

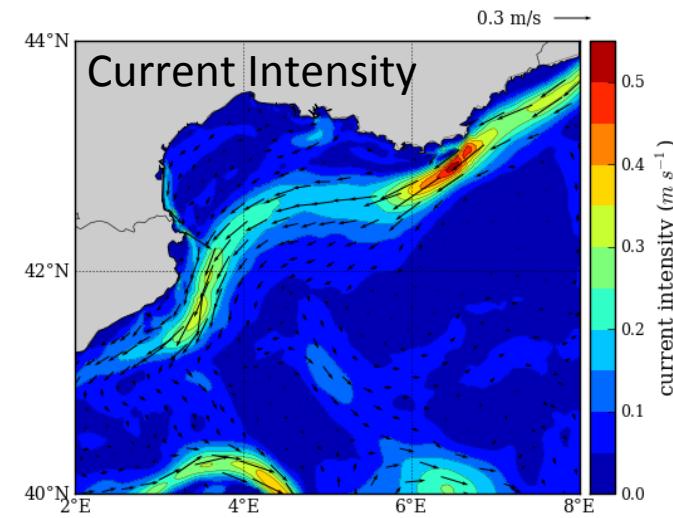
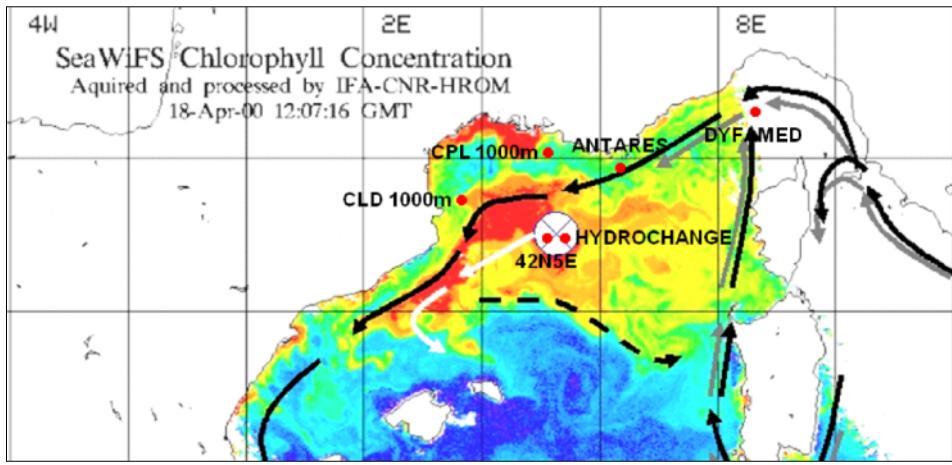
PROPOSED OCEAN AIRSWOT OR SWOT CALVAL SITES IN FRANCE



PROPOSED FRENCH OCEAN CALVAL SITES – WHY?

1°) NW Mediterranean Sea

- No tides !
- Dynamics : coastal currents generating eddies and filaments; river inputs
- Intensive spring blooms of ChL; Mid-latitude deepwater formation in late winter;
- In-situ obs : regular monitoring, extensive field program HyMex in 2012 / 2013, HR ocean models in operational mode
- HR Geoid (SHOM) & MDT (CLS) -> MSS



