

ABSTRACT
FORECASTING SOUTHWEST MONSOON ONSET,
WITHDRAWAL DATE AND RAINFALL FOR MYANMAR

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The patterns of regional and seasonal atmospheric circulation in the Asia –Pacific domain are analyzed to identify possible predictors for long –range forecast of Myanmar’s southwest monsoon rainfall, onset and withdrawal dates .The primary data used are the (NCEP/NCAR) reanalysis and Japan Meteorological Agency (JMA) monthly climate data for 1960 -2005. Early onset is found to coincide with (i) early breakdown of the 200hPa westerly jet centered at (20° N- 25 N°/ 70° E- 75° E) in April; (ii) warmer April (15-30) mean 200hPa temperature over the Tibetan Plateau (35°N/ 70° E-100° E) and (iii) northward movement of April 500hPa mean ridge position at(75° E-100° E). Also the April 850hPa mean westerly (easterly) zonal wind at the southern tip of Myanmar (5°N- 10° N/97.5° E) leads to earlier (later) onset of monsoon. The shift of the South Asian High at the 200hPa is closely related to the retreat of monsoon. Southward (northward) movement of the 200hPa August (15-31) mean ridge position from its normal position is associated with early (late) monsoon withdrawal. The reversal of the 300hPa temperature at the Tibetan Plateau (40° N/ 70° E- 100° E) in August is concurrent with the monsoon withdrawal, with negative (positive) anomalies associated with earlier (later) end of the monsoon. Anomalies in sea surface temperature (SSTA) over Nino3.4 (5°N-5° S/170°W-120°W), Nino West (Equ-14° N/130° E-150° E) and south East Indian Ocean (5°N- 10° S/ 75° E-100° E) were found to influence Myanmar rainfall. The remote influence of the Pacific Ocean SST is observed through the variation of 500hPa (June-July-August) mean West Pacific Subtropical High (WPSH) .Higher (lower) Nino3.4 SSTA corresponds to a westward (eastward) and southward (northward) movement of WPSH from its mean JJA ridge position. It is also associated with a larger (smaller) areal extent of the WPSH based on the 5865gpm contour. Plausible predictors were selected by stepwise regression for the period 1960-1995 and the resulting equations were verified for the period 1996-2005. Monsoon onset dates for four regions of Myanmar (southern, deltaic, central and northern) are predicted using information available in April, about a month ahead of the onset. The average skill score of forecasts are 49.2%, 28.5%, 66.6%, and 23.1% respectively. Monsoon withdrawal dates for the deltaic and southern regions are not skillfully predicted. This is partly due to the consistently early withdrawal of monsoon observed after the 1990’s which was not fully captured during the model development. Monsoon rainfall was skillfully predicted from the SSTA variables. The whole monsoon season (MJJASO) and sub-seasonal (pre monsoon period, peak, late monsoon) period rainfall have an average skill score of 46.4%, 33.3%, 42.9%, 26.8 %, respectively.