Saanich Inlet

Strait of Georgia

Summer 2006 Newsletter

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VENUS Team members, Paul, Richard, and Adrian, check out the camera and instrument platforms retrieved by ROPOS on August 2, 2006. Sitting on the deck of the CCGS John P. Tully, this is their first maintenance check after 6 months at a depth of 100m in Saanich Inlet.

Project Overview

VENUS is a research facility that is supporting coastal oceanography and providing data for long term studies in British Columbia waters. The VENUS network of instruments is dedicated to observing oceanographic processes in our marine environment. The VENUS Data Archive will support data mining and communication among users. Measurements, images, and sound are being delivered to scientists, managers, the public, and a data archive via seafloor fibre-optic cables laid from two separate landfall sites. These cables will deliver power for instruments, lights, and robots, transmit commands from project scientists, as well as deliver information back on the state of our oceans.

The VENUS Project includes two interactive laboratories, one currently installed and operational in Saanich Inlet and a second in the Strait of Georgia to be installed later in 2007.

Keeping Current

VENUS Data Portal and Website

Since the deployment of the Saanich Array and the launch of the new VENUS Data Portal and Website, we have been monitoring some impressive statistics. Over 70,000 visitors have logged onto VENUS! Also encouraging is the fact that 65% of the over 1,000,000 web page requests have been from the data section. This points to a real demand for data products and imagery. Over 10% of our visitors stay for over 20 minutes accessing material and data on the web site and over 1500 copies of the VENUS Users Guide, which provides information for potential observatory users, have been downloaded.

We will continue to refine the data portal as new instruments and new arrays come on line and we incorporate feedback from our user community.

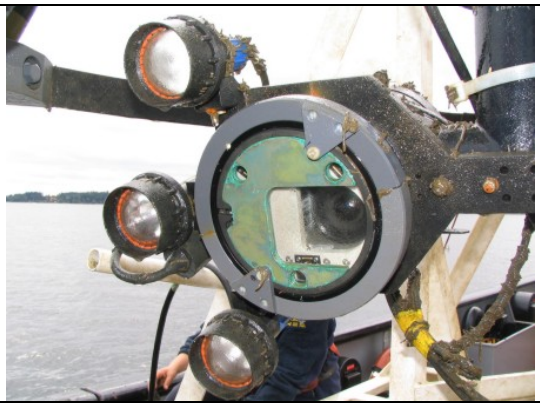


Figure 1: The camera window after 6 months at 100 m in Saanich Inlet.

Figure 2: Side view of the camera system after recovery on August 2nd..

Figure 3: The camera system just before re-deployment. A new TTL flash was installed.

Figure 4: The VIP being recovered after 6 months at 95 m in Saanich Inlet.

Figure 5: Re-deployment of the camera system in a new location on August 7th.

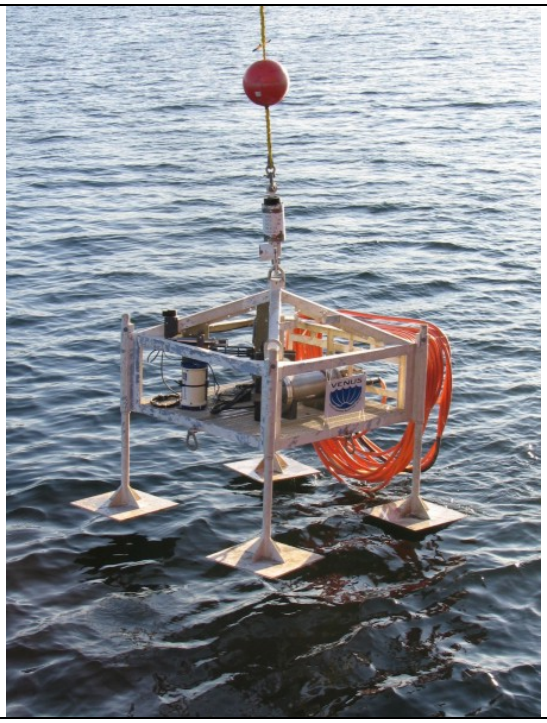


Figure 6: Re-deployment of the VIP in the same location on August 5th.

