

New Buoy for Coastal monitoring

- Context and background
- Needs of operational oceanography
- Buoys for coastal water and estuary
- Development of buoy and mooring

Context

- **Development of observing systems network for coastal waters (European water framework)**
- **Coastal operational oceanography**

- **Cost effective infrastructures**
 - **Scientific observation**
 - **Operational monitoring**

- **Monitoring of coastal water and estuary**
 - **Specificity of coastal water**
 - **Constraints**

Coastal Operational monitoring

Level of development of instruments

Blue parameters:

Temperatures, salinity, currents,
sea level, waves, wind, sediment

Sensors and instruments are matures

Green parameters:

DO, Chlor A, Nutrients & Water quality
Hazardous substances

Some sensors on test

Instruments to be developed

Existing Infrastructures



Existing infrastructures



Study of the new buoy

Design of buoy and mooring

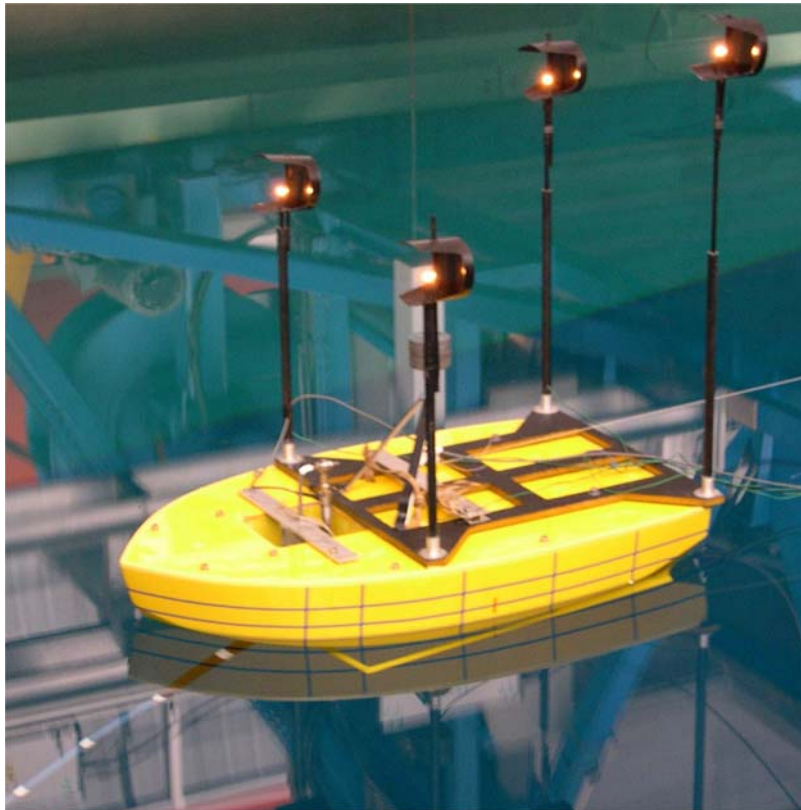


water is pumped at specified depths



Study of the new buoy

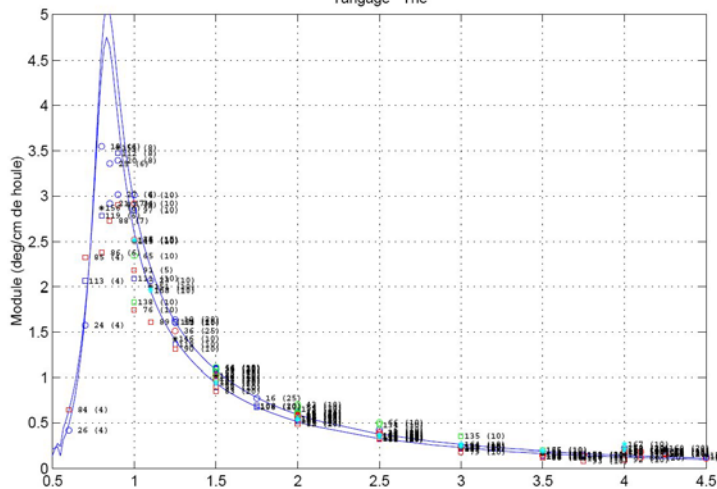
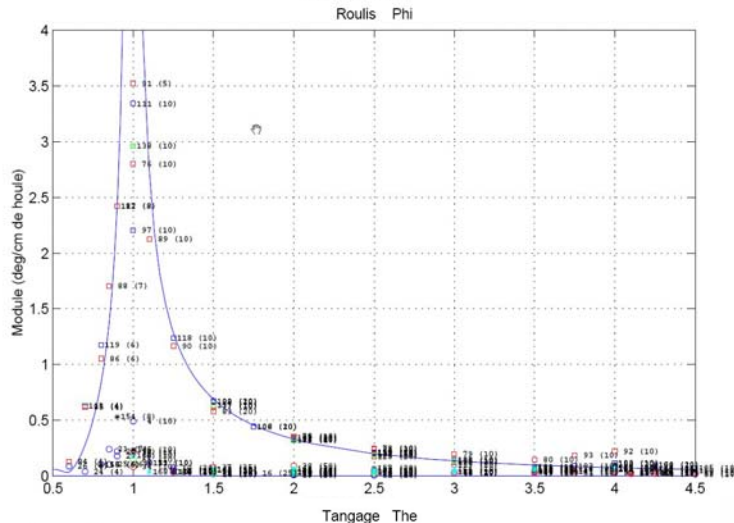
Tests in wave tank and numerical modelling



