## Regional Ocean Model System in the PWS Region

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### Scope of Work:

The central overarching hypothesis for the ocean observing system in Prince William Sound is that both the degree and source of connectivity of the Prince William Sound to neighboring coastal marine systems combine with the natural and anthropogenic disturbances drive dramatic variation in ecosystem processes, biological community structure, and population dynamics over space and time. Critical connections between PWS and other ecosystems are forged through variable water mass exchange with the Gulf of Alaska or from coastal freshwater runoff, implying dramatic differences in heat, salt, nutrient fluxes, stratification, planktonic propagules, and dissolved and suspended inorganic particles. This temporal and spatial variation in inputs interacts with various disturbances from ecological processes, such as predation, human activities, such as fishing, and natural events, such as earthquakes, and has important direct and indirect impacts to the PWS ecosystem. The goal of this project is to develop a real time data assimilation ocean circulation model to allow for a better understanding of the circulation patterns in PWS and water exchange mechanisms between the GOA and PWS to provide a solid scientific foundation for addressing fisheries and ecosystem management needs related to long term oceanic and climate variability. The proposed work will be divided into two tasks at JPL and UCLA, respectively. The UCLA task will focus more on development of a ROMS configuration with a goal to realistically reproduce the PWS circulation and variability, and the JPL task will focus more on the development of the ROMS data assimilation system and real-time implementation.