JOINT EUROPEAN RESEARCH INFRASTRUCTURE NETWORK FOR COASTAL OBSERVATORIES

Best Practices Worshop

End-to-End Quality Assurance Experience at Ifremer

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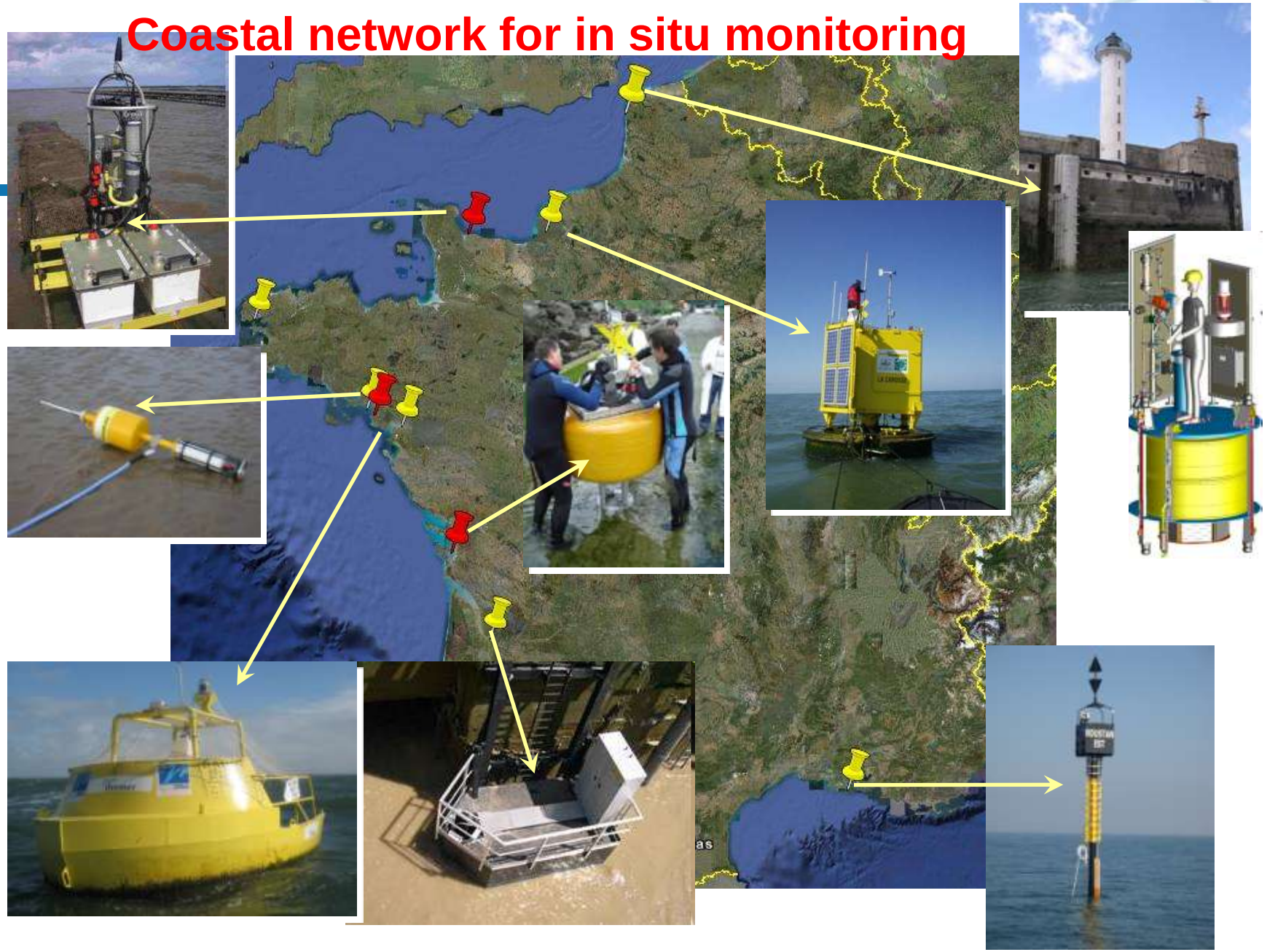
Coastal network for in situ monitoring



End-to-End Quality Assurance Experience at Ifremer

Many types of fixed or moving platforms

Focus only on key parameters on estuary &coastal water

Continuous Measurement (high frequency)

From surface to sea bottom

Quasi real time automatic, and remote control

Robust system, quality assurance, maintenance

Fifteen years of high frequency data collection

Large panel of locations

Coastal environment

Harsh environment (very demanding)

High level of energy (wave, current)

Biofouling & mineral deposit

Many hazards (fishing, anchoring, vandalism, ..)

Fatigue on instruments and structures

End-to-End Quality Assurance Experience at Ifremer

Quality and durability guaranty by technolo

flow through measuring systems (most)

Pumping and chlorination

Protection against harsh environment

Active bio fouling protection

Objective to reach a 3 months period mainten

Energy: huge concern for autonomous system

End-to-End Quality Assurance Experience at Ifremer

PHYSICO-CHIMICAL PARAMETERS		
Parameters	Range	Accuracy
Water temperature	-5 to +30°C	0,1 °C
Conductivity	0 to 70 mS/cm	0,3 mS/cm
Dissolved Oxygen	0 to 20 mg/l	0,2 mg/l
pH	6,5 to 8,5 upH	0,2 upH
Turbidity	0 to 4000 NTU	10 %
Chlorophyll	0 to 50 FFU	10 %

ADDITIONAL PARAMETERS		
Parameters	Range	Accuracy
Nitrates	0,1 to 100 µ mol/l	5 %
Silicates	0,1 to 100 µ mol/l	5 %
Ammonium	0,1 to 100 µ mol/l	5 %
p CO2	200 to 1000 µ atm	1 atm

