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What the recent international field campaign in and around the Indian Ocean has advanced our knowledge of the MJO?

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A coordinated international field experiment with special focus on the convective initiation mechanism study of the Madden-Julian Oscillation (MJO) took place in and around the central equatorial Indian Ocean from October 2011 through January 2012. This campaign consisted of several projects including CINDY2011 (Cooperative Indian Ocean experiment on intraseasonal variability in the Year 2011), DYNAMO (Dynamics of the MJO), AMIE (Atmospheric Radiation Measurement program - MJO Investigating Experiment), and LASP (Littoral Air-Sea Process). More than 70 institutes/universities from 16 countries joined the campaign. During a four-month intensive observing period from October through January, three MJO events were observed. It is worth noting that while it is clear to identify three events (late October, late November, and late December) from the time-longitude cross section of outgoing long-wave radiation data along the equator, the most popular MJO identification method - Real-time multivariate MJO Index introduced by Wheeler and Hendon (2004) - could not capture the December event.

While the vertical stepwise moistening which was trapped around trade inversion and 0degC level were confirmed from the equatorial sounding data as previously reported, it was emphasized that lateral transport of moisture and dry air from the Southern Hemisphere as well as westward-propagating disturbances from the Indonesian Maritime Continent were also keys. Several topics from published works during past 2 years after the campaign will also be introduced to indicate what we expected and what are not.

Keywords: Madden-Julian Oscillation, CINDY2011