EPIGRAM, 17 octobre 2013, île de Ré

Towards an introduction on data assimilation in ROMS SE Bay of Biscay configuration

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Modelling Activities by the Operational Oceanography Group in AZTI-Tecnalia

ROMS
Basque coast in the Bay of Biscay

END USERS
Basque Government, others

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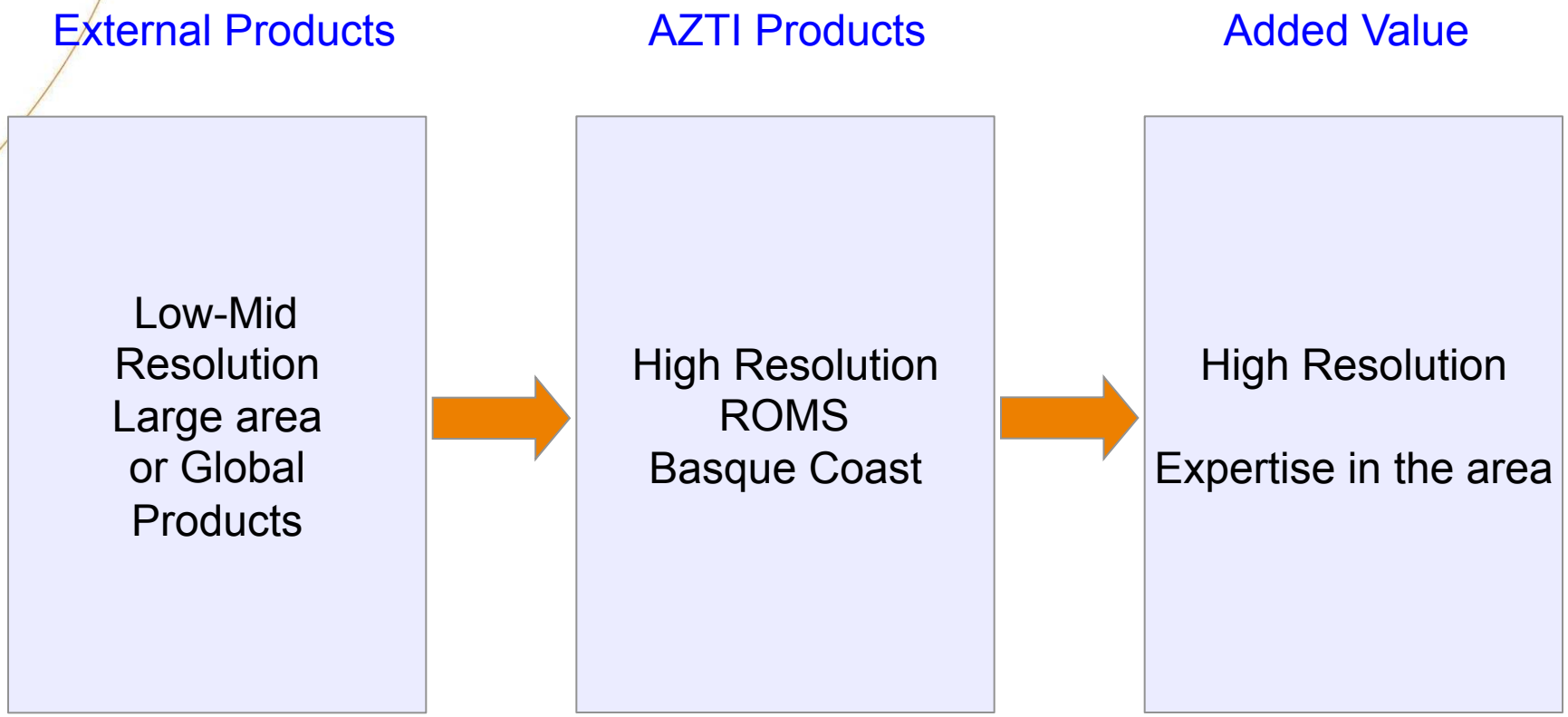
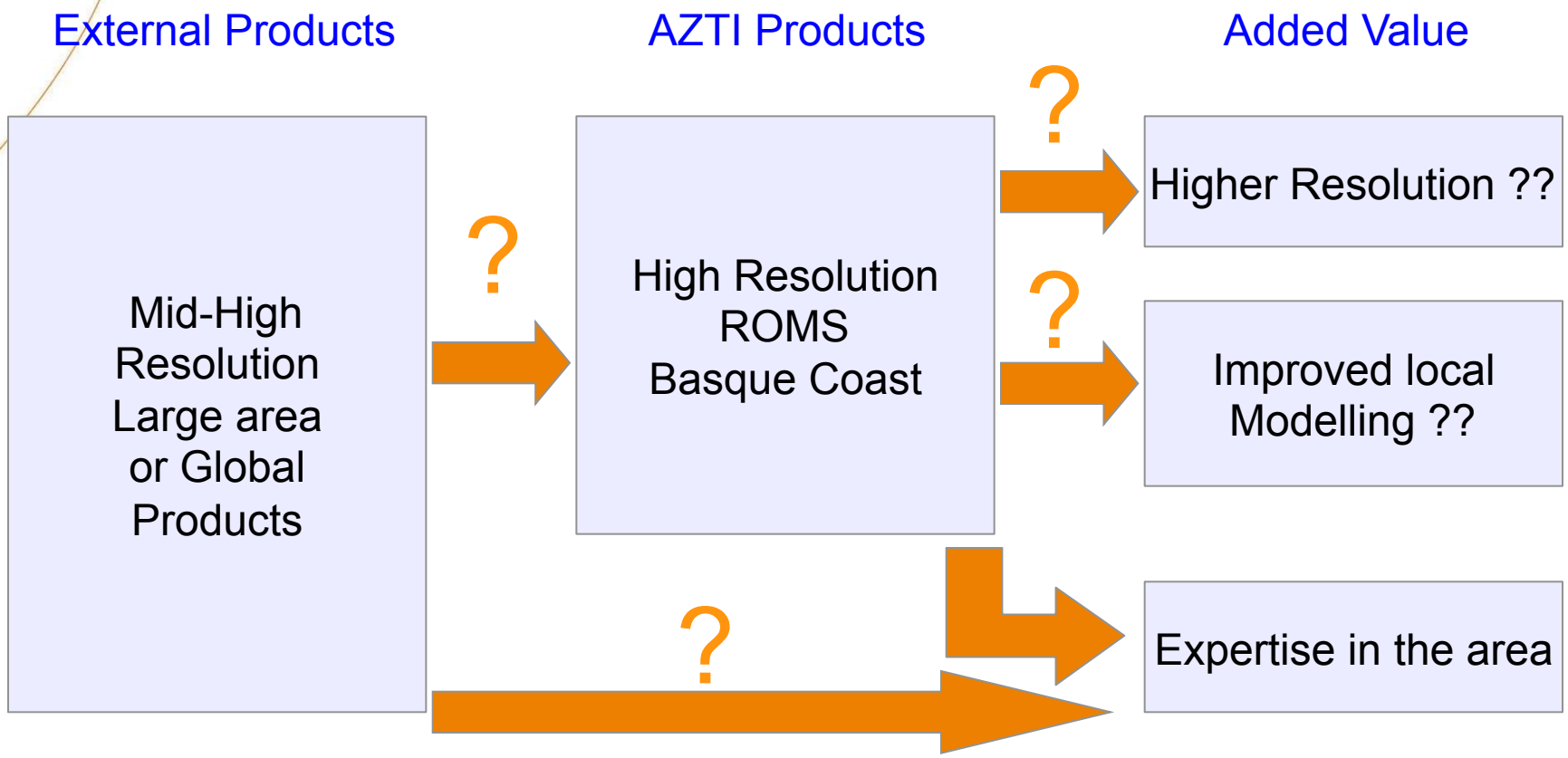
PAST MODELLING STRATEGY



FUTURE MODELLING STRATEGY ??