METEOROLOGICAL PARAMETERS		
Parameters	Range	Accuracy
Air temperature	-20 to + 30°C	0,1 °C
Air pressure	900 to 1100 Hpa	0,3 Hpa
P.A.R.	0 to 3000 µ mol/s/m²	10 µ mol/s/m²
Hygrometry	0 to 100%	2%
Wind Speed	0 to 40 m/s	1 m/s
Wind Direction	0 to 360°	10 °

Operational organisation

Operational team (mandatory)
Network supervision
In situ preventive operation
Sensors calibration under quality assurance
On site and workshop maintenance
Traceability of spare sensors and devices

Strong partnership with suppliers

Data quality assurance

4 levels of data checking

raw data, automatic checking, visual checking,

qualification after calibration (3 months delay)

6 levels of data quality (international scale)

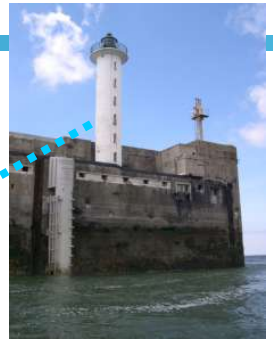
not qualified (raw data), good, out of stat, unreliable, false, missing

Local Network

Control & Processing

Acquisition

Dissemination



Network supervision

Data logging and computing

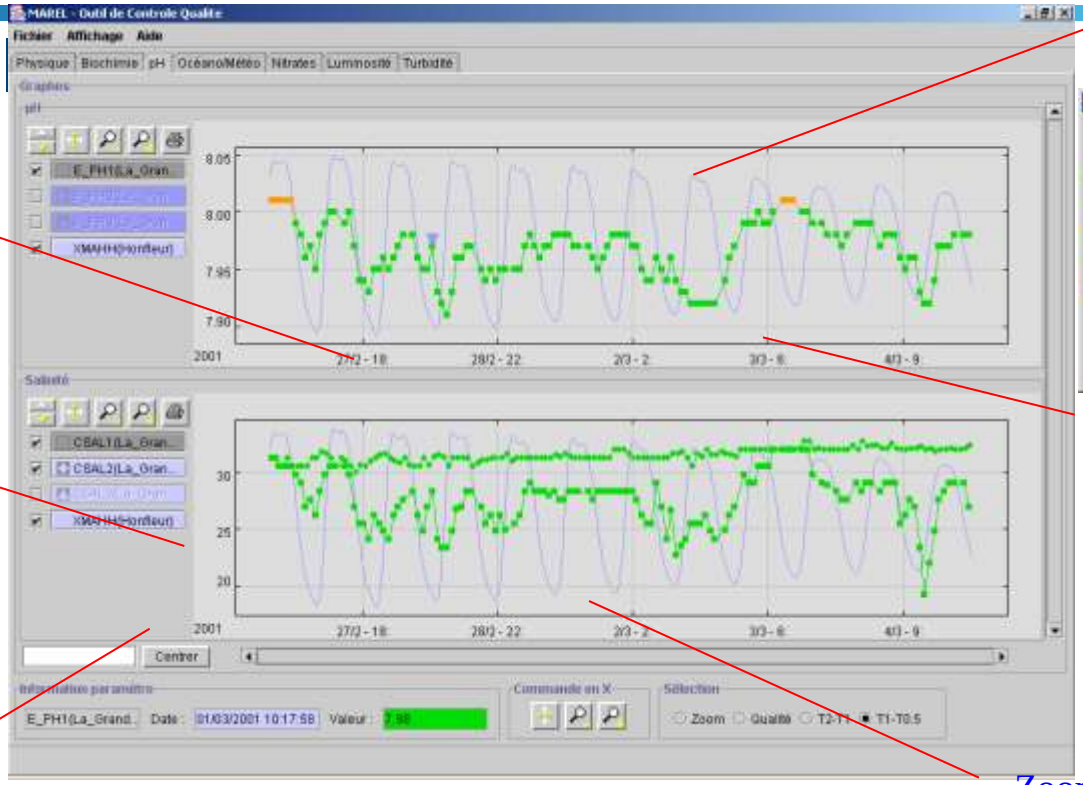
Data control

Local Network

Central Data assimilation

Local Network

Data quality control software



Tide signal

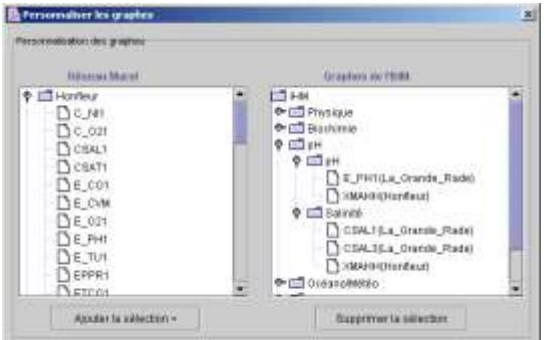
Superposition of different processing levels.

Moving time window

Numerical information about targeted point of the plot

data points are flagged according to the level of processing and quality

Zoom function on time axis



Possibility to add or delete time series

data diffusion on the web

Various user profiles: public, scientist, technician, owner

Data visualisation

Data downloading

Metrology report

Raw data access

Maintenance log book and management

Maintenance and accessibility

Systems at sea: limited accessibility:

- ✓ *weather, boat (very high price), crews…*

Floating support must adapted to maintenance

- ✓ *design, size, cost… Size of unit of maintenance*
- ✓ *No technical work at sea (just connection)*

Limitation of travel at sea (every 3 months),

Tele-maintenance