

***EVALUATING LAND-ATMOSPHERE-CLOUD COUPLING IN  
REANALYSES***

Wei Wu, Yangang Liu, and Alan K. Betts

For presentation at the  
Gordon Research Conference 2012:  
Biogenic Hydrocarbons & the Atmosphere  
June 24-29, 2012  
Bates College (93 Russell Street)  
Lewiston, ME

**Atmospheric Sciences Division/Environmental Sciences Dept.**

**Brookhaven National Laboratory**

**U.S. Department of Energy  
Office of Science**

ABSTRACT

Studies show that atmospheric cloud properties closely link to land-surface shortwave radiation and meteorological properties, which are critical to ecosystem processes. However, based on three major Numerical-Weather-Prediction reanalyses (ERA-Interim, NCEP/NCAR Reanalysis I, and NCEP/DOE Reanalysis II), climate models exhibit significant underestimation of their cloud properties, and the cloud properties are strongly related to 2-m relative humidity. The cloud fraction biases in the two NCEP reanalyses increase (decrease) with the relative humidity (temperature and specific humidity), but the cloud fraction biases in ERA-Interim show no relationship (an increase) with the relative humidity (temperature and specific humidity). These results highlight the need of improving the accuracy of modeling the interactions between atmosphere and land-surface properties.

A poster contributed to “**Ecosystem-Atmosphere Interactions**” (Tue, 4-6pm, Jun 26, 2012)