The International Training Centre for Operational Oceanography (ITCOO) of the Indian National Centre for Ocean Information Services (ESSO-INCOIS) is organizing an intense short course on Ensemble Kalman Filtering - Methods and Algorithms during July 15 - 26, 2013. The course will be conducted by Prof. S. Lakshmi Varahan, School of Computer Science, University of Oklahoma, USA at ITCOO-INCOIS, Hyderabad.

I. Goal
The aim of this proposed intense short course is to provide a good theoretical, algorithmic and computational background on various aspects of ensemble methods fashioned after the well known Kalman filtering that constitutes the basis for the forecasting methods that are currently used in many of the leading forecasting centers around the world.

II. Topics
1) Dynamic Data Assimilation and its relation to filtering, prediction and smoothing problems
2) An overview of statistical estimation - theory and methods
3) Kalman filtering approach to linear filtering - an exercise in linear unbiased and minimum variance estimation
4) Nonlinear filtering problem and its challenges
5) Various approximations to Nonlinear filtering
6) Ensemble methods
7) Hybrid methods
8) Particle filtering and its relation to ensemble methods
III. A plan of Action
1) It is planned that these topics will be covered in a total of 20 lectures
2) Each lecture will be for 60 minutes + 10 minutes for discussions
3) There will be two lectures back to back on each morning for ten working days (covering two weeks from July 15th through July 26) with a break about 30 minutes in between the two lectures

IV. Suggested Reading

Text Book

Reference Texts and papers
4) Papers from the current literature