



Calculating surface currents from gridded satellite data fields

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Established in 1989, the Centre de Topographie des Océans et de l'Hydrosphère (CTOH)

(Centre for Topographic studies of the Oceans and Hydrosphere) is a French Observational Service dedicated to satellite altimetry, and part of the national network of observational services sponsored by the Institut National des Science de l'Univers (INSU). The principal objective of the CTOH Centre de Topographie des Océans et de l'Hydrosphère is to maintain an up-to-date, homogeneous altimetric data base for studying long-term sea level change with emphasis on its impact on climate. In 2000, this objective was expanded to include the developing altimetric applications on the continents and hydrosphere, in particular to monitor changes in lake and river levels and on the cryosphere.

Within this framework, the CTOH team works closely with the different scientific investigators at the Laboratoire des Etudes en Géophysique et Océanographie Spatiale (LEGOS), CLS Space Oceanography Division, AVISO/CNES, and ESA. The main objectives of the CTOH involve altimetric data validation, developing new algorithms for different physical parameters, developing high-order data products, and outreach in promoting the use and understanding of different altimetric parameters and applications. In detail, the main activities of the CTOH are :

- to develop an up-to-date altimetric data base at LEGOS for Topex/Poseidon, Jason, GFO, ERS1/2 and ENVISAT data
- to validate the different geophysical corrections for the different altimetric data

- to incorporate new geophysical corrections developed by scientists at LEGOS (eg, tides, high-frequency barotropic corrections)
- to produce and distribute higher level altimetric products
- to provide easy access to altimetric data products for internal and external scientific users
- to provide training on how to use altimetric data, and the physical interpretation of the different altimetric components, for students, visiting scientists, and external users

We are currently developing and testing an improved surface current product based on gridded satellite altimetry and scatterometry data. The surface current product includes surface geostrophic current anomalies derived from altimetry, a mean surface geostrophic current from climatology data (Rio and Hernandez, 2004), and Ekman currents at 15 m depth. This global product's originality is to determine the velocity fields within the equatorial band, using the equatorial adjustment described by Lagerloef et al. (1999). These velocity fields are validated using independent velocity data in the tropics and at mid to high latitudes, and different applications are presented.