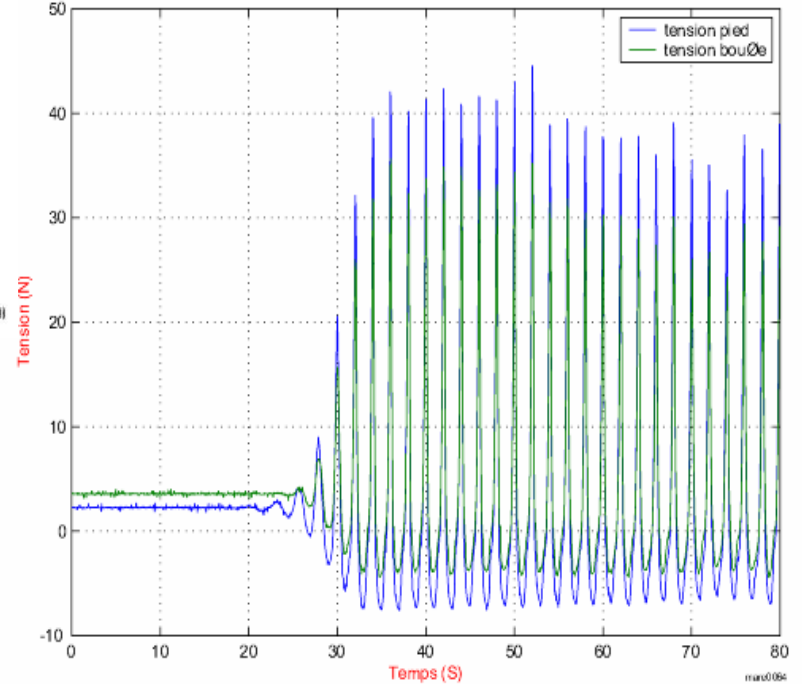
Study of the new buoy

Extensive tests in wave tank and numerical modelling

MAREL : Fonctions de transfert des mouvements sur houle régulière
Calculs AQUA+



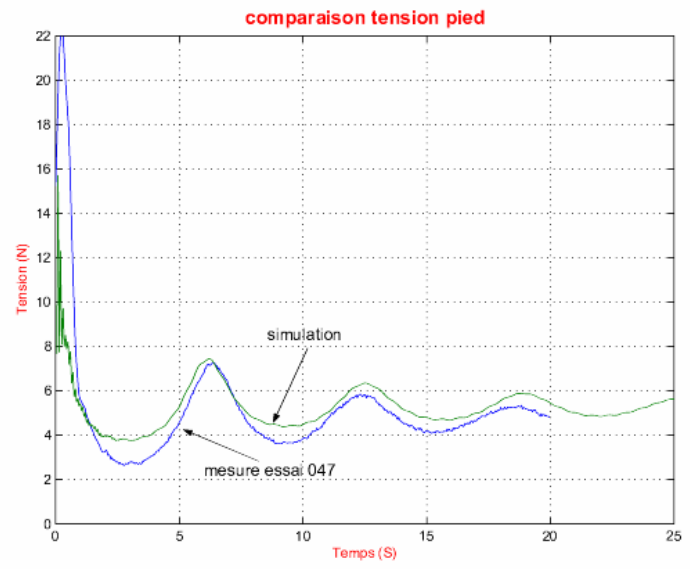
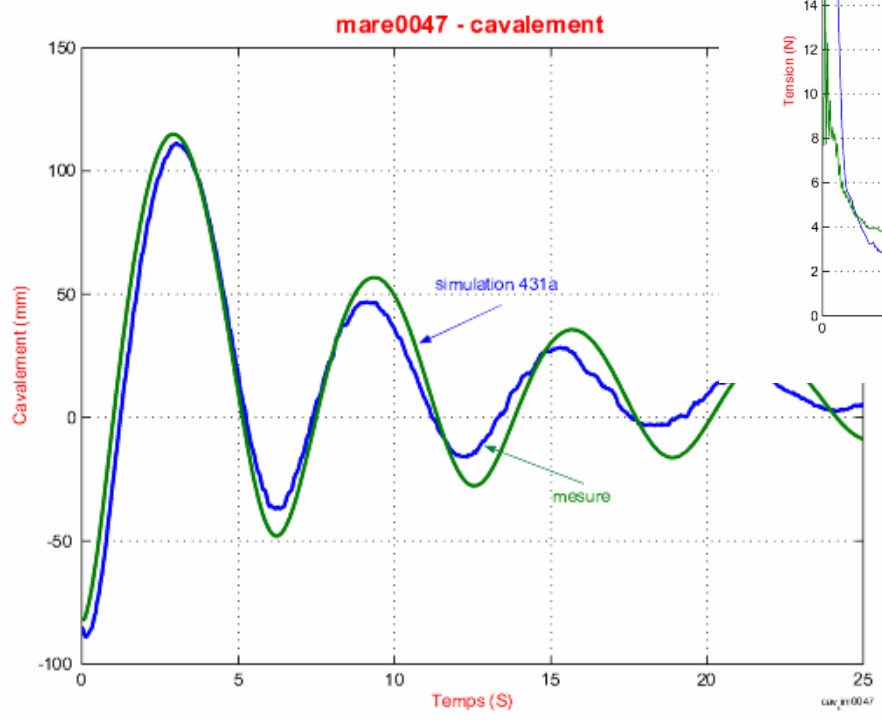
mare0064 H = 10 cm T = 2 s 1000g





