

Abstract Submitted
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Balanced Dynamics in the Madden-Julian Oscillation¹ SHARON SESSIONS, STIPO SENTIC, New Mexico Tech, ZELJKA FUCHS, University of Split, Croatia, and New Mexico Tech, DAVID RAYMOND, New Mexico Tech — Balanced dynamics describes the response of the tropical thermodynamic environment to changes in the atmospheric vorticity patterns. Observations and numerical simulations have demonstrated that positive mid-tropospheric vorticity anomalies produce a more stable thermodynamic environment with cool anomalies at low levels and warm anomalies aloft. The increase in atmospheric stability creates more bottom-heavy convective profiles which are highly conducive for developing tropical cyclones. Balanced dynamics may also play a role in other varieties of tropical convection, including the most significant source of intraseasonal variability: the Madden-Julian Oscillation (MJO). Using data from DYNAMO—a field program aimed to investigate the dynamics of the MJO—we investigate the role of balanced dynamics in the Madden-Julian Oscillation.

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