

# Available Device Categories

The following is a dynamic list of all of the device categories are being pulled from the [deviceCategories](https://data.oceannetworks.ca/api/deviceCategories?method=get&token=[YOUR_TOKEN_HERE]) web service using the URL [https://data.oceannetworks.ca/api/deviceCategories?method=get&token=\[YOUR\\_TOKEN\\_HERE\]](https://data.oceannetworks.ca/api/deviceCategories?method=get&token=[YOUR_TOKEN_HERE])

The **deviceCategoryCode** values can be used as a filter on the [locations](#), [devices](#), [properties](#), [dataProducts](#) and [dataProductDelivery](#) services. Filters on the **deviceCategoryCode**, **deviceCategoryName**, **description** and **longDescription** columns can be used to reduce the results returned from the [deviceCategories](#) service.

deviceCategoryCode	deviceCategoryName	description	longDescription
ACCELEROMETER	Accelerometer	Accelerometer and Motion Sensor	Accelerometers are instruments that measure accelerations. Acceleration can be static as the earth's gravity pulling objects toward the earth, or dynamic as caused by oscillatory movements of the instrument. NEPTUNE broadband Ocean Bottom Seismometers (OBS) include three components, with accelerometers as strong motion add-ons. The seismometer sensors (velocity) are more sensitive than the strong motion accelerometers, but ground shaking caused by strong local earthquakes exceeds their measurement range.
ACOUSTIC_RELEASE	Acoustic Release	Acoustic Release	
ACOUSTICRECEIVER	Acoustic Receiver	Acoustic Receiver	Acoustic receiver instruments include VEMCO fish tracking devices. VEMCO acoustic monitoring receivers are small can-shaped instruments that are installed on platforms on the seafloor, or attached to moorings in the water column. The instruments listen for transmitters, which are acoustic coded tags placed on marine mammals and fish that come into range of the receiver. VEMCO receivers and acoustic tags come in a variety of frequencies and sizes that can be used for a variety of applications and types of marine life including tiny salmon smolts to great white sharks.
ADAPTER	Adapter	Instrument Adapter	Instrument adapters are instruments that host a variety of sensors and instruments. Typically, these devices do not collect any data and our digital infrastructure system does not communicate with them. The main purpose of adapters is to function as an adapter and connect groups of instruments and sensors to the Ocean Networks Canada observatories. Some examples include the VPS (Vertical Profiling System), Tempo-Mini, and the BPS (Buoy Profiling System).
ADCP1200KHZ	ADCP 1200 kHz	1200 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The traveling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. RDI Teledyne Acoustic Doppler current profilers are configured to monitor water currents at several frequencies. The instruments contain sensors for temperature, pressure, tilt and compass heading. RDI ADCPs use four beams to measure current velocity so that the fourth beam/transducer can substitute for a blocked or damaged beam or it can be used to increase data accuracy. The RDI Workhorse ADCP operating at 1200 kHz offer high vertical resolution with a typical range of 12 m.
ADCP150KHZ	ADCP 150 kHz	150 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The travelling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. RDI Teledyne Acoustic Doppler current profilers are configured to monitor water currents at several frequencies. The instruments contain sensors for temperature, pressure, tilt and compass heading. RDI ADCPs use four beams to measure current velocity so that the fourth beam/transducer can substitute for a blocked or damaged beam or it can be used to increase data accuracy. The RDI Quartermaster ADCP are instruments that monitor currents at 150 kHz and at ranges up to 340 metres. In our area we typically get good data to about half that range.
ADCP1MHZ	ADCP 1 MHz	1 MHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The travelling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. Nortek Aquadopp Current Profilers uses 3 acoustic beams typically slanted at 25 degrees to measure the current profile. The internal tilt and compass sensors measure the direction of the current and the high resolution pressure sensor measures depth. If the system is fixed mounted, the pressure sensor can measure the tidal elevation. The HR Aquadopp Current Profiler measures the phase shift between two or more acoustic pulses. The instrument transmits a pulse and then records an echo to measure the velocity along each of the acoustic beams.
ADCP2MHZ	ADCP 2 MHz	2 MHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The travelling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. Nortek Aquadopp Current Profilers uses 3 acoustic beams typically slanted at 25 degrees to measure the current profile. The internal tilt and compass sensors measure the direction of the current and the high resolution pressure sensor measures depth. If the system is fixed mounted, the pressure sensor can measure the tidal elevation. The HR Aquadopp Current Profiler measures the phase shift between two or more acoustic pulses. The instrument transmits a pulse and then records an echo to measure the velocity along each of the acoustic beams.
ADCP300KHZ	ADCP 300 kHz	300 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The traveling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. RDI Teledyne Acoustic Doppler current profilers are configured to monitor water currents at several frequencies. The instruments contain sensors for temperature, pressure, tilt and compass heading. RDI ADCPs use four beams to measure current velocity so that the fourth beam/transducer can substitute for a blocked or damaged beam or it can be used to increase data accuracy. The RDI Workhorse ADCP operating at 300 kHz monitors currents within a range up to 160 metres. In our area we typically get good data to about half that range.
ADCP400KHZ	ADCP 400 kHz	400 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The travelling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. Nortek Aquadopp Current Profilers uses 3 acoustic beams typically slanted at 25 degrees to measure the current profile. The internal tilt and compass sensors measure the direction of the current and the high resolution pressure sensor measures depth. If the system is fixed mounted, the pressure sensor can measure the tidal elevation. The HR Aquadopp Current Profiler measures the phase shift between two or more acoustic pulses. The instrument transmits a pulse and then records an echo to measure the velocity along each of the acoustic beams.
ADCP55KHZ	ADCP 55 kHz	55 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The traveling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities.
ADCP600KHZ	ADCP 600 kHz	600 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The traveling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. RDI Teledyne Acoustic Doppler current profilers are configured to monitor water currents at several frequencies. The instruments contain sensors for temperature, pressure, tilt and compass heading. RDI ADCPs use four beams to measure current velocity so that the fourth beam/transducer can substitute for a blocked or damaged beam or it can be used to increase data accuracy. The RDI Workhorse ADCP operating at 600 kHz monitors currents within a range up to 70 metres. In our area we typically get good data to about half that range.
