Local Mesoscale/Submesoscale Nowcasting and Forecasting

This project focuses on basic and applied research for describing and predicting a local region of the ocean onboard ships or shore. Emphasis is placed on mesoscale/submesoscale structures and water column mixing in areas of Naval and scientific interest. Real-time multiplatform observations, acquired at various spatial and temporal scales, are objectively analyzed on chosen grids. Along with climatology and feature models of specific oceanic structures, the real-time data are used as input into models that dynamically adjust the fields and generate a nowcast of the oceanic state. Subsequent data is assimilated into dynamical forecasts, specifically tailored to local areas with open boundaries. Predictions of the future state of ocean structures, variabilities, and parameters of interest are generated. Emphasis is placed on the on-site forecasting in shallow water. These forecasts are validated and evaluated with acquired *in situ* data during field surveys. Various dynamical models, forecasting systems, data assimilation methods, and objective analysis approaches are considered for representing the mesoscale/submesoscale ocean structures and their evaluation.