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Ministry of Earth Sciences (MoES)
भारतमौसमविज्ञानविभाग
INDIA METEOROLOGICAL DEPARTMENT
Forecast of the Onset Date of Southwest Monsoon - 2021 over Kerala

1. Background

Advance of the southwest monsoon over Indian main land is marked by monsoon onset over Kerala and is an important indicator characterizing the transition from hot and dry season to a rainy season. As the monsoon progresses northward, relief from scorching summer temperatures is experienced over the areas. Southwest monsoon sets over Kerala on 1st June with a standard deviation of about 7 days. India Meteorological Department (IMD) has been issuing operational forecasts for the date of monsoon onset over Kerala from 2005 onwards. An indigenously developed state of the art statistical model with a model error of ± 4 days is used for the purpose. The 6 Predictors used in the models are; i) Minimum Temperatures over North-west India, ii) Pre-monsoon rainfall peak over south Peninsula, iii) Outgoing Long wave Radiation (OLR) over south China Sea, (iv) Lower tropospheric zonal wind over southeast Indian Ocean, (v) upper tropospheric zonal wind over the east equatorial Indian Ocean, and (vi) Outgoing Long wave Radiation (OLR) over the south-west Pacific region.

IMD's operational forecasts of the date of monsoon onset over Kerala during the past 16 years (2005-2020) were proved to be correct except in 2015. Forecast verification for the recent 5 years (2016-2020) is given in the table below.

Year	Actual Onset Date	Forecast Onset Date
2016	8 th June	7 th June
2017	30 th May	30 th May
2018	29 th May	29 th May
2019	8 th June	6 th June
2020	5 th June	1 st June

2. Forecast for the 2021 Southwest Monsoon Onset over Kerala

This year, the onset of southwest monsoon over Kerala is likely to be on 31st May with a model error of ± 4 days.

3. Status of the 2021 Southwest Monsoon and Advance over the Andaman Sea

In the Indian monsoon region, initial monsoon rains are experienced over south Andaman Sea and the monsoon winds then advance in a north-westwards across the Bay of Bengal. As per the new normal dates of monsoon onset/progress, the southwest monsoon advances over the Andaman Sea around 22nd May. At present a Depression has formed over Lakshadweep area & neighbourhood. It is very likely to intensify into a Cyclonic Storm during next 24 hours. It is very likely to move north-northwestwards and reach south Gujarat coast in the early hours of 18th May. As a result the cross equatorial south westerlies have temporarily strengthened over the Arabian Sea. The cross equatorial flow is very likely strengthen & deepen over the Bay of Bengal from 20th

May and a sustained rainfall activity is likely over the south Bay of Bengal and Andaman & Nicobar Islands from 21st May. Hence the monsoon advance over Andaman & Nicobar Islands is very likely around 21st May 2021. However, the past data suggest that there is no association of the date of monsoon advance over the Andaman Sea either with the date of monsoon onset over Kerala or with the seasonal monsoon rainfall over the country.

4. New Normal Dates of Onset/Progress and Withdrawal of Southwest Monsoon over India

India Meteorological Department (IMD) had released new normal dates of onset and withdrawal of southwest monsoon based on recent data in a press release dated 15th April 2020. The normal dates of onset are revised based on data during 1961-2019 and normal dates of withdrawal are revised based on data during 1971-2019. The detailed research paper on the new normal dates of monsoon onset and withdrawal is given in the below link of Mausam Journal.

<https://mausamjournal.imd.gov.in/index.php/MAUSAM/article/view/33>