

PRISM Cruises

Since 1998, PRISM has conducted cruises to ~40 stations within greater Puget Sound, including each of its major sub-regions (Central Basin, South Sound, Hood Canal, Whidbey Basin, Admiralty Inlet, E. Strait of Juan de Fuca). The cruises are designed to collect a synoptic snapshot of the oceanographic conditions in Puget Sound in early summer (June) and winter (December). The intent behind the cruise plan, however, contributes to each of the three PRISM goals: to advance our scientific understanding of Puget Sound, to contribute to education about Puget Sound and afford opportunities for practical training, and to provide input to regional planning.

Contributions of PRISM cruises to PRISM goals:

The PRISM cruises are an important and very visible sign of UW's commitment to research, education, and regional planning regarding Puget Sound. Below we list some of the major accomplishments and assets that the PRISM cruise time-series has achieved to date. Future expansion and participation is encouraged!

Education: A novel feature of each PRISM cruise is that students are trained aboard the vessel to conduct all of the scientific tasks on the cruise. While there are typically a wide variety of participants on a cruise, the vast majority are students, mostly at the undergraduate level. Each cruise, the Chief Scientist and the Watch Leads train all of the participants in all shipboard oceanographic procedures, including how to stage a station, operate the CTD, take a variety of samples, conduct various laboratory analyses, and process data. Typically we train ~20 students per cruise. The students essentially run the cruise, with guidance to assure comparability and quality. Graduate students are also welcome aboard, and many have chosen to work on their independent research projects, utilizing the water or wire time available. Occasionally we have hosted high school students (like the winners of the UW Orca Bowl Competition!), teachers from a variety of levels. Members of the media have joined the cruises resulting in news articles.

Some of the comments we have received:

“Just wanted to say thank you for all your help on the cruise. I definitely learned a lot and was very excited by this kind of research. Being a geologist and all...it definitely opened my eyes to different possibilities for my scientific future.”

“I just wanted to thank you for the opportunity to go on these last two cruises. I had a great time and really learned alot.”

“Thanks for allowing me to come along on the cruise. I'd like to help on the next cruise as well so keep me in mind.”

“I would like to thank you for the opportunity in participating in the PRISM cruise. I enjoyed the entire time, even when the weather turn bad. I hope that I will be able to participate in future cruises, if time permits.”

Science: Through the PRISM cruises, we are building a timeseries of data that can be used to investigate the dynamics of Puget Sound oceanography and interannual variation. Examples of research using the PRISM cruise data are to assess climate impacts on water properties, to investigate the level of nutrient limitation in the sub-regions, and to identify the dominant patterns of variation Sound-wide. The effects of El Niño's and of droughts are clearly seen in the data. Our understanding of the sensitivity of the region to eutrophication has been significantly aided by the expanded database on primary production. The signals of where freshwater lenses are most prominent or deep-water turbidity have yielded new insights into how Puget Sound functions.

Another significant application of the PRISM cruise data is for use in numerical models. PRISM, and others within PSMEM-C, use the data from the cruises for model verification and validation.

Another science emphasis of PRISM cruises have been to foster inter-disciplinary ties and collaboration, both among UW departments and beyond UW. PRISM cruise participants have included students and/or researchers from Chemistry, Geology, Applied Math, Biology, Genetics, Science Education, Biochemistry, Computer Science, and Fisheries. Participants have hailed from UW Tacoma, Pacific Lutheran University, The Evergreen State College, and Western Washington University, and NOAA.

Regional planning: PRISM cruises have been beneficial for our application of knowledge about Puget Sound towards regional planning decisions. In addition to students, another major participant in the cruises has been staff from regional agencies, especially the Washington State Department of Ecology and King County Department of Natural Resources and Parks. This active participation has fostered both the sharing of data and information as well as assurance that sampling techniques and protocols are in common.

Some high-profile regional projects, such as King County's Marine Outfall Siting Study (MOSS) and the Hood Canal Dissolved Oxygen Program (HCDOP), have greatly benefited from data collected on PRISM cruises. The HCDOP has utilized the PRISM sampling opportunity to both collect more data and to serve as a training platform for Citizen Volunteer Monitors.

PRISM is a member of the Puget Sound Assessment and Monitoring Program, hosted by the (now) Puget Sound Partnership. Its Science Coordinator participated on a PRISM cruise and the PRISM data are freely used by PSAMP investigators.

Non-Governmental Organizations (NGOs) like the Hood Canal Salmon Enhancement Group and the Ocean Inquiry Project have also participated in PRISM cruises, as have Congressional staff, CORE staff, and other regional and national decision makers. The contribution that the cruise platform has to offer to each of these groups' needs is varied, but easily accommodated by a given cruise voyage. Most significantly, the value of increased awareness and communication of the importance of science and science education, cannot be overstated. Being able to communicate this by demonstrating it in

practice, on the ship, to a wide variety of audiences is a great asset to the University and the region.

Data:

Standard variables measured on each cruise are temperature, salinity, density, oxygen, chlorophyll fluorescence, light transmission, PAR, and at some stations, primary productivity. In addition, other measurements have been made on selected cruises.

The standard data from the semi-annual PRISM cruises are available for download at: <http://prism.washington.edu/stories/factSheet.jsp?title=PRISM%20Cruises>.

For more information regarding PRISM cruises, participation, or to contribute ideas, please contact:

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