



**This is a movie made from the most recent LiveOcean three-day forecast.**

The color shows the salinity of the surface of the ocean which varies from zero in freshwater to about 34 parts-per-thousand in the ocean. Plumes from many rivers are apparent, especially the Columbia River on the coast and the Fraser River within the Salish Sea. The river plumes can be moved around quite a bit depending on the direction of the prevailing wind. Often during the winter, when winds are dominated by storms coming from the south, the Columbia River plume is pushed tight to the Washington coast, and may reach all the way to Neah Bay and even into the Strait of Juan de Fuca. During the summer we often see winds from the north and the Columbia River plume is pushed southwards and offshore (the offshore drift is a consequence of the Earth's rotation, the so-called "Coriolis force"). The importance of our many rivers is that they can deliver things like sediment and nutrients from the land to the coast. They also increase the stratificaion of the water near the coast. The river plumes may also be transport pathways for larvae of some species such as the invasive European Green Crab. Within the Salish Sea the rivers provide a key ingredient driving the massive estuarine exchange flow.

The movie has a panel at the bottom that shows time. The tide is evident in the twice-a-day variation of the sea surface height. Daytimes are shown as the thick yellow lines on the horizontal axis. Winds are shown by an arrow in the middle of the map, with the scale given by the circle. The black line off the coast on the map is the 200 m depth line, which marks the "shelf break" separating the coastal region from the deeper ocean beyond.

As part of a project to help forecast Harmful Algal Blooms along the coast, the blooms that influence whether or not razor clams are safe to harvest at the beach, we forecast the movement of simulated drifters. These are the arrays of moving red dots on the map. They are released at regions known to be potential sources of Harmful Algae, and then followed for three days to see if they are heading for the beach. This is just one of many pieces of information used by the managers who keep the razor clam harvest safe. Close ups of the particle tracks from two regions are plotted in the panels on the right. The upper right panel is the region of the Juan de Fuca Eddy. The lower right panel is the region over Heceta Bank.