ministry of Agriculture and Farmers Welfare.

**Ms. Mamta Yadav**, Scientist 'B' attended a meeting of the committee constituted for collection of bathymetric and other important data on the important rivers in Odisha with the objective of flood modeling and development of early warning system at Bhubaneswar on 26<sup>th</sup> April, 2016.

**Shri R. Balasubramanian**, Scientist 'D' attended a meeting on "Overview of state level kharif planning-2016 for Maharashtra", under the Chairmanship of Hon'ble Chief Minister of Maharashtra at Mumbai on 28<sup>th</sup> April, 2016.

**Shri K. Santosh**, Scientist 'E' attended the meeting of Disaster Management Department, "Monsoon Preparedness 2016" chaired by Chief Secretary, Govt. of Kerala on 3<sup>rd</sup> May, 2016.

**Shri B. K. Mandal**, Scientist 'E' and **Shri Radhey Shivam Sharma**, Scientist 'B' had a meeting with the Director, Land Survey, regarding weather forecasting techniques & Climate Change on 13<sup>th</sup> May, 2016.

**Dr. G. C. Debnath**, Scientist 'F' attended the Pre-monsoon Preparedness Meeting 2016 on 17<sup>th</sup> May, 2016 chaired by Chief Secretary, Govt. of West Bengal.

**Dr. V. K. Mini**, Scientist 'D' attended a Monsoon preparedness meeting convened by the Chief Minister at the secretariat, Goa Govt. on 19<sup>th</sup> May, 2016 and explained IMD's long range forecast about monsoon performance, onset date for SW Monsoon 2016 and the details of systems in place for issuing weather forecast and warnings.

**Forecasters Meet - 2016** was conducted by Weather Forecast Development Division, ADGM(R) at Pune during 23 - 24 May, 2016 to discuss on the scope for expansion of Public Weather Services'. Many senior officers of IMD participated in the Meet.

**Shri R. Balasubramanian**, Scientist 'D' attended a meeting on "Interim Findings from Field Interactions on Climate Services in Maharashtra" organized by The Energy and Research Institute (TERI) at Pune on 24<sup>th</sup> May, 2016.

**Dr. Sanjib Bandyopadhyay**, Scientist 'E' attended a meeting on the status of weather data for crop insurance and other purposes with Additional Chief Secretary, Govt. of West Bengal on 24<sup>th</sup> May, 2016.

**Dr. M. Mohapatra**, Scientist 'G' (Services) participated in a Twitter conference programme as an expert on cyclones and floods organised by National Disaster Management Authority at New Delhi to respond to the queries raised by public through twitter online on 27<sup>th</sup> May, 2016.

**Dr. Somenath Dutta**, Scientist 'F' attended a meeting of the committee for review of the CAT & other training programs on 27<sup>th</sup> May, 2016 at Indian National Centre for Ocean Information Services, Hyderabad.

**Dr. Shirish Khedikar**, Scientist 'B' participated in the 44<sup>th</sup> 'Joint Agresco Meet 2016' and gave presentation on "Activities and Services to farmers of Maharashtra by IMD" held at Dr. Punjabrao Deshmukh Krishi Vidyapeeth, Akola during 28 - 30 May, 2016.

**Dr. K. K. Singh**, Scientist 'F' attended a brainstorming meeting on "Future Thrust and Strategies for Agrometeorological Research, Education and Extension in India" during 30-31 May, 2106 organized by Central Research Institute for Dryland Agriculture, Hyderabad.

**Dr. S. C. Sahu**, Scientist 'F' attended a meeting of the State Executive Committee constituted under the Disaster Management Act 2015 at Secretariat, Bhubaneswar on 9<sup>th</sup> June, 2016.

**Dr. N. Chattopadhyay**, Scientist 'F' and Dr. Geeta Agnihotri, Scientist 'E' participated in the "Regional Review Meeting of Gramin Krishi Mausam Sewa (Karnataka)" & "Forecasting Agricultural Output Using Space, Agrometeorology and Land Based Observations (South zone)" held during 9 - 10 June, 2016 at University of Agricultural Sciences, Gandhi Krishi Vigyan Kendra, Bangalore.

