



Water Cycle Research
Making a Difference

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Seminar Announcement:

Speaker: Yan Luo, University of Maryland
Title: Regional Aspects of the North American Land Surface-Atmosphere Interactions and Their Contributions to the Variability and Predictability of the Regional Hydrologic Cycle

Date: Wednesday, April 26, 2006

Time: 11:00am

Location: CREW Seminar Room
4041 Powder Mill Road, Suite 302
Calverton, MD 20705-3106 USA

Regional Aspects of the North American Land Surface-Atmosphere Interactions and Their Contributions to the Variability and Predictability of the Regional Hydrologic Cycle

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In this study, we investigate the pathways responsible for soil moisture-precipitation interactions and the mechanisms for soil moisture memory at regional scales through analysis of NCEP's North American Regional Reanalysis dataset, which is derived from a system using the mesoscale Eta model coupled with Noah land surface model. The consideration of the relative availability of water and energy leads to the relative strengths of land-atmosphere interaction and soil moisture memory, which are related to the predictability of the regional hydrologic cycle. The seasonal and geographical variations in estimated interaction and memory may establish the relative predictability among the North American basins. The potential for seasonal predictability of the regional hydrologic cycle is conditioned by the foreknowledge of the land surface soil state, which contributes significantly to summer precipitation: (i) The precipitation variability and predictability by strong land-atmosphere interactions are most important in the monsoon regions of Mexico; (ii) Although strong in interactions, the poor soil moisture memory in the Colorado basin and the western part of the Mississippi basin lowers the predictability; (iii) The Columbia basin and the eastern part of the Mississippi basin also stand out as low predictability basins, in that they have good soil moisture memory, but weak strength in interactions, limiting their predictabilities. Our analysis has revealed a highly physically and statistically consistent picture, providing solid support to studies of predictability based on model simulations.

DIRECTIONS: 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 Centrepark.

Once at Centrepark there are three buildings (besides the movie theater). Building 4041, housing COLA & CREW, is the office tower on the right. The Sheraton College Park hotel is to the left of the twin office towers.

