

CGD SEMINAR



DATE: Tuesday, 11 October 2016

TIME: 11:00 am

LOCATION: NCAR, 1850 Table Mesa Drive
Mesa Lab, Main Seminar Room

TITLE: Anticipating Pacific coral reef resilience
and susceptibility to climate variability

SPEAKER: Liz Drenkard, Rutgers University

ABSTRACT:

Reef-building corals are susceptible to thermal stress and will expel their photosynthesizing endosymbionts (i.e., bleach) when water temperatures exceed their thermal tolerance. Prolonged bleaching can be fatal, thus endangering the ecological and economic benefits conferred by these organisms. Historically, extensive, global bleaching events have been associated with extremes in the El Niño Southern Oscillation (ENSO). With the addition of rising SSTs caused by anthropogenic climate change, identifying environmentally and/or biologically robust reef systems is becoming a priority for targeted conservation efforts. Using numerical models, and ocean and atmosphere reanalysis products, we discuss the roles of ENSO-associated anomalies in both large-scale atmospheric circulation patterns and regional ocean-cooling mechanisms of two contrasting reef environments: Jarvis Island in the central, equatorial Pacific and the Verde Island Passage (VIP), located within the Coral Triangle (CT) on the maritime continent.

Uninhabited Jarvis is directly affected by open-ocean conditions, including variability in the Walker circulation and upwelling of the Equatorial Undercurrent (EUC). While projected EUC-intensification would locally mitigate long-term rise in SSTs, EUC weakening during episodic, strong El Niño events leaves this system doubly vulnerable to thermal stress. Conversely, due to its situation in the geographically complex and populated Philippine Archipelago, conditions in the VIP are dominated by coastal responses to the South Asian Monsoon. Despite large-scale reductions in regional cooling mechanism in the northern CT during strong ENSO transitions, the VIP's geometric configuration produces localized divergent circulation patterns that counter anomalously warm SSTs. These two case studies emphasize the importance of understanding how interactions between large-scale and regional mechanisms confer resilience to thermal stress when considering conservation priorities.

Live chat: <http://www.fin.ucar.edu/it/mms/ml-live-chat1.htm>

Live webcast: <http://www.fin.ucar.edu/it/mms/ml-live.htm>

For more information, contact Gaylynn Potemkin, email potemkin@ucar.edu, phone: 303.497.1618