**Dr. V. K. Mini**, Scientist 'D' attended the State Executive Committee meeting of State Disaster Management Authority convened by the Chief Minister at the secretariat, Goa Govt. on 14<sup>th</sup> June, 2016 to discuss the setting up of State Disaster Response Force.

**Dr. M. Mohapatra**, Scientist 'G' (Services) participated in the meeting to discuss the draft proposal for the renewed and expanded SAARC Disaster Management Centre (SDMC) at National Disaster Management Authority on 15<sup>th</sup> June, 2016.

**Dr. P. K. Nandankar**, Scientist 'F' attended a meeting on "Hazard Risk Vulnerability Analysis in Pune" held at Collector's Office, Pune on 16<sup>th</sup> June, 2016.

**Dr. Geeta Agnihotri**, Scientist 'E' attended a meeting in the Planning Department, Bengaluru regarding collection of rainfall data from Raingauge centres by Directorate of Economic and Statistics on 18<sup>th</sup> June, 2016.

**Shri S. M. Metri**, Scientist 'D' attended a meeting of the 'State Level Committee to Monitor Season, Crop Condition and Drought Relief Measures' in the Chambers of additional Chief Secretary and Development Commissioner, Vidhana Soudha on 20<sup>th</sup> June, 2016.

**Shri A. K. Sen**, Scientist 'E' attended a meeting of Crisis Management Group (CMG) of Bihar Govt., chaired by Hon'ble Chief Minister of Bihar on 22<sup>nd</sup> June, 2016 and made a brief presentation on current weather situation and prospects of South West Monsoon for current year in Bihar.

**Shri S. Bagulayan Thampi**, Scientist 'F' participated in the Selection Committee meeting to review the performance of the Assistant Directors (Technical) on contract, conducted by National Institute of Wind Energy, Chennai on 23<sup>rd</sup> June, 2016.

**Shri A. K. Sharma**, Scientist 'G' and Shri R. B. Verma, Scientist 'D' attended the meeting to review the progress of the project "Installation of DTH based Digital Cyclone Warning Dissemination System" on 29<sup>th</sup> June, 2016 at ISRO Bengaluru.

## Research & Publications

A research paper entitled "Evaluating the potential of rainfall product from Indian geostationary satellite for operational agromet advisory services in India" by N. Chattopadhyay, S.S. Vyas, B.K. Bhattacharya and S. Chandras published in the Journal of Agrometeorology, Vol. 1, June 2016 p29-33.

A research paper entitled, 'Inter-annual variability of tropical cyclone energy matrix over the north Indian Ocean' by M. Mohapatra and V. Vijayakumar published in Climate Dynamics.

An article in Tamil on "El-Nino – some information" by K. V. Balasubramanian published in the magazine 'Arvial Poonga'.

## Media Interaction

**Shri S. B. Thampi**, Scientist 'F' participated in a chat show on "Summer 2016" at Doordarshan on 8<sup>th</sup> April, 2016.

**Dr. G. C. Debnath**, Scientist 'F' participated in a programme on current heat wave situation over West Bengal at Akashvani Bhawan, All India Radio on 16<sup>th</sup> April, 2016.

**Dr. S. C. Sahu**, Scientist 'F' participated in a talk on "Grisma Raudra Prabaha and Panipag Bibhag" at Doordarshan on 20<sup>th</sup> April, 2016.

**Dr. S. Sen**, Scientist 'E' participated in a live discussion on a television channel on 8<sup>th</sup> May, 2016 regarding the Transit of Mercury over the disc of the Sun.

**Cyclone warnings** were disseminated for the first time through social networking site like Face book and twitter during cyclone Roanu (17-22 May, 2016).

**Shri S. S. Mairal**, AM-II participated in a discussion on monsoon and kharif crops in the programme "Amchi Mati Amchi Manasa" conducted by Doordarshan, DD Sahyadri on 20<sup>th</sup> June, 2016. He also delivered a talk on "Long Range Forecast and Kharif Planning for Pune region" on All India Radio on the same day.

## Visitors

**Dr. Harsha Vardhan**, Hon'ble Minister of Science & Technology and Earth Sciences, visited IMD Pune on 1<sup>st</sup> April, 2016. Dr. N. Chattopadhyay, Scientist 'F' gave a presentation on "Agromet Advisory Services to Farmers" on the occasion.



