

CGD Seminar Series

Does Non-Gaussian Calibration Improve Multi-Model Seasonal Forecasts?

Nachiketa Acharya

*International Research Institute for Climate and Society
The Earth Institute at Columbia University*

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Time: 11am – 12pm

For Zoom information, please contact

Tracy Baker tbaker@ucar.edu

*For live stream information, visit the
CGD Seminar Webpage*

ABSTRACT

In this study, state-of-the-art coupled GCMs of the North American Multi-Model Ensemble (NMME) are calibrated using extended logistic regression (ELR), a non-Gaussian regression method where probability itself is considered as the predictand, to produce a probabilistic seasonal prediction of precipitation and temperature. ELR is the extension of traditional logistic regression by including the predictand threshold in the regression equations to allow the derivation of full predictive distributions. Hence, in addition to traditional tercile probability forecasts, the proposed calibration method has also provided a more flexible format that enables users to extract information for those parts of the forecast distribution of the greatest interest to them in the decision-making process. While the ELR has been successfully applied in the past to ensemble weather and sub-seasonal forecast, this is the first time, to our knowledge, that it has been used to produce seasonal climate forecasts, and currently it has been used in the real-time seasonal prediction system at International Research Institute for Climate and Society (IRI), Columbia University, USA. The skill of ELR-based forecasts is evaluated using 1982-2010 hindcasts following a leave-one-year-out cross validation and compared with the more common approaches based on counting how many members exceed a certain threshold, ordinary least square (OLS) based calibration (Gaussian assumption) and the probability anomaly correlation (PAC) based calibration which is used by NOAA in real-time. The results will be discussed for summer and winter precipitation and temperature for the entire globe as well as tropical and sub-tropical climate regions.

For more information, contact Tracy Baker | tbaker@ucar.edu | x1366