DEFINING FUTURE MODELLING STRATEGY

The definition of the future strategy requires to clarify whether improvement in local modelling, compared to new large area or global products, will come through:

- Increasing resolution even more ?
- Improved local modelling, by means of DATA ASSIMILATION for example ?
- Both ?
- Others ?

In order to try to give an answer to those questions for the case of the Basque Coast modelling activities, researcher GANIX ESNAOLA is currently developing a research stay in the University of Liège under the supervision of Alexander Barth and Aida Alvera-Azcárate in the topic of the Data Assimilation in ocean modelling.

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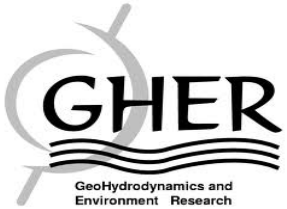
Research Group: GHER (GeoHydrodynamics and Environment Research)



Supervisors: Alexander Barth & Aida Alvera-Azcárate

Length/Period: 6 months/ Oct-2103 to Mar-2014

Ocean Model: ROMS AGRIF v3.0

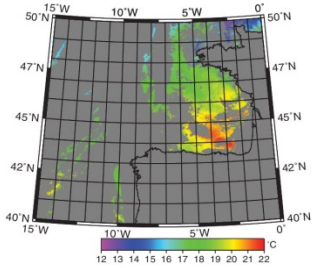
Expected ROMS resolutions: 2.0 Km (first step) and 0.66 Km (second step)

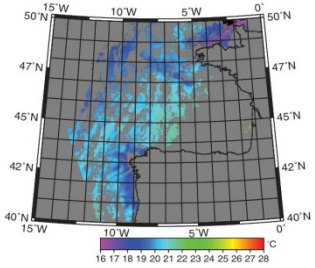
Data Assimilation methodology: Ocean Assimilation Kit (OAK) from GHER

But, What is going to be assimilated????

Data for the assimilation (first step): HF-radar surface currents and permanent buoy data

Data for the assimilation (second step): Satellite data (SST,...) and other data from the Basque network





Surface circulation and Lagrangian transport in the SE Bay of Biscay (BoB) from HF radar data

