Predictability, Observations, and Uncertainties in Geosciences

March 13-15, 2006
School of Computational Science
Florida State University
Tallahassee, Florida

The challenging problem of predictability and estimation of uncertainties in application to geosciences has an inherently multidisciplinary character. The collaboration between mathematicians, statisticians, engineers, computer scientists, and geoscientists is required before new algorithms can be developed.

Highly-dimensional dynamical systems found in geosciences generally limit the applicability of traditional methods, and new ideas based on the use of ensembles are just a first step in the direction of addressing the uncertainties in high dimensional spaces. As a general mathematical framework, the control theory appears to provide the means for addressing these issues. This workshop will bring together leading world scientists from all disciplines that can contribute to the improvement of predictability and uncertainty estimation in geosciences applications.

INVITED SPEAKERS:

Ed Lorenz
Massachusetts Institute of Technology

Eugenia Kalnay
Dept. of Meteorology,
University of Maryland, College Park, MD

Dan Gabriel Cacuci
Institute for Nuclear Technology and Reactor Safety,
University of Karlsruhe, Germany

T.N. Krishnamurti
Dept. of Meteorology,
Florida State University, Tallahassee, FL

Rolf Reichle
Global Modeling and Assimilation Office,
NASA, Greenbelt, MD

Zoltan Toth
NOAA/NCEP, Washington, D.C.

Jeffrey Anderson
NCAR, Boulder, CO

Graeme Stephens
Dept. of Atmospheric Science,
Colorado State University

James Annan
Frontier Research Center for Global Change,
JAMSTEC, Japan

Francois Le Dimet
Joseph Fourier University,
Grenoble, France

Organizers:
Prof. Michael I. Navon
SCS and Department of Mathematics,
Florida State University
Dr. Milija Zupanski
CIRA, Colorado State University

TOPICS

Probabilistic modeling, ensemble forecasting
Reduced order modeling
Ensemble data assimilation methods, uncertainty estimation
Predictability, chaotic dynamics
Information content analysis
Model error and parameter estimation
Control theory in geosciences, non-differentiable minimization
Non-Gaussian probability distribution and data assimilation, observations

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