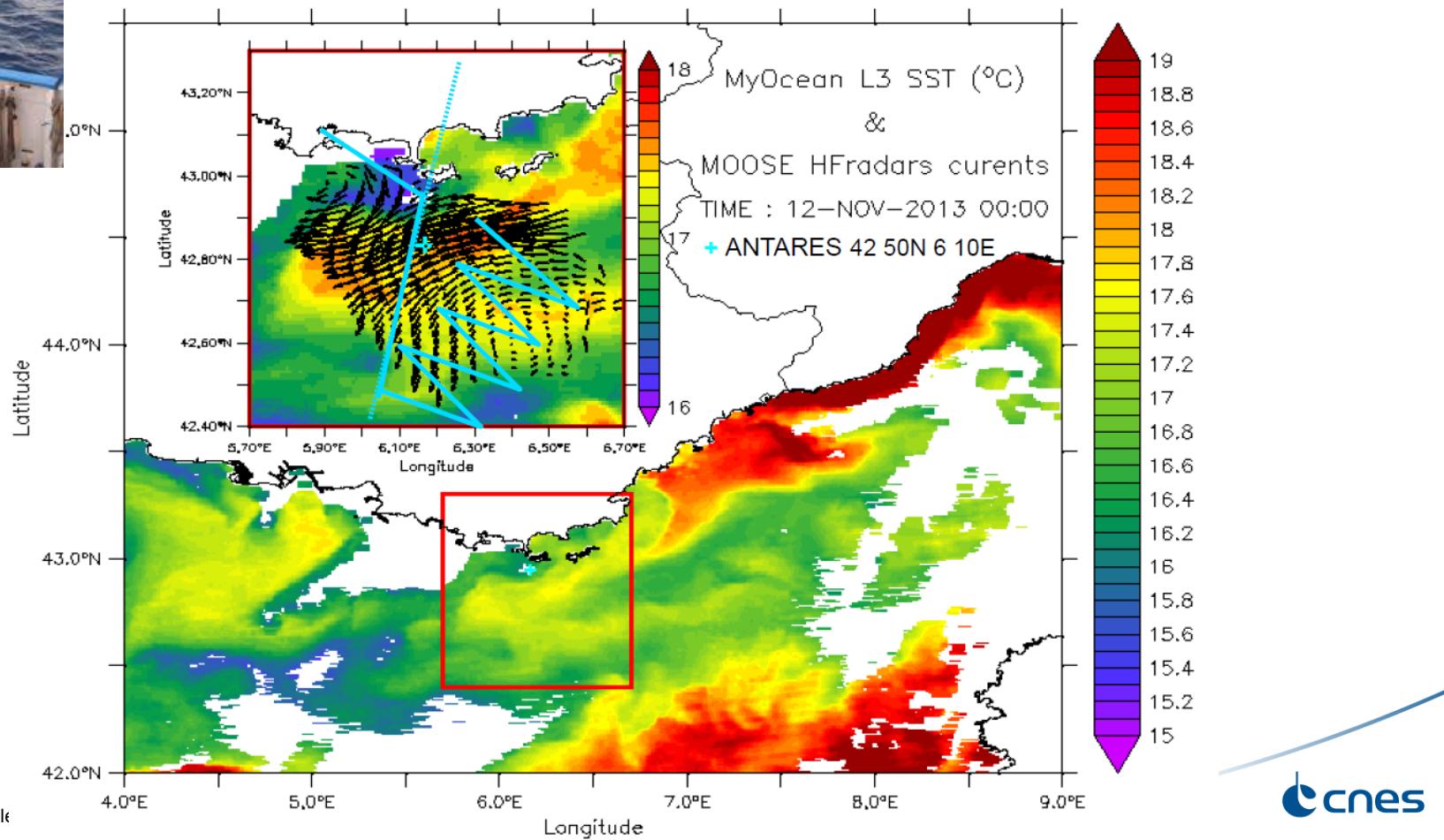
LATEX 2010-2020 : European air-sea flux study over NW Mediterranean meso & sub-mesoscale structures, ~ 100 PIs

ADAPTIVE SAMPLING

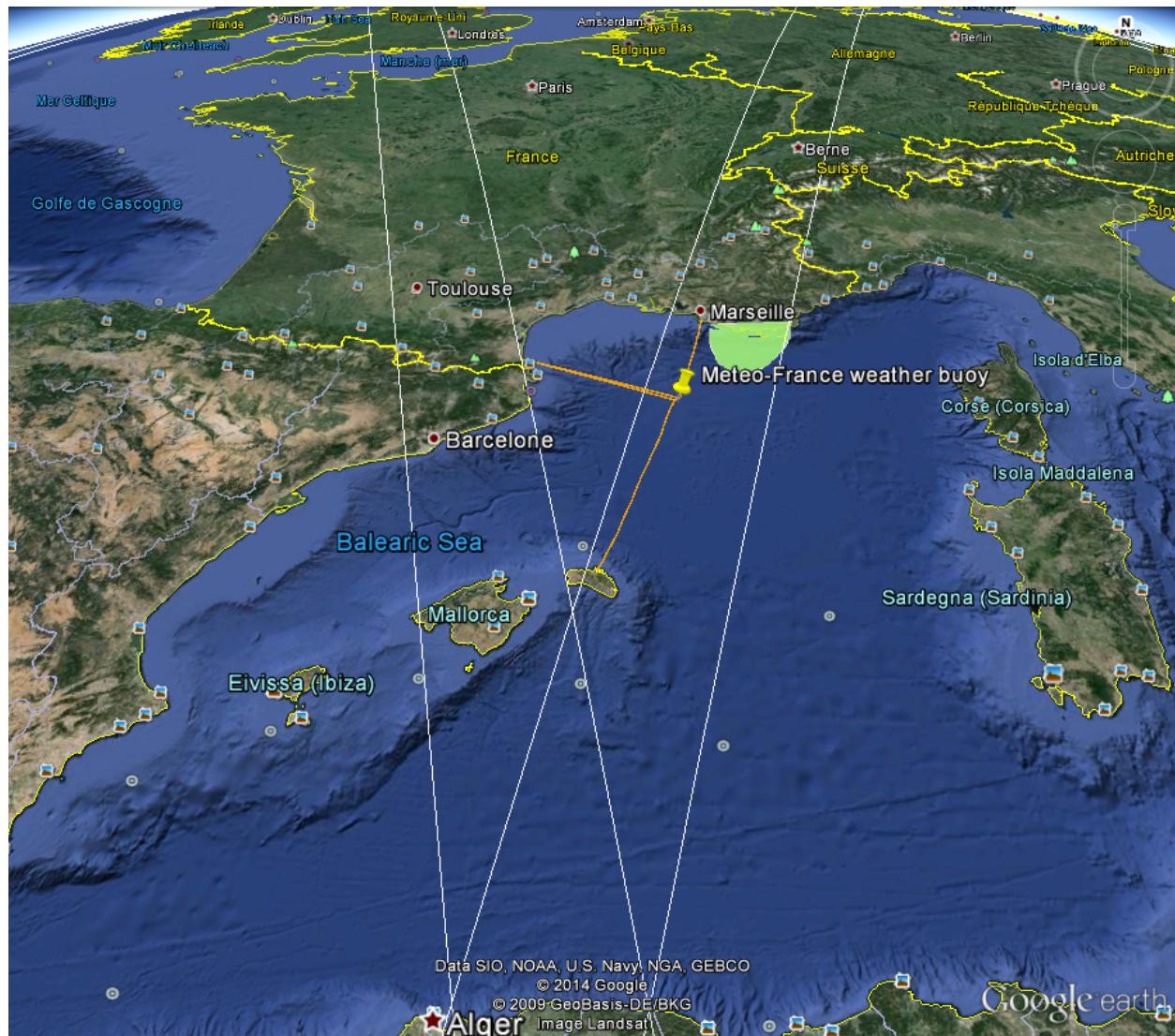
- Shallow rapid sampling with towed CTD
- Deployment of drifter pairs in filaments positioned in NRT with satellite data



