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Energy budget of a MCS during CINDY-DYNAMO field campaign

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To mitigate the potential damages caused by tropical cyclones, a thorough understanding of their genesis is required including physical processes involved in small and large scales. The combined use of Numerical Weather Prediction (NWP) models and available observations is therefore necessary.
From analyses of the ALADIN-REUNION numerical model, the genesis of a cyclonic vortex during the CINDY-DYNAMO field campaign in the Indian Ocean (November 2011) has been followed around 10 days before being (officially) tracked by the Regional Specialized Meteorological Centre of La Réunion. This was achieved using a relative vorticity maximum at 850 hPa. Moreover, an active phase during the course of the Madden-Julian Oscillation (MJO), was revealed. An energy budget study showed the influence of the jet stream (from the MJO) on the growth of a Mesoscale Convective System (MCS) by barotropic processes behind the tropical system (named "02S"). Furthermore, diabatic processes were brought out during intense deep convection episodes. From these results, this study has been pursued in several directions. In order to study the MJO's impact on the "02S" system over the whole troposphere, the energy budget has been applied to the 700, 500 and 200-hPa levels. In order to verify that the genesis pattern of the tropical system "02S" is not unique, the tropical cyclone "Anja" which arose from the course of the MJO in November 2009 has also been studied. Comparison of the processes involved between "02S" and "Anja" will be shown.