ADCP75KHZ	ADCP 75 kHz	75 kHz Acoustic Doppler Current Profiler	Acoustic Doppler Current Profilers (ADCP) are hydroacoustic instruments, similar to sonars. ADCPs use the Doppler effect of sound waves that are scattered by particles in seawater over a depth range. The traveling time of sound waves gives an estimate of distance, and the increase (blue shift) or decrease (red shift) in frequency is converted into water current velocities. RDI Teledyne Acoustic Doppler current profilers are configured to monitor water currents at several frequencies. The instruments contain sensors for temperature, pressure, tilt and compass heading. RDI ADCPs use four beams to measure current velocity so that the fourth beam/transducer can substitute for a blocked or damaged beam or it can be used to increase data accuracy. The RDI Long Ranger are instruments that monitor currents at 75 kHz and at ranges up to 600 metres. In our area we typically get good data to 500m.
AISRECEIVER	Automatic Identification Systems (AIS) Receiver		Land-based AIS receivers provide data that track large ships and other marine vessels within range of the receiver. The data are used to monitor, understand and mitigate the impacts of marine shipping activities.
ALTIMETER	Altimeter	Altimeter	Altimeters are used on rosettes to measure altitude above the seafloor, to ensure the instrumentation does not hit the bottom during its descent.
BARPRESS	Barometric Pressure Sensor	Barometric Pressure Sensor	Barometric pressure sensors are used to monitor weather conditions at Ocean Networks Canada shore stations. In addition to oceanographic sensors, measurements from instruments above the surface of the ocean are useful to discover interactions between the atmosphere and hydrosphere.

BARS	BARS	Temperature and Resistivity Probe	Benthic and Resistivity Sensors (BARS) collect measurements from hydrothermal vents, using a multitude of sensors. BARS have sensors to measure resistivity, temperature, pH (oxidizing nature of seawater components) and hydrogen. These instruments can estimate chloride concentration, temperature, and redox potential within a black smoker vent by recording a time series of fluid resistivity. The region of active geothermal venting, measured by BARS sensors, shows extremely variable temperatures as hot hydrothermal fluid is cooled quickly by surrounding sea water.
BBES	Benthic Biogeochemical Experiment System	Benthic Biogeochemical Experiment System	Filtered seawater is pumped into the reaction system through the centrifugal pump. Reaction starts by adding tracers through the peristaltic pump & valves.
BBS	Broadband Seismometer	Broadband Seismometer	The Broadband Seismometers (BBS) deployed on the NEPTUNE observatory are designed to measure seismic waves over a very broad frequency range (0.00278 Hz - 100 Hz). Seismic signals in this range can include microseisms which are natural background noise that include action of storm waves and long swells at sea. All BBSs also contain a strong accelerometer to detect events that exceed the range of the highly sensitive seismometers.
BEACON	Beacon	Tracking and Monitoring Beacon	Beacons are installed to locate and track instruments, and are typically used during the recovery of subsea moorings. They can be satellite, radio, or Xenon models. With satellite beacons, when a mooring is released from the seafloor using an acoustic release, the location of a surfaced mooring is received by satellites that collect messages from a beacon. The messages and measured frequencies are relayed to processing centers via ground stations. The location of the transmitting beacon can be calculated accurately to within 150 metres. Similarly, when radio beacons surface, they transmit a pulsing radio frequency signal, often VHF, that is detectable within a certain range. Surfaced Xenon models, or Flashers, emit a Xenon light flash that can be detected when within visual range.
BHTL	BH Temperature Logger	Borehole Temperature Logger	Borehole Temperature Loggers are instruments that record and store temperature data from a whole string of sensors. The sensors are spaced along a cable that extends hundreds of metres into a borehole drilled into the seafloor. The temperature measurements at various subseafloor depths are used to study the hydrology of the seafloor.
BIOFOULING	Anti-Biofouling Device	Anti-Biofouling Device	Anti-biofouling devices are used to mitigate growth on other instruments. An anti-biofouling device on Tempo-mini operates on a schedule to prevent marine life from accumulating on its oxygen sensor and camera lens.
BOTTOMPROFILER	Sub-bottom Profiler	Sub-bottom Profiler	A sub-bottom profiler is an echosounder that penetrates deep beneath the seafloor. The backscatter data serves to identify and characterize layers of sediment or rock. The frequency influences the range and resolution. For instance, the CHIRP 3260 can support multiple frequencies, reaching depths up to 10 km.
BPR	BPR	Bottom Pressure Recorder	Bottom Pressure Recorders (BPR) are instruments that can detect small changes in pressure on the seafloor. The custom-designed BPRs can detect pressure changes of 100 ppb with respect to full scale. Most BPRs have a full range equivalent to a head of 4000 m of water and are therefore capable to detect water level changes of about 0.4 mm of water. BPRs are installed on all major sites of the NEPTUNE observatory. BPR data is streamed in real-time to Tsunami Warning Centers. In the future, information from these units could help to better understand tsunami wave propagation and to better protect coastal communities. Several BPRs are integrated into NEPTUNE observatory seismometers.
CAMERA_3D	3D Camera	3D Camera	Underwater 3D cameras consist of numerous cameras strategically positioned to construct 3D or composite images of the marine environment.
CAMLIGHTS	Camera Lights	Camera Lights	Devices for controlling lights are used for cameras deployed throughout the observatories. They allow for remotely-controlled operations from scientists on-shore. Depending on the situation, scientists will manually adjust light controls, or schedule changes using ONC software. The length of time that lights are on is limited in order to minimize impact on the environment.
CAMSYSTEM	Camera System	Camera System	Camera systems are installed at many sites within the Ocean Networks Canada observatories. Systems are comprised of cameras plus ancillary devices like pan, tilt, lights, and lasers. Many cameras are installed on the seafloor for long time periods and run on schedules with lights, which are turned on several times per day. Certain cameras are installed at shallow depths (such as Mill Bay) and do not have lights, and images are visible only during the daylight hours. While most camera video is streaming live from the seafloor, video from cruises and dive operations are later ingested into the Ocean Networks Canada database. In the Arctic, cameras have been used to construct time-lapse videos showing seasonal surface ice changes throughout the year. The various cameras at Ocean Networks Canada are diverse, and many applications are used to discover the marine environment.
