



मौसम विज्ञान विभाग समाचार

IMD NEWS

INDIA METEOROLOGICAL DEPARTMENT
(Ministry of Earth Sciences)

Quarterly Newsletter

In this issue

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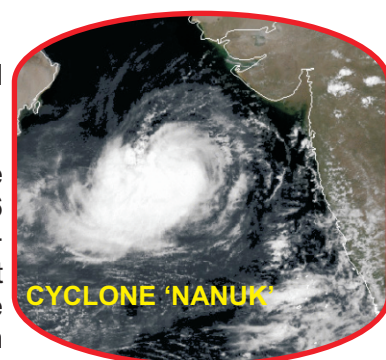
LRF- SW MONSOON SEASON - 2014



IMD issues Long Range Forecast for Southwest Monsoon Rainfall in two stages, in April & up dated in June. In addition to the update for the forecast for the seasonal rainfall over the country as a whole, forecasts for the monthly rainfall for July & August over the country as a whole, and forecast for the season rainfall for the 4 broad geographical regions of India (NW India, NE India, Central India and South Peninsula) are issued.

This year, 1st Stage Long range forecast for 2014 Southwest Monsoon Rainfall was issued on 24th April 2014.

The update forecast for the Southwest monsoon season (June-September) rainfall over the country as a whole is issued using a 6-parameter Ensemble Forecasting System. The 6 predictors used are: NE Pacific to NW Atlantic SST Anomaly Gradient (December + January), Southeast equatorial Indian Ocean Sea Surface Temperature (February), East Asia Mean Sea Level Pressure (February + March), Central Pacific (Nino 3.4) Sea Surface Temperature Tendency (March to May - December to February 2014), North Atlantic Mean Sea Level Pressure (May) and North central Pacific 850 zonal wind gradient (May).



Seasonal

Rainfall - 90-96%
Quantitatively - 93%,
Model Error - $\pm 4\%$

Geographical Region

NW India – 85%,
Central India - 94%,
South Peninsula - 93%,
North-East India – 99%,
Model Error - $\pm 8\%$

Monthly

July 93%,
August – 96%,
Model Error $\pm 9\%$

2nd Stage Long Range Forecast Update for 2014 Southwest Monsoon Rainfall was issued on 9th June 2014 by the Hon'ble Minister for Science & Technology and Earth Sciences Dr. Jitendra Singh at a press conference which was attended by a large number of Electronic & Print Media. The seasonal, regionwise and monthly Long Range Forecast in percentage on basis of long period average is given above.

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INTERNATIONAL ASSIGNMENTS

Shri A. K. Mitra, Scientist 'D', was on tour to Jeju, Island, Republic of Korea to attend 19th International TOVS Study Conference (ITSC-19) during the period 26th March to 1st April, 2014.

Dr. N. Chattopadhyay, DDGM (Agrimet) participated in the International Conference on "Promoting Weather and Climate Information for Agriculture and Food Security" held at Antalya, Turkey during 7-9 April, 2014 and presented on "Overview and case studies for Agrometeorological Services".

Dr. L. S. Rathore, Director General of Meteorology was on tour to Antalya, Turkey to attend 16th Session of Commission for Agriculture Meteorology of WMO during the period 10-15 April, 2014.

Smt. Suman Goyal, Scientist 'E' participated in the eighth Session of Expert team on Satellite Utilization and products (ET-SUP-8) during 14-17 April, 2014 at Geneva, Switzerland.



Dr. L. S. Rathore, DGM and PR of India during a meeting held on "Co-operation in Meteorology" with PRs of BRICS countries and Advisers at WMO Geneva

66th WMO Executive Council Meet-2014



The 66th Session of the World Meteorological Organization Executive Council (EC-66) was held at Geneva. During the meeting inter alia, the Global Framework for Climate Services (GFCS), Aeronautical meteorology, Public weather services, the Tropical Cyclone Programme, Marine meteorology and Oceanography, Agricultural meteorology, Water management, Disaster risk reduction (DRR), data processing and forecasting, WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS), strengthening good governance and capacity-building, partnerships and research under the implementation of the WMO Strategic Plan 2012-2015; resource management and communication and public affairs were discussed. The reports from a number of bodies, including, President of the Organization; Secretary-General, Financial Advisory Committee (FINAC), 2014 were submitted for discussion. Dr. Shailesh Nayak, Secretary, MoES, Dr. L. S. Rathore, DGM & Member Executive Council of WMO, Shri A. S. Khati, Joint Secretary, MoES, Shri B. N. Reddy, DPR, PMI Geneva and Dr. S. D. Attri, DDGM (O) attended 66th Executive Council Meeting of WMO held during 18-27 June, 2014 at Geneva.

