



Spectra: the last advance of T-FLaP technology for in continuous oceanographic observations

Marco Marcelli, Viviana Piermattei, Alice Madonia, and Umberto Mainardi

University of Tuscia, DEB, Department of ecological and biological sciences, Civitavecchia, Italy (marcomarcell@unitus.it)

Ocean models have become increasingly useful as computing capabilities and in situ measurement systems have been improved. An operational observing and forecasting system of the ocean properties needs effective data collection programs for model data assimilation and satellite calibration. However, the development of observational networks is strongly limited by the advances of reliable, user-friendly and low cost technologies. These requirements cannot be achieved with current marine measurement technologies, which are too expensive for extensive utilization. For all these reasons in the last decades the use of low cost instrumentations from ships of opportunity (promoted within VOS and SOOP international research programmes), is gaining more and more attention. In order to reduce operative costs and to enhance spatial resolution of data, stand-alone systems provide continuous real-time information about the physical and biological states of the surface waters by moving ships. Following this philosophy, T-FLaP evolution leads to the development of a new low-cost mini ferrybox system, called Spectra, suitable for continuous in situ measures of temperature, conductivity (salinity and density), chlorophyll a and chromophoric dissolved organic matter (CDOM) fluorescence. The philosophy that inspired this instrument is therefore that of Ferrybox, but with miniaturization of components and a considerable reduction in costs. Spectra is composed by an electronic unit, dedicated to the data acquisition, transmission and storage, equipped with a GPS and a hydraulic unit where the measures occur. The measuring cell is a flow-through tubular cell where the water flows. The measuring cell has a modular structure. The design of the measuring cell has been studied in order to ensure that the sensors are in direct contact with the volume of water passing through the probe. In this work a detailed description of Spectra system is given. Moreover, the results of the application of this technology in different oceanographic surveys are reported.