



**WP5**

**Deliverable 5.2**

**Description of the**

**Autonomous deep-sea  
multi-sensor probe for deep-sea  
measurements**

**Deliverable [D5.2](#) is an autonomous deep-sea multi-sensor probe for deep-sea measurements.**

As it was reported during the presentation of WP5 activities at the "mid term review, in Bruxelles on 21/02/2008, two different multi-sensors probes have been built in the framework of KM3NeT-Design Study.

KM3NeT Design Study

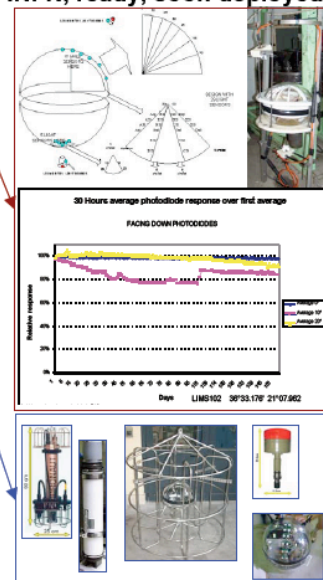
**Deliverable 5.2 design, construct and test a multisensor probe**

two developed: by UOA/NESTOR (LIMS) already operated, by INFN, ready, soon deployed

- LIMS: To measure sedimentation and Biofouling (LED sources and Photodiodes) on the KM3NeT glass housings  
**HCMR, NESTOR/NOA, U. Athens**
- Already deployed, preliminary results reported

- INFN version **INFN, INGV, TECNOMARE**
- 1st version: long term measurement of:
    - Current (Doppler current metre)
    - Biofouling (LED pulsed source and Photodiodes)
    - Temperature, Conductivity, Pressure
  - Power available for ~24 months measurements
  - Data transmission to sea surface by acoustic modem, data stored also locally

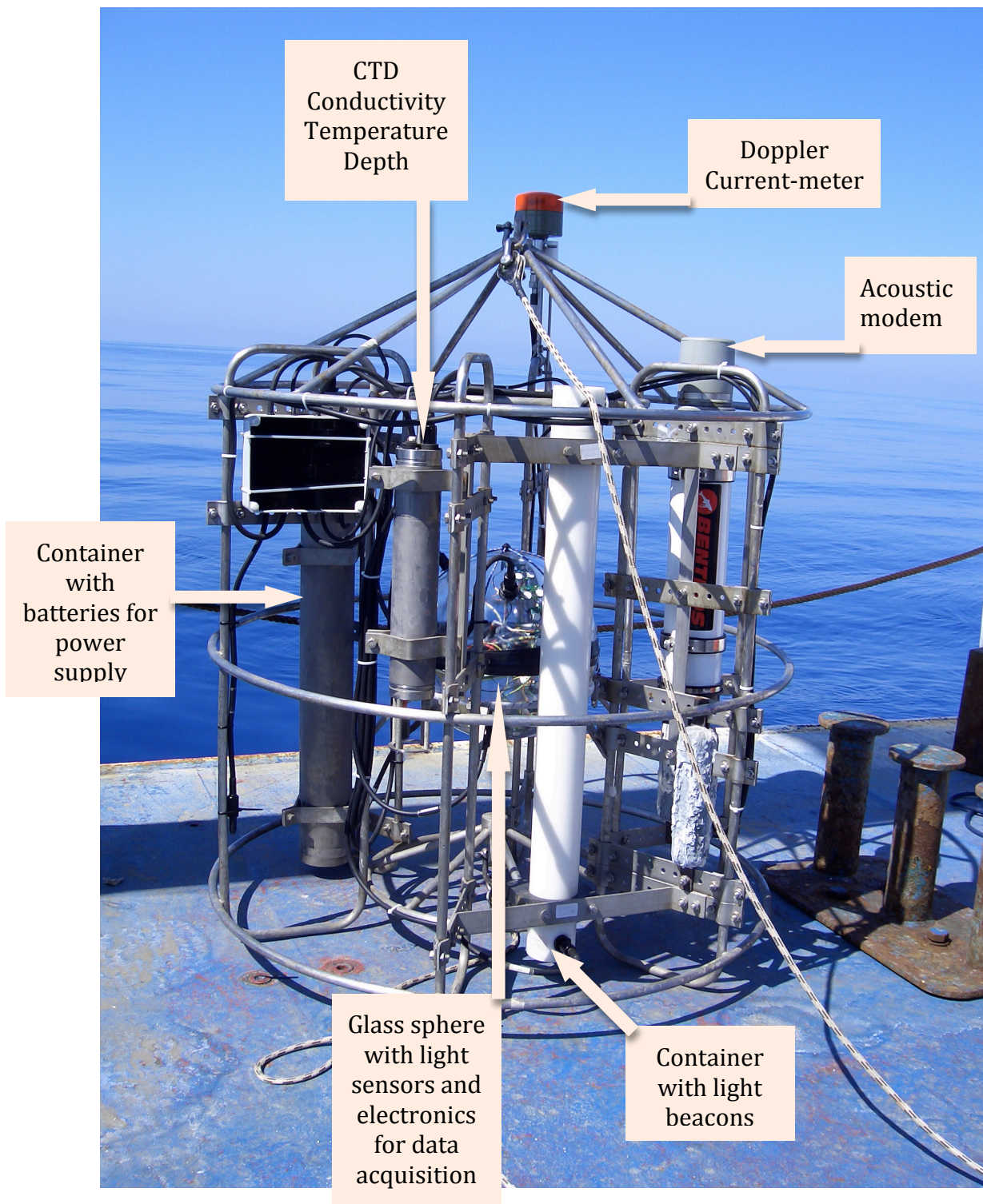
**Work developed within time schedule, activity in progress**