Campagne OSCAHR 1-8 novembre 2015



PROPOSED 1-DAY FAST SAMPLING SITE

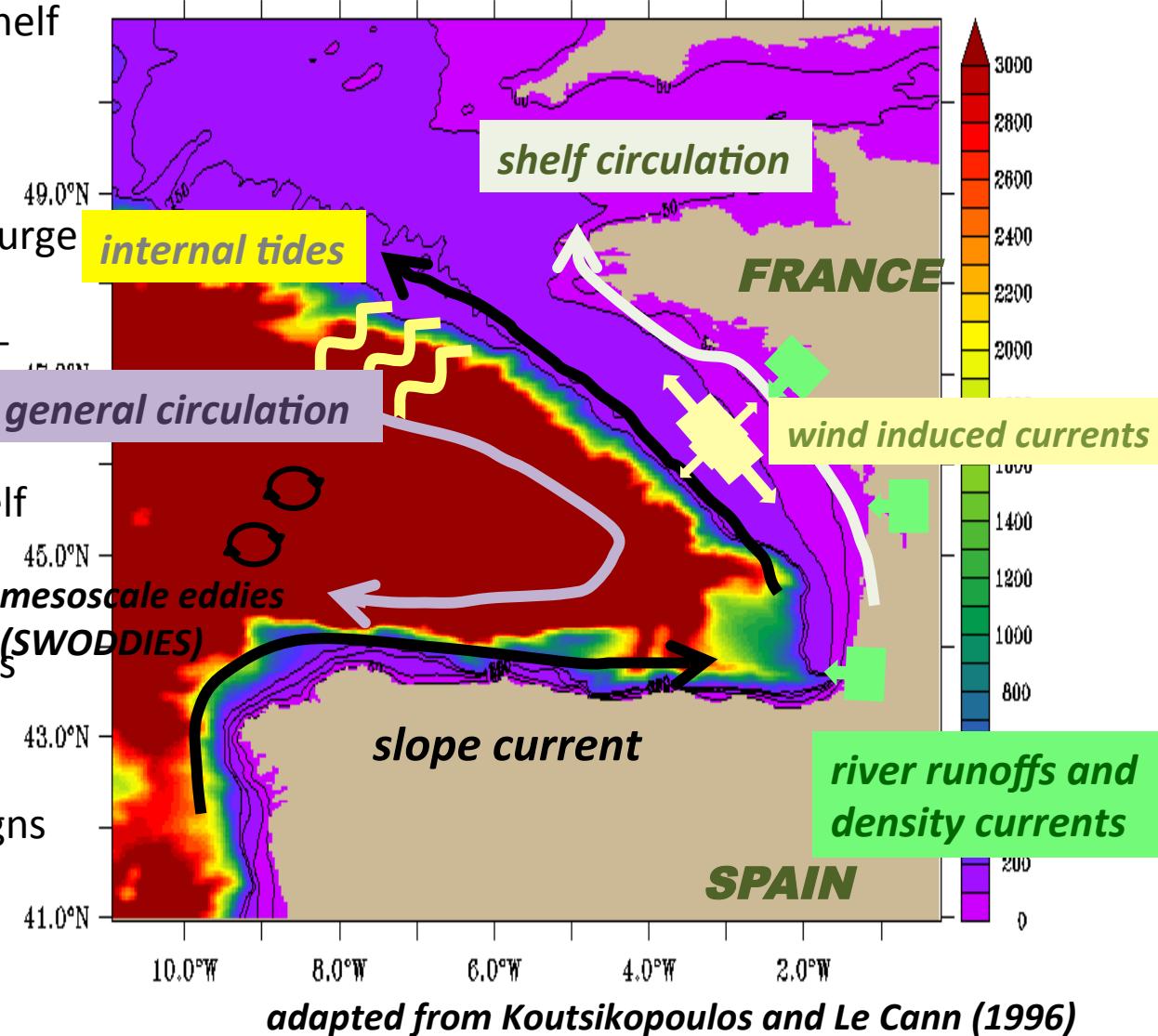


2nd Ocean CalVal site : Bay of Biscay



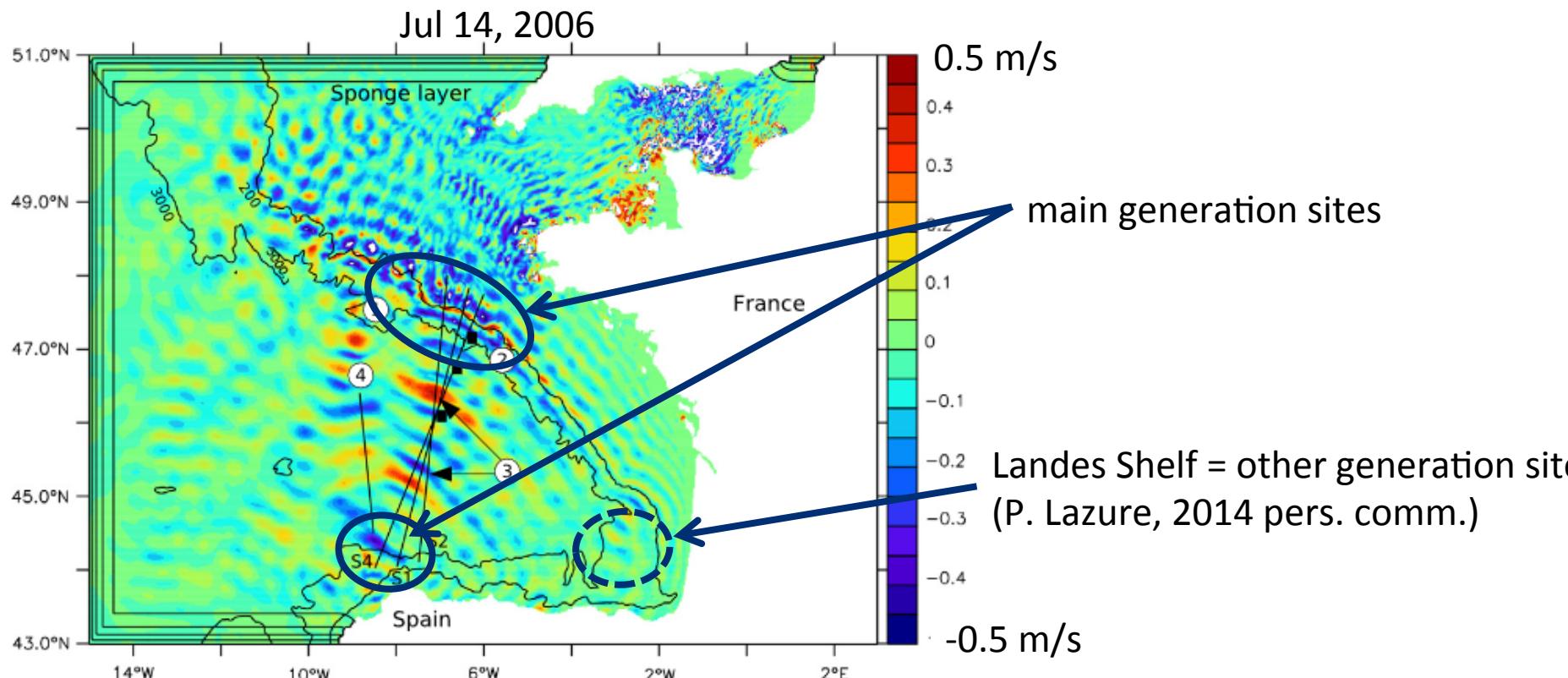
Why the Bay of Biscay ?

- Strong tides – coastal tides & internal tides generated at shelf break
- Strong wave conditions & infragravity waves & storm surge
- Small-scale mesoscale & sub-mesoscale structures not observed by nadir altimetry (coastal currents & cross-shelf exchange)
- River runoff & coastal plumes
- HR modelling & assimilation experience & in-situ campaigns (eg EPIGRAM)
- HR Geoid (SHOM) & MSS



Internal tides in the Bay of Biscay : results from idealized HYCOM simulations (Pichon et al., 2013)

North-south surface baroclinic velocity (M2 component) from a numerical simulation where the initial density is spatially homogeneous and the forcing by barotropic tides only is considered



