

CGD Seminar Series

“The NCAR Climate Variability Diagnostics Package for Large Ensembles”

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Climate Analysis Section - NCAR

Date: Tuesday 17 November 2020

Time: 11am – 12pm

For Zoom information, please contact

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For live stream information, visit the

CGD Seminar Webpage

ABSTRACT

We will introduce the newly developed NCAR “Climate Variability Diagnostics Package for Large Ensembles” (CVDP-LE), an automated analysis tool and data repository for exploring internal and forced contributions to climate variability and change in coupled model “initial-condition” Large Ensembles and observations. The CVDP-LE computes a wide range of modes of interannual-to-multidecadal variability in the atmosphere, ocean and cryosphere, as well as long-term trends and key global and regional climate indices, based on a user-specified set of model simulations and observational data sets. The output is displayed graphically for each quantity in two ways: the “individual member” view in which all simulations from all models are compared on a single page; and the “ensemble summary” view in which the ensemble-mean (i.e., forced response) and ensemble-spread (i.e., internal variability) of each model are presented on a single page. Both displays include quantitative comparisons to observations in the form of pattern correlations; the “ensemble summary” view also provides temporal and spatial metrics of the rank of the observations relative to the ensemble spread, facilitating model evaluation and inter-comparison. All output, including ancillary pattern correlation and rank metrics, are saved to a web-based data repository of png and netcdf files for later access and further analysis. The accompanying *User’s Guide* provides general background on Large Ensembles, detailed documentation of all diagnostics and metrics, and strategies for making effective use and proper interpretation of the results; a separate *Readme* file contains instructions on how to run the package. We will demonstrate the capabilities of the CVDP-LE with examples from the Multi-Model Large Ensemble Archive (MMLEA) and CMIP6 Historical simulations. Suggestions for improving and expanding the CVDP-LE are welcomed.

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