19.10.2016

Day-3_Report of Group 4 : Forecasting, Applications and Market.

Lecture on Lagrangian data assimilation was taken by Dr. Amit Apte. The art of optimally incorporating partial and noisy observational data of a chaotic, nonlinear, complex dynamical system with an imperfect model (of the data noise and the system dynamics) to get an estimate and the associated uncertainty for the system state was explained in detail. It was concluded that Lagrangian data assimilation is the problem of using data from Lagrangian/passive instruments (e.g. drifters and gliders). Particle filtering and Kalman filtering are two complementary data assimilation methods which are ineffective in high dimensional and nonlinear problems, respectively, but effective in nonlinear problems and high dimensions, respectively. Hybrid particle-Kalman filter combines the strengths of both, for the Lagrangian data assimilation problem.

Talk on Real Time Ocean Observations & Ocean Data and Information System was given by Dr. Pattabhi Ramarao. He has covered the ocean observation, information & advisory services provided to fishing community, coast guard, coastal states, IMD, Navy, NHO, Ports and Harbours, offshore and shipping industries, academia and Research Institutes, Latest equipment are used for online collection of ocean data on temperature, wave, current, atmospheric pressure, wind, sub surface temperature, salinity etc. A network of instruments around Indian coast as well as in the surrounding countries has been made for on line data collection. The collected data is transmitted through satellite to INCOIS and processed. The data is put online in the server for general as well as for specific requirement in the required format for fast dissemination of information routinely.

Group_5 spent more than two hours time in discussion with Dr. Harikumar on understanding the forecasting, application and market. Hands on experiments with the computer system were also done. Outline of the group report to be prepared was also discussed. Each group member was assigned the task for preparation of the report.

Lecture on Upwelling along the coast of Kerala and penetration into the Bay of Bengal was delivered by Dr. K. Ajith Joseph. He has demonstrated the signatures of upwelling, inferred applying remote sensing Techniques. Contributing factors for upwelling such as wind stress along the shore was demonstrated. A marked decrease in upwelling was observed during the warm ENSO years of 1991 – 92 and 1997 – 98. HYCOM was used to simulate the major oceanographic features in the Indian Ocean. Alongshore wind could explain only up to 25-30% of the upwelling along the southwest coast of India for certain years and certain sections. The penetration of upwelled waters into the Bay of Bengal is captured in the model and is influenced by the monsoon currents

Few important queries from the group to further clarify the issue were as follows:

1. A clarification on how to choose the best samples for data assimilation?

2. What is the physical meaning of covariance?
3. Why upwelling is limited to Kerala coast?
4. Our model output is in the form of Hs where as in the field actual wave heights are more than this, how this is addressed?
5. Is rossby waves influence coastal upwelling

All the questions were answered which have enhanced the groups knowledge.