

Multidisciplinary Simulation, Estimation, and Assimilation Systems

Seminar Series

Prof. Fuqing Zhang

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Simultaneous state and parameter estimation with an ensemble Kalman filter for land surface and boundary layer processes

Abstract: In a variety of disciplines including atmospheric, oceanic, hydrologic and environmental sciences, large numerical simulations have become an essential tool for understanding the physical processes, synthesizing data, and for prediction. A key problem for modeling these dynamical systems is how to deal with uncertainties and error in the models' representation of key physical processes. This talk will introduce some of the recent ensemble-based data assimilation approaches such as the use of an ensemble Kalman filter for Simultaneous State and Parameter Estimation (SSPE) in the treatment and quantification of model error and uncertainties. Applications of SSPE to a variety of phenomena ranging from the atmospheric boundary layer transport, air-sea fluxes and a physically-based land-surface hydrologic model will be presented.

Biography: Prof. Zhang's research interests include atmospheric dynamics and predictability, data assimilation, tropical cyclones, gravity waves and regional-scale climate. He earned his B.S. and M.S. in meteorology from Nanjing University, China in 1991 and 1994, respectively, and his Ph.D. in atmospheric science in 2000 from North Carolina State University. He has authored/co-authored over 150 peer reviewed journal publications that have a total of more than 3300 citations. He has received numerous awards for his research and service.

Friday, Nov. 20, 2015

2:30PM; Rm. 5-314

Massachusetts Institute of Technology
77 Massachusetts Avenue
Cambridge, MA 02139

Host: Pierre Lermusiaux
<http://mseas.mit.edu>



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