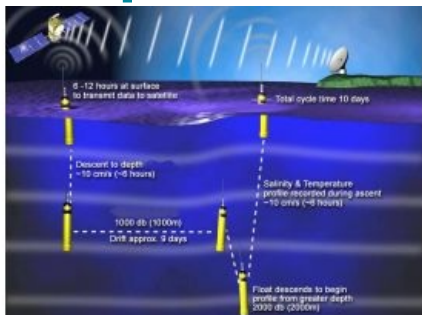


Teledyne Webb Research Prepares APEX for the Future



Teledyne Webb Research has released the APF-11 controller and firmware as the new core of the Autonomous Profiling Explorer (APEX). With nearly 8,000 floats deployed during the past 16 years, APEX has long been the workhorse of the Argo Programme monitoring temperature and salinity in the upper 2,000 metres of the world's oceans. Teledyne engineers designed the new controller and firmware to ensure APEX continues in that role for years to come.

Recent Argo Programme expansion to monitor upper ocean biogeochemical and optical properties carries the requirement for additional sensors. APF-11 meets this need by accommodating up to eight sensors, in addition to the conductivity, temperature and depth (CTD) sensors, enabling configuration of profiling floats that meet custom scientific

requirements.

Including CTD and Particulate Backscatter

The frequently deployed APEX biogeochemical (APEX BGC) configuration includes the CTD, plus sensors that measure dissolved oxygen concentration, chlorophyll fluorescence, and particulate backscatter. Teledyne recently delivered several APEX advanced multi-sensor (APEX AMS) floats featuring the APF-11 controller and firmware and sensors to measure dissolved oxygen; chlorophyll fluorescence; particle backscatter and the optical properties radiance, irradiance and transmittance. Additional APF-11 design features include file compression during Iridium transmission using the Z-modem protocol to effectively double information throughput, resulting in significant communication cost savings for the 4-plus year life of APEX. Additional features and sensors will be incorporated in future firmware releases and incorporate customer feedback and requirements. For example, integration of the Sea-Bird Electronics Float Deep SeaFET pH sensor is scheduled for completion in March 2017.

Monitor Changes in Ocean Bottom Physics

The International Argo Steering Team recently initiated Deep Argo program pilot networks to monitor changes in ocean bottom water temperature and salinity. Teledyne's APEX Deep profiler is leading the way into the deep ocean, relying on APF-11 to control the high pressure pump and buoyancy engine required to reach 6,000 decibars pressure, as well as all aspects of float navigation, positioning, communications and sensor control.