

Comparison between high resolution altimetric products and *in situ* observations to guide the oceanographic cruise OUTPACE.

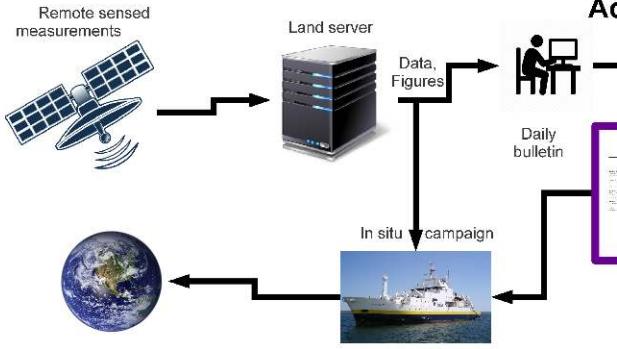
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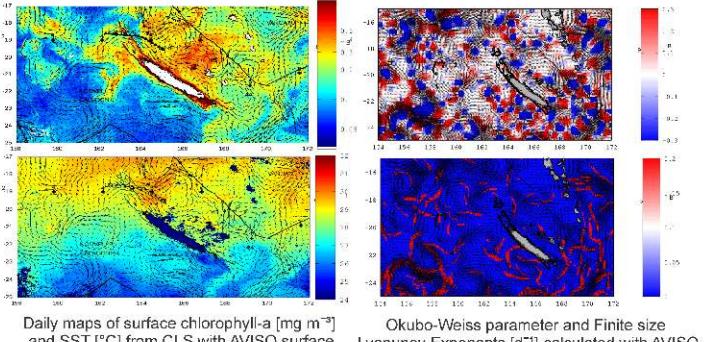
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The use of satellite (Chl-a, SST) and altimetric products allowed us to successfully guide the *in situ* sampling during the OUTPACE cruise [Moutin and Bonnet, 2015]. These products are also useful during the post-cruise data interpretation as they provide a wide temporal and horizontal range. Here we compare the standard altimetric product (from AVISO) and new high resolution altimetric products (produced by CLS with support from CNES) with *in situ* data.

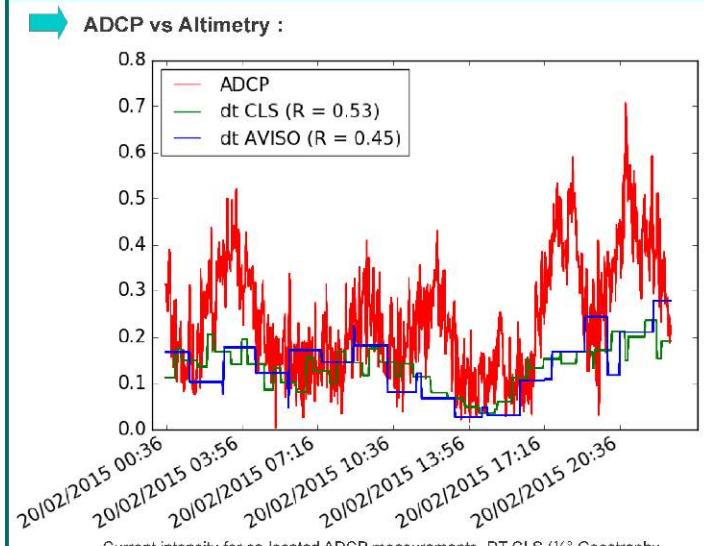
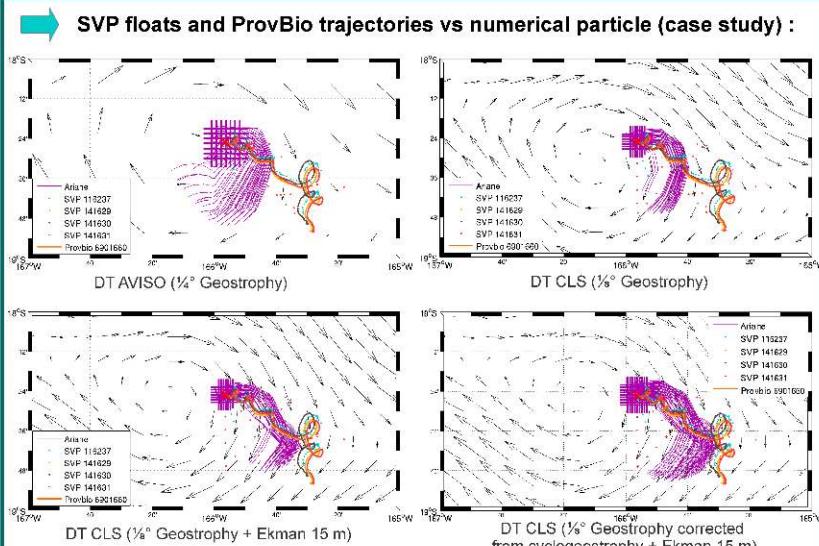
Guiding an oceanographic cruise ...



