

The Influence of the Madden Julian Oscillation on Queensland's Rainfall

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ABSTRACT

The Madden Julian Oscillation (MJO) is a tropical atmospheric anomaly, which develops in the Indian Ocean and propagates eastward. With a timescale ranging from about 30 – 60 days, the MJO has a frequency of 6-12 events per year. In its active phase, the MJO is associated with increased convective activity. Anecdotal evidence suggests that the MJO is closely correlated with rainfall events in areas of Queensland. The value of using MJO signals for climate forecasting in Queensland was assessed.

The project investigated the spatial extent and sought a better definition of, the influence of the MJO on rainfall in Queensland. Rainfall data from 18 Queensland centres was analysed for underlying spatial and temporal patterns. The Real-Time Multivariate MJO index developed by the Australian Bureau of Meteorology Research Centre was used in the statistical analysis. Correlations between rainfall events in Queensland and the location of the active phase of the MJO were identified.

In collaboration with the Queensland State Government Departments of Primary Industries and Natural Resources, the project, which is partially funded by the Australian Cotton Research and Development Council, aims to improve skill in climate forecasting with longer lead times. One application of the results will be in an economic assessment of four farm simulation models, to assist with the improvement of agricultural information systems.

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