**Dr. Harsha Vardhan addressing officials at IMD Pune**



**Ms. Anuradha Mitra**, Joint Secretary and Finance Advisor, Ministry of Earth Sciences visited RMC Kolkata, Alipore Office on 13<sup>th</sup> April, 2016 and had a meeting with the DDGM and other senior officers regarding financial aspects.



**Ms. Anuradha Mitra, Joint Secretary and Finance Advisor, MoES visited RMC Kolkata, Alipore Office on 13 April, 2016**



**Dr. S.O. Shaw, Scientist 'E' and Dr. L.S. Rathore, DGM at the dedication ceremony of DWR Cherapunjee to the nation**

**Shri A. S. Khati**, Joint Secretary, MoES visited MC Thiruvananthapuram on 27<sup>th</sup> April, 2016 for inspection and to oversee activities in connection with observance of "Swachhta Pakhwada". He also held discussion with officers and staff on various office matters.

**Dr. Guillermo 'Gui' Baigorria** from School of Natural Resources, Department of Agronomy and Horticulture, University of Nebraska-Lincoln visited Agromet Service cell (ASC), New Delhi on 25<sup>th</sup> May, 2016. An Interactive session on Crop climate advice management tool, "Crop Climate.Org" was organized between Dr. Baigorria, ASC officials and research fellows.



**An Interactive session between Dr. Baigorria, Agromet Service Cell officials and research fellows**

**Dr. L. S. Rathore**, DGM and **Dr. S. O. Neil Shaw**, Scientist 'E' visited Shillong to attend dedication ceremony of Doppler Weather Radar Cherapunjee to the nation by Hon'ble Prime Minister of India on 27<sup>th</sup> May, 2016. The next day, they visited DWR Cherapunjee where they had a press interaction and addressed the officers and staff of RMC Guwahati.

**Shri Prashant Jagtap**, Mayor, Pune visited IMD Pune on 14<sup>th</sup> June, 2016 and held discussion with senior officers.

**Dr. M. Rajeevan**, Secretary, MoES visited RMC Chennai on 24<sup>th</sup> June, 2016 and had interaction with officers in-charge of various units.



**Dr. S. Balachandran felicitating Dr. M. Rajeevan**

645 students and staff members from various universities / colleges / schools visited RMC Chennai as a part of their academic schedule during April-June, 2016. A brief presentation about the functions / various activities of IMD was given.

413 students from various local schools and 25 students from Delhi Paramedical and Management Institute, New Delhi visited HQ during April-June, 2016.

80 students of College of Veterinary Science, Assam visited RMC Guwahati on 5<sup>th</sup> May, 2016.



## National / International Collaboration

Under 'Gramin Krishi Mausam Sewa', it is proposed to establish 240 District Agromet Units (DAMUs) in the Phase-I and all districts in Phase-II. IMD has started establishing District Agromet Units (DAMUs) at Krishi Vigyan Kendras (KVKs) under Indian Council of Agriculture Research (ICAR) network. To assess the existing infrastructure, manpower etc. of KVKs for setting up DAMUs under GKMS Scheme, visit to 71 KVKs have been made during April to June.

**Dr. A. K. Srivastava**, Scientist 'F' attended the Second meeting of the Task Team on Operational and Resource Plan for the Global Framework for Climate Services in Geneva, Switzerland from 18-19 April, 2016.

**Dr. D. S. Pai**, Scientist 'F', Shri O. P. Sreejith, Scientist 'D' and Shri Madhukar R. Badwaik, AM-II attended Eighth Session of the Asian Climate Outlook Forum (SASCOF-8) 2016 in Colombo, Sri Lanka from 19-26 April, 2016.

**Severe Weather Forecast Demonstration Project (SWFDP):** SWFDP, an ambitious project taken up with the joint initiative of IMD and World Meteorological Organisation is a 3-tier

cascading process involving various Numerical Weather Prediction (NWP) centres at global levels, RSMC New Delhi at regional levels and the National Meteorological centres of the member countries. The project stresses upon the Public Weather Services and liaison with Disaster Managers, Media and others for effective management of severe weather over the region. Daily regional guidance is being provided to member countries on dedicated webpage since 2<sup>nd</sup> May, 2016.