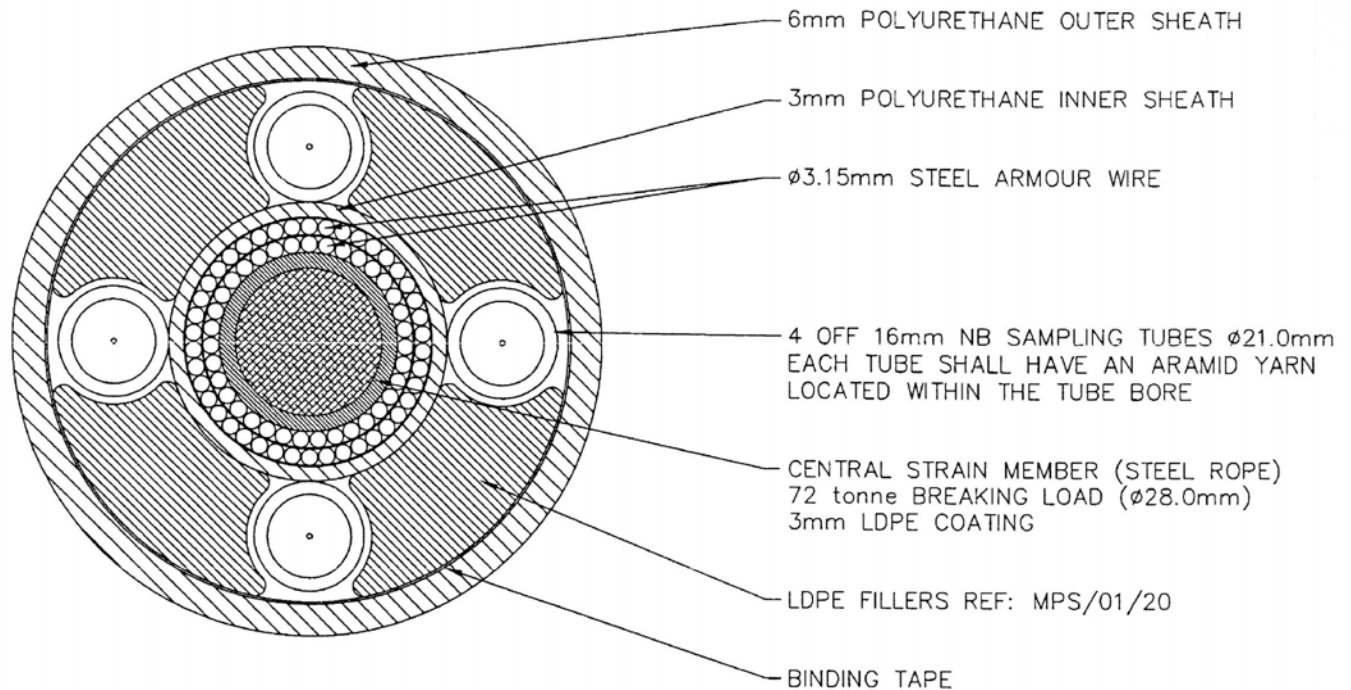
Study of the new buoy

Tests in wave tank and numerical modelling



Study of the umbilical

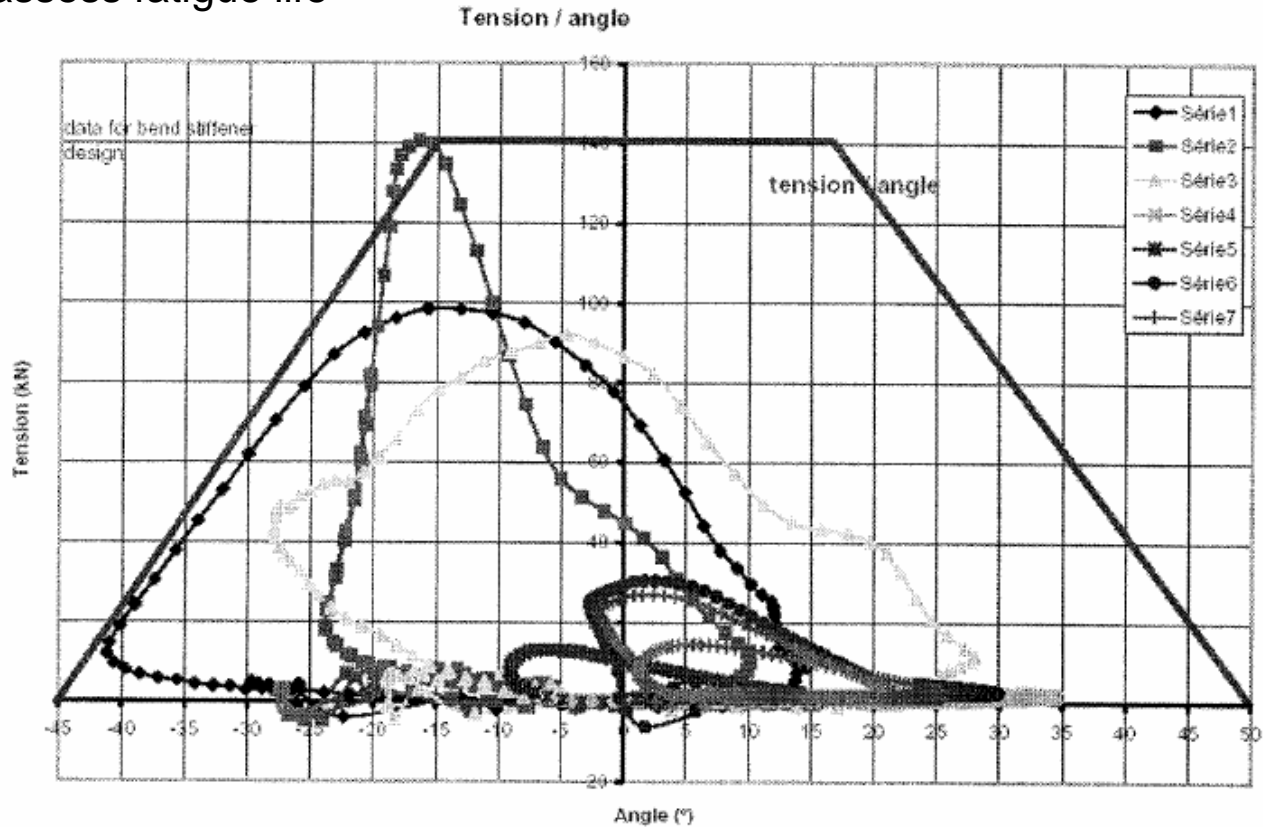
Design of the mooring bundle



Study of the umbilical

Dynamic analysis

