CGD SEMINAR

NCAR

DATE: Tuesday, 24 October 2017

TIME: 11 a.m.

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

TITLE: Prediction of 2-year La Niña using CESM

SPEAKER: Pedro DiNezio, University of Texas

ABSTRACT:

Historical observations show that one in two La Niña events have lasted for two consecutive years. Little is known about the predictability of these 2-year La Niña events, despite their outsized impacts on drought and flooding. I will address this question using a hierarchy of simulations performed with the Community Earth System Model Version 1 (CESM1). Statistical analysis of an 1800-year long control simulation shows that 2-year La Niña are more likely to occur after strong El Niño events. This result is supported by perfect model forecasts, which show that the predictability of 2-year La Niña is controlled by the magnitude of the thermocline discharge driven by the preceding El Niño. Initialized predictions from the CESM Decadal Prediction Large Ensemble show similar skill. This allowed us to predict the duration of the La Niña event following the record-breaking El Niño of 2015/16. Forecasts initialized in November 2015, at the peak of El Niño, predicted a 60% probability of La Niña conditions persisting into the upcoming 2017-2018 boreal winter, i.e. a two year event. An empirical model combining observed and simulated predictors shows 80% probability. Together these results demonstrate that, under specific initial conditions, La Niña conditions can be predicted two years in advance.

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

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