Inaugural Maintenance Cruise

The week of August 1-7, 2006 was the first opportunity for VENUS staff to access instrumentation deployed in February 2006. The Canadian Coast Guard Vessel(CCGS) John P. Tully left the dock on August 1st with the Canadian Scientific Submersible Facility (CSSF) ROV ROPOS on board. Within an hour, Tully was over the Saanich Inlet Node site and ROPOS was being readied for deployment. After the Node and VENUS Instrument Platform (VIP) inspection, the ROV picked up the camera tripod and traveled 40 m to re-attach it to the cradle structure for recovery. The ROV then disconnected the wet-mate plug from the Node and attached a thin high strength recovery line to the cradle structure for final recovery. The recovery line pays out as the ROV rises. Once at the surface, the recovery line is transferred from the ROV drum to the ship's winch.

The camera system was quickly rinsed off, disconnected from the tripod, and transferred to the ship's zodiac for a quick run to shore. Onshore the system designer, Doug Smith from C-Map Systems, began integration of a new TTL 200 Ws flash to replace the ailing 300 Ws PhotoSea flash.

Using the same ROV recovery method, the VIP was brought to the surface and onto the deck. Tully then departed the VENUS Saanich site returning to the Institute of Ocean Sciences (IOS) where the camera cradle/tripod and VIP were transferred onto the dock and to the waiting maintenance crew.

In general, the instruments and platforms faired well over the 6 month period between original deployment and first recovery. Besides general cleaning, the following additional steps were taken:

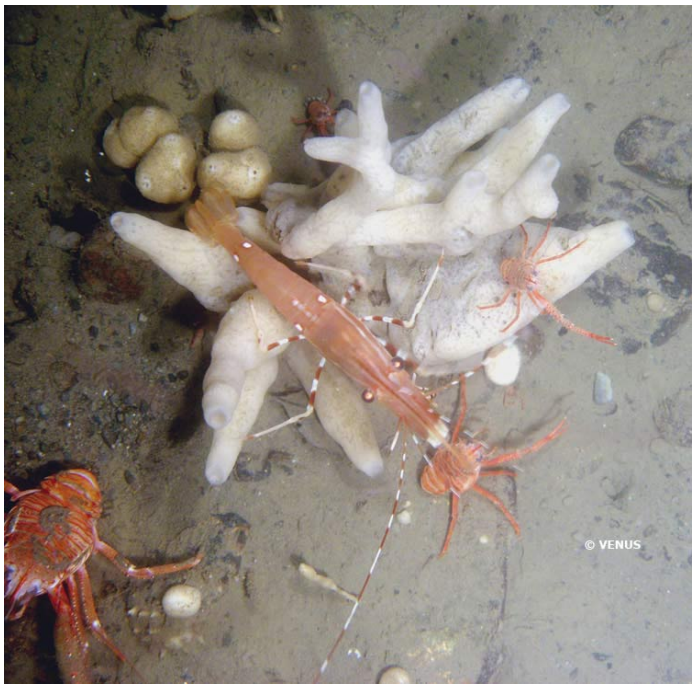
- Seabird 16plus: switched out with a new, recently calibrated unit
- Falmouth NXIC: oil replaced in pressure port
- Aanderaa Optode: anti-fouling copper weave replaced
- SeaTech Transmissometer: anti-fouling copper sleeves re-sanded
- C-Map Camera: new TTL flash, CF Card, anti-fouling copper window re-sanded

One significant failure that occurred was the flooding of the 45 m cable linking the camera system on the tripod to the SIIM mounted to the camera cradle. The cable flooded through a faulty moulding. After about 4 months, seawater intruded and came into contact with a power wire for the lights causing it to rapidly corrode. The in-rush current for the lights then caused the wire to break, thus disabling the lights and rendering the system unusable. The 45 m cable was replaced during the maintenance week.

We also installed an ALEC CTW (conductivity, temperature, anti-fouling wiper) on the VIP, which is on loan to the project.

