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## Forecast of the Onset Date of Southwest Monsoon - 2019 over Kerala

### 1. Background

Southwest monsoon sets over Kerala on 1<sup>st</sup> June with a standard deviation of about 7 days. The event marks the start of rainy season over the region and as the monsoon progresses northward, relief from scorching summer temperatures is experienced over the areas. 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  $\pm 4$  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 during the past 14 years (2005-2018) were proved to be correct except in 2015. Forecast verification for the recent 5 years (2014-2018) is given in the table below.

Year	Actual Onset Date	Forecast Onset Date
2014	6th June	5th June
2015	5th June	30th May
2016	8th June	7th June
2017	30th May	30th May
2018	29 <sup>th</sup> May	29 <sup>th</sup> May

### 2. Advance of monsoon over the Andaman Sea

Conditions are becoming favourable for advance of southwest monsoon over the southern part of Andaman Sea, Nicobar Islands and adjoining southeast Bay of Bengal during 18-19<sup>th</sup> May 2019. Past data suggests 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.

### 3. Forecast for the 2019 Monsoon Onset over Kerala

*This year, the statistical model forecast suggests that the monsoon onset over Kerala is likely to be slightly delayed. The southwest monsoon onset is likely to set over Kerala on 6<sup>th</sup> June with a model error of  $\pm 4$  days.*