Coupling a California Coastal Ocean Model with a San Francisco Bay/Estuary Model to Enable Predictions

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A structured grid California coastal ocean model is coupled to an unstructured San Francisco bay/estuary model with the goal of enabling operational predictions. The California coastal ocean model is based on the Regional Ocean Modeling System (ROMS) using 40 terrain-following vertically-stretched layers and a structured horizontal curvilinear grid of 3-km resolution. As the model domain includes bays and estuaries, the complex coastline often requires an unstructured grid in the horizontal direction in order to achieve computational efficiency. To link the California coastal ocean with the San Francisco bay/estuary, we have implemented the Semi-implicit Eulerian-Lagrangian Finite Element (SELFE) with unstructured triangular grids in the horizontal direction and a hybrid vertical coordinate combining the terrain-following and vertically-stretched with constant-depth layers. Results from the coupling between the California coastal ocean ROMS and San Francisco bay/estuary SELFE will be presented. Experiences and lessons learned from working with application end users of the hindcasts and forecasts in support of improved decision making will be discussed.