He also attended FINAC, IBCS meetings of WMO during 15-16 June and Financial Advisory Committee (FINAC) Intergovernmental Board of Climate Services during the period 15-27 June, 2014.



Dr. S. D. Attri, Scientist 'E', was on tour to Geneva, Switzerland to attend the 9th meeting of Management Group of Commission for Atmospheric Science during the period 23-25 April, 2014.

Shri Virendra Singh, Scientist 'E' participated in the 42nd plenary Session of the Coordination Group for Meteorological Satellites (CGMS-42) at Guangzhou, China during 19-23 May, 2014.



Participants of SSOP at China

Shri G. K. Das, Scientist 'D' was on tour to Nanjing, China during 9-11 June 2014 for the training workshop on "Synergized Standard Operating Procedures (SSOP) for Coastal Multi-Hazards Early Warning System.



Dr. Y. V. Rama Rao, Scientist 'E' was on tour to Taipei, Taiwan to attend the Workshop on Numerical Prediction of Tropical Cyclones during the period 20-22 May, 2014.

Dr. D. S. Pai, Scientist 'E' and Shri S. D. Raskar, S.A. participated as a resource person and as a trainee during 1-5 June in a two weeks training course on "Seasonal Weather Prediction" which was organized by SAARC Meteorological Research Centre (SMRC) at Dhaka, Bangladesh during the period 1-12 June, 2014.

Ms. Maduri M. Musale, S.A. was on tour to Trieste, Italy to participate ICTP IITM COLA Targeted Training Activity TTA Challenges in Monsoon Prediction during the period 23rd June to 4th July, 2014.

MEETINGS

Operational Forecasting Officers Meet



The "Operational Forecasting Officers Meet - 2014" was held during 05-06 June 2014 at Arnav Hall, Ministry of Earth Sciences, New Delhi. The meeting was attended by the Forecasters from 17 MCs, 6 RMCs, DDDM(WF) Pune, NWFC and Scientists from the other Divisions of DGM office, DDGM(UI), DDGM (Agromet), NCMRWF Noida, IITM Pune and MoES. The meeting commenced with opening remarks by Sh. B. P. Yadav, Head, NWFC. Thereafter, the meeting was addressed by Dr Swati Basu, Director, NCMRWF and Dr. L. S. Rathore, DGM, IMD. Dr Swati Basu highlighted that there should be more meeting like this to get feedback about NWP products and to know further needs of forecasters related to NWP products. Dr. Rathore briefed the house about the objective of the meeting. He advised the forecasters to identify the additional products required for forecasting and also additional services, which can be started. The inaugural address was delivered by Dr. Shailesh Nayak, Secretary, MoES. He stressed the need to verify the forecast & warning more objectively

Important Meetings by individuals

Shri N. T. Niyas, Scientist 'C' attended a State Level Technical Committee meeting on Crop Insurance held in the chamber of Director of Agriculture, Vikas Bhavan, Trivandrum on 3rd April, 2014.

Dr. D. Pradhan, DDGM chaired 61st DVC Advisory Committee meeting on 4th April 2014 at the office of Damodar Valley Corporation for review action plan for 2014-15.

Shri S. K. Kundu, Scientist 'F' Participated in the meeting of Technical Board (TRB) of Ministry of Earth Sciences on wind profiler on 10th April, 2014.

Dr. Anand Sharma, Scientist 'E' Meteorological Centre, Dehra Dun had a courtesy meeting with, Shri Harish Rawat Hon. Chief Minister of Uttarakhand on 19 April 14.



