Summer monsoon onset over Andaman & Nicobar Islands: Objective criteria for operational forecaster

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Received 9 May 2016, Accepted 28 November 2018

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ABSTRACT. In the present study, various meteorological parameters associated with the advance of southwest monsoon has been examined to formulate a set of objective criteria for declaring the arrival of southwest monsoon over Andaman & Nicobar (A & N) Islands, keeping in mind the India Meteorological Department’s (IMD’s) operational forecasting service requirements. The objective criteria have been developed by analyzing daily observed rainfall distribution over the A & N Islands, NCEP/NCAR daily mean reanalysis of winds at various levels and Outgoing Long wave Radiation (OLR) data over the Bay of Bengal within the grid point box (Lat. 0 to 15° N and Long. 80–95° E) for the period 1980-2013. Year wise composite analysis of the above parameters were carried out for a period of thirty four (34) years with two (2) more independent years as testing period. The following criteria have been established for the declaration of onset of southwest monsoon over A & N Islands. The advance of southwest monsoon over A & N Islands could be declared after 5th May, provided, (i) Rainfall distribution is fairly widespread (FWS) or widespread (WS) over the group of Islands on the day and prior to the day, (ii) U-component of wind speed at 925 hPa is 8 mps (16 kts) or more on the day over southeast BOB including Nicobar Islands, (iii) Depth of westerlies over the southeast BOB including Nicobar Islands is up to 600 hPa, (iv) OLR over the southeast BOB including Nicobar Islands is 210 Watt/m² or less on the day and prior to the day, (v) However, in cases occurrence of a low pressure system (LPS) over the Bay of Bengal resulting in FWS/WS rainfall over the Islands for 2 consecutive days, fulfillment of any two more of the enlisted criteria would suffice the declaration of advance/arrival of southwest monsoon over the A & N Islands, if such a situation occurs after 5th May.

Key words – Monsoon onset, Rainfall distribution, OLR, Westerly wind.