ProvBioII: biogeochemical floats become more flexible

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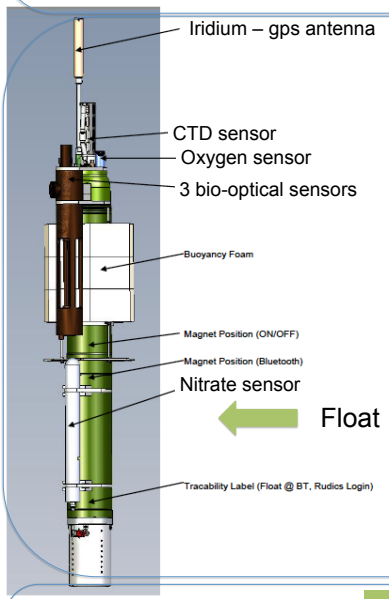
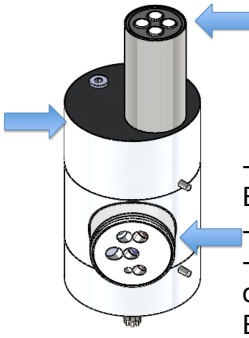
A major improvement has recently been made with the development of a new version of the ProvBio float, the now so-called ProvBioII. The LOV has been deeply involved in expressing specific requirements to the manufacturer in order to fulfill a number of scientific goals, (in the frame of two main projects: "remOcean" and "NAOS"). The float now presents much more flexible possibilities regarding the programming of the mission. For instance, navigation is now better adapted to science purposes, and allows a "multi-profiles" mode (up to ten per day). In particular, floats can rise at a predetermined time which would be suitable for ocean color validation. The data acquisition is now highly adaptive. Five different sampling zones are available within which, the powering of the various sensors as well as the data acquisition resolution can be optimized (to balance science needs versus energy costs). This float prototype was validated a few months ago and fourty ProvBioII floats have now already been deployed. The new potentialities of ProvBioII will be illustrated through data from a set of floats deployed in the north and south Atlantic sub-tropical gyres as well as in the Mediterranean Sea. Visualization tools will also be presented.

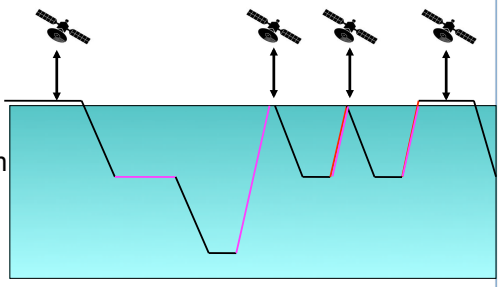
HARDWARE and MISSION





- Downwelling Irradiance 490, 380, 412nm.
- Photosynthetically active radiation (PAR)

-Chlorophyll_a (chl_a)
Ex:470nm Em:695mn
-Backscatter (bb) 700nm
-Colored dissolved organic matter (CDOM)
Ex:370nm Em:460mn

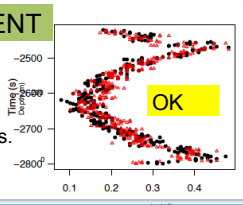


CTD and Bio-Optical measurements
Up to 5 Zones of sampling
* 0 – 100m / 1m
*100 - 300m / 5m
*300 - 1000m / 25m
*1000 - 2000m / 100m

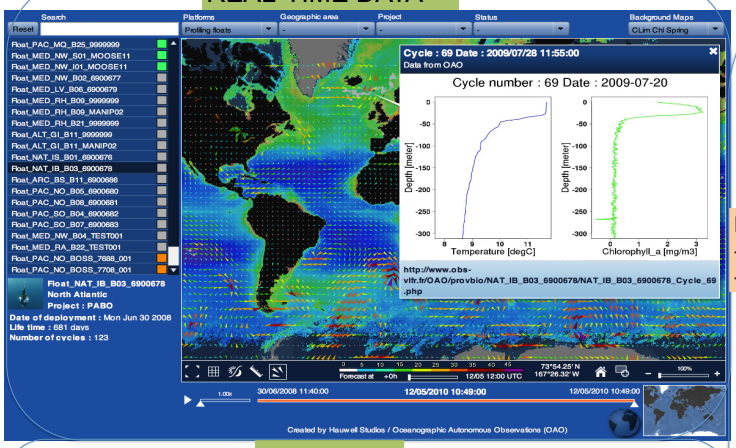
Missions and sensors parameters can be modified as :
- Sampling frequency up to 0.2 meter resolution
- Multi profile mode , up to 10
- Time of surfacing and frequency
- End of life mode for recover

EVALUATION OF SENSORS PRIOR DEPLOYEMENT

The number of bad data or bad profiles can be significantly reduced if a control of quality of sensors is performed prior to any deployements. We deploy simultaneously a set of sensors and establish cross-comparison between them and with a reference sensor. We have already identified some sensors that required minor modification (implemented with wrong calibration coefficients) or re-expedition to manufacturer because of more severe issues. By performing in such way before deployment, we increase the chance of getting more good data as soon as the float is deployed (with obviously no more possibility to intervene a posteriori on the hardware part of the sensor).



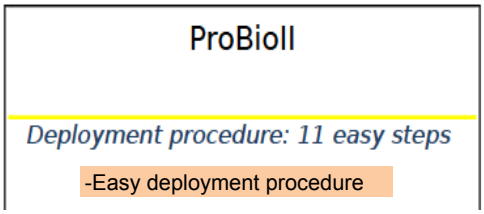
REAL-TIME DATA



RECOMMANDATION AND TOOLS

-Programming and control floats before expedition
-Control before loading the box in the boat by a "bio man"
-Explanation and formation before loading the box in the boat by a "bio man" to the person in charge of deploying the float

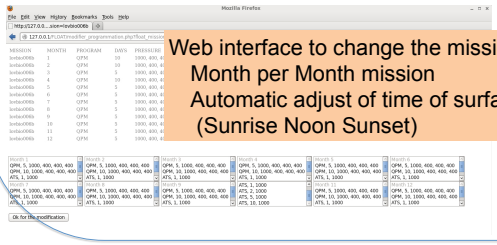
Real time sms:
-End of life alert
-Latitude Longitude



-Easy deployment procedure

DATA & QC

There is an on going work on various aspect of data management and distribution. This includes the definition of biogeochemical variable names in accordance with international standards, the description of procedures to properly evaluate sensors and document metadata as well as technical data. The definition of procedures for Real Time and Delayed Mode QC is also ongoing. Metadata are already available at the Coriolis ftp site ftp://ftp.ifremer.fr/ifremer/argo/dac/coriolis/
Preliminary version of data in Netcdf format are available (evaluation phase, restricted access): http://www.oao.obs-vlfr.fr/BD_FLOAT/NETCDF/
But they will be soon available at the coriolis ftp site



Web interface to change the mission
Month per Month mission
Automatic adjust of time of surfacing
(Sunrise Noon Sunset)