**Shri R. Balasubramanian**, Scientist 'D' visited National Bureau of Soil Survey and Land Use Planning (NBSSLUP) Nagpur for interaction and discussion regarding collaboration between NBSSLUP and IMD on 4th May, 2016.

**Dr. M. Mohapatra**, Scientist 'G' (Services) participated in 72<sup>nd</sup> session of UN-ESCAP as a part of Indian delegation led by Ministry of Commerce during 17-19 May, 2016 at Bangkok. Dr. R. Chidambaram, Principal Scientific Adviser to the Government of India and Chairman Scientific Advisory Committee to the Cabinet was the leader of the team.

**Dr. S. D. Attri**, Scientist 'F' attended the 11<sup>th</sup> Session of the Management Group of the Commission for Atmospheric Science of WMO at Geneva, Switzerland during 1-3 June, 2016.



**Shri A. K. Sharma**, Scientist 'G' participated in the 44<sup>th</sup> session of coordination group for Meteorology Satellite (CGMS-44) working group meeting during 4 – 11 June, 2016 at Biot, France.



**Twentieth Meeting of the Meteorology Sub-group (MET SG/20) of the Asia/Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) ICAO Regional Office, Bangkok, Thailand, 06-09 June 2016**

**Dr. R. Suresh**, Scientist 'F' participated in the 20<sup>th</sup> meeting of Meteorology sub-group (MET/SG20) of the Asia Pacific Air Navigation Planning and Implementation Regional Group (APANPIRG) at International Civil Aviation Organization Regional Office, Bangkok during 6-9 June, 2016.





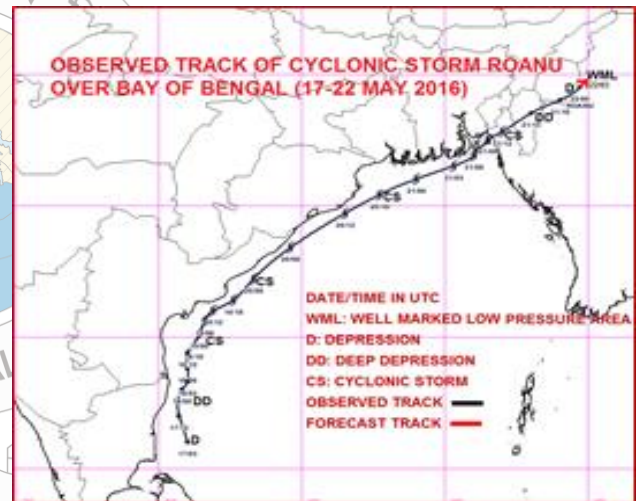
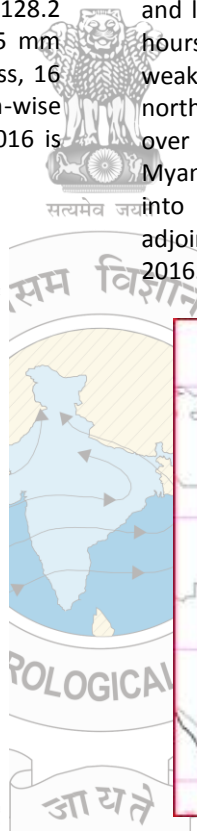
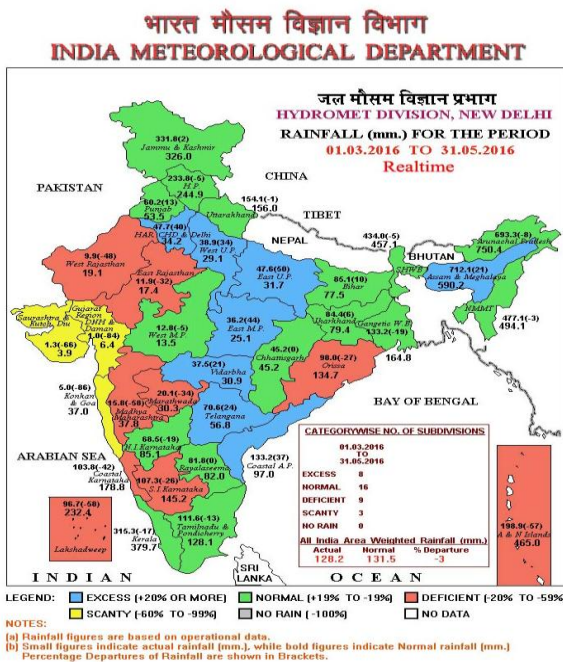
**Dr. M. Mohapatra**, Scientist 'G' (Services) participated in a meeting to discuss progress in the Indo-Russia cooperation on disaster management at Ministry of Home Affairs on 9<sup>th</sup> June, 2016.