Adaptive sampling strategy



In situ data vs altimetric products

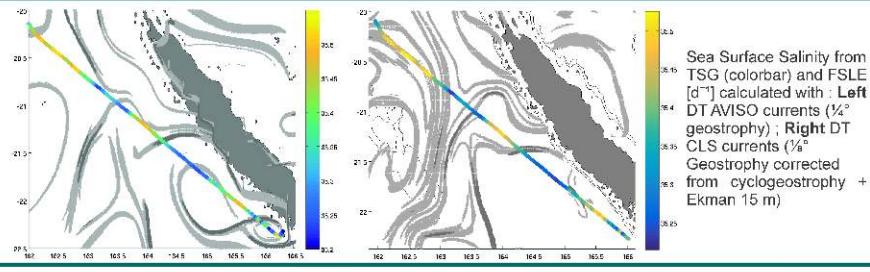


The addition of the Ekman component (at 15 m) clearly improves the agreement between *in situ* SVP and ProvBio float trajectories and numerical particle trajectories computed with the altimetry-derived velocity field.

The CLS product adding the Ekman component can be better correlated with *in situ* ADCP (Acoustic Doppler Current Profiler) measurements than with the standard AVISO product.

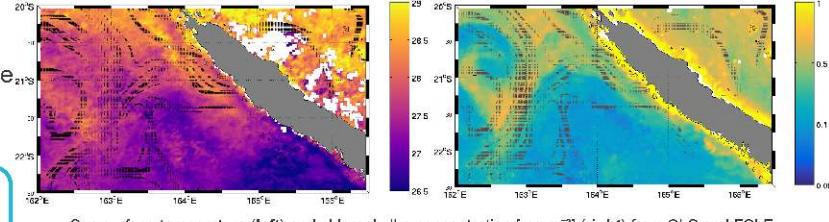
TSG vs Lagrangian diagnostic (FSLE) :

A lagrangian analysis with Finite Size Lyapunov Exponents shows that the physical fronts calculated with the CLS product adding the Ekman component better match with sea surface salinity gradients (measured from ThermoSalinoGraph) than those calculated with the standard AVISO product



Studying physical/biogeochemical coupling with satellite data

The agreement between satellite-derived data and *in situ* data is continuously improving and thus allows us to assess reliable surface information over large areas to study the physical and biogeochemical coupling at meso- and submeso-scales.



References

- Moutin, T., Bonnet, S. (2015) OUTPACE cruise, RV L'Aléa. <http://dx.doi.org/10.17600/1500090>
- d'Ovidio, F., De Monte, S., Alain, S., Dandonneau, Y., & Levy, M. (2010). Fluid dynamical niches of phytoplankton types. Proceedings of the National Academy of Sciences, 107(43), 18366–18370.
- Nencioni, F., d'Ovidio, F., Doglioli, A. M., & Petrenko, A. A. (2011). Surface coastal circulation patterns by *in-situ* detection of Lagrangian coherent structures. Geophysical Research Letters, 38(17).