Provide data to design bend stiffener
And assess fatigue life

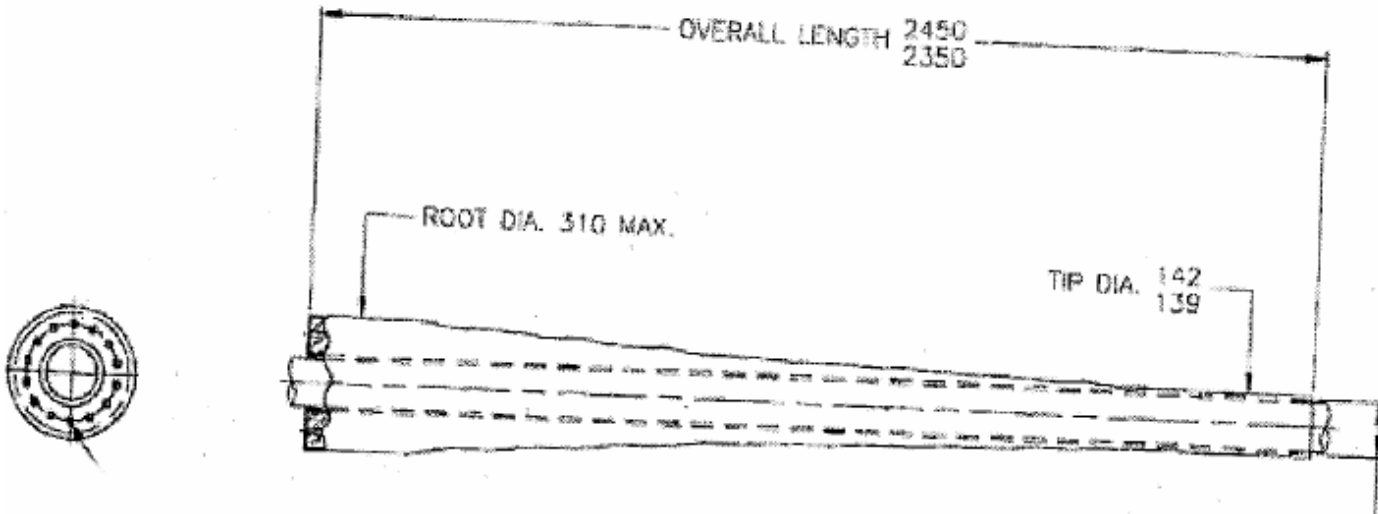


Study of the ombilical

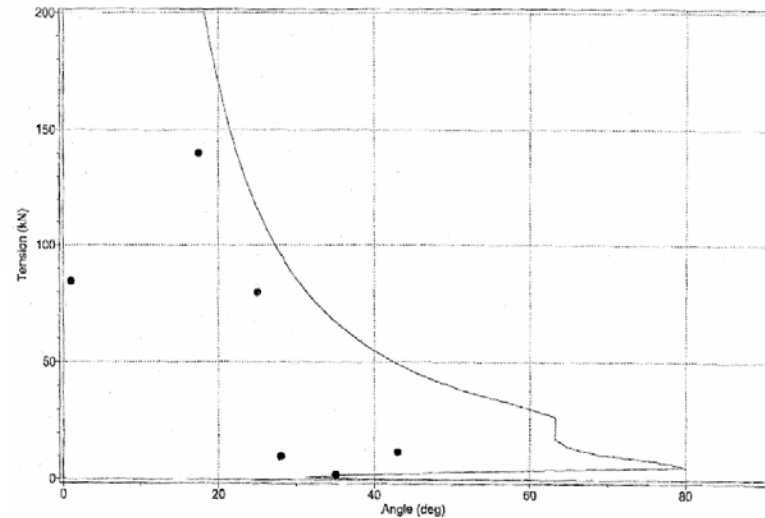
View of ombilical



Study of the umbilical Bend stiffener design