**Dr. L. S. Rathore**, DGM attended the 68<sup>th</sup> Session of WMO Executive Council in Geneva, Switzerland during 15-22 June, 2016.

## Weather Summary

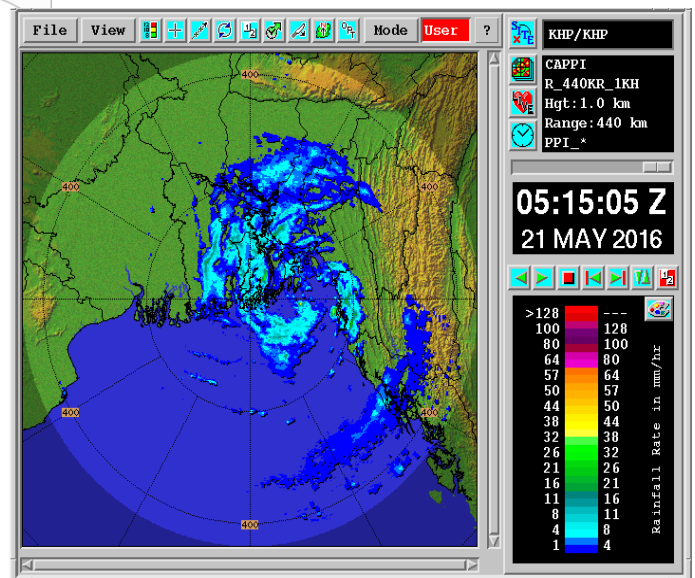
**Real time rainfall statistics for the pre-monsoon season - 2016** was prepared. The rainfall for the country as a whole for the pre-monsoon season - 2016 has been recorded as 128.2 mm against the normal rainfall for the season as 131.5 mm (departure -3%). In all, 8 met subdivision recorded Excess, 16 Normal, 9 Deficient and 3 scanty rainfalls. The subdivision-wise real time rainfall map for the Pre-Monsoon season - 2016 is given below:

adjoining southwest BoB near latitude 13.3°N and longitude 81.0°E at 0830 hours IST of 18<sup>th</sup>. The favourable environmental conditions continued and the system moved north-northeastwards skirting Tamil Nadu and Andhra Pradesh coast. It intensified into a **cyclonic storm (CS)** over westcentral BoB and lay centered near latitude 15.1°N and longitude 81.4°E with maximum sustained winds of 35 knots around the system centre in the early hours of 19<sup>th</sup>. The system continued to skirt along the east coast of India while moving northeastwards and intensified slightly with maximum sustained wind speed reaching 40 knots at 1130 hours IST of 19<sup>th</sup> and to 45 knots at 2330 hours IST 20<sup>th</sup> May. The system maintained its intensity of 45 knots and crossed Bangladesh coast near latitude 22.6°N and longitude 91.6°E, to the north of Chittagong around 1530 hours IST of 21<sup>st</sup> May as a CS. After landfall, the system started weakening due to land interactions. Continuing its east-northeastward journey, the **CS** gradually weakened into a **DD** over Mizoram at 2330 hours IST of 21<sup>st</sup>, into a depression over Myanmar and adjoining Manipur at 0530 hours IST of 22<sup>nd</sup> and into a well-marked low pressure area over Myanmar and adjoining Nagaland & Manipur at 0830 hours IST of 22<sup>nd</sup> May, 2016.



