CTB Joint SEMINAR Series

Theme: CFS as a Prediction System and Research Tool
Climate Test Bed (CTB)
Center for Ocean-Land-Atmosphere Studies (COLA)

Summer Season Forecast Experiments with the CFS using Different Land Models and Different Initial Land States

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Date: Wednesday, March 26, 2008
Time: 2:00 pm (refreshments served at 1:30 pm)
Place: COLA Seminar Room (*)

In N.H. summer, the influence of ENSO SST on N.H. atmospheric circulation is significantly weaker than in the winter season. Hence seasonal predictions by coupled global climate models show notably lower skill over the N.H. in summer than in winter, especially over land. Research over the past decade or more has indicated that proper land surface physics, land characteristics and land-state initialization (soil moisture, snowpack) is important for improving N.H. summer seasonal predictions with coupled global models. In this study, we investigate the impact of different land models and different sources of land initial conditions on summer season predictions of the NCEP global Coupled Forecast System (CFS). Specifically, 20-25 years of ensemble CFS summer forecasts are executed from late April initial conditions for four configurations of the CFS with two land models and two sources of initial land states. We present the precipitation and temperature prediction skill of these CFS summer forecasts, with a focus on prediction skill over CONUS. Additionally, we present some assessments over the Asian monsoon region (provided by CPC collaborators).

The two land models in the above experiments are 1) the older OSU LSM used in the presently operational CFS and 2) the newer Noah LSM used operationally in NCEP's medium-range Global Forecast System (GFS) since June 2005. The two sources of initial land states are 1) the NCEP/DOE Global Reanalysis 2 (GR2), which utilizes the OSU LSM and 2) the new NCEP Global Land Data Assimilation System (GLDAS), which utilizes the new Noah LSM. Results from our experiments show that merely upgrading the land component of a global climate model for seasonal forecasting without providing initial land states that are self-consistent with the land model upgrade can actually degrade the performance of the global model.

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Directions from the Capital Beltway (I-495): Take Interstate 95 north toward Baltimore. Take the first exit (29B - Route 212 West) to Calverton. Turn left at the first traffic light (intersection of Powder Mill Road and Beltsville Drive) into Centerpark office park. COLA is located on the 3rd floor of bldg. 4041. Parking is free.