

COSS-TT International Coordination Meeting (9)

Session 4: Synergy between altimetry and modelling in coastal regions*

Discussions

**up-to-date and future altimeter products presentation; connectivity with in-situ; data assimilation and modelling use cases for regional/coastal oceans; coastal/off-shore signal continuity.*

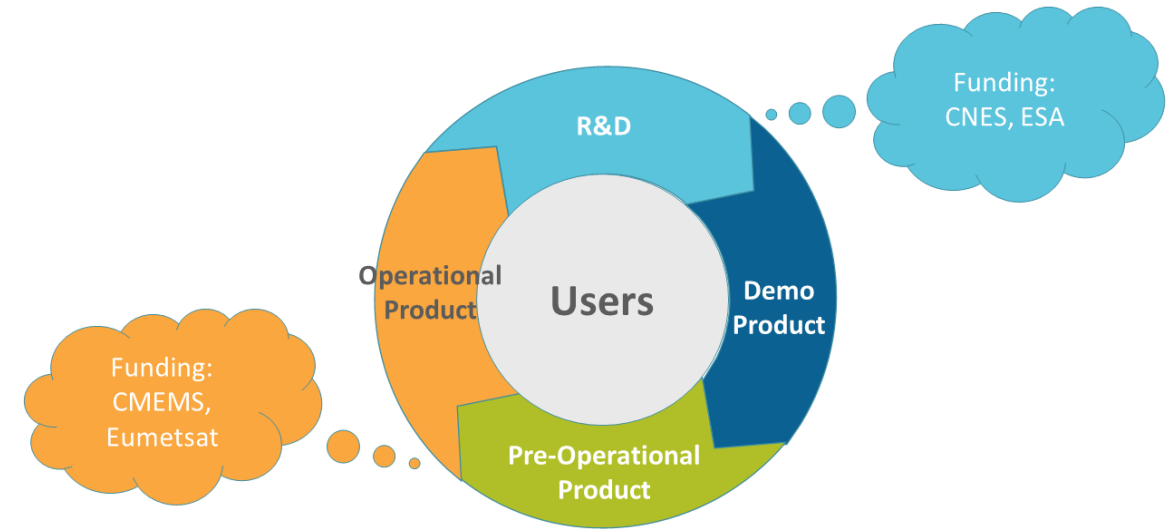
Altimeter nadir measurements

Altimeter nadir data and processing continues to evolve toward higher resolution & reduced errors

- Different processings tested in R&D ? need users feedback for transfer toward operational production
- Significant impact for model assimilation

? feedback from COSS-TT community is important to :

- Maintain R&D activity for coastal area
- Transfer mature R&D toward operational production



SWOT KaRIn products

- Successfull launch in December 2022
- First promising results in 2023 !

❓ First L2 ocean products expected from the Project in Augt/Sept 2023 (NRT timeliness of 3 days)

- *L2 flavours: compact topography product or wind/wave or expert-oriented*
- *2km fixed-grid : easier to use (geophysical corrections)*
- *resolution sometimes insufficient for the coastal applications and science*
- *250m product: 40 GB/day, technical product design (e.g. grid not fixed, no geophysical correction, no environmental context, etc)*

