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Title: Imprints of Dynamically-Varying Vegetation on Subseasonal Persistence

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Abstract:

The interaction of soil moisture with the atmosphere has been known for decades to influence the climate simulated with Earth system models, 'reddening', for example, the spectra of simulated air temperature. A land surface model fitted with dynamic vegetation phenology (the 'CatchmentCN' model) allows for similar examinations of phenology impacts on simulated climate. Here we examine the climate variability inherent in three parallel multi-decadal simulations with the NASA/GMAO GEOS-5 atmosphere/land modeling system: (i) a simulation with phenological variations (LAI) set to climatological seasonal cycles, as determined from an offline simulation with the CatchmentCN model driven with observations based meteorological forcing; (ii) a simulation with interannually varying (but prescribed) phenological variations, as again determined from the offline simulation; and (iii) a simulation with fully interactive vegetation phenology. Analysis of these simulations allows us to quantify the 'memory' imparted to the climate system through memory in phenology.

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