



A mechanism for Indian Summer Monsoon Intraseasonal Variability based on PV anomalies in the Somali Jet

Praveen Rai (1), Manoj Joshi (2,3), Ashok Dimri (1), and Andrew Turner (4)

(1) School of Environmental Sciences, Jawaharlal Nehru University, New Delhi, India, (2) Climatic Research Unit, University of East Anglia, Norwich, UK, (3) Centre for Ocean and Atmospheric Sciences, University of East Anglia, Norwich, UK, (4) NCAS-Climate and Department of Meteorology, University of Reading, Reading, UK

Intraseasonal variability during the Indian summer monsoon is characterized by periods of rainfall interspersed by dry periods, which are known as active and break events respectively. Understanding and predicting such events is important for predicting societally important changes such as water resources. The Somali Jet, lying over the Arabian Sea, is known to be a key regional feature of this circulation. In the present study, we analyse the spatial structure of Somali Jet potential vorticity (PV) anomalies and show that they vary considerably during active and break periods. Analysis of these PV anomalies suggests a mechanism joining sea surface temperatures (SST) anomalies, convection, modification of PV by diabatic heating and mixing in the atmospheric boundary layer, wind stress curl, and ocean upwelling processes. The feedback mechanism is consistent with observed variability in the coupled ocean-atmosphere system on timescales of approximately 20 days.