



Ocean surface geostrophic circulation climatology and annual variations inferred from satellite altimetry and goce gravity data

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In this work we study for the first time absolute Surface Geostrophic Currents (SGC) variations using only satellite data. The proposed approach combines 18 years altimetry data, which provide reliable measurements of the Absolute Sea Level (ASL) height with a GOCE geoid model to obtain a Dynamic Topography with an unprecedented precision and accuracy. Our proposal allows overcoming the main limitations of existing approaches based solely on altimetry data (that suffer the lack of an independent reference to derive ASL maps), and approximations based on in-situ data (which are characterized by a sparse and non homogeneous coverage in time and space). Features of the SGC annual variations are also addressed.

As a result of our study we provide a new climatology of absolute SGC in the form of a 52 weeks data set of surface current fields, gridded at a quarter degree longitude and latitude resolution resolving spatial scales as short as 140 km. For presentation, this data set is averaged monthly and the results, presented as monthly climatology, are compared with a climatology based on in-situ observations from drifter data.