ANTARES mooring

for an integrated coastal ocean observing system :

coastal-open ocean exchanges and eddy formation studies by means of radar, profilers, gliders and mooring coupled with numerical models.

LSEET, LOCEAN, LOV, DT INSU

Current observations by radar VHF in the Gulf of La Spezia Mediterranean Sea): **Validation with real (drifters) and synthetic trajectories**

MREA-LASIE-POET

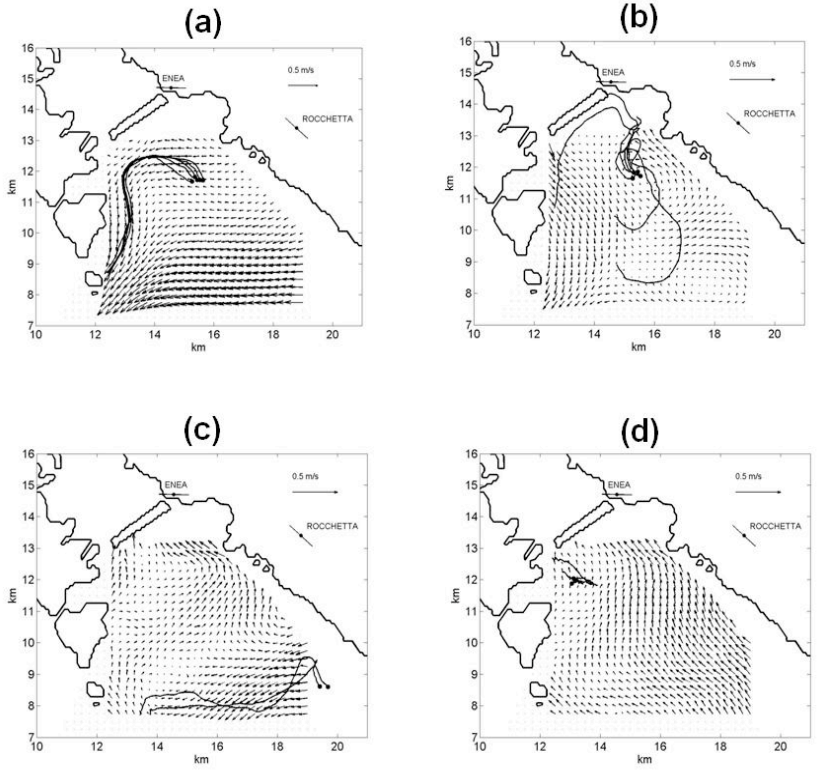
WERA VHF (resol. 300m/coverage 15km)

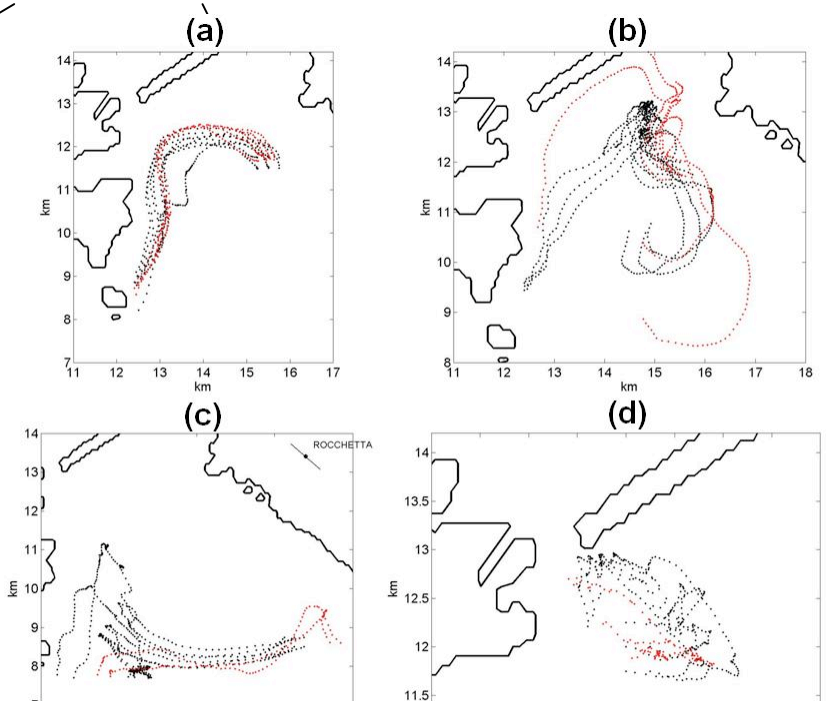
2 weeks (13-28 juin 2007)

Spreading patterns: Ok for practical applications.