CDOM	Fluorometer CDOM	Coloured Dissolved Organic Matter Fluorometer	Chromophoric or Coloured Dissolved Organic Matter (CDOM) is a component of dissolved organic matter (DOM) that is measured optically. CDOM occurs naturally in the ocean by presence of tannins (chemical compounds) released from decaying organic matter (detritus). CDOM is also increased by human activities such as logging, agriculture, and effluent discharge. Monitoring CDOM in the ocean is important because it limits photosynthesis and the growth of phytoplankton. Phytoplankton are diverse types of bacteria, protists and single-celled plants that form the base of marine food webs, and are also the primary producers of oxygen in the oceans. CDOM fluorometers are sensors that measure the intensity and wavelength distribution of an emission spectrum after excitation by a particular spectrum of light. These parameters detect the amount of CDOM because it absorbs short wavelengths ranging from blue to ultraviolet. As CDOM increases in water, it will appear more green to brown in colour.
CHEMINI	CHEMINI	In Situ Iron Concentration Measurement	The In-Situ CHEmical MINIaturized analyzer (CHEMINI) is an instrument developed by IFREMER that measures dissolved chemical parameters in seawater including iron, nutrient salts and sulphur. CHEMINI is one of the sensors on Tempo-Mini, installed at Endeavour Ridge, and used to measure iron (Fe) properties near hydrothermal vents. The study of chemical parameters at hydrothermal vents is important. As hot effluent encounters the cold seawater (~2 degrees C), minerals precipitate from the element-rich vent water. Black smoker vents are found in areas where the effluent is very hot (~350 C). These types of vents precipitate iron sulphides, giving rising plumes a dark colour and cause the formation of sulphide-mineral deposits on the seafloor.
CO2SENSOR	CO2 Sensor	Carbon Dioxide Sensor	CO2 sensors are installed to monitor CO2 levels in the ocean, and how its concentration affects the marine environment. CO2 sensors installed at Ocean Networks Canada measure the partial pressure, or the concentration of dissolved CO2 in seawater by a variety of techniques. Since carbon dioxide molecules absorb infrared (IR) radiation in a characteristic absorption band and specific wavelengths, CO2 is often detected by IR sensors. Sensors are also equipped with calibration mechanisms that provide a zero CO2 measurement each day, which compensates for changes in the performance of sensors during long deployments.
CORK	CORK	Circulation Obviation Retrofit Kit	Circulation Obviation Retrofit Kit (CORK) instruments seal the top of Integrated Ocean Drilling Program boreholes, to prevent circulation between the open hole and the ocean bottom water. CORKs monitor subseafloor hydrology by collecting in-situ pressure and temperature measurements from the formation deep below the seafloor. Some CORKs can also be used to collect borehole fluid samples, house third party instrument packages, or collect geochemical samples with an osmotic sampler. Data from CORKs are recorded and stored in a data logger unit. CORKs without a cabled connection have to be visited regularly with submersibles to download the data stored in the logger. For detailed description of sensors at a particular CORK, see the related IODP report.
COVIS	COVIS	Cabled Observatory Vent Imaging Sonar System	The Cabled Observatory Vent Imaging Sonar (COVIS) is a sonar system used to quantitatively image hydrothermal vents at the mid-ocean ridge. COVIS is installed at Main Endeavour Field on the Juan de Fuca Ridge, near Grotto and the North Tower hydrothermal vent fields. Hydrothermal fluids emitted by black smokers and diffuse flow from the surrounding seafloor is believed to transfer chemicals, heat and biological matter from the oceanic crust to the ocean. A time-series of 3-dimensional images, produced by COVIS, will help visualize the turbulent hydrothermal activity and processes occurring at mid-ocean ridges.
CSEM	CSEM	Controlled Source Electromagnetic Instrument	The Controlled Source Electromagnetic Method (CSEM) equipment consists of a transmitter, affixed to a small instrument platform, and a string of 5 receivers, spaced 200 metres apart along a 1 kilometre cable. The CSEM sends a precise electromagnetic signal from a transmitter (TX) dipole which is recorded at several seafloor receiver (RX) dipoles located at a range of distances from the transmitter. The subtle changes in resistivity of the sediment between the TX and RXs are due to the displacement of conductive pore water by electrically-insulating gas hydrate. Through repeated soundings, the CSEM will track changes in resistivity and reveal the evolution of the gas hydrate deposit. The CSEM method used is described theoretically by Edwards (1997) and experimentally by Schwalenberg et al (2005).
CTD	CTD	Conductivity Temperature (and Depth Sensor)	Conductivity Temperature Depth (CTD) is an abbreviated name for an instrument package that contains sensors for measuring the conductivity, temperature, and pressure of seawater. Salinity, sound velocity, and density are variables derived from sensor measurements. CTDs can carry additional instruments and sensors such as oxygen sensors, turbidity sensors and fluorometers.
CURRENTMETER	Current Meter	Current Meter	Acoustic Current Meters (ACM) use the Doppler Effect to measure current velocities in the ocean environment. The instrument transmits a short pulse of sound, and then listens to its echo to measure the change in pitch or frequency. The change in pitch can determine the velocity of the current. Current metres are installed at many locations on Ocean Networks Canada observatories. Several current metres are installed on the Regional Circulation Moorings (RCM) at Endeavour. The instruments are spaced at various depths on the RCM moorings, and are used to study currents within the axial rift valley of Endeavour Ridge. Aquadopp current metres have a sensor head that contains 3 acoustic transducers, a tilt sensor, a temperature sensor and a pressure sensor.
DATALOGGER	Datalogger	Datalogger	Data logger or recorder devices are connected to sensors and a power source, and are programmed with appropriate recording parameters. They are used in tandem with scientific sensors to record and store their data to internal data storage such as a flash card.
DC90	Profiling Winch		A Profiling Winch is used to raise and lower the Buoy Profiling System, a prototype instrument package. The winch can be remotely operated on-shore.