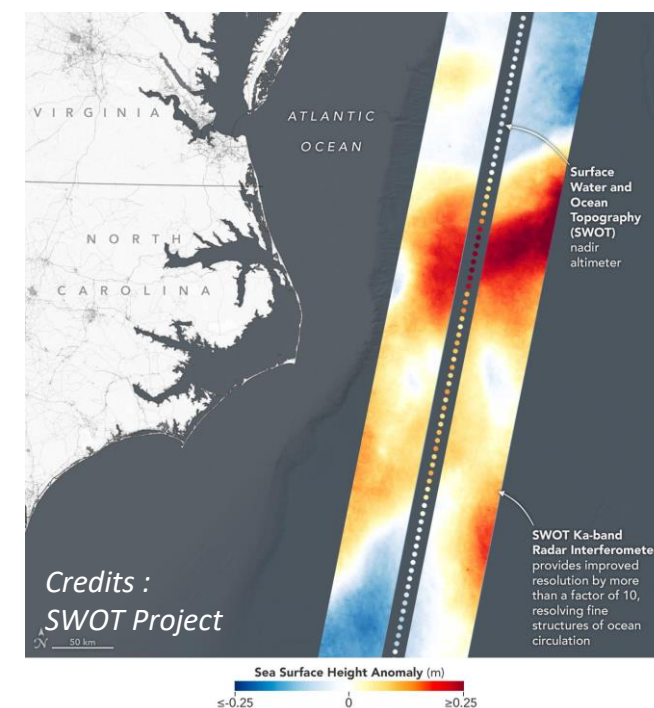
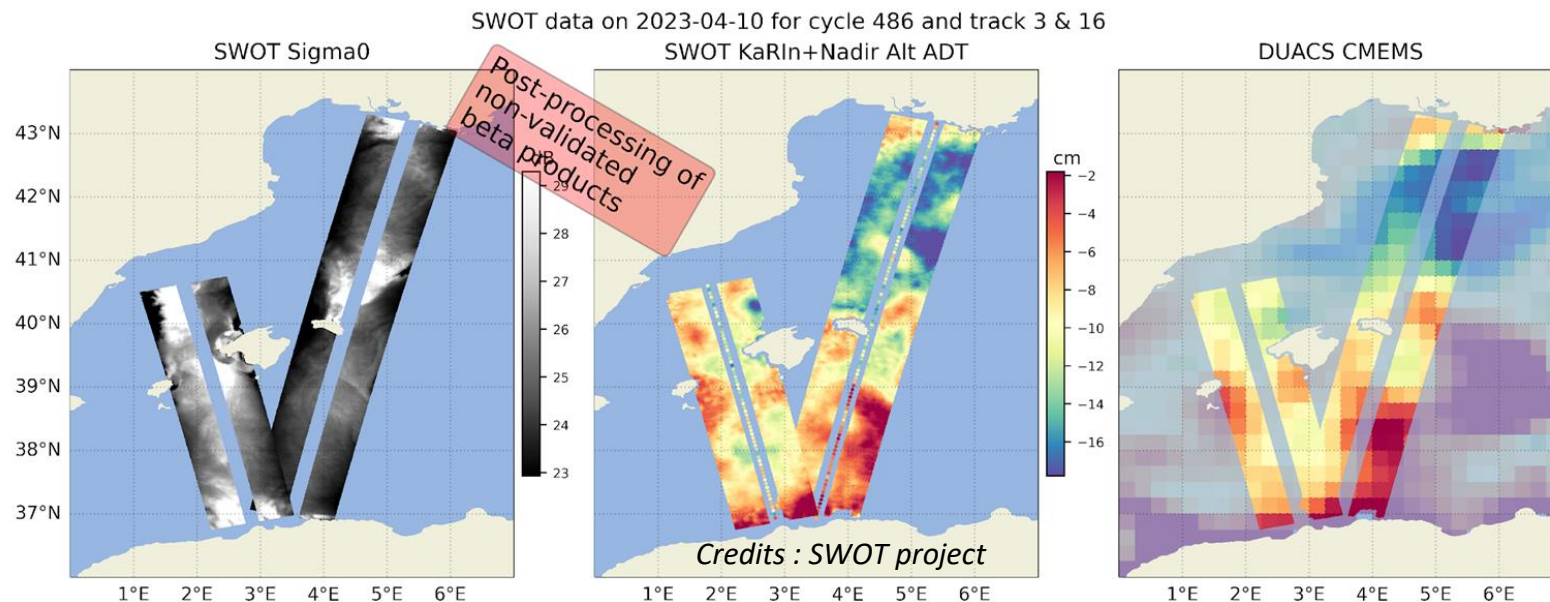
❓ Reprocessing of SWOT's 1-day phase is expected by the end of 2023

❓ Experimental L3 to be released in Sept 2023: simplest product for non-expert users, calibrated with nadir altimeters, 2km resolution only in 2023

❓ Free 'cloud-like' jupyterhub hosting from CNES

- *2km L2 and L3 products and tools for parallel computing and I/O*
- *250m product in a Level-3 convenient form in early 2024*

❓ Hydrological/estuaries products also available in HR database of Hydroweb-Next (note that they were not designed for oceanographers)