Optimal launching from NRT maps

Flow variability and relative dispersion studies (and recovery of coastal drifters)



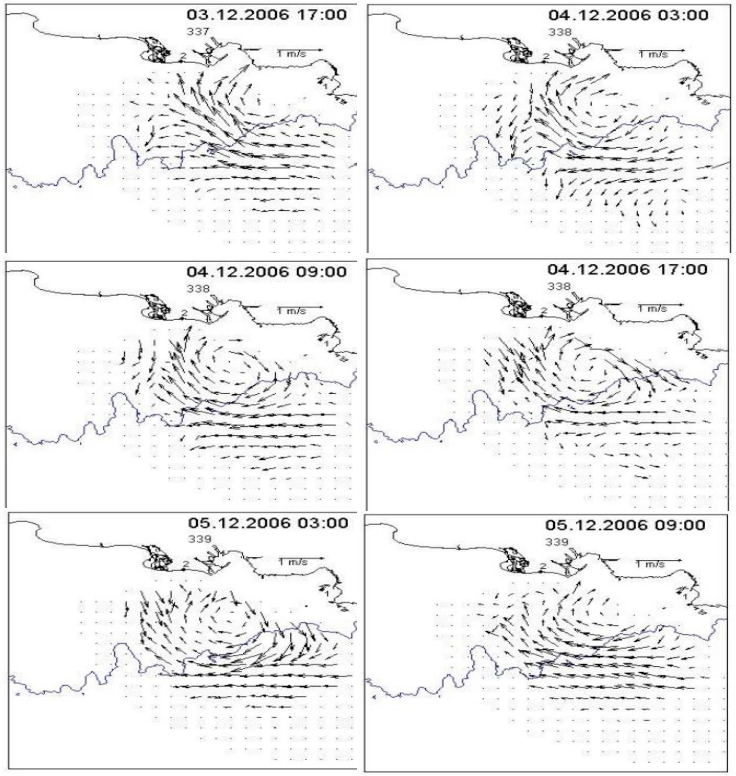


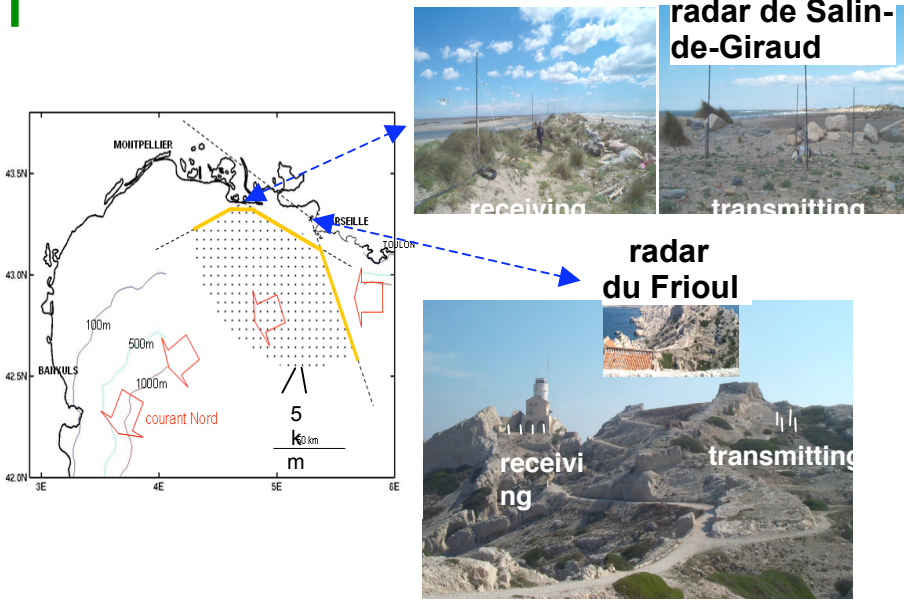
Current observations with radar HF : gulf of Lions

ECOLO (PNEC/PATOM)

WERA HF (resol. 5 km/coverage 100km)

1,5 Y (june 2005-jan 2007)





Observation of inertial sub-mesoscale eddies: generation mechanisms investigated by numerical model and model validation