DEPTH_TEMP	Temperature and Depth Logger	Combination Depth-Temperature Transmitter or Logger	Temperature and Depth Loggers are instrument packages that contain sensors for measuring the temperature, and pressure of seawater. Depth is derived from sensor measurements.
DIVE_COMPUTER	Dive Computer	Dive Computer	Dive computers are devices used by scuba divers to measure the time and depth of a dive.
DLRAD	Campbell Scientific Datalogger	Data Logging System for Radiometers	Campbell Scientific Dataloggers are used on the BC Ferries SeaKeeper 1000 instrument system. The SeaKeeper system is installed on the BC Ferries Queen of Alberni vessel, which regularly crosses the Strait of Georgia from Duke Point, Nanaimo to the Tsawwassen Terminal in Delta, Vancouver. The system supports several oceanographic sensors including temperature, conductivity, oxygen, chlorophyll and turbidity sensors. A meteorological station is also mounted above water, on the upper deck of the vessel. The Campbell Scientific Data Logger supports data acquisition and data storage from the SeaKeeper 1000 sensor suite.
DRIFTER	Drifter Buoy	Drifter Buoy	A drifter buoy floats on the sea surface and is used to investigate ocean currents and other parameters like temperature or salinity.
DSC	Still Camera	Still Camera	Underwater still cameras are mainly used on Ocean Networks Canada for high resolution imaging on Remotely Operated Vehicles (ROV) during maintenance expeditions.
ECHOSOUNDERBIOA	Echosounder, Bioacoustic	Bioacoustic single beam echosounder	Echosounders are used to measure acoustic backscatter as a proxy for detecting zooplankton, fish, bubbles or other particles in the water-column. An echosounder has one or more transducers which emit acoustic pulses at a particular frequency. When the pulses strike animals or other objects in the water, echoes are produced, which can be detected and converted by the transducers back into electrical signals. Software is then used to determine distances, sizes, concentrations and movements of organisms and other objects in the water. A public forum ( <a href="http://www.fisheriesacoustics.com">www.fisheriesacoustics.com</a> ) is available to connect researchers around the world working in hydroacoustic data analysis and research.
ECHOSOUNDERHYDMB	Echosounder, Hydrographic Multibeam	Multibeam hydrographic echosounder	Multibeam bathymetric echosounders acoustically map the seafloor. Typically mounted below a ship or ROV, they transmit a narrow fan of acoustic beams from a transducer. These beams are reflected by the seafloor contours and received by the instrument. The return signal angle and travel time are used to calculate the depth and position for points on the seafloor. Motion and heading sensors are used to compensate for the relative movement of the instrument. Capabilities and system components vary between manufacturers and models.
ECHOSOUNDERHYDSB	Echosounder, Hydrographic Single Beam	Single beam hydrographic echosounder	Single beam hydrographic echosounders provide precise measurements of depth to the seafloor. Typically mounted below a ship or ROV, they transmit pulses into the water. These pulses are reflected by the seafloor contours and received by the instrument. The return signal and travel time are used to calculate the depth and position of the seafloor. Capabilities and system components vary between manufacturers and models.
FLNTU	Fluorometer FLNTU	Combined Fluorometer and Turbidity Sensor	FLNTU instruments have a combination sensor that measures chlorophyll fluorescence and turbidity within the same volume of seawater. The instrument uses a light emitting diode (LED) to provide an excitation source. The fluoresced light is received by a detector at a particular angle from the LED source, and uses an interference filter, to discriminate against scattered excitation light. Turbidity is measured at the same time, by detecting scattered light from a 700 nm LED, which is positioned at the same angle as the chlorophyll fluorescence.
FLUOROMETER	Fluorometer	Fluorometer	Fluorometer instruments measure the fluorescence of seawater. There are several types of fluorometer instruments that are installed by Ocean Networks Canada. Typically, fluorometers will also monitor other parameters in seawater such as turbidity and chromophoric (or coloured) dissolved organic matter (CDOM). Fluorescence is an important parameter to measure in the ocean. Phytoplankton are tiny organisms that emit light, or fluoresce. They are the primary food source that forms the base of ocean food webs and includes diverse types of bacteria, protists, and single-celled plants. They are also the main producers of oxygen in the oceans. By measuring the fluorescence, biologists can get a direct reading on the amount of primary production in a marine environment.
GRAVIMETER	Gravimeter	Gravimeter	Gravimeters (or gravity meters) measure the gravity field of the Earth with such a resolution that they can detect very small changes in the underlying or surrounding structures. Their resolution is in the order of 0.01 micro-Gal in a gravity field of 980,000,000 micro-Gal. This resolution enables them to detect minute changes due to fluid motion in the seafloor or magma movements in or below the earth crust, dependent where they are located. The gravimeter of Ocean Networks Canada is placed in gimbals which are carefully balanced so that it will naturally swing into a level position when deployed. The gravimeter is part of a Seafloor Compliance (SFC) apparatus together with a Differential Pressure Gauge (DPG), designed and built by the University of Toronto. The seafloor compliance method can monitor changes in the stiffness of a gas hydrate zone or a magma chamber. The seafloor responds subtly to pressure variations caused by waves. The induced pressure from the waves at the sea surface is detected by the DPG, and the motion of the seafloor, which is dependent on its stiffness, is detected by the high-precision gravimeter.
GTD	Gas Tension Device	Gas Tension Device	Gas Tension Device (GTD) instruments measure total dissolved gas pressure. The total dissolved gas pressure in seawater is the sum of the partial pressures of all dissolved gases. The GTD works by equilibrating a small volume of air trapped behind a semi-permeable membrane that is resistant to seawater. When the air sample is isolated from hydrostatic pressure, the measured pressure is solely from the gases in the seawater. This internal pressure is measured using a very stable pressure sensor. Using the total pressure of all gases, the partial pressure of nitrogen is estimated by subtracting the partial pressure of oxygen (and by making some assumptions for other gases such as CO <sub>2</sub> ).
