



## **Use of surface drifters to increase resolution and accuracy of oceanic geostrophic circulation mapped from satellite only (altimetry and gravimetry)**

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Strong improvements have been made in our knowledge of the surface ocean geostrophic circulation thanks to satellite observations. For instance, the use of the latest GOCE (Gravity field and steady-state Ocean Circulation Explorer) geoid model with altimetry data gives good estimate of the mean oceanic circulation at spatial scales down to 125 km. However, surface drifters are essential to resolve smaller scales, it is thus mandatory to carefully process drifter data and then to combine these different data sources.

In this framework, the global  $1/4^\circ$  CNES-CLS13 Mean Dynamic Topography (MDT) and associated mean geostrophic currents have been computed (Rio et al, 2014). First a satellite only MDT was computed from altimetric and gravimetric data. Then, an important work was to pre-process drifter data to extract only the geostrophic component in order to be consistent with physical content of satellite only MDT. This step include estimate and remove of Ekman current and wind slippage. Finally drifters and satellite only MDT were combined. Similar approaches are used regionally to go further toward higher resolution, for instance in the Agulhas current or along the Brazilian coast. Also, a case study in the Gulf of Mexico intends to use drifters in the same way to improve weekly geostrophic current estimate.