Session: B1 Oral presentation

Decadal climate prediction with GEOS-5

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The GMAO's GEOS-5 Atmosphere-Ocean General Circulation Model (AOGCM) has been used for the decadal prediction runs in the CMIP5 experiment suite. The 10-year forecasts, with initial conditions from 1960 to 2005, are initialized from an ocean and sea-ice reanalysis conducted using a multi-variate Ensemble Optimal Interpolation scheme in the GEOS-5 AOGCM while the atmosphere is constrained by MERRA (1979-2005) and a related atmospheric analysis (prior to 1979). Five-member ensemble predictions are conducted using the initial conditions from the reanalyses and four perturbations. The perturbations are generated using the bred vector approach with an upper ocean heat content (average temperature in the upper 500 m) norm over the North Atlantic. Two different rescaling timescales are used, 1-year and 5-year. Preliminary results indicate regions of higher predictable SST over the northern North Atlantic and western extratropical Pacific at up to 5 year forecast leads. The presentation will include an analysis of the predictive skill of the system and the ability of the bred vectors to capture the dominant modes of instability on decadal timescales.