HYDROPHONE	Hydrophone	Hydrophone	Hydrophone instruments include high frequency (10 to 200,000 Hz) and low frequency (0.1 to 1600 Hz) models. Hydrophones are acoustic instruments that can process data while they are being collected to produce calibrated waveform data. Hydrophones are typically used to study vocalizations of marine mammals, ship traffic and ambient noise. Hydrophone data at sites like Folger Deep and Strait of Georgia are used to detect vocalizations, which are examined to study seasonal shifts in cetacean populations. Whale songs are detectable by hydrophones from tens to hundreds of kilometres away from the source. Species (such as orcas) and sub-populations (such as resident, transient or offshore orcas) are identified by their unique calls.
ICE_BUOY	Ice Buoy	Ice Buoy	Ice buoys are used in Arctic and Antarctic regions to track ice movement and collect environmental data. Ice buoys can be geographically located with the Argos system or other satellite navigation receivers (e.g. GPS).
ICEPROFILER	Ice Profiler	Ice Profiler	Shallow Water Ice Profiler (SWIP) instruments are upward looking single beam echosounders mounted on the ocean floor specialised to measure ice draft. They can estimate ice forces, determine the thickness of ice, and the detail of the underside of sea-ice. They will help understand the dynamics and thermodynamics of the sea ice regime in Arctic environments.
IMGROTARYSONAR	Imaging Rotary Sonar	Fan-Shaped Single-Beam Sonar Rotating Azimuthally	An imaging rotary sonar transmits a single fan-shaped beam at a given frequency, and provides a chromatic display that shows stronger echo returns as brighter colours than points with weaker echoes. By rotating around a fixed point, the resulting image allows the user to visualize the environment. The Kongsberg Mesotech 1071/1171 High Resolution sonars and the Imagenex 881A Imaging Sonar are two options that can be configured for particular situations (e.g. imaging the characteristics of the seafloor or objects in the water column).
INTERNAL_DEVICE_MONITOR	Internal Device Monitor	Internal Device Monitor	Device used to monitor the internal conditions of a another device or sensor. Internal Device Monitors are used to ensure proper functioning of the host instrument.
JB	Junction Box	Junction Box	OceanWorks International SIIMs supply power and communications to instruments on the VENUS network. OceanWorks International Junction Boxes Each supply power and communications to instruments on the NEPTUNE network. Both Junction box and SIIM have a number of serial and ethernet ports, including 400V ethernet ports that enable connections to other junction boxes and high-voltage instruments. Junction boxes can convert high voltages to lower voltages (15V, 24V or 48V) required by many instruments. Junction boxes also include Ocean Networks Canada OIM and Ocean Networks Canada SCU. The OIM (Ocean Networks Canada Interface Module) are developed in-house and provide power and communications to several Ocean Networks Canada Innovation Centre (ONCIC) projects. SCU (Signal Combiner Units) are developed in-house and provide power and communications to SMART Oceans community observatories. (
MBIOSENSOR	Microbial Sensor	Microbial Sensor	Microbial sensors detect microbial activity in the seafloor sediment indirectly by measuring redox (reduction-oxidation) reactions. For instance, a microbial sensor package that was installed at Barkley Canyon in 2010 aimed to reveal the decomposition process occurring within the sediments. During certain periods of the year, production of organic matter in the upper water column increases and more food reaches benthic creatures as nutrients sink from surface. At Barkley Canyon, influx of organic matter occurs during the spring (April to May) and in the fall (August to October). Together with other co-located instruments, microbial sensors can improve our understanding of benthic ecosystems.
MBPROFILESONAR	Multibeam Non-rotating Sonar	Horizontally-Orientated Seabed Profiling Multibeam Sonar	A multibeam sonar transmits a pulse at a certain frequency along a number of narrow beams. The sonar processor looks at the return signal for each pulse and decides where along that pulse return time lays the strongest return, giving a single point in space. For instance, the Imagenex Delta-T 837 is a programmable, multi-frequency, digital sonar that can be operated using default settings or its configuration customized for seafloor or water column monitoring.
MBROTARYSONAR	Multibeam Rotary Sonar	Multibeam Sonar Rotating Azimuthally	Multibeam rotary sonars can monitor their environment in all directions. Mounted on a platform, a multibeam transducer rotates at fixed increments and intervals to survey up to 360 degrees. Repeated surveys enable scientists to analyze the changing conditions of the seafloor (e.g., due to sedimentation or bioturbation) or occurrences of transient objects that backscatter in the water column (e.g. fish, gas bubbles). For example, an Imagenex multibeam sonar has been used to detect methane gas plumes that escape from the seafloor at the "Bubbly Gulch" near Bullseye Vent at Clayoquot Slope.
METHSENSOR	Methane Sensor	Methane Sensor	Methane sensors measure the concentration of dissolved methane in the seawater. These sensors are protected against sea water and pressure by a silicone membrane. Gas molecules diffuse through the membrane and into the detector chamber. Diffusion occurs along the partial pressure gradient that exists between the chamber and the ambient water. The concentration of methane in the chamber is then compared to the concentration in the surrounding water. Over time, contamination of the sensor membrane from oil droplets seeping out of the seafloor can obscure and bias measurements, so it is necessary to recover and maintain methane sensors periodically.

METSTN	Meteorological Station	Meteorological Station	Meteorological stations are instruments that are comprised of a suite of meteorological sensors. Typical examples of measurements include temperature, barometric pressure, humidity, rainfall, solar radiation, wind speed and direction.
MVP	Moving Vessel Profiler	Moving Vessel Profiler	The Moving Vessel Profilers are instruments that collect data sets from deep and shallow water. The MVP system includes a winch, deployment system and a device called a free fall fish. The winch and deployment system allows the free fall fish to be released from a vessel while it is moving. Once deployed, the free fall fish is an autonomous device that carries a variety of sensors and collects data as it swims around the water column.
NAV	Navigation	Measures latitude, longitude, speed over ground and ship course	Navigational instruments are used to measure and record positional information of ships and AUVs. Typical sensors include latitude, longitude, speed, and heading.
NITRATESENSOR	Nitrate sensor	Nitrate Sensor	Nitrate sensors measure the concentration of nitrate, a major nutrient for phytoplankton. In most oceans, phytoplankton grow until they have used up all of the nitrate or all of the phosphate. In several regions, HNLC (high nutrient low chlorophyll) conditions occur where nutrients like nitrogen are not completely used up by phytoplankton but rather their growth is limited by chlorophyll. Thus, it is an important variable for ecosystem studies. The Atlantic ISUS nitrate sensors build upon a chemical-free UV absorption technology developed at MBARI.