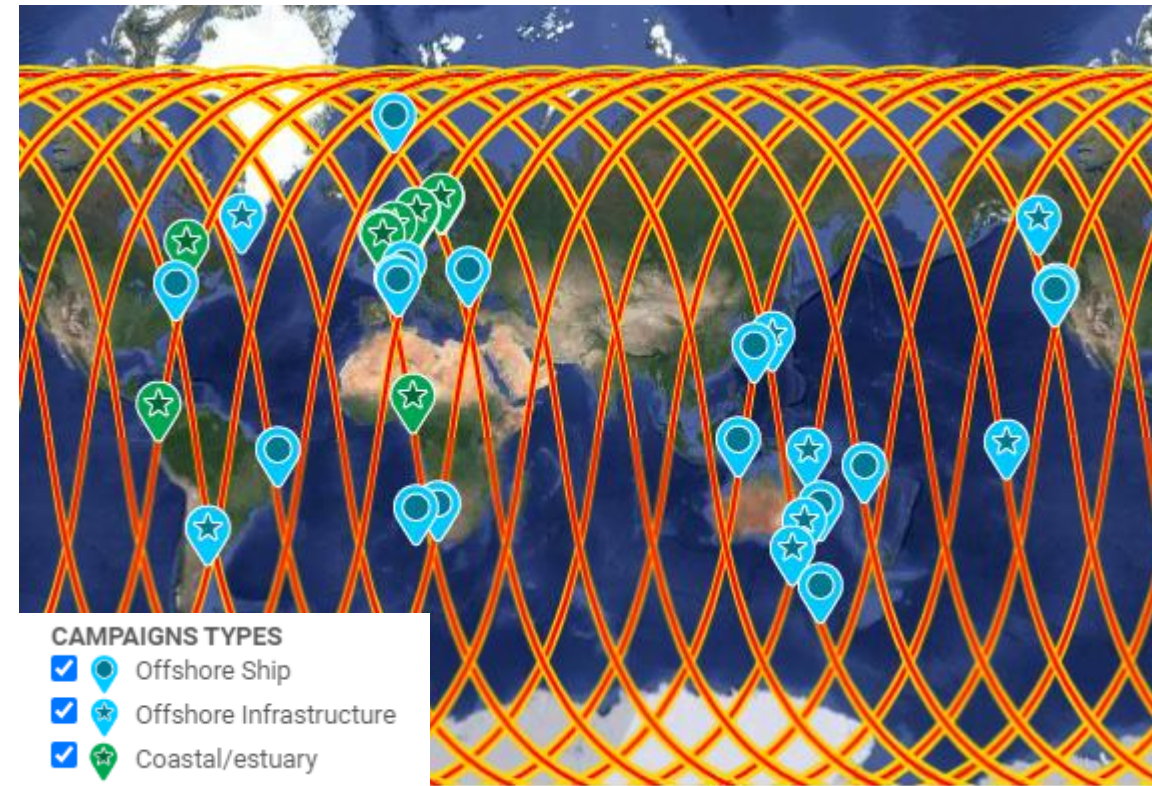


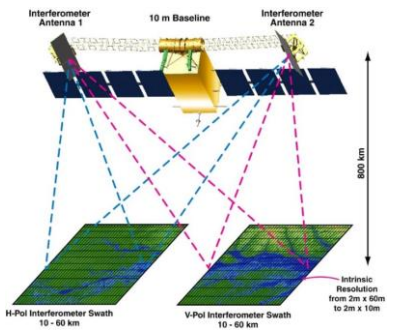
SWOT swath measurements

Different integrated approaches to use altimeter/in-situ/model data as part of the SWOT CalVal activities: see <https://www.swot-adac.org> consortium

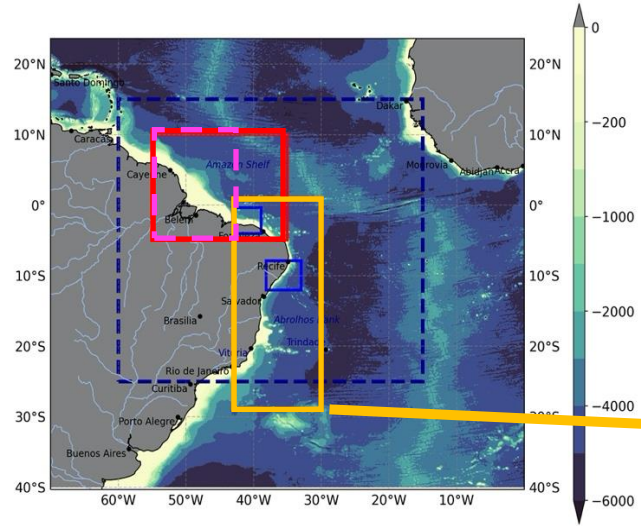
(e.g. The SWOT-Abrolhos campaign)

☐ Colocated in situ/SWOT measurements expected available for model assimilation/validation



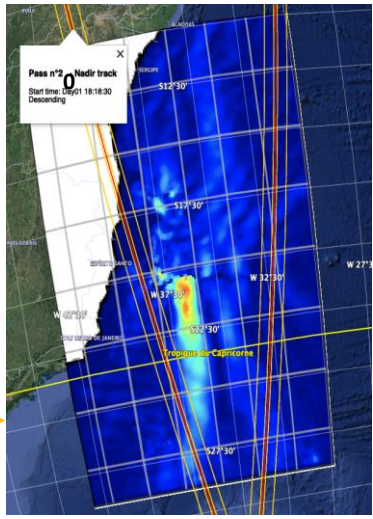


observe the ocean mesoscale and submesoscale circulation at spatial resolutions of 15 km and larger