Outer diameter 306 / 142 mm
Bore diameter 127 mm
Length 2.3 m
PU



Study of the umbilical

View of bend stiffener



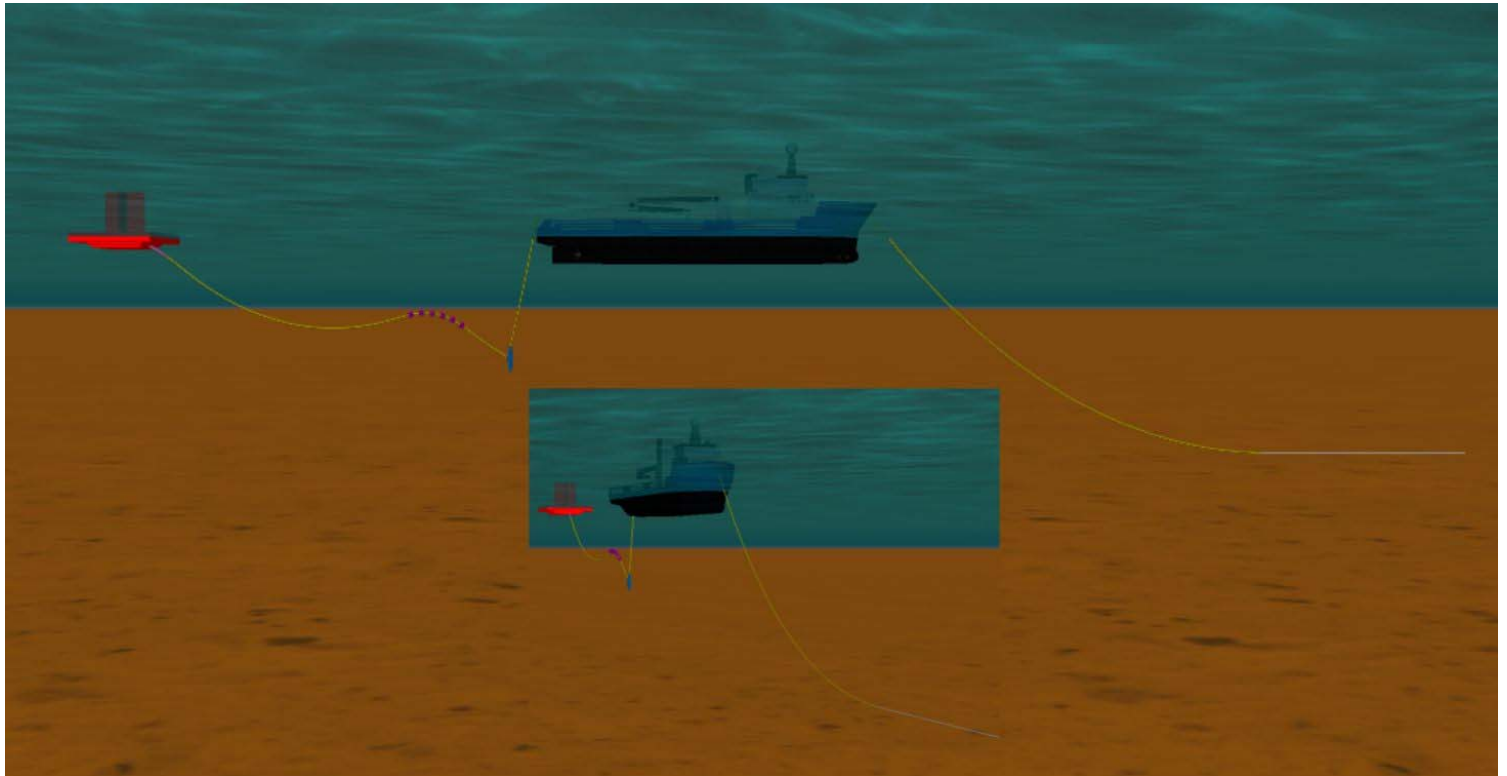
Study of the new buoy

Deployment at sea



Study of the new buoy