NODE	Node	Node	In the context of the Ocean Networks Canada observatories, nodes are underwater structures that interface between the backbone fibre-optic cable and extension cables to the various platforms. Underwater mateable interfaces allow for underwater maintenance that requires extension cables to be connected or disconnected. These nodes, developed by Maripro for NEPTUNE and OceanWorks for VENUS, incorporate underwater power technology that converts DC line voltage (400V and 1200V for the VENUS observatory, 10 kV for the NEPTUNE observatory) to 400 V DC power.
OCEANOGRAPHICRADAR	Oceanographic Radar System	Oceanographic Radar System	ONC's high frequency land-based oceanographic radars play a key role in making Canada's coastlines safer for shipping navigation, incident response (such as search and rescue and oil spills), and tsunami detection. Oceanographic radars measure the ocean surface currents and waves in near real-time, and contribute to an accurate prediction of severe weather conditions.
ORIENTATION	Orientation	Orientation	Orientation instruments are used on ships, ROVs and instrument packages to record variables like heading, pitch and roll.
OXYSENSOR	Oxygen Sensor	Oxygen Sensor	Oxygen sensors measure dissolved oxygen concentration in seawater. The Aanderaa Optode determines the in-situ oxygen concentration based on the ability of the sensing foil (platinum porphyrine) to act as a dynamic fluorescence quencher. Fluorescence is the ability of a molecule to absorb light of certain energy and then emit light with lower energy. The Optode excites its sensing foil by exposing it to a modulated blue-green light source, and due to its fluorescent behaviour, the foil then returns red light (longer wavelength, lower energy). The lower wavelength photon that is emitted is delayed by the presence of oxygen molecules, and the amount of oxygen determines the lag in time (or phase shift) between excitation of the foil and detection of the returned red light. By linearizing and temperature compensating this phase shift, the absolute oxygen concentration can be determined. The SBE 43 uses a Clark polarographic membrane type (see image). In these sensors, oxygen molecules diffuse through a membrane and are converted at a gold cathode to hydroxyl ions (OH <sup>-</sup> ). The rate of diffusion of oxygen molecules leads to a measurable electrical current that the sensor electronics converts to a voltage. The voltage signal is linear with partial pressure of oxygen. Taking temperature, salinity, and pressure into account, oxygen concentration can be calculated. Sea-bird SBE63 Oxygen Sensors are designed to be integrated with Sea-bird CTD such as the 16plus V2, 37SIP and 19plus models and utilise the same optical principles of the Aanderaa Optode for measurement. The SBE 63 is designed for use in the pumped flow path of a CTD. Water does not freely flow through the plumbing between samples, allowing anti-foul concentration inside the system to maintain saturation and eliminating exposure of the sensor to light, maximizing bio-fouling protection. The elapsed time between the CTD and associated oxygen measurement is easily quantified, and corrected for in post-processing. The Alec RINKO is a fast-response, high accuracy and high-resolution oxygen sensor based on an optical (phosphorescence) principle.
PARTANALYZER	Particle Analyzer	Particle Size Distribution Analyzer	The LISST-100X instrument is a multi-parameter system for in-situ observations of particle size distribution and volume concentration. It also records the optical transmission, pressure and temperature. The instrument is fully self-contained with battery and data-logger. It can be used with supplied programs, or in specially designed modes, e.g. event triggered based on storms (pressure variance) or fronts (temperature front).
PHSENSOR	pH Sensor	pH Sensor	pH sensors are devices that measure the acidity or alkalinity of sea water by the concentration of hydrogen ions in the water column. The pH of seawater plays an important role in the ocean's carbon cycle.
PIEZOMETER	Piezometer	Formation Pressure (and Temperature) Sensor	A marine Piezometer is an instrument that measures pore fluid pressures in shallow marine sediments. Two piezometers have been installed within the VENUS and NEPTUNE observatories. A vibrating wire (VW) piezometer is deployed in the Strait of Georgia for monitoring slope-sediment dynamics. An IFREMER-developed piezometer extends four metres into the sediments at the Cascadia Basin site. Its needle-like probe is six centimetres in diameter and is equipped with four pore pressure and four temperature sensors.
PLANKTONCAMSYSTEM	Plankton Camera System	Plankton Camera System	Plankton Camera Systems are used to study particles and zooplankton simultaneously by quantifying them in a known volume of water.
PLANKTONSAMPLER	Plankton Sampler	Plankton Sampler	These instruments collect plankton samples from the water column in a time series. Samples are analyzed upon the recovery of the instrument, to provide qualitative and quantitative information about plankton in the water column.
PLATFORM	Platform	Platform	A structure or vehicle to which can be attached sensors or other platforms. A platform may be stationary or moving, and has an associated local coordinate frame that can be referenced to an external coordinate reference frame. The geospatial position and orientation of its sensors are often derived from the platform on which is mounted.
POCAM	Precision Optical Calibration Module	Precision Optical Calibration Module	Used for the Strings for Absorption Length in Water (STRAW) project. The POCAM will provide in-situ calibrated, isotropic, nanosecond light flashes in the range of 380 to 600 nm.
POWER_SUPPLY	Power Supply	Power Supply	Devices that provide power to associated networked devices.
PPPFLT	Precise Point Positioning - Float	Precise Point Positioning system processor - Float solution	These precise point positioning processors are modules as part of an aggregate systems for the Early Earthquake Warning installations. Within these processors, specially designed Kalman filters are applied to GNSS and accelerometer input data. The processors output supports epicentre location and magnitude estimates for the larger earthquake detection system. This category corresponds to the floating point ambiguity resolution (AR) stream.
PPPINT	Precise Point Positioning - Integer	Precise Point Positioning system processor - Integer solution	These precise point positioning processors are modules as part of an aggregate systems for the Early Earthquake Warning installations. These processors apply specially designed Kalman filters to GPS and accelerometer input data. Its output serves the larger earthquake detection system. This category corresponds to the integer ambiguity resolution (INT) stream.