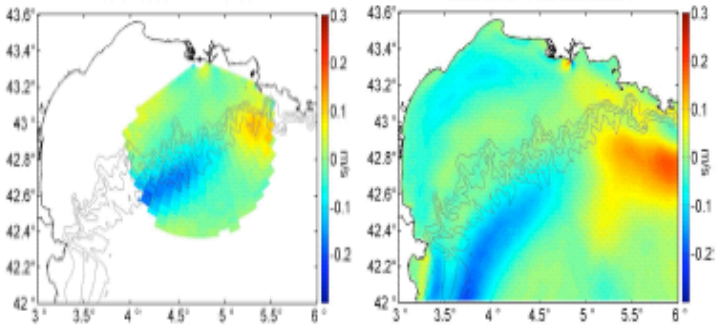
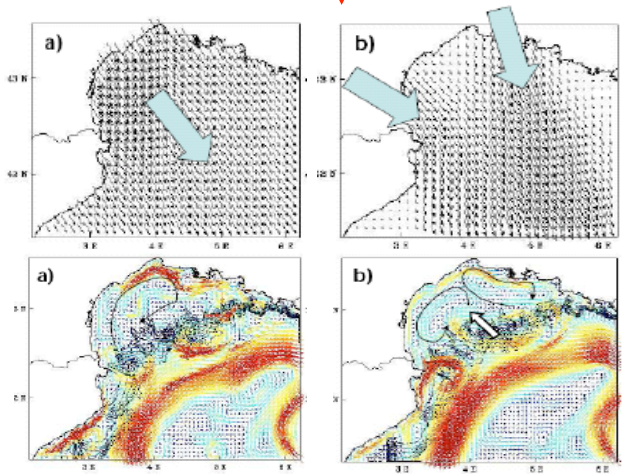
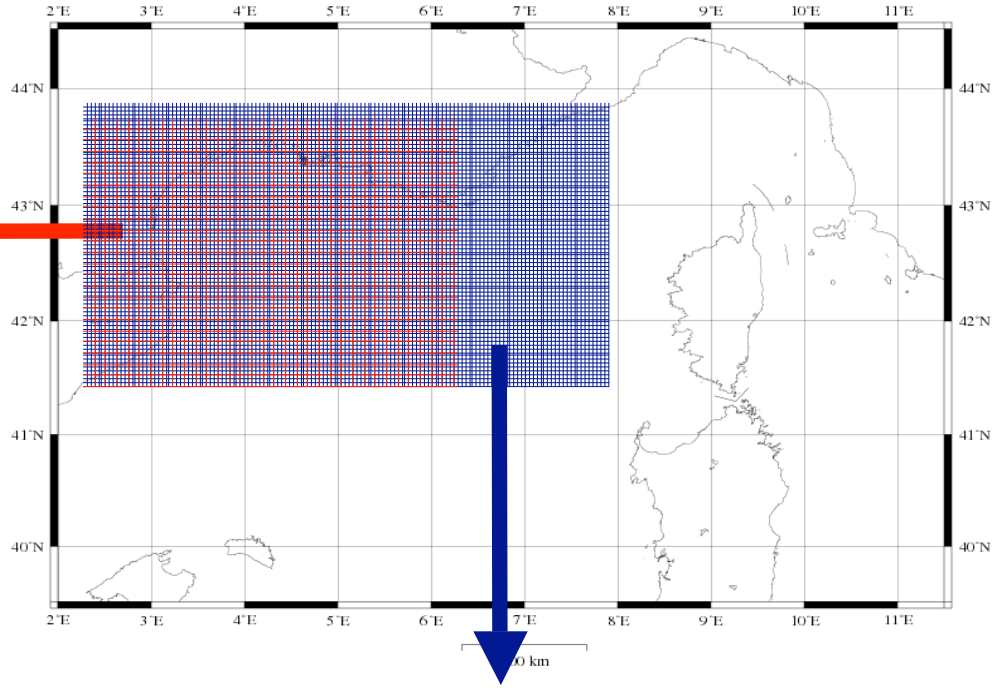


Figure 5: Mean radial velocity for radar 2 (left) and by the model (right) over one year. Wind speed < 6m.s^{-1}.