BAY OF BISCAY (BOB) SHELF PROCESSES

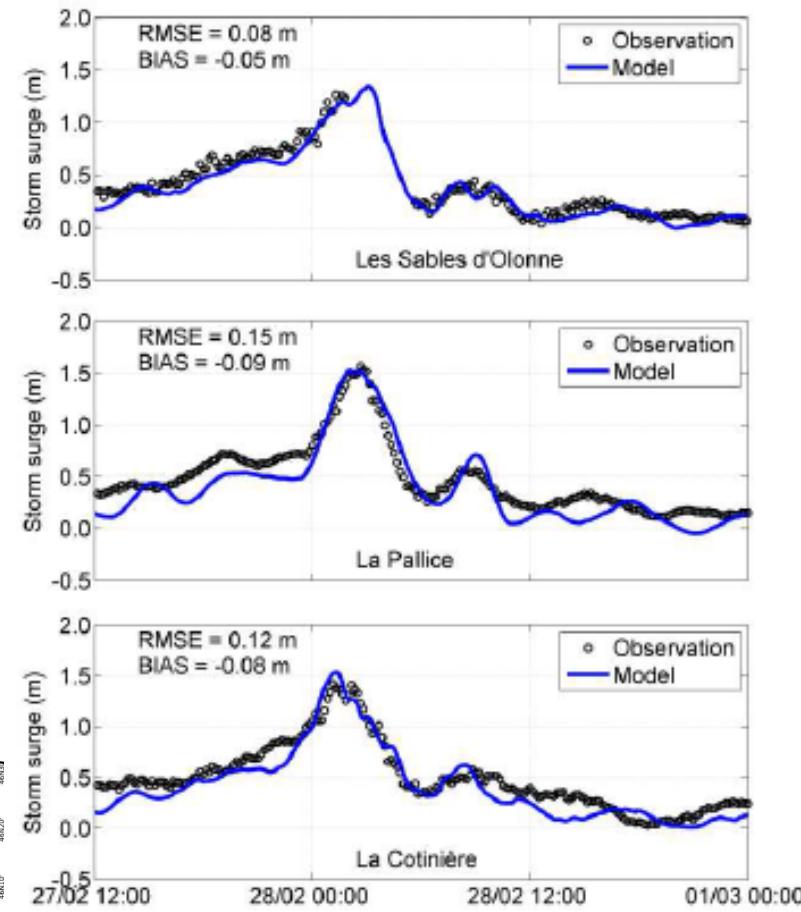
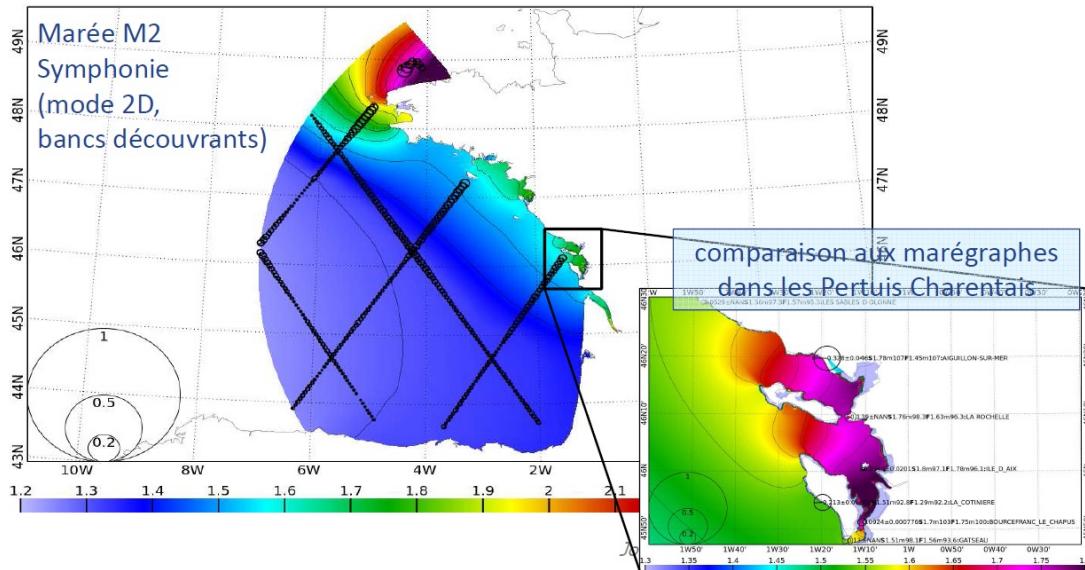
Specific shelf response to strong Atlantic wind-wave forcing

Intense, faster, smaller-scale structures generated on shelf

Storm surge

Compounded by strong coastal tides

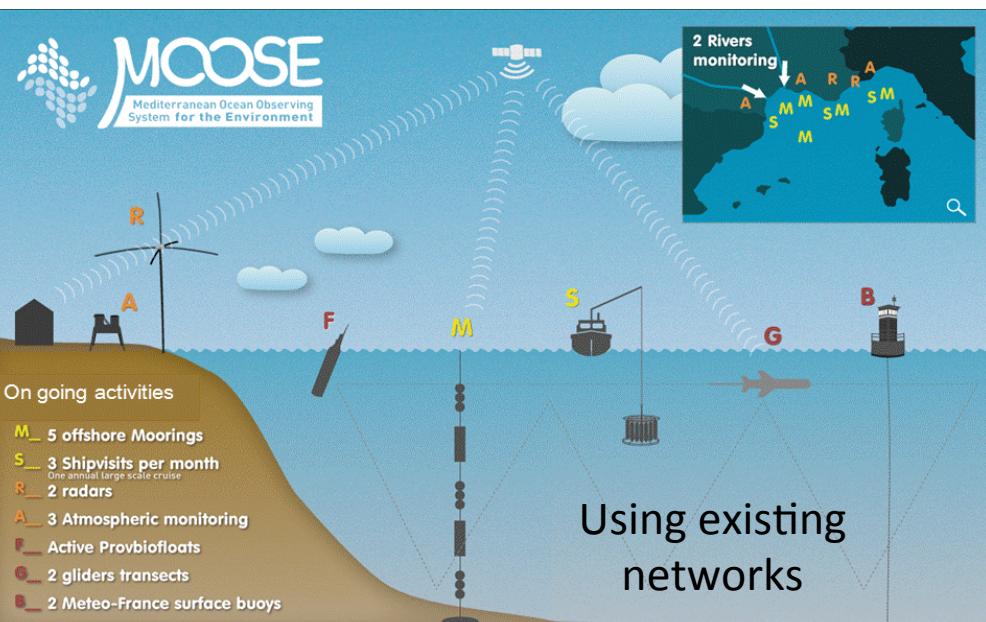
Exemple: Configuration BOBSHELF (LEGOS/LA)
(Marsaleix, Duhaut, Toublanc, Ayoub et Lyard)



