



Perspectives for full Surface Current mapping with the proposed SKIM mission

clement ubelmann (1), gerald dibarboure (2), lucile gaultier (3), and fabrice arduin (4)

(1) CLS, Toulouse, France (cubelmann@cls.fr) , (2) CNES, Toulouse, France (gerald.dibarboure@cnes.fr), (3) ODL, Brest, France (lucile.gaultier@oceandatalab.com), (4) IFREMER, Brest, France (Fabrice.Ardhuin@ifremer.fr)

The present altimetry constellation observes the large scales (above 200km wavelength) of geostrophic currents. The full surface current, also including Ekman, inertial oscillations, tidal (barotropic and baroclinic) currents and other ageostrophic processes, is not yet directly observed from space. In this study, we propose to evaluate the potentials of the SKIM concept that would provide Doppler measurements over a 300km wide swath (Ardhuin et al., 2017)

From very high resolution simulations, synthetic observations of an altimetry constellation and SKIM have been generated with simulator tools, including best estimates of SKIM error budget. Then, a multivariate optimal interpolation scheme is used to combine these datasets and provide reconstructions of the surface current. Prescribing accurate covariances for both topography and currents, accounting for all components and their best linear dependencies (cross current/topography terms) is the main challenge. In a few key regional configurations (western boundary current, low-latitudes, eastern basins, ...) we will show that SKIM would be essential to improve the resolution of the surface current, and that the altimetry would act in synergy to control the different components.