

CGD SEMINAR



DATE: Tuesday, 5 December 2017

TIME: 11 a.m.

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

TITLE: A mechanically decoupled CESM:
removing the wind-driven piece
of climate

SPEAKER: Sarah Larson, Univ. of Wisconsin

ABSTRACT:

The contribution of buoyancy (thermal + freshwater fluxes) versus momentum (wind-driven) coupling to SST variance in climate models is a longstanding question. Addressing this question has proven difficult because a gap in the model hierarchy exists between the fully coupled (momentum coupling + buoyancy coupling + ocean dynamics) and slab ocean coupled (thermal coupling with no ocean dynamics) versions. The missing piece is a thermally coupled configuration that also permits anomalous ocean heat transport convergence decoupled from the wind stress. A mechanically decoupled model configuration is provided to fill this gap and diagnose the impact of momentum coupling on SST variance in NCAR CESM. An “opposing flux hypothesis” is proposed to explain why the subtropics (midlatitudes) experience increased (reduced) SST variance without momentum coupling. A byproduct of mechanically decoupling the model is the absence of ENSO variability. The Pacific Decadal Oscillation operates without momentum coupling or tropical forcing, although the pattern is modified with enhanced (reduced) variability in the subtropics (midlatitudes). Results show that wind-driven Ekman fluxes are a crucial component to both subtropical and midlatitude SST variance.

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

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