



**VENUS is an underwater laboratory for ocean research, exploration and outreach, accessible to Everyone via the Internet**

In February 2006, the University of Victoria installed instrument arrays on the seafloor transmitting live data over the Internet. The Victoria Experimental Network Under the Sea serves researchers who access sensor systems and archived data from their desks anywhere in the world. Instruments record ocean currents, temperature and chemical conditions. Acoustic and visual images capture animals in their natural habitat. Even the sounds of the ocean are transmitted, stored, and broadcast over the Internet.

The VENUS cabled observatory is deployed in the coastal waters of southern British Columbia. The facility is providing long-term oceanographic data on physical, chemical, biological, and sediment conditions in Saanich Inlet and in the Strait of Georgia near Vancouver, British Columbia.



Pollock, sea perch and ROV claw in the lights of the VENUS seafloor camera.

The observatory was conceived and designed to meet recommendations from Canadian ocean researchers. The facility can be expanded or reconfigured to meet additional innovative needs. VENUS scientists are developing new approaches to ocean research: interactive experimentation with the ocean with real-time feedback. By sharing live data, scientists can focus many talents on the same phenomena.



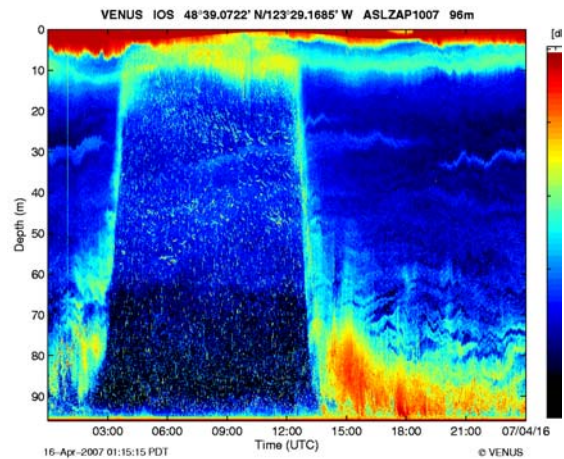
The VENUS node ready for deployment.

Instruments on the seafloor plug in to a large 'node' that controls power and communications. The designs of the node and instrument interfaces were major achievements of VENUS and its industrial partners. VENUS has three nodes: one in Saanich Inlet and two in Strait of Georgia. VENUS and the University of Victoria also house a data repository available for present and future inquiries. A myriad of measurements stream to the database every minute: salinity, temperature, currents, gas content, ambient sounds, water turbidity, zooplankton abundance, among many others. Data is available immediately over the web.

The VENUS website is our portal to the seafloor. Anyone can log on to check ocean conditions at any time using our automatic displays. Researchers can also search the Archives for specific data or events of interest. Inquiries to staff and scientists are also mediated through this site.

All VENUS data are open to everyone. Communication among scientists – professional and amateur – is enriched by the process of unrestricted discovery. A major mandate is to promote the training of young scientists who might not be able to get to sea, but can access the Internet.

Current research projects in Saanich Inlet include a forensics study on corpse degradation, and the role of bottom fish in re-suspending nutrients from the seafloor. We are also building a facility for testing remotely and autonomously operated vehicles. A major installation in Strait of Georgia examines the stability of the mud slope next to the Fraser Delta. Mid-Strait studies examine changes in water mixing over the year, the responses of bottom animals to plankton blooms, and acoustic monitoring of both whales and deep sea ships.



Zooplankton migration in Saanich Inlet is very evident at both sunset (upward) and sunrise (downward).

VENUS is also a vehicle for public outreach and education. The web accessibility brings the oceans to desktop explorers everywhere. Outreach venues can adapt the data/image displays for their own audiences and can negotiate on-site camera and instrument control with VENUS Operations. Students everywhere can see real ocean information and develop their own projects for schools, science fairs and university studies.



Get some ocean action on-line.

We expect to operate VENUS up to and beyond 2025. Our hope is to keep expenses to researchers and students to the minimum by attracting government funding, in-kind contributions, sponsorships and donations. A funding program is also required to develop an interpretive program to serve outreach and school venues.

Further information is available on our website. Media attention promotes our objectives; some coverage is available on the website.

[www.venus.uvic.ca](http://www.venus.uvic.ca)

contact us at [venus@uvic.ca](mailto:venus@uvic.ca) or 250-472-5366