Dr. S. C. Sahu, Scientist 'E' M.C. Bhubaneswar attended consultative meeting on study on early warning system covering Bhubaneswar city under Gol-UNDP Climate Risk Management in urban areas through disaster preparedness and mitigation project organized by OSDMA at Bhubaneswar on 28th April, 2014.

Dr. Jayanta Sarkar, Scientist 'E' M.C. Ahmedabad attended the Inter-State Meeting on "Flood Management and Preparedness for Monsoon 2014" held at Surat on 13th May, 2014.

Dr. G. C. Debnath, Scientist 'E' attended "Disaster Mitigation Meet" at NABANNA, Howrah, West Bengal on 29th May 2014.

Dr. D. Pradhan, DDGM and Dr. S. Bandhyopadhyay Scientist 'E' attended a meeting on 5th June, 2014 at Writer's building with Sri Rajib Banerjee, Hon'ble Minister-in-Charge of Irrigation and Water Way's Department Govt. of West Bengal, regarding QPF and general Weather forecast for monsoon of year 2014.

Shri Ashok Kumar Sharma, Scientist 'F' participated in a brain storming meeting on 17th June, 2014 at Krishi Bhawan regarding application of remote sensing and geospatial technology in various operational activities of Ministry of Agriculture.

Dr. M. Mohapatra, Scientist 'E', attended a meeting in Ministry of Home Affairs DMD New Delhi on 26th June, 2014 on '6th Trilateral Meeting of Experts of India-Russia-China.



A brain storming session on maintenance of AWS network was held at IMD Pune on 28th May 2014. In-Charges of RIMCs and other senior officers attended the session.

WORKSHOPS

Capacity Building Training Workshop

A Capacity Building Training Workshop on "Operational Climate Prediction for South Asia" was conducted at the India Meteorological Department (IMD), Pune for participants from the South Asian countries. The training workshop was attended by representatives from eight South Asian countries viz. Bangladesh, Bhutan, India, Maldives, Myanmar, Nepal, Sri Lanka, Dhaka and UKMO London. Experts from the IMD and IITM, Pune and international experts from United Kingdom Meteorological Office, U.K, APCC, Korea, NOAA, U.S. and World Meteorological Organization, Geneva participated in the training workshop as the resource persons. Two days SASCOF-5 meeting co-hosted by IMD was held at IITM, Pune during 22-23 April.

Workshop on INSAT-3D Satellite



Satellite Meteorology Division, India Meteorological Department, New Delhi- 110003 organized a Training Workshop on INSAT-3D Satellite Data Products from 30th April, 2014 to 1st May, 2014 at MoES, New Delhi. Number of Scientist/Officers from the department participated in Training Workshop on INSAT-3D Satellite Data Products during the period.

Important Workshop attended by individuals

Dr. G. C. Debnath, Scientist 'E' and **Shri G. K. Das**, Scientist 'C' attended two days training workshop on "Oceanic Information Services for Cyclone Forecaster" organised by INCOIS Hyderabad during 2-3 April, 2014.

Dr. P. Guhathakurta, Scientist 'E' attended the workshop on "India's 6th National Report to the UNCCD and the alignment of India's National action programme to combat Desertification" on 15th May 2014.

Shri R. Balasubramanian, Scientist 'C' participated in the 'Capacity Building Training Programme for farmers' which was held at Tarapur, Petlad, Umreh and Anand, Gujarat during 21- 24 May, 2014 organised by National Council for Climate Change Sustainable Development and Public Leadership Ahmedabad.

Dr. M. Mohapatra, Head RSMC delivered a presentation on "Lessons learnt from Very Severe Cyclonic Storm Phailin during October 2013" in a workshop on Phailin cyclone 2013: Lessons Learnt" organised by NIDM at New Delhi on 30th May 2014.

Dr. S. C. Sahu, Scientist 'E', M.C. Bhubaneswar participated in a National workshop on "GIS and Remote sensing using Open Source Software "Organized by Sophitorium Group of Institutions at Bhubaneswar on 13th May 2014.