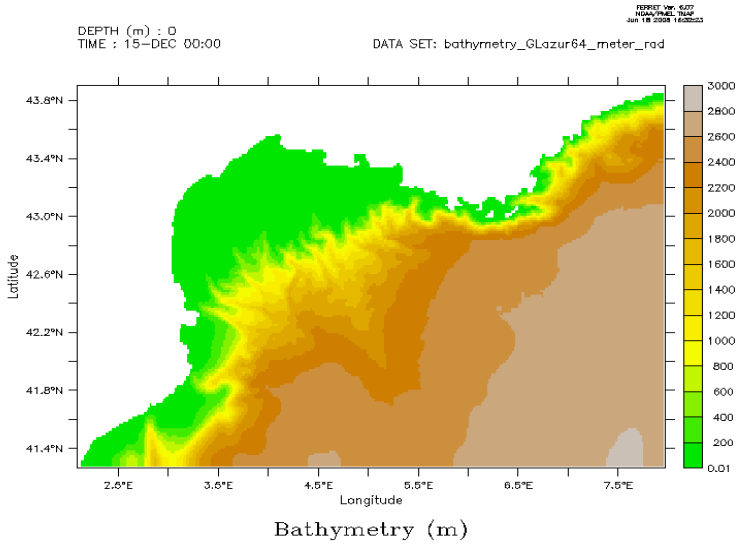
Modelling NEMO 1/64°

GDL64





GLAZUR64
(under development)

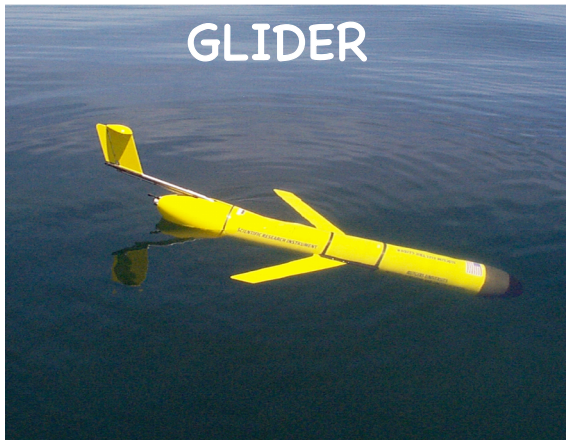


Radar data assimilation for operational oceanography
Validation/correction
Process studies

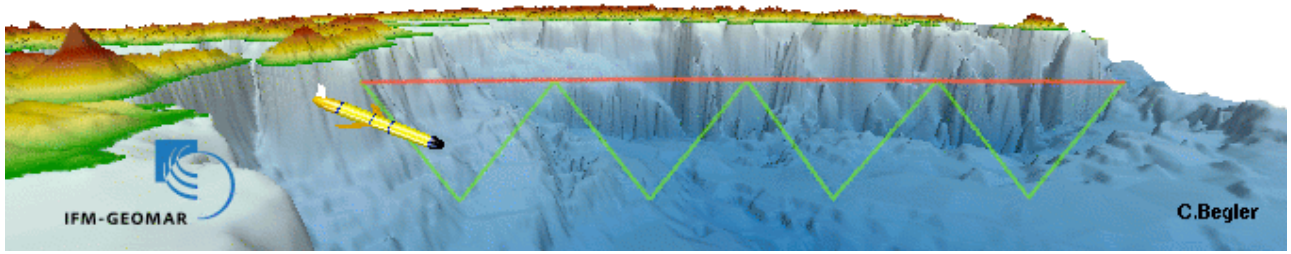
Synoptic high resolution surface current observation needs to be coupled with water column observations by mooring and glider