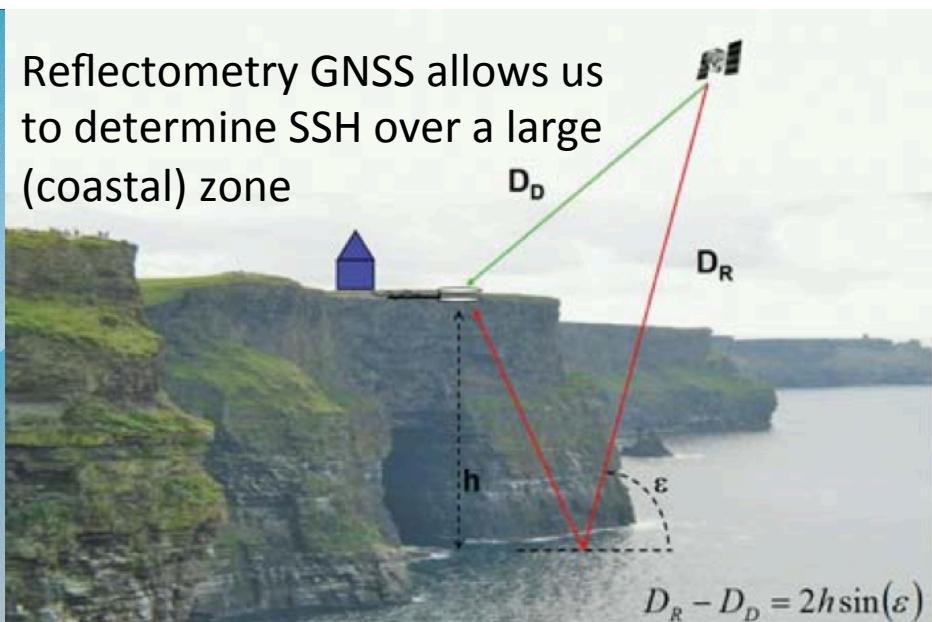
Storm surge during Xynthia
(Bertin et al., LIENS)

Large Interdisciplinary community working on BoB modelling & observations ... EPIGRAM

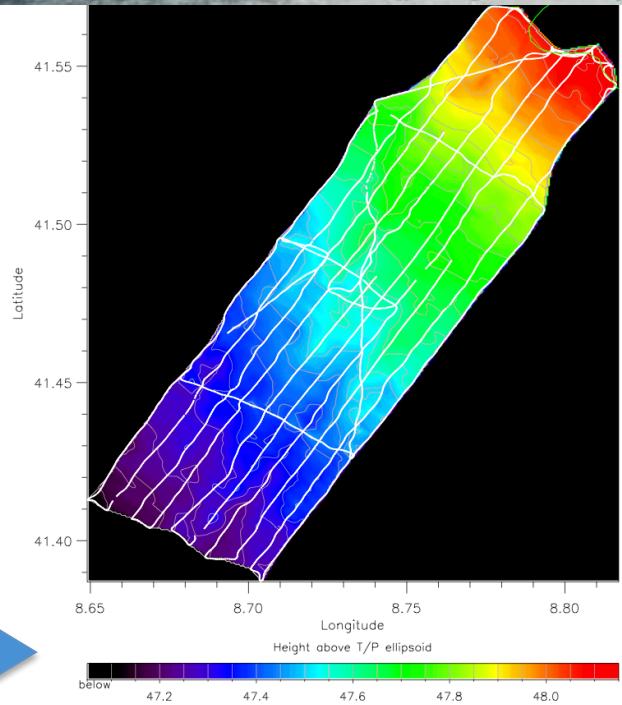
SUPPORT FOR SSH CALVAL ...