### Cyclonic Storm, 'ROANU' over the Bay of Bengal (17-22 May, 2016)

A low pressure area developed over southwest Bay of Bengal (BoB) off Sri Lanka coast in the evening of 14<sup>th</sup> May, 2016. Moving northeastwards, it lay as a well marked low pressure area over southwest BoB and adjoining Sri Lanka in the morning of 15<sup>th</sup>. It further moved northwestwards and lay over Sri Lanka and adjoining areas of Gulf of Mannar & southwest BoB in the morning of 16<sup>th</sup>. Moving thereafter, north-northwestwards, it concentrated into a **depression (D)** and lay centered over southwest BoB off Tamil Nadu coast in the morning of 17<sup>th</sup> near latitude 11.0°N and longitude 81.0°E. It further moved nearly northwards, intensified into a **deep depression (DD)** and lay centred over westcentral and



**Seasonal (Jun - Sept) rainfall forecast over the country as a whole**

Quantitatively, the seasonal rainfall for the country as a whole was forecasted as 106% of the long period average (LPA) with a model error of  $\pm 4\%$ . The LPA rainfall over the country as a whole for the period 1951-2000 is 89 cm. Thus there is no change in the updated quantitative forecast from the first stage operational forecast issued on 12<sup>th</sup> April, 2016.

The 5 category probability forecast for the Season (June to September) rainfall over the country as a whole is given below:

Category	Rainfall Range (% of LPA)	Forecast Probability (%)	Climatological Probability (%)
Deficient	< 90	0	16
Below Normal	90 - 96	4	17
Normal	96 - 104	33	33
Above Normal	104 - 110	40	16
Excess	> 110	23	17

**Season (June-September) Rainfall over Broad Geographical Regions:**

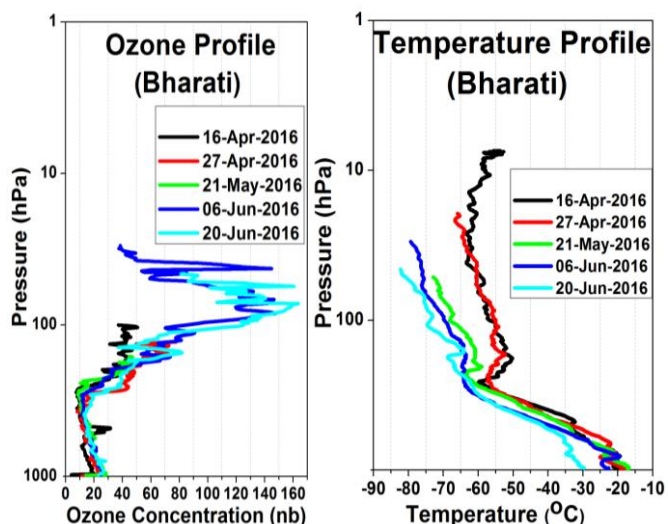
The season rainfall was forecasted as 108% of LPA over North-West India, 113% of LPA over Central India, 113% of LPA over South Peninsula, and 94% of LPA over North-East India all with a model error of  $\pm 8\%$ .

**Monthly (July & August) Rainfall over the country as a whole:**

The rainfall over the country as a whole was forecasted as 107% of its LPA during July and 104% of LPA during August both with a model error of  $\pm 9\%$ .

**Ozone Ascents at Bharati station, Antarctica**

A total of five ozone ascents were taken during April to June, 2016. The stratospheric temperatures reduced to  $-82.24^{\circ}\text{C}$  on 20<sup>th</sup> June, 2016 indicating the formation of stratospheric clouds which may lead to depletion of the ozone concentration in the stratosphere.



**Miscellaneous**

**Swachhta Pakhwada and Earth Day Celebrations**

The “Earth Day 2016” was celebrated at **RMC Kolkata Office**, MCs and various outstations on 22<sup>nd</sup> April, 2016. An essay contest on this year’s topic “Caring Mother Earth” was also held at Alipore office. Shri Debdeep Chakraborty, AM-II delivered a presentation on his Antarctica Expedition.

“Swachhta Pakhwada” was observed during 22 – 29 April 2016 at **Central Seismological Observatory Shillong** and “Earth Day” was celebrated on 22<sup>nd</sup> April, 2016. The office premises were cleaned by the officers and staff. Some students and teachers from a local school were invited and were explained the basic concepts of Seismology, Meteorology, Radiation and their relation with Mother earth. An essay competition on “Caring Mother Earth” was also held on the occasion of “Earth Day”.