Simulation of deployment at sea



Study of the new buoy

Deployment at sea



Study of the new buoy

Deployment at sea



Study of the new buoy

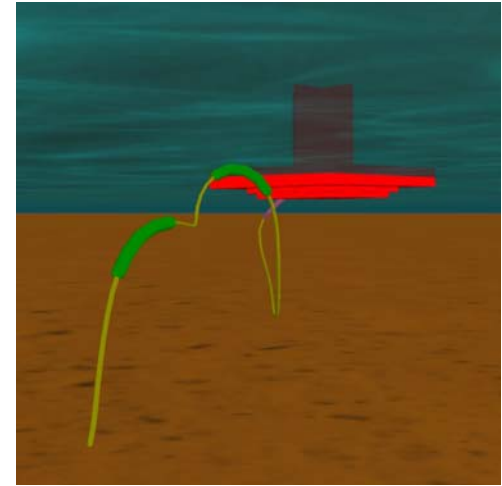
Deployment at sea

Monitoring of key parameters
And nutrient

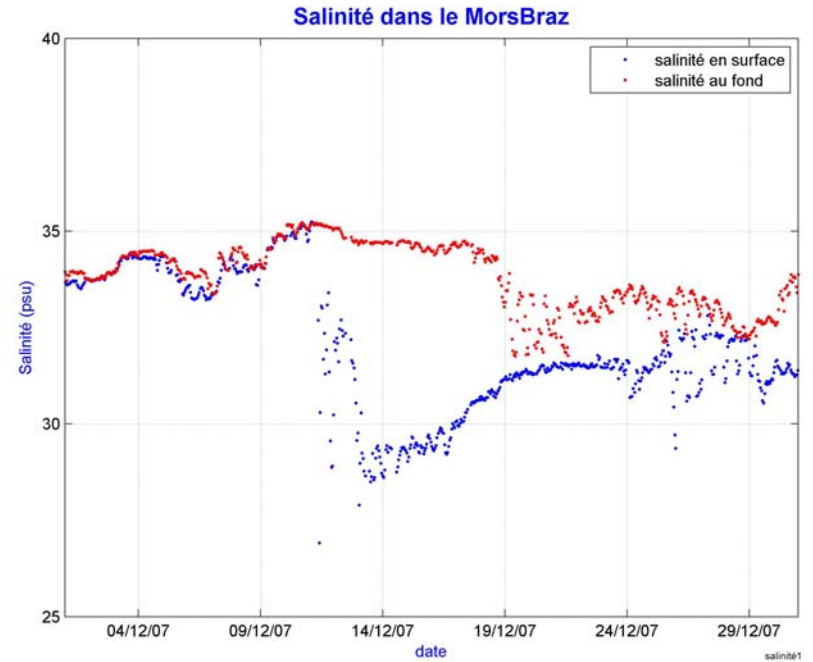
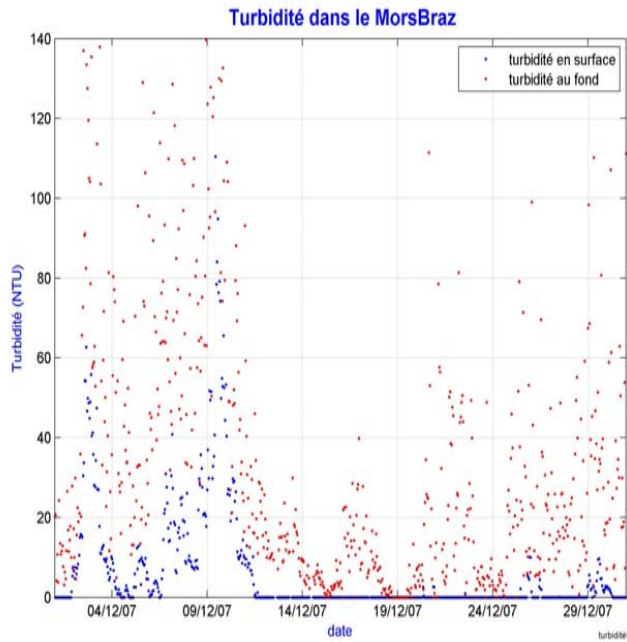
At different levels from sea
surface to sea bottom



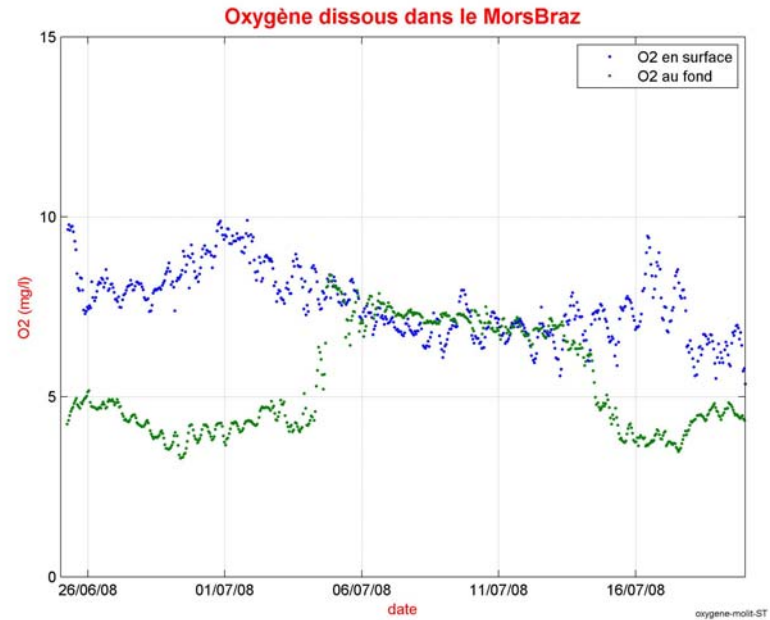
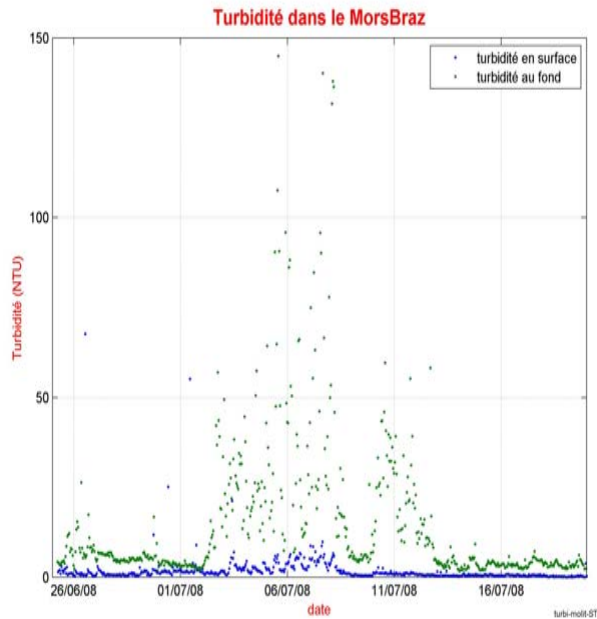
Study of the new buoy loops

