



On the Dynamical Mechanisms Governing El Niño– Southern Oscillation Irregularity

Judith Berner

National Center for Atmospheric Research (NCAR)

This talk will investigate the mechanisms by which short-timescale perturbations to atmospheric processes can affect interannual variability such as the El Niño-Southern Oscillation (ENSO).

To this end a coupled simulation of NCAR's Community Climate System Model is compared to a simulation in which the model's atmospheric diabatic tendencies are perturbed at each time step using a Stochastically Perturbed Parameterized Tendencies scheme.

The simulation with stochastic parameterization compares better with 20th-century reanalysis in having lower inter-annual sea surface temperature (SST) variability and more irregular transitions between El Niño and La Niña states. The broadening of the SST spectrum is consistent with a reduced decorrelation time scale of the ENSO eigenmode from 17 to 11 months, which is closer to 8 months as obtained in 20th-century reanalysis.

It will be shown that for the simple model of a linear damped oscillator, such a noise-induced stabilization and broadening of the spectrum is obtained when its frequency parameter is perturbed (i.e., a randomization of phases).

It will be discussed how these results can be used to inform next generation physical parameterization development. The seminar will close with a discussion of other areas where fast-slow interactions play a fundamental role and stochastic parameterization can add value to weather predictions and climate projections.

Thursday, 17 January 2019, 3:30 PM

Refreshments 3:15 PM!

NCAR-Foothills Laboratory
3450 Mitchell Lane
FL2-1022, Large Auditorium

This seminar will be webcast live at:
<http://ucarconnect.ucar.edu/live>

Recorded seminar link can be viewed here:
<https://www.mmm.ucar.edu/events/seminars>

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