1107-91-331   **Elaine T Spiller*** (`elaine.spiller@marquette.edu`). *Some recent approaches for assimilating data from Lagrangian instruments.*

We discuss a recently proposed hybrid particle-ensemble Kalman filter for assimilating Lagrangian data, and apply it to a high-dimensional quasi-geostrophic ocean model. Effectively the hybrid filter applies a particle filter to the highly nonlinear, low-dimensional Lagrangian instrument variables while applying an ensemble Kalman type update to the high-dimensional Eulerian flow field. We present some initial results from this hybrid filter and compare those to results from a standard ensemble Kalman filter and an ensemble run without assimilation.

We will also discuss the assimilation of data that are collected while Lagrangian ocean instruments are in transit between surfacings. Effectively utilizing such data presents a challenge as the subsurface paths of these instruments are unknown. We introduce an observation operator that takes these data into account in addition to the data that are typically assimilated. A key point is that the subsurface, en-route paths of these ocean instruments are estimated as part of the assimilation scheme. Finally, we will posit how we see these two schemes being used together. (Received January 18, 2015)