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Connecting with the Strait of Georgia - an overview of activities supported by NRCan using the VENUS project.

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The Strait of Georgia and the Fraser River delta, comprising one of the most densely populated areas of Canada, have been the subject of intense oceanographic and coastal research for many years. Ship based and mooring programs have revealed vital information about slope stability and sediment dynamics on the delta slope and in the Strait. The trigger mechanisms and fundamental drivers of these processes remain poorly understood, however, because of the data and power limitations of moored data acquisition systems. The Victoria Experimental Network Under the Sea (VENUS) is a fibre optic scientific network in the southern portion of the Strait of Georgia, which measures many properties of interest over a range of time scales from subseconds to years. This observatory consists of a cable extending from the river mouth (40m depth) down the delta front to two deep observatory Nodes at 170 and 300m respectively, with 'sockets' to connect instruments. At all connection points, interface packages enable scientists to plug in their own specialized instruments for measurements of processes in real time, and over all time scales. Data is accessible in near real-time from the project web site (www.venus.uvic.ca).

Natural Resources Canada (along with other government departments and universities) supports several research initiatives which make use of the VENUS network. These are discussed, along with instrument specifics. A heavily instrumented sediment dynamics 'lander', which will be located on the delta slope close to the mouth of the main delta channel, collects data about environmental and sediment conditions

at the interface between river and ocean. This lander contains a scanning sonar instrument to measure bedform migrations, ADCP's, single point current meters and turbidity sensors to measure near bed sediment transport and water column oceanographic conditions. Other instrumentation is installed at the deeper nodes for understanding ambient conditions in the strait. For example, zooplankton acoustic profilers (ZAP) on the deepest node measures backscattering targets in the water column. An installation on the slope of the Fraser Delta will measure pore pressures in the sediment, and the forcing mechanisms which affect them. The objective is to understand the conditions leading to slope instability, failure and mass transport, including influences of dredge disposal and other port activities.