

**Air-Sea Interactions from Indian Ocean Wind Bursts:
Tropical Cyclone meets MJO at 0, 80E**

Individual Madden-Julian Oscillation (MJO) events appear as pulses of low radiance temperature from high clouds in large-scale maps of outgoing long-wave radiation (OLR). In the DYNAMO (Dynamics of the MJO) experiment in November 2011, for the first time we observed intense scale interactions *within* an MJO pulse—including synoptic, convective, and turbulent scales in both atmosphere and ocean. A tropical cyclone from the Bay of Bengal and a strong MJO event in the Indian Ocean coincided near 0, 80E, the site of the Research Vessel *Roger Revelle*. Embedded within the MJO event, two energetic bursts of sustained eastward wind and enhanced precipitation passed over the ship, each propagating eastward at the Kelvin wave speed. While shallow atmospheric cold pool fronts modestly increased the wind for tens of minutes to hours in the vicinity of rain showers, the larger-scale bursts increased the wind stress by 0.2 N m^{-2} for two days (with peak stresses above 0.7 N m^{-2} during the first wind burst, which was enhanced by the tropical cyclone). The ocean response was rapid and energetic, accelerating the Wyrтки Jet at the equator from less than 0.5 m/s to more than 1.5 m/s over a 2-day period and doubling eastward transport across the ocean's equatorial waveguide.