

Estimating surface ocean dynamic from SWOT- drifters synergy

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Reconstructing the surface momentum conservation including ageostrophic terms

$$d_t \vec{u} + f \vec{k} \wedge \vec{u} + g \vec{\nabla}_z \eta + \vec{F}_{wind} = \vec{S}$$

1 Historical 1D analysis

Global GDP

Along tracks SSH

ERASTAR + Rio 2015

2 In situ 2D analysis

In situ drifters

SWOT SSH

In situ + product + ?

3 Global 2D analysis

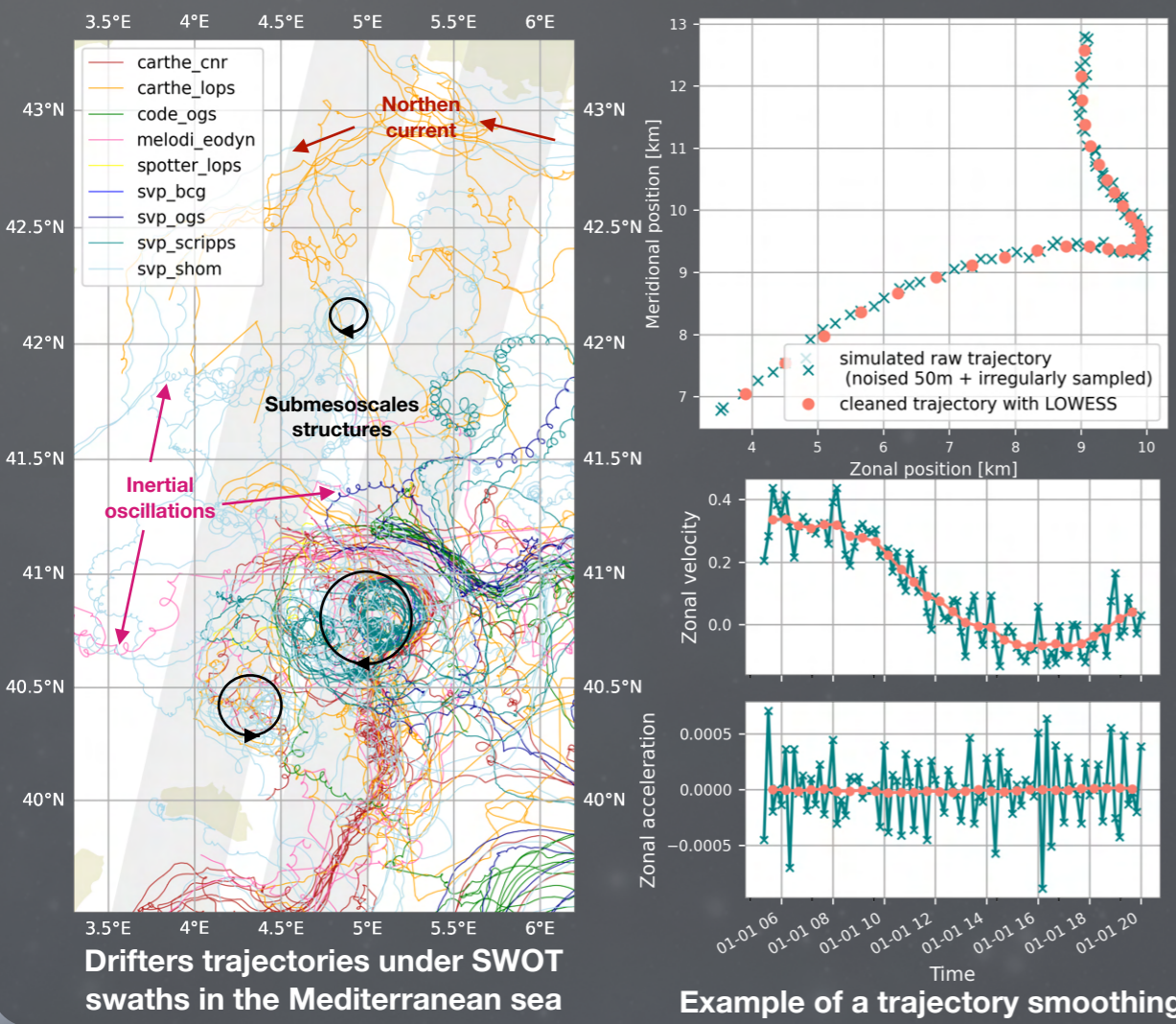
Global GDP

SWOT SSH

Product + ?

- Examine SWOT SSH using drifters trajectories
- Describe the global distribution of the different momentum conservation terms (maps)
- Define their relative importance
- Determine the distribution of dominating balances

In situ drifters under SWOT swaths



CSWOT/WEMSWOT (LOPS/SHOM)
BIOSWOT (MIO+CNR)
UWA campaign



- During the fast sampling period (1day)
- 127 drifters in total
- from 5 min to 1 hour nominal acquisition frequencies
- Two very different dynamical areas :
 - Mediterranean Sea : microtidal
 - North-Western Australian sea : macrotidal

Coming soon

Processed in situ trajectories

- 10 min - 30min -1h regularly sampled datasets
- Cleaned and Smoothed via the LOWESS method

Preliminary results : Along-track altimetry + GDP 1

- Unperfect closure of the momentum conservation (error 52%) :
 - Colocalisation errors (30%)
 - Instrumental errors
 - Estimation/Computing errors
 - Resolution mismatch
- Maps of the contribution of the different terms to the momentum conservation closure

- Geostrophy
- Inertial balance