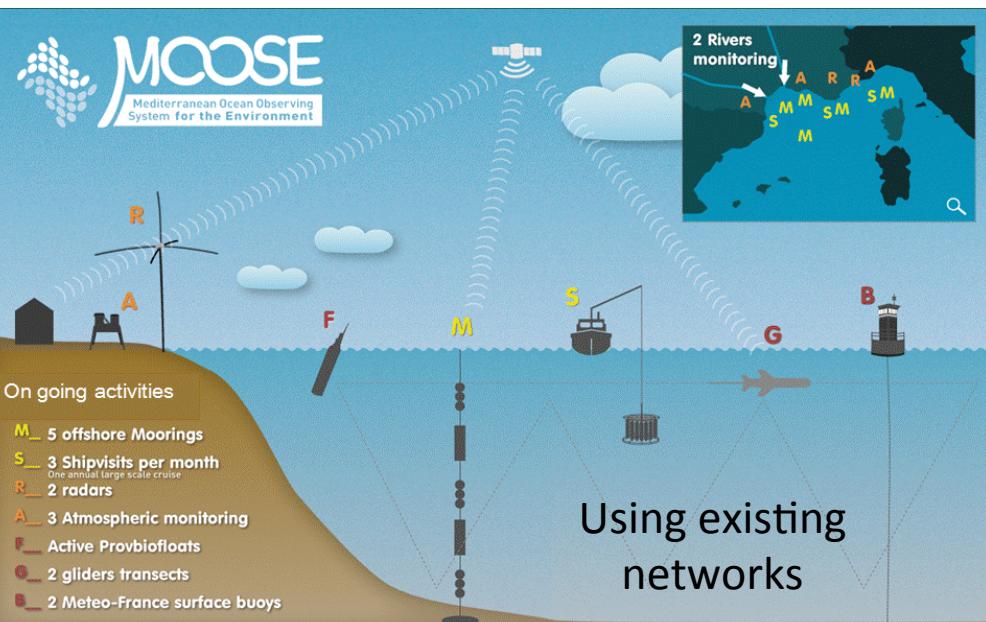
Reflectometry GNSS allows us to determine SSH over a large (coastal) zone



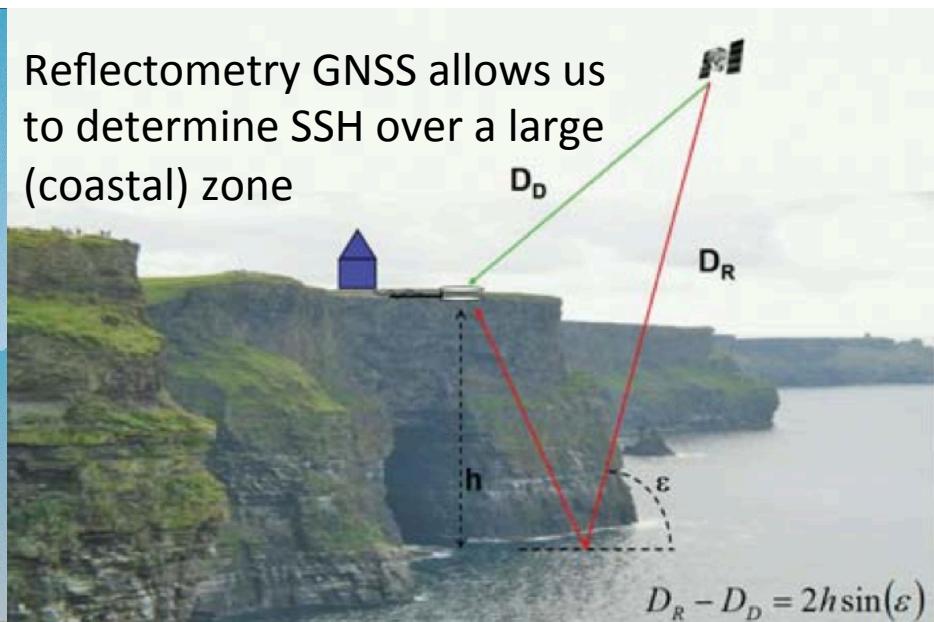
Towed GPS mattress allows HR mapping of the geoid & MSS over a large zone



SUPPORT FOR SSH CALVAL ...



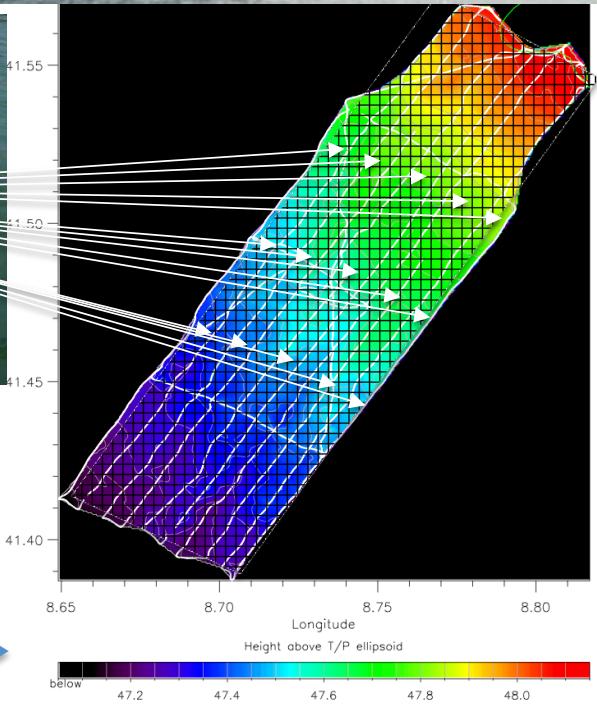
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Towed GPS mattress allows HR mapping of the geoid & MSS over a large zone