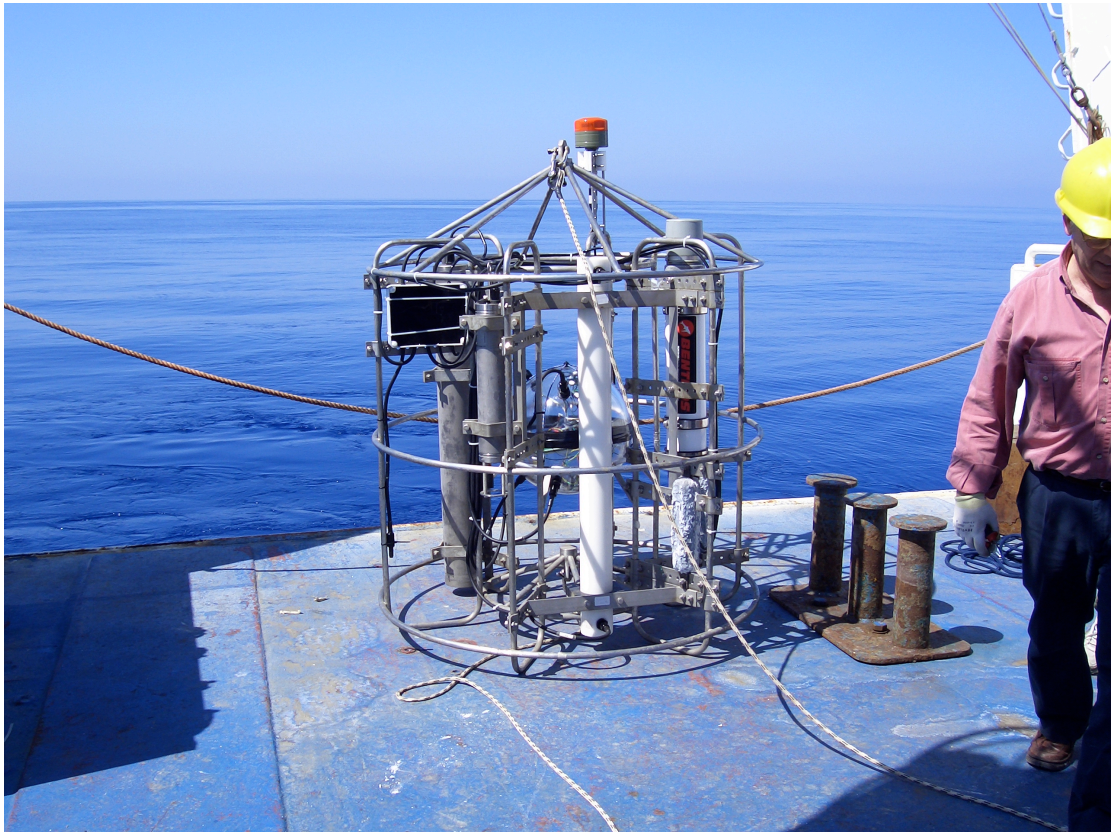
Both apparatus have been completed and operated under-water.