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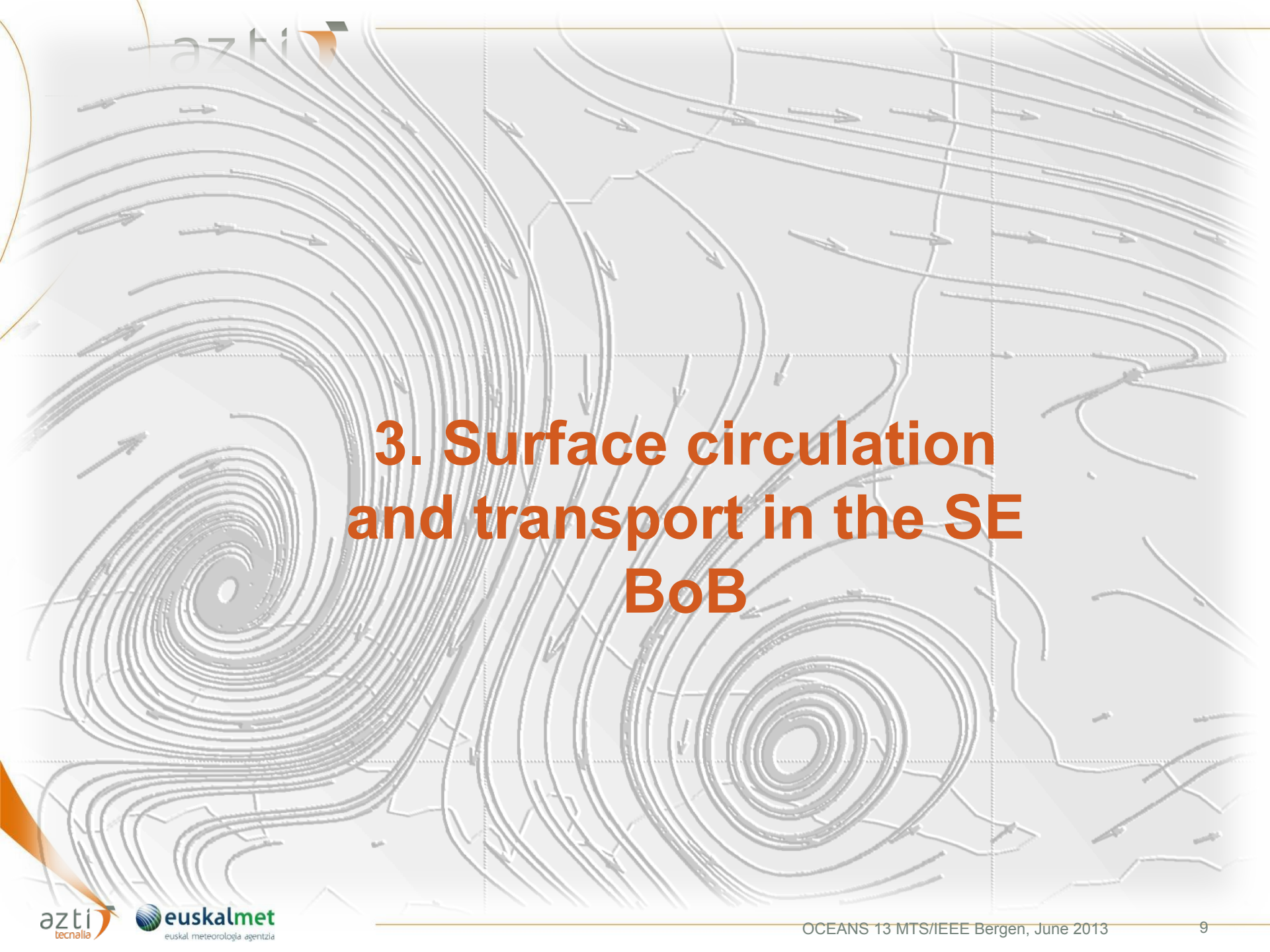
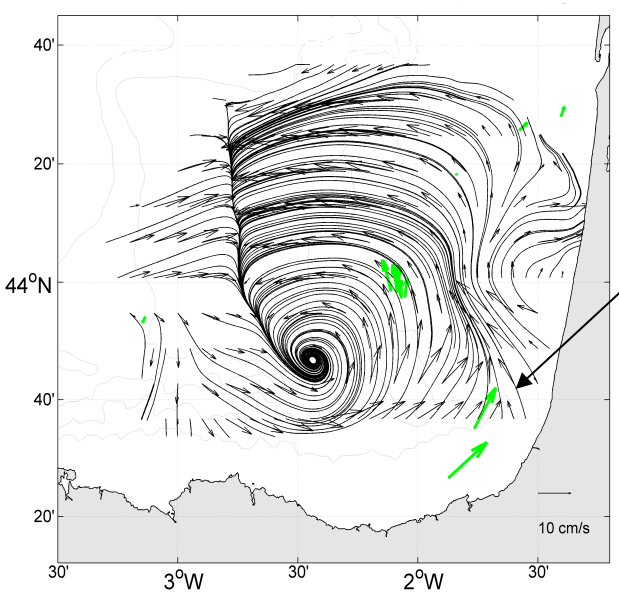
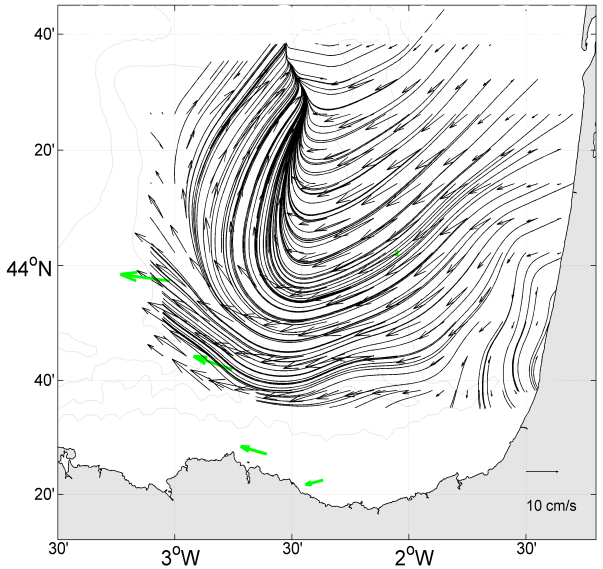