PPPORB	Precise Point Positioning - Orbits	Precise Point Positioning system processor - Broadband /Orbits solution	These precise point positioning processors are modules as part of an aggregate systems for the Early Earthquake Warning installations. These processors apply specially designed Kalman filters to GPS and accelerometer input data. Its output serves the larger earthquake detection system. This category corresponds to the broadband orbits (ORB) stream.
PRES	Pressure Gauge	Pressure Gauge	Pressure gauges are used to measure seafloor pressure, an important physical oceanographic variable. Sensitive measurements allow scientists to study phenomena like tsunamis and tides, and their impact on other variables and processes.
PROFILESONAR	Profiling Sonar	Digital Profiling Sonar	A profiling sonar transmits a pulse at a certain frequency along a beam. The sonar processor looks at the return signal for each pulse and decides where along that pulse return time lays the strongest return, giving a single point in space. The Imagenex 881A Profiling Sonar is a programmable, multi-frequency, digital scanning sonar that can be operated using default settings or its configuration customized for seafloor or water column monitoring.
PTL	Pan Tilt Lights	Pan Tilt Lights	Devices for controlling pan, tilt and lights are used for cameras deployed throughout the observatories. They allow for remotely-controlled operations from scientists on-shore. Depending on the situation, scientists will manually adjust the controls or schedule changes using ONC software. The length of time that lights are on is limited in order to minimize impact on the environment.
PVCS	Pump and Valve Control System	Pump and Valve Control System	The Pump and Valve Control System (PVCS) is a concept being developed by the Marine Operations group at ONC. It will oversee the operation of a pump and a set of valves while providing feedback using various sensors.
PYRANOMETER	Pyranometer	Meteorological Radiometer for Short Wave Irradiance	Meteorological radiometers measure electromagnetic radiation in the atmosphere. Pyranometers measure broadband solar irradiance on a plane surface.
PYRGEOMETER	Pyrgeometer	Meteorological Radiometer for Long Wave Irradiance	Meteorological radiometers measure electromagnetic radiation in the atmosphere. Pyrgeometers which measure infrared (IR) radiation.

RADIOMETER	Radiometer	Hyperspectral Radiometer	Radiometers collect measurements of optical properties in the ocean environment.
RAIN_GAUGE	Precipitation Gauge	A tipping-bucket rain gauge that monitors rainfall in metric units	Precipitation gauges measure the rate of fall or the integrated amount of precipitation including rain, sleet, snow, or hail.
ROV_CAMERA	ROV Camera	ROV Video Camera	ROV-mounted video cameras serve both scientific and operational needs. Scientists monitor organisms (e.g. composition, abundance, behaviour, interactions), characteristics of seafloor geology and changes over time. Operators use cameras for instrument operations, navigation, and maintenance procedures.
SDOM	Digital Optical Module	Digital Optical Module	Used for the Strings for Absorption Length in Water (STRAW) project. The SDOM will detect light flashes from the POCAMs. The optical water properties can be deduced based on the detected light intensity and timing.
SEDTRAP	Sediment Trap	Sediment Trap	These instruments use a conical-shaped trap to guide settling particles into a sample bottle (~20 bottles is typical). Bottles are rotated when remotely triggered by a user or a set schedule. The Sediment Trap records operational conditions during the deployment including the sample date, time, and temperature during each sampling event. Upon instrument recovery, the samples are brought back to a lab for analysis of particle flux and composition over time.
SERVER	Server	ONC internal server	
SOUND_SPEED_SENSOR	Sound Speed Sensor	Sound Speed Sensor	The sound speed in water, such as at the ocean surface or surrounding an ROV, is measured by sensors that use "time of flight" technology to provide low noise, high accuracy and high resolution data. Time of Flight (TOF) describes various methods and sensors that measure the time it takes for an object, particle or wave to travel a distance through a medium. Sound speed sensors are often installed on ships flow-through systems and on ROVs. The resolution of the sound velocity sensor on the ROPOS navigation system is 0.001m/s with an accuracy of +/- 0.017m per second.
SPS	Short Period Seismometer	Short Period Seismometer	The Short Period Seismometers (SPS) installed at the Endeavour site of the NEPTUNE observatory are compact, low-power, low-noise, ground velocity sensors with a typical bandwidth of 1 to 200 Hz. Data from the seismometers are directed to the Incorporated Research Institutions for Seismology (IRIS) and the Geological Survey of Canada National Seismograph Network. The array of SPS instruments is designed to monitor local seismicity on the Endeavour Segment of the Juan de Fuca Ridge.
SUSPENDED_SEDPROFILER	Suspended Sediment Profiler	Suspended Sediment Profiler	These devices are used in sediment transport studies, including measurement of suspended sediment profiles, precision altimetry, dredge plumes and turbulence. .
TARRAY	Temperature Array	Temperature Array	Temperature arrays are instruments that have multiple temperature sensors that are connected, but spatially distributed in a region of interest, such as the flanks of hydrothermal vents or around gas hydrate mounds. Specific details like spacing and sensor specifications vary.
TEMPHUMID	Air Temperature and Humidity Sensor	Air Temperature and Humidity Sensor	Air temperature and humidity sensors are used to monitor weather conditions at Ocean Networks Canada shore stations. Air temperature is measured in numerous ways including thermistors, thermocouples and mercury thermometers. It is an important parameter to measure because it affects wind speed and direction, relative humidity, the rate of evaporation and precipitation in the atmosphere. Humidity is the amount of water vapour in the air and can indicate precipitation, dew or fog. Humidity is typically measured as the absolute humidity (the water content of air), relative humidity (measures the current absolute humidity relative to maximum for that temperature), or specific humidity (as a ratio of water vapour content to the total air content based on a mass). In addition to oceanographic sensors, measurements from instruments above the surface of the ocean are useful to discover interactions between the atmosphere and hydrosphere.
TEMPOMINI	Tempo-Mini Controller	TEMPO-mini monitoring and control parameters	Tempo-Mini (an instrument package developed and designed by IFREMER) is controlled by two Barix Barionets. These are universal data collection and communication devices configured for this system.
TEMPSENSOR	Temperature Sensor	Temperature Sensor	Instruments that only measure water or ground temperatures are deployed at various observatory sites. Sensor specifications vary by manufacturer and application.