- 1) The LIMS detector has been built by the NESTOR-NOA group. It has been operated successfully in Pylos area, results have been reported in the TDR. It has allowed the measurement of the transparency variation of glass spheres positioned for long periods in deep sea. LIMS has several Light sensors, distributed on the two halves of a glass sphere normally used as housing for underwater Optical Modules. Two LED (light source) are located outside the glass sphere. LIMS is in NESTOR/NOA laboratory if it is not in operation under water.
- 2) The detector built by INFN contains not only LED and light sensors, it contains also instruments (CTD, conductivity, Temperature, Depth), Current Meter, to measure the deep-sea environmental conditions during the measurements of the optical properties. A data acquisition system collect data and an acoustic modem can transmit data on the sea surface. The detector has been operated successfully already in Capo Passero site, data have been reported. At present is deployed in Capo Passero site at 3500m depth. It will be recovered during the next six month, then it will be available for inspection at the INFN Laboratori Nazionali del Sud.

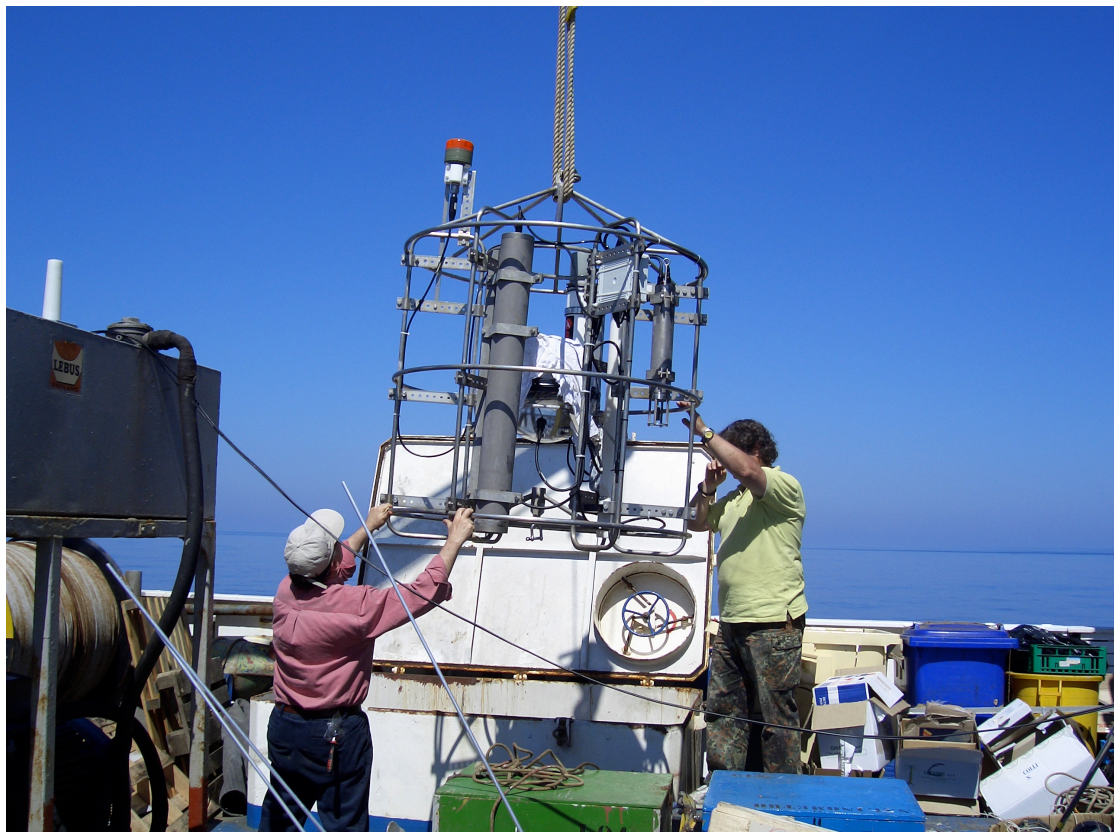
Deliverable 5.2 Autonomous deep-sea multi-sensor probe for deep-sea measurements