My Summer Experience as a VENUS Co-Op

by Danielle Wilson



Squat lobsters, *Munida quadrispina*, and the spot shrimp, *Pandalus platyceros*, are bottom scavengers and can also catch zooplankton. The Syringella sponge is partially covered with sediment. These sponges are sessile filter-feeders and small crustaceans, like squat lobsters, may use them for protection. Suberitid sponges, in the upper left corner, have a fine texture and possess siliceous spicules.

Over the summer I had a remarkable experience working with VENUS as an Ocean Data Research Assistant. I considered working with the CYCLOPS camera the most exciting part of the job. Deployed at a depth of 95m, the Saanich Inlet camera showed new surprises every day. Saanich Inlet is one of the better-studied marine basins in the world, yet so unusual that it is constantly surprising the scientific community.

I saw flatfish swimming far above the ocean floor, squat lobsters catching zooplankton, and a giant Pacific octopi crawling up a camera leg. One wouldn't expect to find so much life in what seemed should be a barren wasteland. Because an excess of organic material falls to the ocean floor, there is such little oxygen it's a wonder anything can survive.

My job also included species identification and descriptions. Visual aspects used to identify a species included the organisms' colouring, markings, morphology and any other useful features. Non-visual facts, such as the average size, sexual dimorphism, preferred habitat, geographical range, and range in depth helped to narrow down which species was likely in the VENUS photograph. In the uncommon event that no images matched the organism in the image, then that species may have been studied little, undiscovered, or may have been an introduced species. Uncommon animal or not, all images had something special to offer the public and scientific community in learning more about the Saanich Inlets' elusive deep-water habitat.

Another great part of my job was the August cruise of the West coast of beautiful British Columbia; a pleasant break from office work. Squat lobsters caught zooplankton, dogfish swarmed in front of the camera lens, and even a giant Pacific octopus crawled along the equipment cable as we cruised around the Saanich Inlet and the Strait of Georgia on the John P. Tully Coast Guard Ship.

Sadly, working with VENUS was but a summer work-term through the University of Victoria's Biology Cooperative Education Program. Because of my wonderful co-workers and interactive underwater work it has been my favourite work term and a rewarding experience. I would also like to take the time to give a huge thank you to Andy Lamb, a marine naturalist and educator who was a wonderful help to VENUS when we had difficulty identifying numerous marine species.

The following article was written for the magazine "Canadian Chemical News" and their special issue on forensic science. You can find more information on the pig deployment at the Research Highlights page on the VENUS website and in the image gallery.

Forensic Research On-line from the Seafloor

by Verena Tunnicliffe VENUS Project Director

What can you do with 4 kilometers of fibre-optic telecomm cable and a dead pig? With the cable connected to University of Victoria's VENUS Observatory, Gail Anderson of the School of Criminology at Simon Fraser University realized that she could examine the fate of a corpse at 100m depth in coast BC waters. Her research is applied to interpretation of post-mortem processes in suspected homicides. With the VENUS Team aboard the Coast Guard research vessel *JP Tully*, she dropped a pig to 95m depth in a quiet inlet where the remotely operated vehicle, ROPOS, carefully placed the weighted carcass in front of a camera stationed on the seafloor. The camera is part of a network of instruments in Saanich Inlet near Victoria. The instruments are connected into a seafloor node that routes power and communications. Real-time data are transmitted back to University of Victoria.

Crabs and squat lobsters reducing a pig carcass deployed at 95m in Saanich Inlet. Photo from the VENUS Camera.

Through Internet connections, Prof. Anderson has control of the camera at Simon Fraser University. In addition to images taken as she observes, she – and anyone else with an Internet connection – can see the chemical conditions in the water near the experiment. VENUS instruments deliver a continuous stream of data on ocean salinity, temperature, oxygen and other parameters. During the first week of pig deployment, ocean temperature varied around 9.6°C and oxygen between 0.5 and 1.6 ml/l. While these hypoxic conditions would seem to be limiting to scavenger activity, the pig saw a lot of action. After the first day a large section of one haunch was missing. Crabs, octopus and smaller crustaceans occupied the carcass and reduction occurred over the next 3 weeks. You can log on to VENUS data at www.venus.uvic.ca. We are posting some of the pig pictures. (In case you wonder, it was slaughtered professionally and would have ended up in someone's bbq anyway.)

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