3. Surface circulation and transport in the SE BoB

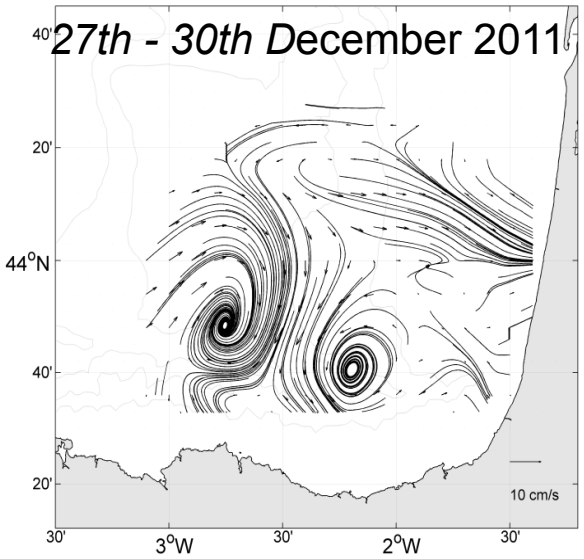
Surface circulation and transport in the SE BoB from HF radar

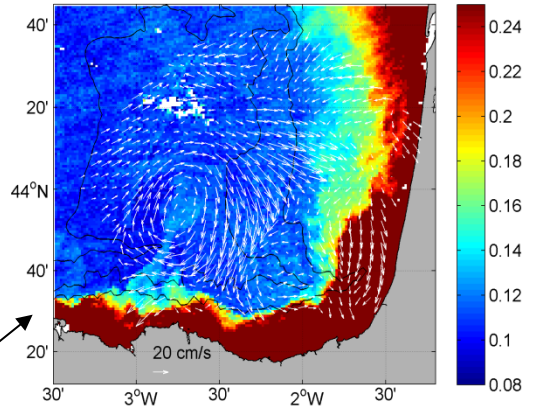
Lagrangian residual currents: seasonal to mesoscale

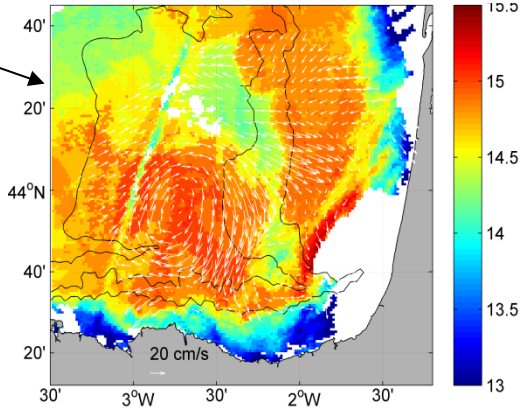




- Methodology (Muller et al. JMS 2009, JGR 2010) already applied to the Iroise sea
- Lagrangian residual currents for 3-day integration period
- Green vectors: real drifters, same integration time
- Coherency with SST, CH