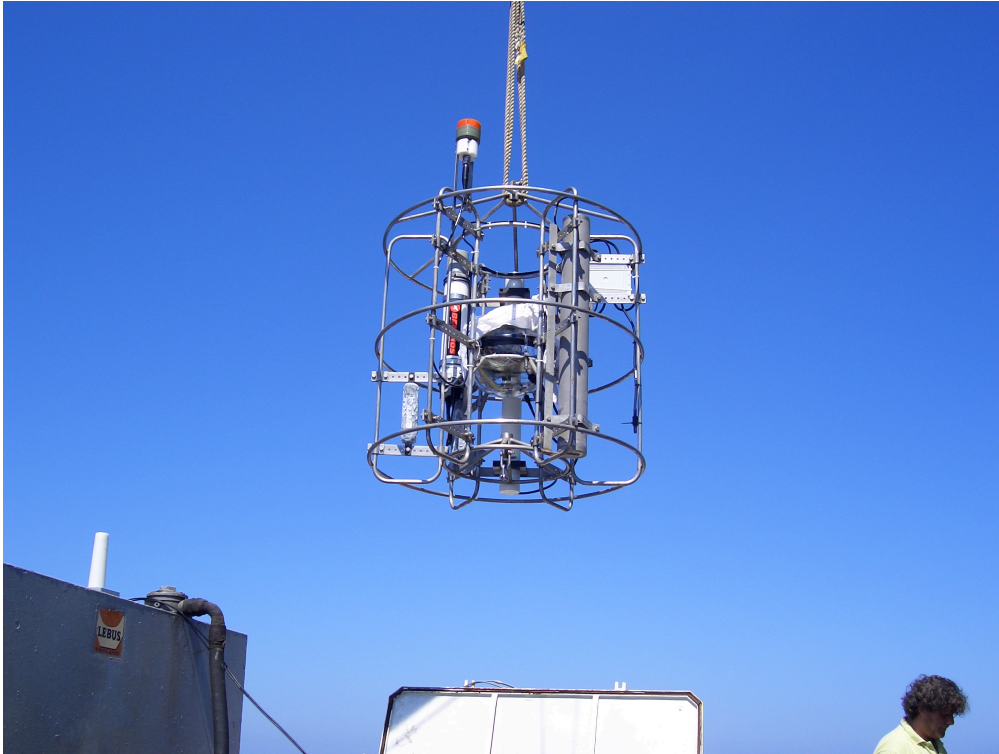
Deliverable 5.2 Autonomous deep-sea multi-sensor probe for deep-sea measurements



The apparatus ready for the deployment on the R/V Urania Deck on May 2009



Deliverable 5.2 Autonomous deep-sea multi-sensor probe for deep-sea measurements



The deployment and the immersion in water (R/V Urania, on May 2009)