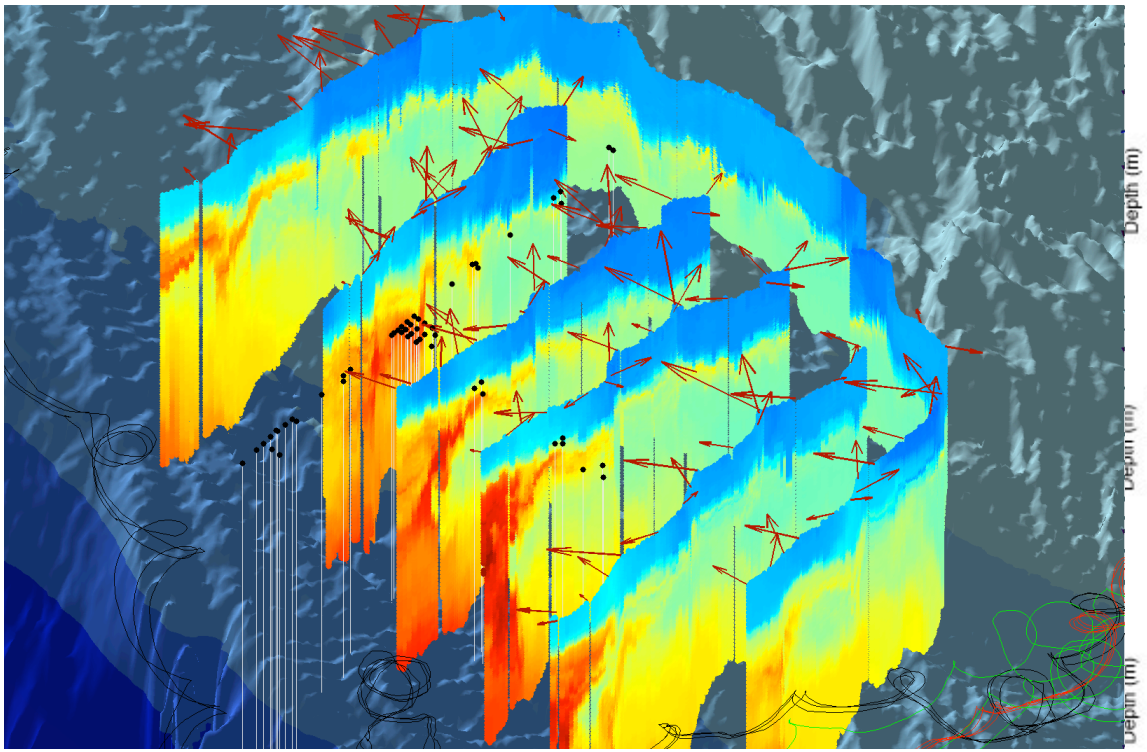
Radar observations are needed for RT optimal sampling (e.g. glider or profilers), comparison with mooring (positioning in the NC)

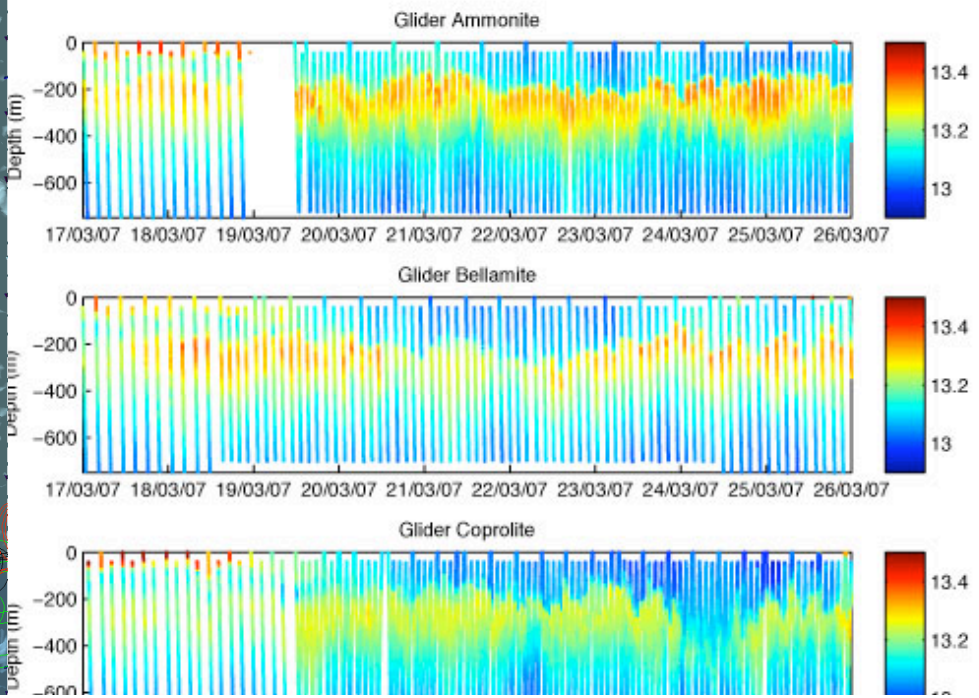
Quasi-autonomous instrumentation, optimal sampling , 3D coverage high spatial-temporal resolution (to capture all variations)


GLIDER


GPS + IRIDIUM
modem
data
missions
GliderMan


IFM-GEOMAR
C.Begler




Glider Ammonite
Glider Bellamite
Glider Coprolite
Depth (m)
0
-200
-400
-600
17/03/07 18/03/07 19/03/07 20/03/07 21/03/07 22/03/07 23/03/07 24/03/07 25/03/07 26/03/07
13.4
13.2
13

MOORING DESIGN

Partie LOCEAN

144 m ABASM 18707

146 m 3 CF16, +75 Kg

149 m RBR 1060 14214

150 m **Aquadopp**

170m µcat n° 3018 P=350m

200m RBR 1060 14213

230m RBR 1060 14212

248m 1 CF16, +25 Kg

250m **Aquadopp**

251m RBR 1060 14211

300m SP2T +

µcat n° 5058

350m RBR 1050 13829

400m RBR 1050 13832

450m RBR 1050 13831

498 m 1 CF16, 25 Kg.

