NEW Version 2 (V2) SBE 16*plus* and 19*plus* SEACAT CTDs

The SBE 16*plus* **V2** and SBE 19*plus* **V2** SEACATs incorporate an electronics upgrade and additional features, and continue to bring high accuracy and resolution, reliability, and ease-of-use to the wide range of research, monitoring, and engineering applications. SBE 16*plus* V2 and SBE 19*plus* V2 can acquire data from **six auxiliary voltage sensors** (**vs four**) as well as from an RS-232 sensor, has a larger memory (64 Mbyte vs 8), and can provide XML output (in addition to raw and ASCII engineering unit formats). Future upgrades and enhancements to the firmware can be easily installed in the field through a computer serial port and a bulkhead connector on the CTD, without the need to open the instrument or return it to Sea-Bird. Additionally, an optional **Digiquartz pressure sensor is now available in the SBE 19*plus* V2 Profiler**, providing exceptional accuracy, stability, and resolution.

The dimensions of the 16*plus* V2 and SBE 19*plus* V2 are identical to their predecessors, so no mounting modifications are required for substituting these CTDs on an existing system. And the old data output formats are still available, so any custom data processing software developed by a customer will be compatible with the new CTDs.

Note: The SBE 16*plus* V2 is available with an RS-232 or RS-485 interface, and well as with an inductive modem interface (SBE 16*plus*-IM V2).

NEW Sea-Bird and WET Labs Co-Develop Water Quality Monitor

Sea-Bird and WET Labs have combined CTD, Dissolved Oxygen, Chlorophyll, and Turbidity sensors with an innovative strategy of active and passive anti-fouling measures to create the **WQM**, a Water Quality Monitor for coastal and estuarine moorings that produces research-grade measurements for an entire season, without periodic cleaning or maintenance. The WQM consists of elements from Sea-Bird's pumped CTD and Dissolved Oxygen sensors and WET Labs' ECO series fluorometer and turbidity sensor, all of which are know for high accuracy and stability. Bio-fouling and sediment loads are the dominant factors that degrade and limit data quality from the WQM's sensors. These factors can overwhelm inadequately protected sensors and invalidate their data -- often in just a few days. The WQM employs active flow control, passive flow restriction, light-blocking, active biocide injection, and passive fouling inhibitors to effectively and safely combat internal and external fouling. With fouling minimized, the superior inherent stability of the WQM sensors translates directly to superior long-term data quality.

The WQM is available only from WET Labs (http://www.wetlabs.com/products/wqm/wqm.htm).

MicroCAT Design Changes

Two important design changes are being implemented in SBE 37 MicroCATs:

- Electronics have been redesigned in **SBE 37-SM, 37-SMP, 37-SI, and 37-SIP MicroCATs** (firmware version 3.0 and higher, which began shipping in April 2008). Improvements include:
  - The 37-SI and 37-SIP have internal memory (8 Mb) for the first time, while the 37-SM and 37-SMP have increased memory (8 Mb vs 2 Mb).
  - For pumped MicroCATs (37-SMP and 37-SIP), the pumping time has been increased from 0.5 to 1.0 second, providing better flushing of the conductivity cell and more accurate salinity data. Additionally, a new *minimum conductivity frequency* command provides user control of pump turn-on similar to that in our profiling instruments. This prevents the pump from turning on in air, allowing for lab testing of the MicroCAT without concern about damaging the pump.
  - Commands have been added to provide status and data output in XML format.
  Note: These changes do not apply to inductive modem MicroCATs (37-IM and 37-IMP); separate redesign of their electronics is underway.
- The original MicroCAT **battery pack** will be replaced in August / September 2008 with a new retrofit battery pack, because the custom-built 9-volt batteries that we have been using will no longer be available. Sea-Bird designed a retrofit battery holder that uses 12 individual AA lithium cells. These cells are available commercially world-wide, so customers will no longer need to order batteries from Sea-Bird. Additionally, 12 AA lithium cells are less expensive than the six 9-volt batteries required for the existing battery pack, and will deliver 60% more useable capacity.