Weather Forecasting System



One day training workshop on "IMD Weather Forecasting System" was conducted on 10th June 2014 at RMC Kolkata Alipore. Twenty Officers of Irrigation Department and twelve from Damodar Valley Corporation attended the training workshop. Dr. D. Pradhan, DDGM, inaugurated the workshop and delivered the lecture on "Application of DWR in Hydrology and Prediction of Quantitative Estimates of Rainfall". Dr. S. Bandopadhyay, Scientist 'E', Dr. G. C. Debnath, Scientist 'E' and Shri Animesh Chanda, Scientist 'D' also delivered lectures on various topics related to QPF, forecasting system and AWS/ARG respectively.

Understanding weather and forecasting



An interactive session was conducted on 27th June 2014 at RMC Kolkata with Electronic and Print media on "Understanding weather and forecasting". Dr. D. Pradhan, DDGM inaugurated the session and presented a presentation on "Forecasting techniques of IMD and usefulness of DWR and Satellite in weather prediction". About 25 media personnels attended the session and provided their feedback.

A Three day Hindi Karyashaala was organized at H.Q. New Delhi during the period 19-21 May 2014 in which 11 officials participated.

Hindi Sangoshthi'

(I) 'Hindi Sangoshthi' was organized in AMO Mohanbari on 18 June 2014. Shri M. K. Gupta, DDGM, RMC Guwahati was the Chief Guest. On this occasion Hindi dictation competition was organized for the officers and members of staff of AMO Mohanbari. A Hindi Essay competition was organized for school children. Scientific lectures in Hindi were delivered on Chai Baagaan aur Mausam Vigyan, Mohanbari hawaii

adda ke Mausam upkarno ka aadhunikaran, Mohanbari ka Mausam, Aasam ki baar, Aasaam ke chai baagaan, Brahmaputra nad RSRW mark IV aur G RSRW aadi.



WORKSHOPS

(ii) Hindi Vaigyanik Sangoshti' was organized in RMC Guwahati on 26 June 2014. Shri Shyam Lal Singh Poorti, Dy. Director, Hindi Teaching Scheme (NE), Deptt. of Official Language, Guwahati was the Chief Guest. Ms Reva Sharma, Senior Hindi Officer from IMD HQ, New Delhi was also present on this occasion. Two special lectures in Hindi were delivered on 'मौसम विज्ञान की सेवाओं में हिन्दी की महत्ता' & 'मौसम भविष्यवाणी से आर्थिक लाभ'.

LECTURES

Dr. P.C.S. Rao, Scientist-D, participated in the Training Workshop on Ocean Information Services for Cyclone Forecasters, organized by INCOIS in Hyderabad during 2-3 April 2014 and gave a presentation on the 'Marine Forecast Services'.

Dr. Jayanta Sarkar, Scientist 'E', M.C. Ahmedabad delivered a lecture on "Early Warning System and dissemination" in the training programme for police officers at Police Academy at Karai, Ahmedabad organized by Gujarat Institute of Disaster Management on 11th April, 2014.

Dr. D. S. Pai, Dr. A. K. Srivastava, and Dr. P. Guhathakurta, Scientist 'E' delivered lecture in South Asian Climate Outlook Forum-5 (SASCOF) training workshop on operational climate prediction for South Asia which was held at IMD Pune during 14-21 April, 2014.

Dr. S. C. Sahu, Scientist 'E', M.C. Bhubaneswar, delivered lecture in training on urban disaster in Gopabandhu Academy on Meteorological hazard and its warning system by IMD on 21st April, 2014.

Dr. P. Guhathakurta, Scientist 'E' delivered lead talk on IMD's drought monitoring system in "Climate services user forum for the water sector in South Asian" which was held in IITM Pune from 23 to 25 April, 2014.

Dr. Geeta Agnihotri, Director delivered a talk to Home Guards and civil Defence Academy, Bangalore on "Weather forecasting system during floods" on 22 May, 2014.

Shri A. K. Mitra, Scientist 'D' gave a lecture through Video conferencing on INSAT-3D imager and Sounder products utility for operational forecasters for wxthe Naval Met communities on 20th May, 2014.