GPS buoy network



CONTRIBUTION TO US OCEAN CAMPAIGNS

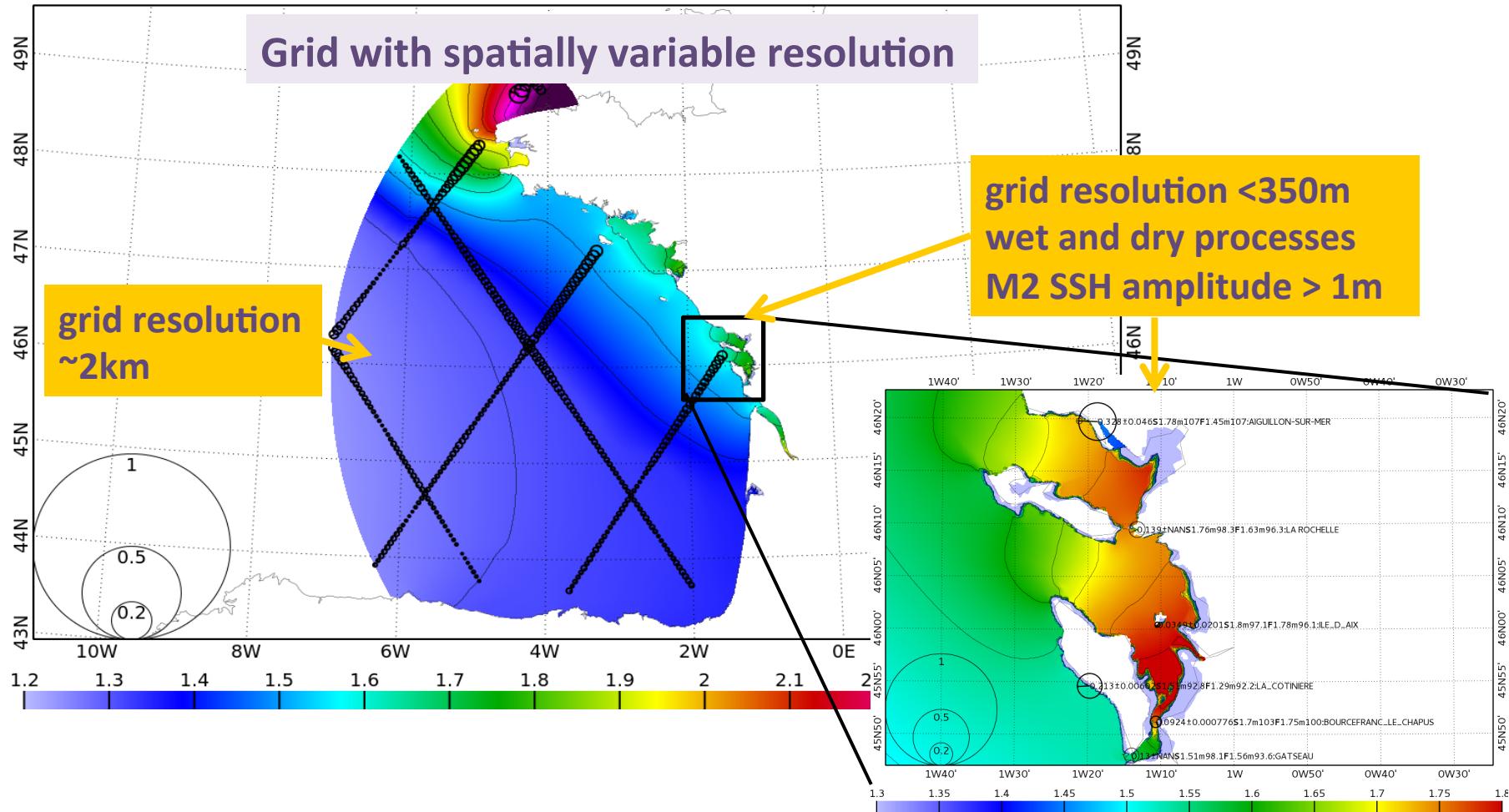
SDT members will also contribute to US-ocean AIRSWOT campaigns

- **Tides** (F. Lyard) – very HR tides calculated within TP-J1-J2 diamonds for AirSWOT zones, using dans les régions d'AirSWOT
- **Surface Waves** (F. Ardhuin) – wave spectral analyses, wave models, & in-situ float analyses
- **Satellite data** (CNES-CLS) – regional HR maps, calculating HR 2-D corrections
- **Satellite data** (B. Chapron, Ifremer-CERSAT) – RadarSAT –SAR, analyses, HR SST, etc
- Lagrangian analysis techniques & « **adaptive sampling** » based on satellite & in-situ observations to position fronts and filaments in NRT (F. D'Ovidio, Nencioli)
- **sQG / Lagrangian Analyses** (Lapeyre, Klein)

=> Preparation & reflection on needs for SWOT CalVal sites & (perhaps) AirSWOT-FR

EXTRAS

M2 barotropic tide elevation from Symphonie and TUGO simulations: high precision at large scales and at short scales over the shelf (comparison with nadir altimetry and tide gauges)



M2 barotropic tide elevation from Symphonie and TUGO simulations: high precision at large scales and at short scales over the shelf (comparison with nadir altimetry and tide gauges)