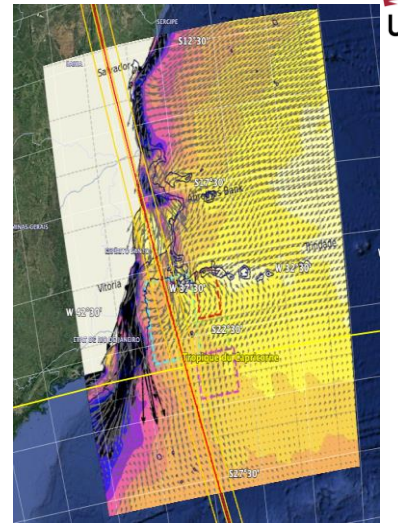


Regional NEMO 1/36° simulations with/without tides

Analysis of the M2 baroclinic fluxes exhibits propagation south of the Vitoria- Trindade Ridge, but not observed by the 1 day SWOT pass n. 20



P. Bauchot et al., in prep.

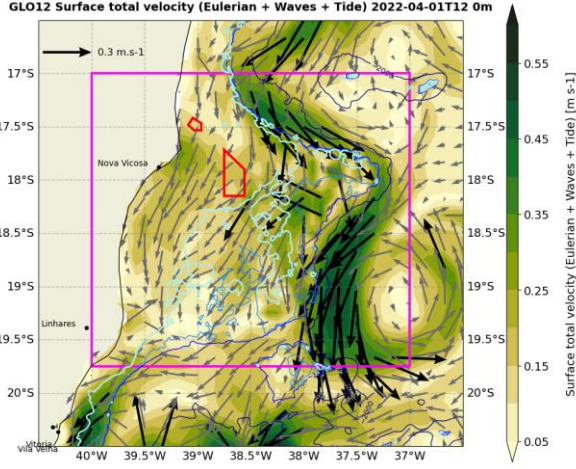
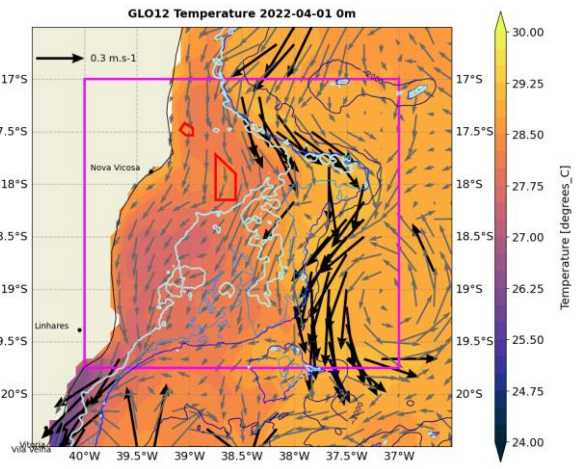


EKE and mean velocity from G12V1

Opportunistic cruise in May 2023 during the SWOT Fast Sampling Phase (1 day orbit) over the Abrolhos Banks

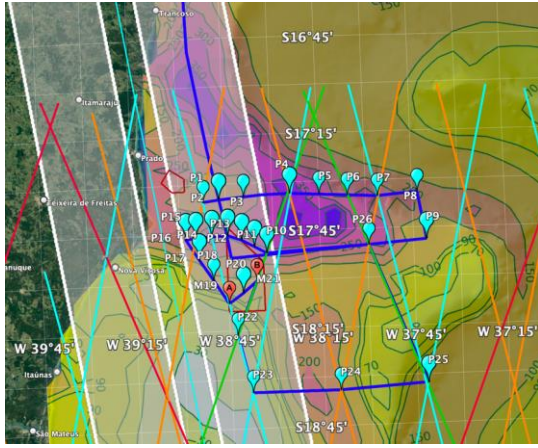


With the Ciencia do Mar IV, synoptic survey, closing the area over the Bank, following nadir satellite passes whenever possible; with CTD cast at location of interest (eg, nadir satellite Xover), and higher sampling across the SWOT “east” swath
2 moorings into the Marine Protected Area



Mercator Global GLO12 nowcasts last year:
Brazil current meandering along the shelf break with semi permanent eddies, and flowing southward over the banks . Significant geostrophic component over the Banks, in addition to tidal flow (50 cm/s):
What fine scales signal SWOT would observe compared to in-situ measurements ?

G12V1 EKE and SWOT pass n. 20. Ship route (bkue) CTD casts (cyan) and moorings (red). Nadir altimeter satellite groundtracks of S6-MF, S3A, S3B, J3N in red, orange, cyan and green.



- Measurements:
- Ship mounted ADCP
 - CTD casts
 - Water samples (biogeochemistry)
 - AWAC at mooring (u(z), T, S, SWH)
 - S4 at mooring (u, T, S, SWH)