Dr. Medha Khole, Scientist 'E' delivered an invited lecture on 'Climate Change and its effect on Human life on 27th June, 2014. This workshop for teachers and students was organized by Vanarai, a NGO Pune founded by Late Padmabhushan Dr. Mohan Dharia.

Dr. M. Mohapatra, Scientist 'E' delivered a presentation on cyclone warning system of IMD to Trainees from Mauritius attached to National Crop Forecasting Centre, (NCFC), Ministry of Agriculture, Govt. of India, on 16th June, 2014 at IMD, New Delhi.

Shri Anand Sharma, Scientist 'E' Meteorological Centre, Dehra Dun was Chief Guest at the workshop "Governance in Science and Technology" for the Scientists. The workshop was organized by Lal Bhadur Shastri National Academy of Administration Mussoorie on 16 June, 2014.

INFRASTRUCTURE DEVELOPMENT

Global Navigation Satellite System



Eight Sets of Global Navigation Satellite System (GNSS) purchased and handed over to all RMCs (one set each) and 2 are presently used in the AWS Lab, Pune. GNSS measures the Altitude, Latitude & Longitude of the station with real time 5 cm accuracy for which no base station/or radio communication is required. As per the directives from WMO for selection of AWS/Met. Observatory site, the obstacle should be away from the site by 2 times of its height. GNSS finds

the distance between the obstacle and the site for finalization of AWS / Met. Observatory as per WMO criteria. GNSS Satellite orbit and clock corrections are calculated from a global tracking network of dual frequency receivers

Commissioning of AWOS

Automatic Weather Observing System (AWOS) has been installed and commissioned at Juhu heliport, Mumbai for helicopter operations.

Hand Held Data Loggers (HDDL)

29 observatories under RMC Mumbai have been equipped with HDDL sets. HDDL is an electronic device which can be used by Conventional Meteorological Observatories to transmit manually collected weather data in near real-time in digital form over GSM Mobile channel to various RMCs and NDC for archival.

High Wind Speed Recorder (HWSR)

GPRS based HWSR made operational at Kakinada, Kalingapatnam, Puri, Balasore and Digha. Data is available on the website www.imdaws.com.

Weather Observatory at Bharati, Antarctica



The summer team of the 33rd ISEA installed the meteorological observatory at Bharati station, Antarctica consisting of the instruments such as; Global radiation radiometer, UV-A radiometer, snow gauge, Thermometers Stevenson screen, mast for ultra sonic anemometer.

Website for RSMC New Delhi



A dedicated website for Regional Specialised Meteorological Centre-Tropical Cyclone, New Delhi was inaugurated by Dr. Shailesh Nayak, Secretary, Ministry of Earth Sciences and Chairman, Earth System Science Organization (ESSO) on 4th April, 2014. The website address is www.rsmcnewdelhi.imd.gov.in. This website has all the facility for dynamical uploading of cyclone warning bulletins, advisories and graphical products useful for national and international users especially WMO/ESCAP panel member countries including Bangladesh, Myanmar, Thailand, Sri Lanka, Maldives, Pakistan and Oman.

ISO Certification

The surface instruments division of the IMD acquired ISO 9001:2008 certification for the year 2015 - 16 for the process of manufacturing, testing, calibration and supply of meteorological Instruments.

HUMAN RESOURCES DEVELOPMENT

Limited departmental competitive examination for Scientific Assts. was conducted at MTI Pune during 19- 21 June 2014.

A training programme was organized on Surface Observations through HDDL by SAMEER Mumbai in co-ordination with R.M.C. Mumbai from 17-20th June, 2014. The staff members from M.C. Ahmedabad and staff each from different outstations (Dwarka, Bhuj, Bhavnagar, Rajkot, Okha, Naliya, Porbandar, Surat, Vadodara, Veraval, Deesa) attended the training. Certificates were also distributed to all participants after successfully completion of above training.

