

PNNL talks weather phenomena at AGU

December 14 2015

Scientists from the Department of Energy's Pacific Northwest National Laboratory will talk about tropical weather, carbon cycle, climate, and more at the 2015 American Geophysical Union Fall Meeting, which runs Monday, Dec. 14 through Friday, Dec. 18 at the Moscone Convention Center in San Francisco.

Day and night conspire to stall rainy weather

March's Tropical Cyclone Pam was one of the most intense cyclones ever, causing widespread damage on the island nation of Vanuatu. Such cyclones often arise from the weather phenomenon known as the Madden-Julian Oscillation. The MJO travels eastward from the Indian Ocean to the Pacific over the collection of islands that make up the Maritime Continent—Sumatra, Borneo, the Philippines and Papua New Guinea. PNNL researchers explored the forces that push this weather event along and what stalls it as it crosses the islands. The team used data collected in Papua New Guinea in computer simulations to test how the daily pulses of clouds over these islands affect the MJO's movement.

Clouds form in the afternoon as the sun warms up the day. Then temperatures fall and clouds dissipate. When the team got rid of the daytime clouds by replacing the day-night cycle of solar heat with the average amount of heat over that time, the simulated MJO sailed along from the Indian Ocean to the Pacific. However, with the daily heating cycle in place, the MJO stalled over Sumatra and Borneo, falling as rain over the islands. PNNL's Samson Hagos will discuss how these daily pulses of cloudiness can trap heat over the islands, causing convection

that hampers MJO's eastward progress.

More information: Tuesday, Dec. 15, 11:50 a.m. - 12:05 p.m.,
Moscone West, 3008, A22E-07, Samson Hagos, "The impact of diurnal
cycle over the Maritime Continent on the Madden-Julian Oscillation."
agu.confex.com/agu/fm15/meetingapp.cgi/Paper/62874

Provided by Pacific Northwest National Laboratory

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