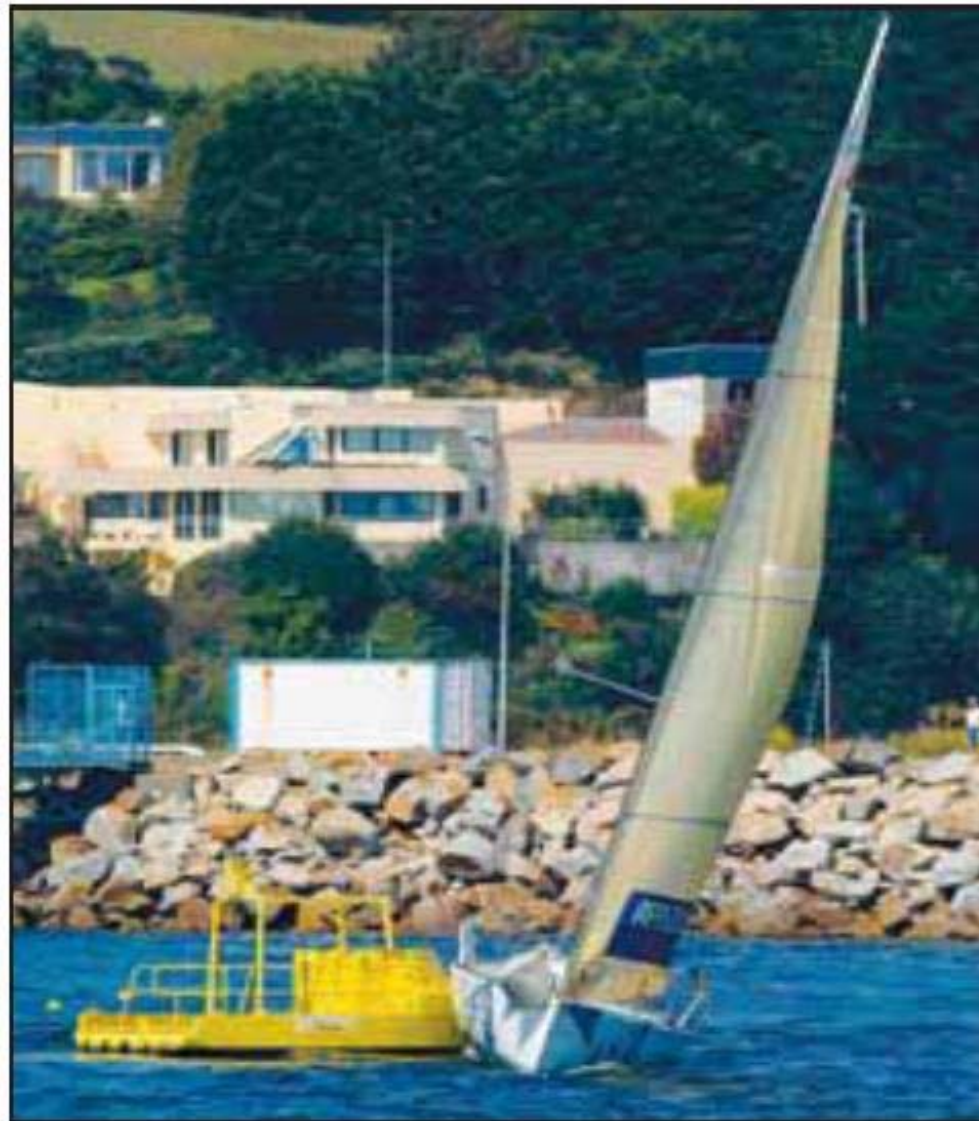


Some results in estuary



Some results in estuary





● *À la sortie du goulet, le Marseillais Marc Emig a heurté une grosse bouée métallique jaune. Sans trop de dommages visiblement puisque le skipper a poursuivi sa route... (Photo Eugène Le Droff)*



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Thank you



Réalisation: Michel Répécaud & Loic Quéméneur IFREMER