प्रस्तुति (इंडिया) प्रा. लिमिटेड द्वारा 31 मई 2014 को आयोजित एक दिवसीय राजभाषा प्रशिक्षण शिविर में मुख्यालय की वरिष्ठ हिन्दी अधिकारी सुश्री रेवा शर्मा तथा हिन्दी अधिकारी श्रीमती सरिता जोशी ने भाग लिया।

ACHIEVEMENTS

Appreciation for Accuracy & Timely Prediction

Dr. David Rogers and Dr. Vladimir V. Tsikunov members of world bank team who had earlier visited ,Meteorological Centre, Dehra Dun, mentioned in their report that the weather forecasts for heavy rainfall during Kedarnath disaster in June, 2013 were "accurate and timely" which helped in limiting the exposure of tourists beginning their pilgrimage. It is a great recognition from World Bank Team for India Meteorological Department.

Nomination as Chairman

Dr. N. Chattopadhyay, DDGM (Agrimet) has been nominated as Chairman under the theme of OPCAME 1: Operational Agricultural Meteorology in the composition of the Management Group of the Commission for Agricultural Meteorology, World Meteorological Organisation (WMO), Geneva.

PUBLICATIONS

Fifteen research contributions were published in quarterly research journal 'MAUSAM' Vol. 65, No. 2, April, 2014.

A research paper entitled "Atmospheric CO₂ Variations in Two Contrasting Environmental Sites over India" with Anand Sharma as one of the co author has been published in the journal Air, Soil and water.

A paper entitled "A study on the Discharge rate of the Ganga at Farakka" by Shri Ranjan Sarkar, S.A. and Shri Debasis Roy, S.A. published in Indian Journal of Research in May 2014.

MISCELLANEOUS

Collaboration between IMD and NAL



A milestone has been achieved in the field of aviation safety when National Aerospace Laboratories, Bangalore and India Meteorological Department signed a partnership agreement on 20th May 2014 for joint production of Drishti system; a sophisticated instrument for assessment of Runway visual range, which is a critical parameter for safe landing and takeoff of aircraft in poor visibility. The agreement which was signed by Dr Shyam Chetty, Director -NAL and Dr. L.S. Rathore, Director General of Meteorology, IMD; encompasses a wide range of research & development activities for further development of various meteorological sensors. The agreement paves the way for operational deployment of Drishti system at different airports where IMD provides aeronautical meteorological services. A mega project for installing nearly 70 such systems at various Airports of the country is being jointly undertaken by the two organisations. Drishti Transmissometer, a visibility measuring system is an innovative, indigenous product first of its kind, designed and developed by CSIR-NAL to cover the wide span of lowest to highest visibility.

Anti Terrorism Day



In order to observe "Anti Terrorism Day" on 21st May 2014 at 1100 hrs IST the officers and staff in all the offices of IMD throughout India took pledge in Hindi & English.

Live TV Programme

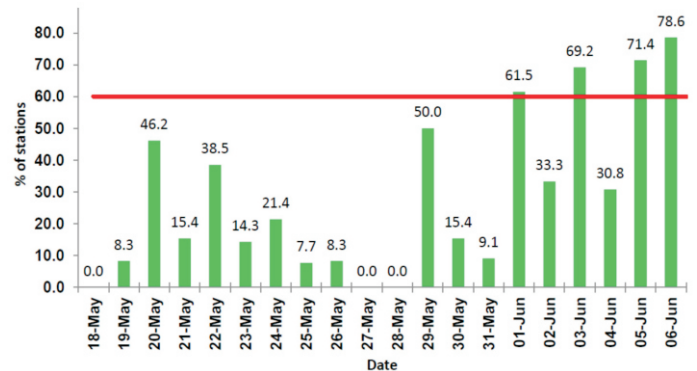
Dr. S. D. Attri, DDGM (O) participated in Krishi Doordarshan Programme on Weather at DDK New Delhi on 5th May, 2014.

Shri B. Puttanna, Scientist 'E' participated in live phone in programme in Samaya TV between 1500-1545 hrs on 19 June, Udaya TV between 1600-1700 hrs on 19th June, 2014 and Kasthuri TV between 1900-2000hrs on 25th June, 2014.