“Swachhta Pakhwada” was observed in all the offices of **RMC Guwahati** during 14-29 April, 2016 and “EARTH DAY” was celebrated on 22<sup>nd</sup> April, 2016 at RMC Guwahati office.



Swachhta Pakhwada being observed at RMC Guwahati

**Positional Astronomy Centre**, Kolkata had made an observational programme on Transit of Mercury over the disc of the Sun on 9<sup>th</sup> May, 2016 afternoon in the PAC Office building. A large number of public gathered on the occasion to see the event by projection method through telescope.



Observation on Transit of Mercury over the disc of the Sun



“Anti-Terrorism Day” was observed on 20<sup>th</sup> May, 2016 at various offices of IMD and the pledge was administered to officers/staff members.



Anti-Terrorism Day being observed at MC Bengaluru

### Mid-Winter Celebrations – 21<sup>st</sup> June, 2016

Mid-Winter Day was celebrated at both Maitri and Bharati stations in Antarctica.



### Yoga Day Celebrations - 21<sup>st</sup> June, 2016

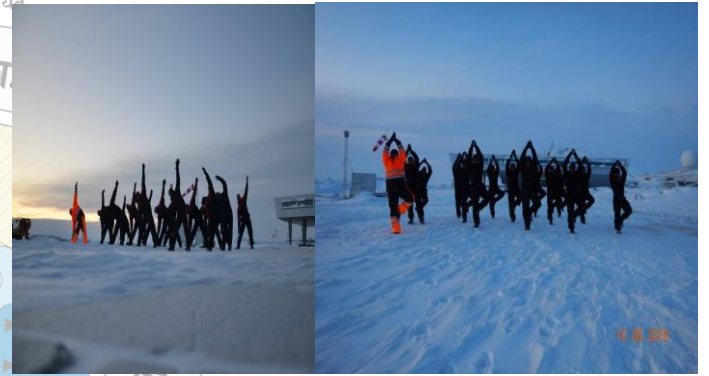
Regional Meteorological Centre, Kolkata celebrated “International Day of Yoga 2016” in collaboration with Isha Foundation at Alipore Office. The representative members of Isha Foundation, Ms. Mahek Mahalani and Ms. Sangeeta Agarwal started practice session with audio visual demonstration. Around seventy enthusiastic participants were following the instructions on screen with great attention and practicing the Yoga as well with serious note. The practice lasted for almost one hour for the seven steps of Upa-Yoga. The steps were 1) Yoga for health 2) Yoga for success 3) Yoga for well-being 4) Yoga for peace 5) Yoga for joy 6) Yoga for inner exploration 7) Yoga for love.



‘International Day of Yoga’ celebrated at RMC Kolkata Alipore Office on 21 June, 2016

International Day of Yoga was celebrated at **Meteorological Centre Ranchi** with a Yoga Session led by Shri Radheshyam Sharma, Scientist ‘B’. All officers & staff members practiced different Yoga Asanas / pranayama. After the yoga Session, Shri Sharma briefed the officers and staff members about benefits of Yoga in the daily life.

Yoga Day was celebrated with great enthusiasm at **Bharati Station, Antarctica**. The station leader Shri V. Ragavendra, Scientist ‘E’, National Remote Sensing Centre, conducted the program with all members of Indian Scientific Expedition to Antarctica (ISEA). Shri T. R. Pakki and Shri Sharad B. Gurusale, IMD team members participated in the celebrations along with rest of the members. The Yoga training was conducted by Shri Mohit Nirwan, JRF, Defence Research and Development Organisation who is a member of 35<sup>th</sup> ISEA, under the project “Effect of Yogic practices in Antarctica”. As a part of this project he conducts Yoga classes for all members every morning.



Yoga Day Celebrations at Bharati, Antarctica

A lecture on “**Meditation as Medicine**” was organized by Prajapita Brahma Kumaris Ishwariya Vishwa Vidyalaya at HQ on the occasion of International Yoga Day. The programme included a brief talk on the subject, guided meditation and audience interaction.



BK Piyush and BK Girija during a discourse on “Meditation as Medicine”

