

Strongest MJO on Record Triggers Extreme Atacama Rainfall and Warmth in Antarctica

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© 2019. The Authors. Tropical perturbations have been shown theoretically and observationally to excite long-range atmospheric responses in the form of Rossby wave teleconnections that result from the equator to pole gradient of planetary vorticity. An extreme teleconnection event occurred during March 2015 in the Southeastern Pacific. As a result, extreme high temperatures were observed in Southwestern South America and the Antarctic Peninsula simultaneously with an extreme rainfall and flood event in the hyperarid Atacama desert. We show that the origin of these seemingly disconnected extreme events can be traced to a Rossby wave response to the strongest Madden-Julian Oscillation (MJO) on record in the tropical central Pacific. A barotropic wave number 3 to 4 perturbation with group velocity between 15 and 30 m/s is consistent with the trajectory and timing followed by the upper-level anomalies radiating away from the tropics after the MJO episode.