ABSTRACT

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SGER: Multivariate Climate Change Detection

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The PI will apply (previously developed) coupled climate model analysis methods to ensembles of historical period integrations of three new US models; the Community Climate System Model (CCSM), the Geophysical Fluid Dynamics Laboratory (GFDL) model, and the Goddard Institute of Space Sciences (GISS) models. The research is collaborative with DOE’s Program for Climate Model Diagnosis and Intercomparison (PCMDI) scientists to perform climate change detection analysis on five model monthly output fields, Microwave Sounding Unit (MSU) Channel 2 temperature, MSU Channel 4 temperature, tropopause height, total columnar water vapor and surface wind stress. The statistical significance of late twentieth century trends in the model data will be judged against state of the art observational data or their proxies. An additional analysis of the daily output from the NCAR CCSM3 is planned to study the statistics of extreme events produced by the model. Return value fields will be calculated for annual maximum daily averaged surface air temperature and precipitation.

Broader Impacts:

This work will yield new information about whether and by how much our climate is changing. This is important information for environmental management and environmental policy decisions.

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