500 m **Aquadopp**

501 m µcat n° 5602

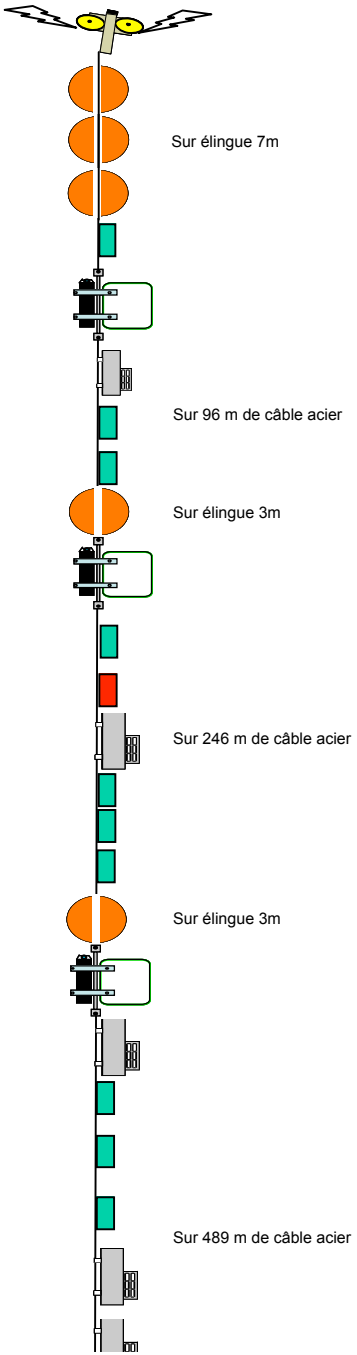
550m RBR 1050 13822

600m RBR 1050 13432

650m RBR 1050 13431

700m µcat n° 5419

870m µcat n° 5574



Partie CEFREM

990m 8 Flotteurs

1000m PPS3-12

1005m RCM11

1100m µcat n°

1300m µcat n°

1500m µcat n° 4924

1750m µcat n°

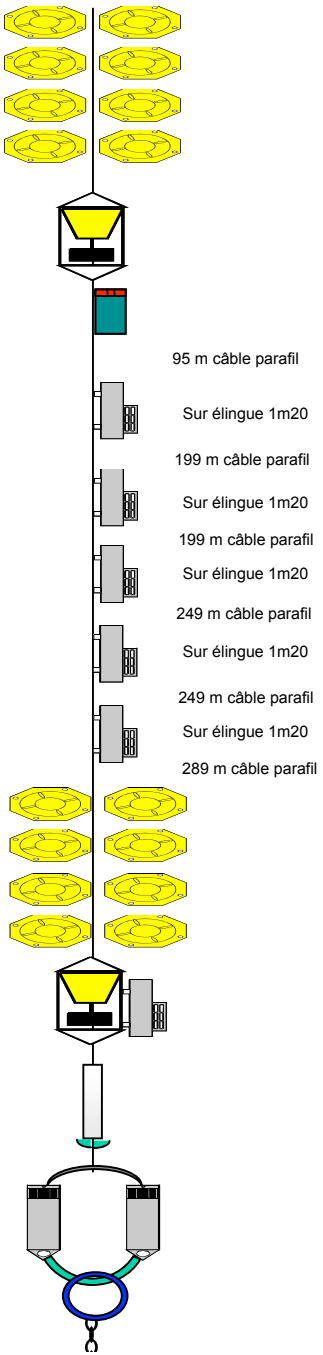
2000m µcat n°

2290m 8 Flotteurs

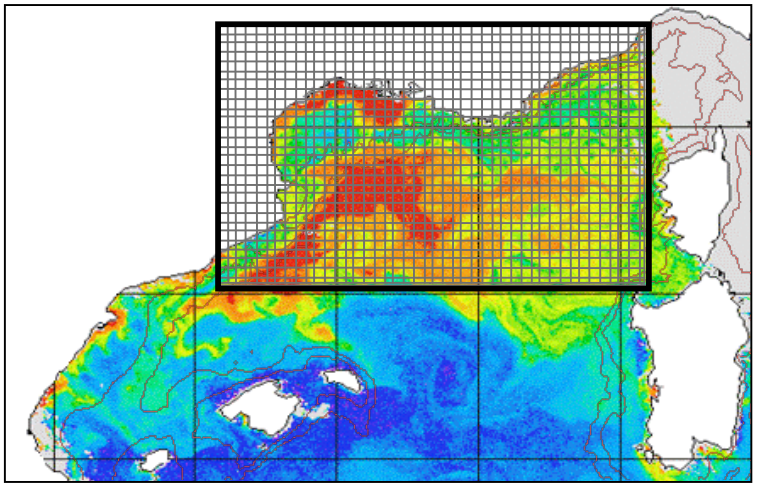
2300m PPS3-12 + µcat

2305m Aquadopp

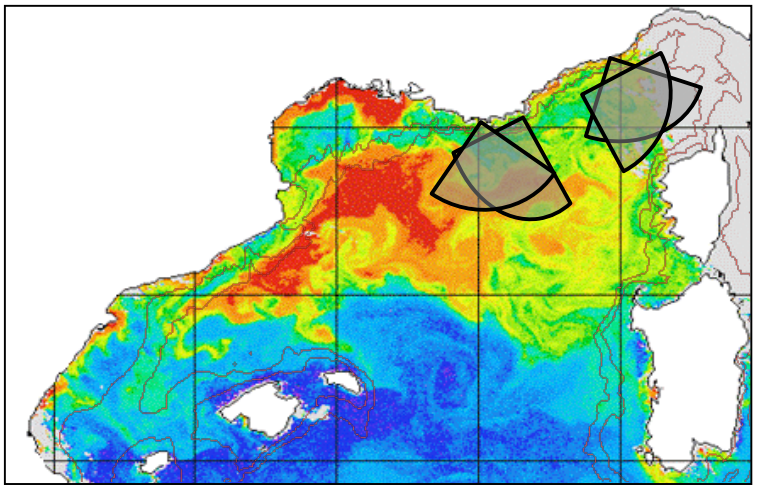
2325m Acoustic release



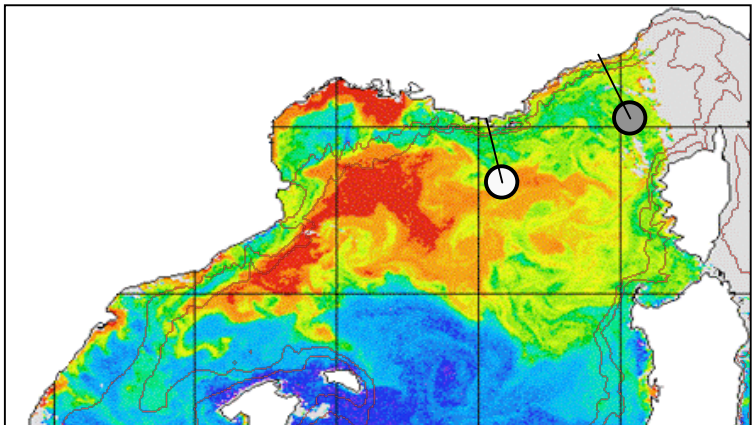
MODEL



RADARS



GLIDERS, MOORING



Antares

Dyfamed

Means:

Integrated study of NW Med coastal circulation by radar, gliders and mooring observations coupled with high resolution model GLAZUR64 (NEMO 1/64°).

Glider/comunication technology supported by DT-INSU; Radar LSEET equipment

Mooring needs to be quasi-autonomous (acustic transmission)

Goals:

Transport study associated with NC instabilities; interactions with coastal circulation; sub-mesoscale eddies, consequences on ecosystem via open ocean-coastal energy and mass exchanges,residence time in gulfs