ONSET OF MONSOON

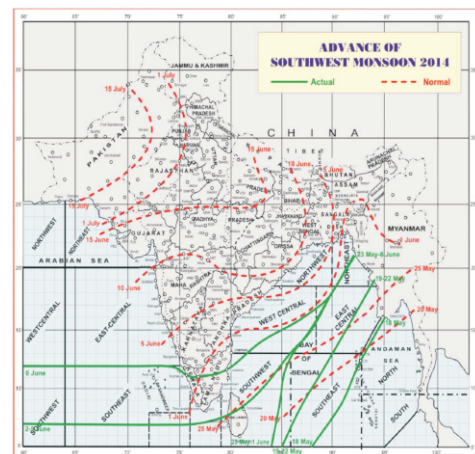
The conditions which were favourable for onset of monsoon over Kerala coast follows :

- The rainfall over Kerala had been fairly widespread to widespread on 5 and 6 June. Out of the 14 rainfall monitoring stations for Monsoon onset over Kerala, more than 70 % of stations reported rainfall more than 2.5 mm for consecutive two days i.e. on 5th June and 6th June.



Percentage of stations reporting rainfall 2.5 mm

- Westerly/ West-southwesterly winds of the order of 40-50 kmph were prevailing upto 600 hPa over south Arabian Sea between Lat. 0°N to 10°N and Long. 55°E to 80°E.
- The INSAT-3D derived Outgoing Long wave Radiation value in the box confined by Lat. 5-10°N, Long. 70-80°E was less than 200 W/m² for consecutive last 2 days, i.e., on 5th June and 6th June.



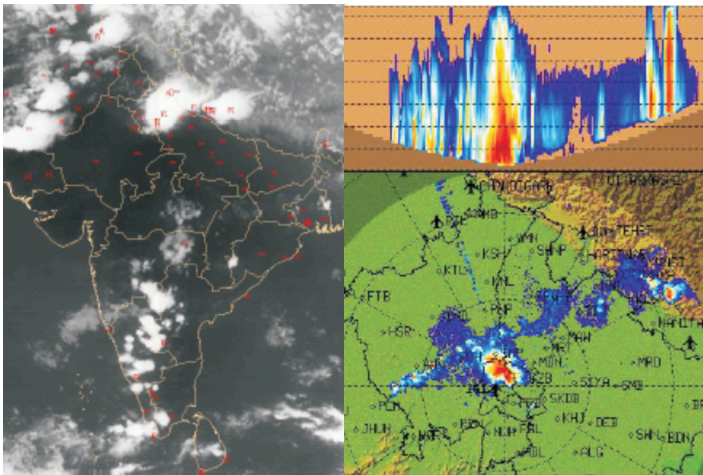
The onset of southwest monsoon over Kerala signals the arrival of monsoon over the Indian subcontinent and represents beginning of rainy season over the region. From 2005 onwards India Meteorological Department has been issuing operational forecasts for the date of monsoon onset over Kerala using an indigenously developed statistical model. The normal date of onset of monsoon over Kerala is 1st June. The forecast for onset of monsoon over Kerala was predicted to set on 5th June with a model error of ± 4 days.

The monsoon was set over Kerala on 6th June 2014.

WEATHER

Thunderstorm with Squall

Moderate to severe thunder squalls accompanied with hailstorm occurred over Maharashtra, Madhya Pradesh and Andhra Pradesh on a few days during pre monsoon season. Moderate to severe thunder squall occurred on few days over east & northeast and one or two days over northwest India during the season.