For a detailed description of the changes, see http://www.seabird.com/pdf_documents/MicrocatChangeNoticeFinalREV.pdf.

Software and Data Analysis

SCPlusV2, a new terminal program for use with the SBE 16*plus* **V2** and SBE 19*plus* **V2**, simplifies CTD setup and testing. Once the CTD is *connected* to the terminal program, a list of applicable commands (organized by category) appears in a window in the terminal program. Clicking a command brings up a short command description, minimizing the need for viewing the Help files or the CTD manual. Clicking the Execute button sends the selected command, eliminating the typing required in our older terminal programs. Over the next few years, we will be creating terminal programs with similar functionality for our other instruments.

Seasave V7 has several new features:
* For water sampler control, Seasave V7 now allows *mixed* auto bottle firing with user-controlled bottle firing. This feature is useful for manually firing the bottom and top bottles, while allowing the auto fire capability to control closing of all the intermediate bottles.
* While Seasave V7 has long supported data transmission via TCP/IP and remote bottle firing, the user had previously been responsible for developing the software *at the other end* to view the data and send the bottle fire commands. The release of **Seasave Remote** provides *the other end* of the process. Seasave Remote allows you to connect your CTD to a computer on deck that is running Seasave V7, while receiving data and firing bottles at a remote location elsewhere on the ship. Seasave Remote can view data output from Seasave V7 via TCP/IP or to a shared file, with display setup identical to what the user is already familiar with from Seasave V7. Seasave Remote can also control water sampler bottles firing through Seasave V7 via TCP/IP. Seasave Remote (SeasaveRem.exe) is automatically installed when you install Seasave V7, in the same folder.

Sea-Bird research on **oxygen sensors** has led to the development of a new oxygen equation, the *Sea-Bird* equation, which provides a better model of the response of the SBE 43 sensor, particularly at cold temperatures. All SBE 43 dissolved oxygen sensors calibrated after April 2008 are shipping with calibration coefficients for the *Sea-Bird* equation instead of calibration coefficients for the *Owens-Millard* equation. The *Sea-Bird* equation has been implemented in **Seasave V7**, **Seasave-Win32** (older Seasave software), and **SBE Data Processing**. However, the software continues to support *Owens-Millard* as well. Application Notes 64 and 64-2 on our website provide details on the new equation.

Website Tips (www.seabird.com)

Check out these recent website additions:

Published Papers (to view these and other published papers, pull down *Support* on our home page to select *Technical Papers*)
* *WQM: New Instrumentation for Coastal Monitoring* -- Sea Technology magazine
* *Long-Term Oxygen Measurements* -- International Ocean Systems magazine
* *Improvements to the SBE 43 Oxygen Calibration Algorithm* -- 2008 Ocean Sciences Meeting (poster presentation)
* *Assessing the Calibration Stability of Oxygen Sensor Data on Argo profiling floats using routine WOCE monitoring data from HOT* -- 2008 Ocean Sciences Meeting (poster presentation)
* *STS: An Instrument for Extending Argo Temperature and Salinity Measurements through the Sea Surface* -- 2008 Ocean Sciences Meeting (poster presentation)

Application Notes (to view these and other application notes, pull down *Support* on our home page to select *Application notes*)
* *Application Note 87: Calculating Calibration Coefficients for the Wet Labs ECO-BB Scattering / Turbidity Meter*
* *Application Note 88: Frame Coating Repair for the SBE 32 Carousel Water Sampler*

New Oceanographer Joins Sea-Bird Staff

We are pleased to welcome Karen Grissom, who joined our Application Engineering/Sales staff in October 2007. Karen is a graduate of the University of Washington, School of Oceanography, and has experience working in coastal and estuarine environments. Her recent experience includes test and evaluation of oceanographic and meteorological sensors, during which she participated in an extensive study of the operational problems encountered when using CT sensors in a real-time ocean observation network.

Karen is sharing her knowledge of the application and integration of oceanographic instrumentation, working with customers to ensure they have chosen the best sensors to meet their requirements.