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GlobCurrent – advancing the surface current estimation from satellites

By

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The GlobCurrent Project was kicked-off in October 2013. The project has a three-year duration and is supported by the European Space Agency (ESA) under the Data User Element (DUE) programme. The overall objective of the GlobCurrent project is to advance the quantitative estimation of the ocean surface current (OSC) based on satellite sensor synergy combined with in-situ data and demonstrate impact in user led scientific, operational and commercial applications. Direct and indirect estimates of OSC and higher level quantities such as the surface current dynamics along meandering frontal boundaries and eddies can be derived using a consisten combination of satellite sensors including altimetry (both conventional and SAR mode), gravimetry, SAR, scatterometry, optical (VIS and TIR) and passive microwaves. Sparse in-situ current measurements from drifting and moored buoys, coastal HF-radar installations, Argo floats, gliders and ship observations complement these satellite measurements. Each of these satellite and in-situ based measurement techniques have their specific strength and limitations (e.g., spatial resolution, repeat coverage, accuracy, depth integration, cloud dependence, empirical based retrieval methods, etc). By development and use of systematic data merging and sensor synergy combined with advanced processing tools and simulation models, the complementary strength of each sensing technique is optimized. In so doing the deficiencies are reduced and the final estimate of the OSC and higher level derived products become consistent, regular and reliable. In turn the use and uptake of satellite based OSC derived products will grow. This presentation will demonstrate these new satellite based global and regional surface current products (e.g. surface geostrophic current, Ekman current, Stokes drift, range Doppler velocity) and provide a preliminary assessment of their reliability and quality.