JERICO

JOINT EUROPEAN RESEARCH INFRASTRUCTURE NETWORK FOR COASTAL OBSERVATORIES

FIRST CALIBRATION EXPERIMENT AND PERSPECTIVES

Ifremer Brest – Metrology laboratory

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JERICO CONTEXT

Sharing experiences, practices through networking

Data Assurance Quality

Metrology

Jerico WP4

The metrology laboratory:

Dedicated to physical and physico-chemical oceanographic parameters:

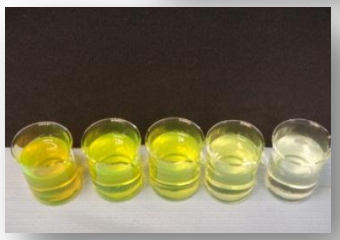
Temperature (Cofrac), pressure (Cofrac), salinity (conductivity), velocity, ocean current, dissolved oxygen, pH, turbidity, fluorescence.

Salinometer

Fresh water or seawater bath (800l)

Towing canal

Formazin solutions



Fluorescein solutions

Calibration experiment:

- Conductivity
- Temperature
- Oxygen

Fresh water or seawater bath (800l)

Fresh water or seawater oxygen bath (100l)

Temperature /conductivity calibration: (Cofrac in temperature)

- Calibration points

Salinity	Temperature (°C)
35	5
	15
17	15
10	20

Temperature /conductivity calibration: (Cofrac in temperature)

- Protocol

Comparison to Standard Platinum Resistance Thermometer and autosal salinometer (both calibrated).

SPRT

Resistance bridge

Salinometer

Temperature /conductivity calibration: (Cofrac in temperature)

- Temperature calibration uncertainty (for Seabird)

U = +/- 10 m°C

100L bath

(heterogeneity less than 10m°C)

U = +/- 40 m°C

800L bath

(heterogenity= 40m°C)

Dissolved oxygen calibration:

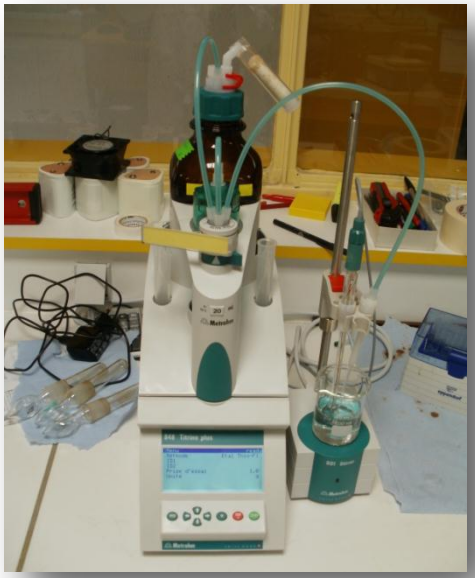
- Calibration points

Dissolved Oxygen	Temperature (°C)	Salinity
100% (air equilibrium)	20	0
	10	0
50%	20 or 10	0

Dissolved oxygen calibration:

- Protocol

Comparison to Winkler analysis.



Winkler titrator

Winkler samples

Dissolved oxygen calibration:

- Dissolved oxygen calibration uncertainty

Expectation: U = +/- 4µmol/L

Depend on sensors uncertainty components.

The experiment:

The experiment:

Participating laboratories:

- HCMR (Greece): Tanya Tsagaraki, Manolis Ntoumas and George Petihakis

  Sbe37-SIP CT sensor and Aandera 3830 DO optode

- CNR-ISMAR (Italy): Stefania Sparnocchia and Elio Paschini

  Sbe19 plus CTD sensor and Sbe43 DO sensor

- AZTI Tecnalia (Spain): Carlos Hernandez

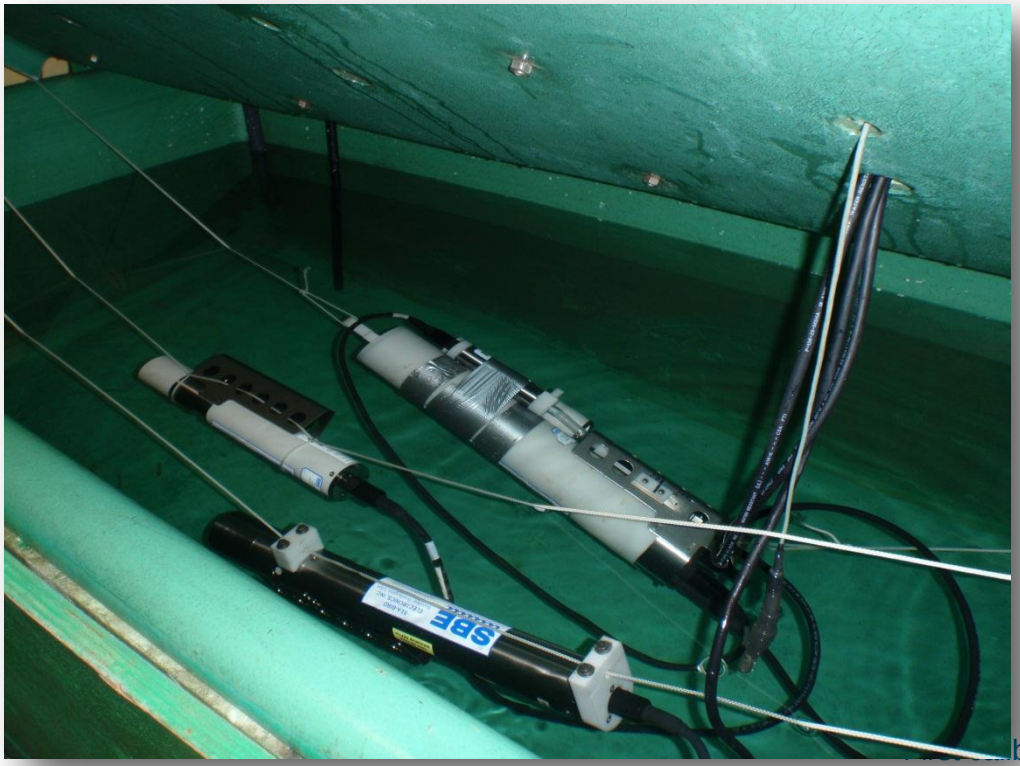
  Sbe37-SMP CTD sensor

- NIVA (Norway): Emanuele Reggiani,

  Aandera 3830 DO optode

The experiment:

Conductivity and temperature (in progress)



The results:

- Calibration certificates or reports for each institute
- Inter Laboratory Comparison anonymous report.

- Calculation of the normalized En scores (indication of laboratories agreement)

or

- Comparison of the sensors errors

Perspectives

- Testing other parameters (turdidity, fluorecence, …)
- Testing different sensor technologies (conductivity sensor: inductive or electrodes sensors)
- Comparing different calibration protocols performed in different institutes.
- Performing in field experiments (ACT ?)

THANKS FOR YOR ATTENTION