



T-FLAP improvement for VOS Program

Marco Marcelli (1), Viviana Piermattei (1), Alice Madonia (1), Umberto Mainardi (1), and Giuseppe M.R. Manzella (2)

(1) University of Tuscia, DECOS, Civitavecchia, Italy (v.piermattei@unitus.it), (2) ENEA - CRAM Forte S. Teresa Loc Pozzuolo 19036 S. Terenzo (Sp) (manzella@santateresa.enea.it ; giuseppe.manzella@enea.it)

The operational oceanography has been engaged in the development of new acquisition, transmission and assimilation systems in order to have the widest possible coverage of real time informations, reflecting the guidelines of the World Meteorological Organization (WMO) and of the Intergovernmental Oceanographic Commission (IOC). Physical and biological processes of marine ecosystems have a high spatial and temporal variability, whose study is possible only through high resolution and synoptic observations.

More than for the physical variables, the biological ones have to be observed in situ. Especially in the mid-high latitudes, a deep observation of the water column is needed, because of the typical distribution of phytoplankton's biomass (Mann and Lazier, 1991).

In the last times an extensive use of XBT was performed in order to provide near real time analysis of the ocean temperature, but there is still a lack in the biomass estimation.

T-FLAP technology (Temperature and Fluorescence LAunchable Probe - Marcelli et al. 2007) was designed to answer to the claim of a cost effective temperature and fluorescence autonomous probe, to be used on ships of opportunity for the Voluntary Observing Ship Program (VOS).

During the last three years the probe was upgraded and improved both in materials and in measure sensitivity. New LEDs were mounted to increase the radiant power of the excitation source..

In order to evaluate the red filter efficiency to detect fluorescence chlorophyll a emission wavelengths, transmittance of new available filters in the range 682-685 nm was calculated.

In vivo fluorescence spectra of each filter were also performed on samples from *Chlorella* sp. cultures, to assess the percentage of the fluorescence emission peak transmitted by the filters.

A multiple system was designed and realized for a high accuracy dynamic calibration of the probes.