

**Large-Scale Distinctions Between MJO and non-MJO Convective Initiation
over the Tropical Indian Ocean**

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Abstract

In this study, we seek large-scale signals that may distinguish MJO from non-MJO convective events before they start over the Indian Ocean. We found three such signals. Low-level easterly anomalies extend from the surface to the mid troposphere and move from the western to eastern Indian Ocean. Surface pressure anomalies exhibit a zonal structure of wavenumber one with an equatorial low pressure surge penetrating eastward from Africa through the Indian Ocean and reaching the Maritime Continent. Negative temperature anomalies in the mid-upper troposphere start over the Indian Ocean and move eastward. All of them emerge 20 days before convective initiation of the MJO and move eastward at speeds close to that of the MJO without any direct connection to MJO convection. They are related to neither the extratropics in any discernable way nor any preceding MJO events. They are absent in non-MJO convective events. These signals provide useful information for forecasting MJO initiation over the Indian Ocean. They can be signatures of a dry dynamics mode of the MJO, if it exists.