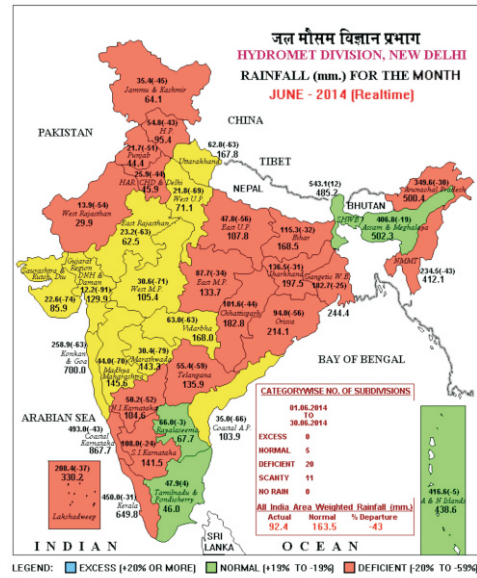


Satellite imagery and radar scope of thunderstorm dated 30th May

A severe thunderstorm affected Delhi and adjoining region between 1630 hrs IST and 1730 hrs IST of 30 May. In DWR, Palam isolated weak echoes started appearing from NW direction near Patiala at 1430 hrs drifting slowly south-eastwards till the echoes strengthened into a NE-SW squall line of around 50 kms at 1530 hrs, near Jind in Haryana with reflectivity more than 55 db and cloud height more than 14 Km. The Cb cloud covered a distance of around 100 Kms in less than two hrs and crossed Delhi by 1730 hrs in the evening with a wind speed of 90-110 Kmph. The temperatures plunged down to 26-28°C, after the event. The thunder squall affected from NWly direction wind last for 6 minutes between 1658-1703 hrs IST reaches maximum wind speed 92 Kmph as recorded at M.O. Safdarjung with fall temperature 13°C.

Rainfall during April – June

The country as a whole received rainfall 130 mm against the normal of 131.3 mm. The pre monsoon seasonal rainfall was 1% below normal. The pre monsoon seasonal rainfall was deficient/scanty over Assam, Meghalaya, Arunchal Pradesh, Nagaland, Manipur, Mizoram, Tripura, West Madhya Pradesh, Saurashtra & Kutch, Diu, Konkan & Goa, Andama & Nicobar Island Gujarat Region & Damnan and Lakshyadeep area. It was normal/excess over remaining parts of the country During June parts of the country except Rayalaseema and Tamilnadu & Puducherry rainfall was normal. The country as a whole received 92.4 mm rainfall against the normal rainfall of 163.5 mm. Thus the rainfall was 43% below normal during June.



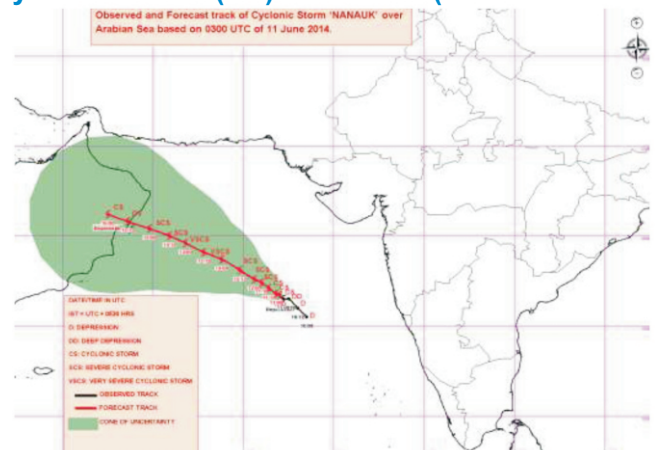
CYCLONIC DISTURBANCES

Two cyclonic disturbances formed over north Indian Ocean during April to June 2014. Out of these one intensified into cyclonic storm Nanauk over Arabian Sea.

Depression over Bay of Bengal (21- 23 May)

A depression formed over east central Bay of Bengal on 21 May 2014. It moved north northeast wards initially and then southwestwards and weakened into a well marked low pressure area over central Bay of Bengal in the morning of 23 May Though the depression weakened over the sea, it's remnant low pressure area moved across Odisha causing heavy rainfall over Odisha and adjoining areas.

Cyclonic Storm (CS) 'NANAUK' (10-14 June 2014)



A Cyclonic Storm 'NANAUK' originated from a low pressure area over east central Arabian Sea which developed on 9th June, 2014. It concentrated into a depression over the same region in the afternoon of 10th. Moving north-northwestwards, it intensified into a CS, 'NANAUK' in the early morning of 11th. It weakened into a deep depression in the afternoon of 13th June, over west central Arabian Sea and into a depression in the evening of same day and further into a well marked low pressure area over the same region in the morning of 14th.