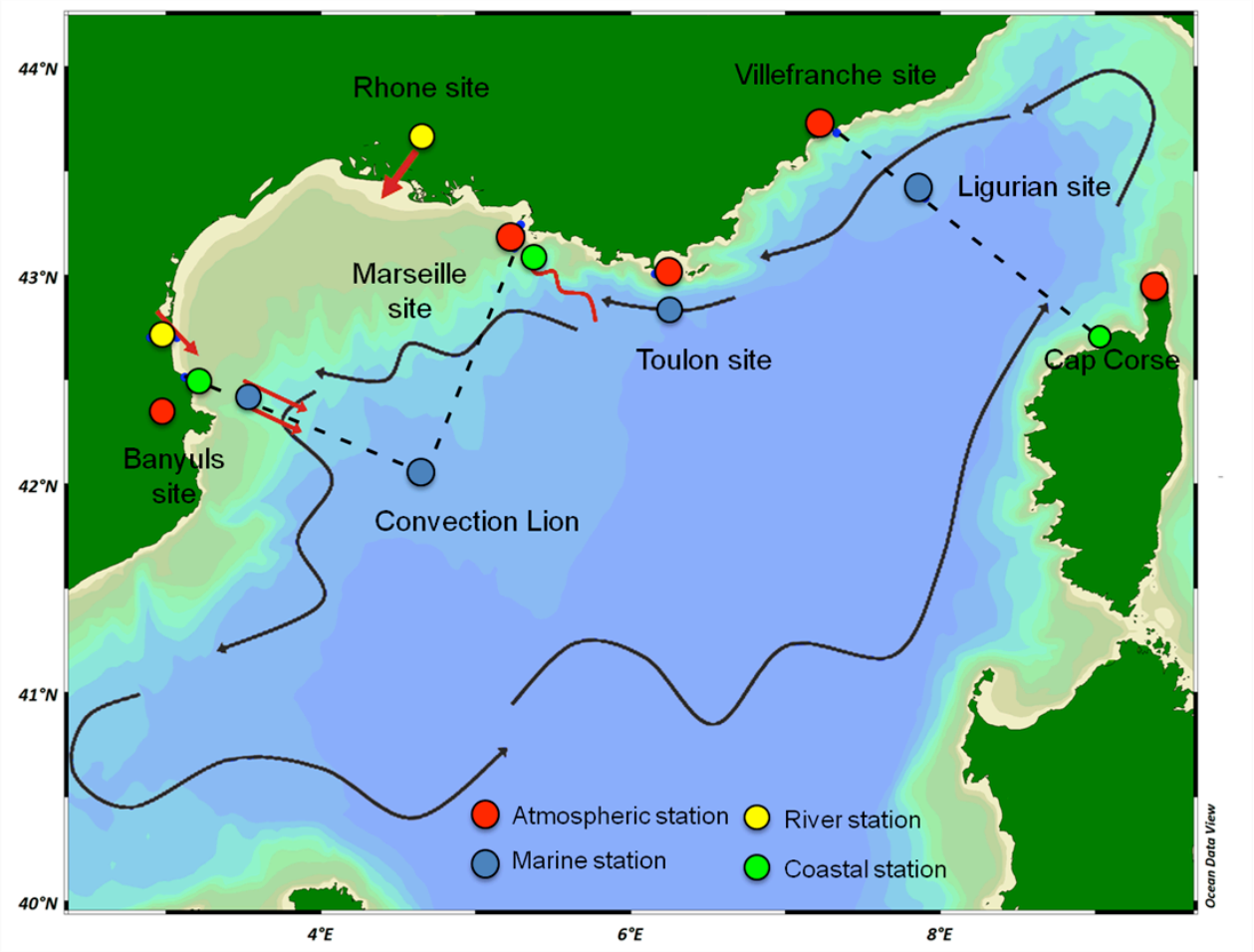
Advantages:

RT for operational oceanography. Interdisciplinarity (more instrumentation).

Antares, essential site for a Pilot Observatory design in the framework of MOOSE (Mediterranean Ocean Observation Site on Environment)

Group of experts , project in the framework of large national and international program for long-term observatories.

MOOSE stations network including atmospheric, river, coastal and open ocean observations. The dashed line represent the glider transects (also called the “endurance lines”).



PERSONNEL INVOLVED

LSEET: Zakardjian Bruno, Anne Molcard, IR
LOCEAN: Laurent Mortier, Pierre Testor, IR
LOV: Fabrizio d'Ortenzio, Hervé Claustre, IR
DT-INSU: Laurent Beguery

BUDJET

Technology for real time transmission of mooring
Equipement mooring
Operation

Radar+ Glider : 50k€
Mooring comunication technology: ??

1 mooring equipment: 200 k€ (DT INSU? AO?)