

The RAL Seminar Series



NCAR

Landscape Controls on the Hydroclimatology of the North American Monsoon

by

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Room 1022, 3:30 p.m.**

The study of "hydroclimatology" seeks to understand the transfer and movement of water and energy in the atmosphere and on the land, integrating sister disciplines of atmospheric science and hydrology. Over the past 10 years, a significant effort has been undertaken to improve the understanding and prediction of the hydroclimate of the North American Monsoon (NAM) system as it is now widely known to exert significant influence North American warm season climate. The GEWEX/CLIVAR-endorsed North American Monsoon Experiment (NAME) recently concluded formal activities during 2010 and contributed much in the way of an improved physical understanding of the NAM. However, significant challenges remain with regard to understanding the role of the land surface has on the regional climate system of the NAM and, in turn, the multi-scale controls on river basin discharge which precariously supports a booming population and rapidly expanding economic base. Furthermore, while some progress has been made in improving warm season prediction skill, most forecast products still lack either the accuracy or descriptiveness to be useful to a broad range of users. This talk documents our current understanding of the coupled NAM hydroclimate system in the context of controls on regional water and energy exchange and seasonal variability in streamflow. Following a brief review of progress achieved under the NAME research program, a pair of linked questions are explored which seek to explain 1) how the NAM precipitation regime is modulated by the regional landscape of southwestern North America, and 2) how the regional landscape filters climate forcing provided by the NAM in the production of river basin runoff. The talk concludes with some reflective comments on observed trends in NAM behavior as they relate to current projections of the NAM hydroclimate under climate change.