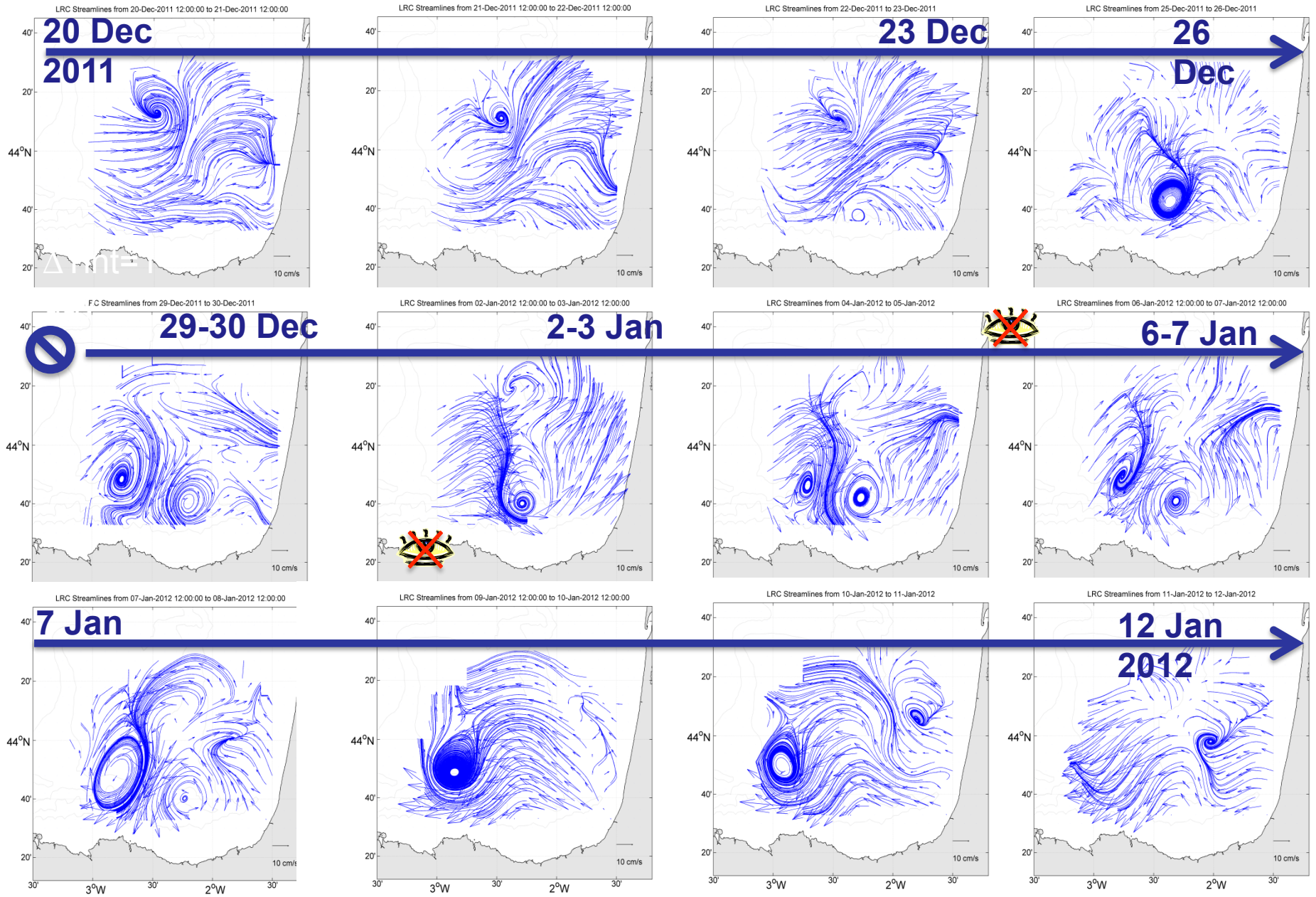






Surface circulation and transport in the SE BoB from HF radar

Lagrangian residual currents: mesoscale circulation and



- The examination of historical HF radar data highlights the complexity of the local circulation. Besides a marked seasonality, coherent (sub)mesoscale structures are observed to impact significantly surface transport. Since state-of-the-art numerical models still have difficulty to correctly reproduce these scales without time-space misfits, the HF radar has become an essential component of the Operational Oceanography in the SE BoB.

THANK YOU FOR YOUR ATTENTION!

AKNOWLEDGEMENTS

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