TILTMTR	Tiltmeter	Tiltmeter	Instrument that is sensitive to deformations that result in small changes from the vertical level of the medium that it is coupled to.
TRANSMISSOMETER	Transmissometer	Transmissometer	A transmissometer measures the transmission of light through seawater. Parallel rays of light in a particular spectral band (e.g., 660 nm, red) are emitted from a source towards a light detector a set distance away. The fraction of light received is converted to a beam attenuation coefficient.
TSG	Thermosalinograph	Thermosalinograph	Thermosalinographs collect data about the sea surface via flow-through systems that move over water on a vessel. Often, they are mounted near the front of the vessel in order to minimize contamination. Primary variables measured are temperature and conductivity, and other variables like salinity and density are derived.
TURBCHLFL	Turbidity, Chlorophyll and Fluorescence	Turbidity, Chlorophyll and Fluorescence	Instruments like the WetLabs ECO Triplet allow for a combination of optical measurements. These instruments on the VENUS observatory have been special-ordered to measure turbidity, chlorophyll and CDOM fluorescence in seawater.
TURBIDITYMETER	Turbidity Meter	Turbidity Meter	Turbidity is an optical characteristic or property of a liquid, which in general terms describes the clarity, or haziness of the liquid. Turbidity meters are sensors that detect scattered light from suspended particles in water. The amount of scattered light that reaches the detector is proportional to the turbidity or particle concentration in the water.
UCRDS	Underwater Cavity Ring-down Spectroscopy	Underwater Cavity Ring-down Spectroscopy	Underwater Cavity Ring-Down Spectroscopy (UCRDS) is a highly sensitive optical spectroscopic technique that enables detection of trace gases in water by measuring the change of the monoexponential ring-down time attributable to the additional optical loss of an absorbing gaseous species present in the sample cavity.
UURS	Underwater Ultraviolet Raman Spectrometer	Underwater Ultraviolet Raman Spectrometer	The Underwater Ultraviolet Raman Spectrometer(UURS) is a sensor used to measure concentrations of dissolved chemicals directly from their ultraviolet absorption spectrum. A variety of chemicals absorb light in the UV and each of these chemicals has a unique absorption spectrum. We can determine the concentration of these chemicals directly, with no chemical manipulation, by measuring the absorption spectrum of seawater in the UV and then deconvolving the spectra to yield the concentration of each component.
UWVOLTAMMETRICSYSTEM	Underwater Voltammetric System	Underwater Voltammetric System	Filtered seawater and reagents are pumped into the voltammetric system through hydraulic relief system. The current produced from the reaction is measured for the calculation of the concentration of each ion.
VIDEOCAM	Video Camera	Video Camera	Video cameras within Ocean Networks Canada are mainly deployed at fixed-locations at the seafloor (with the exception of one above-ground camera in Cambridge Bay mounted above ground), and on mobile platforms underwater (e.g., Wally). Scientists monitor organisms (e.g. composition, abundance, behaviour, interactions), characteristics of seafloor geology and changes over time. Systematic surveys are conducted on fixed and mobile cameras. .
VPBASE	Vertical Profiler System Base	Vertical Profiler System Base	Ocean Networks Canada has an Off-Shore Profiling System (also known as the Vertical Profiler System). It is a mobile instrument platform that consists of a seafloor base unit and an instrument package that floats on a tethered cable. A winch on the base unit raises and lowers the instrument package. Cable spooled from the base is long enough for the instrument package to extend to the surface, collecting data throughout the water column.
VPINST	Vertical Profiler Instrument Package	Vertical Profiler Instrument Package	Ocean Networks Canada has an Off-Shore Profiling System (also known as the Vertical Profiler System). It is a mobile instrument platform that consists of a seafloor base unit and an instrument package that floats on a tethered cable. Numerous instruments are mounted to monitor oceanic variables including: salinity, temperature, dissolved gases and nutrients, irradiance, currents, plankton and fish concentrations, and marine mammal movements.
WALLY	Wally	Wally monitoring and control parameters	Two Benthic Crawlers, Wally I and Wally II, have been deployed in Barkley Canyon hydrates thus far. They have both been developed by a team based at Jacobs University in Bremen, Germany. The suite of sensors mounted on Wally typically includes cameras, a compass, methane sensors, current meter, CTD, fluorometer, and turbidity meter. The goal is to help researchers carry out detailed investigations of processes influencing gas hydrates evolution at the seafloor. Wally crawls on dual tractor treads, which allow a full range of forward, backward and turning movement. Including the titanium frame, drive motors, sealed electronics chambers, wiring, lights, HD video camera, and sensors, its out-of-water weight is 275 kg. With syntactic foam floatation blocks attached, this is reduced to an in-water weight of 40 kg.
WATERSAMPLER	Water sampler	Water Sampler	Water samplers are devices that collect physical samples of fluid. They can be remotely triggered, either manually or automatically, with a set schedule. Upon recovery, the fluid-filled containers can be processed to determine their chemical and biological constituents.
WAVE_BUOY	Wave Buoy	Wave Buoy	Wave buoys provide measurements of the wave conditions. Measurements include wave height, period, direction, and spread.

WETLABS_WQM	Water Quality Monitor	Water Quality Monitor	Water Quality Monitors (WQM) have sensors to measure temperature, salinity, depth, dissolved oxygen, chlorophyll fluorescence, turbidity and backscattering data. The WQM incorporate technologies from two manufacturers, WET Labs and Sea-Bird. To reduce fouling and growth of marine organisms, WQM also have features such as a Bleach Injection System (BLIS), bio-wipers, and passive inhibitors that allow extended deployments up to one year. WQMs provide comprehensive data used to track subtle changes in coastal and inshore marine systems. WQM have been installed in local settings such as Mill Bay, as well as the frigid Arctic waters of Cambridge Bay.
WINDMONITOR	Wind Monitoring System	Wind Monitoring System	Wind monitoring systems measure the speed and direction of wind. RM Young wind systems have four-blade propellers that convert the mechanical rotation into an AC sine wave voltage signal. They are capable of measuring wind speeds up to 100 m/s. WindSonic is a 2-axis ultrasonic wind sensor, providing wind speed and direction data.