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Education

PhD, Physics, Cornell University

Key Interests

Atmospheric Science | Atmospheric Circulation | Atmospheric Wave and Instabilities | Seasonal Predictability of the Atmosphere | Atmospheric Storm Tracks

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SELECT PUBLICATIONS

- › Yadav, P., D. Straus and E. Swenson, The Euro-Atlantic response to the Madden-Julian oscillation cycle of tropical heating: coupled GCM intervention experiments. *Atmos–Ocean* 76, 3115-3128, (2019).
- › Amini, S., and D. M. Straus, Control of storminess over the Pacific and North America by circulation regimes. *Clim. Dyn.*, 52, 4749-4770 (2019).
- › Yadav, P. and D. M. Straus, Circulation response to fast and slow MJO episodes. *Mon. Wea. Rev.*, 145, 1577-1596, (2017).

Research Focus

My research covers a variety of topics in sub-seasonal to seasonal variability and predictability of the atmospheric circulation and related weather. The goal of this research is to provide scientific insight regarding the factors which may make the prediction of the evolution of weather patterns two to four weeks ahead possible, and those factors which may make the prediction of the upcoming seasonal mean possible. My research uses a combination of the output of state-of-the-art forecasts, observations, and innovative numerical model experiments to try to identify sources of enhanced predictive power of both mid-latitude weather patterns and the Indian Monsoon circulation.

Current Projects

- The prediction of the seasonal mean summer Monsoon rainfall over the Indian subcontinent is of enormous societal importance to the Indian population. We have developed a method for correcting the atmospheric diabatic heating that arises from the ocean temperature anomalies in numerical models, and are applying such corrections to a large series of seasonal prediction. The goal is to better understand the separate roles of Pacific heating, Indian Ocean heating, and their interaction.
- The storm tracks in the Northern Hemisphere describe the locus of intense weather systems which directly impact Europe, Asia and the US. In this project we are evaluating the storm track predictions of a suite of state-of-the-art numerical weather prediction models that are being considered for use by the National Weather Service.
- Using state-of-the-art European model forecasts to explore just how the diversity of the Madden-Julian Oscillation (MJO) structures influences the response of mid-latitude weather, and whether a further discrimination of MJO episode types may help to better understand the tropical forcing of mid-latitude weather on intra-seasonal time scales