Date: Friday April 2

Time: 11:00 AM

Location: Maryland Hall 110

Speaker: Kayo Ide (University of Maryland)

Title: *"Assimilation of Lagrangian Data and Observing System Design for Optimal Deployment"*

Abstract

The Lagrangian data assimilation (LaDA) is a method for the assimilation of Lagrangian observations directly into the model. By augmenting the model state vector with the coordinates of the Lagrangian instruments and computing their trajectories based on the model velocity, the LaDA removes the need for any commonly used approximations to transform the Lagrangian observations into the Eulerian velocity observations. We demonstrate effectiveness of LaDA in a realistic setting for ocean-eddy tracking in Gulf of Mexico. We evaluate three types of observations for ocean eddy tracking: the measurement of velocities at fixed station, the horizontal position of surface drifters, and the three-dimensional position of isopycnal floats. We show that as little as one judiciously placed drifter or isopycnal float is needed to recover an eddy being shed by the loop current. We present the theoretical support for the efficiency of the Lagrangian observations based on the observability from control theory and Lagrangian flow analysis from dynamical systems theory.