

# ***Interactive comment on “Measuring currents, ice drift, and waves from space: the Sea Surface Kinematics Multiscale monitoring (SKIM) concept” by Fabrice Ardhuin et al.***

## **Anonymous Referee #3**

Received and published: 25 January 2018

### General comments

Of course this kind of missions are welcome because we badly need a better knowledge of the ocean circulation and, as described, SKIM can provide a good step ahead in this direction. The description is detailed and there is a clear evaluation of the errors implied by the instruments and the related methodology.

### Specific comments

I am not a specialist of the subject. However, I tried to follow the various arguments and to me, within the just mentioned limitations, they look sound.

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One comment concerns the estimate of current below the surface (the proposed instrument measures the surface one). The first author has worked on how the wave propagation velocity depends on the current vertical profile. I wonder if there is any way to use the wave spectrum and surface current information in this respect. However, possibly a counter argument is that the instrument provides only the  $(k, \theta)$  spectrum, i.e. a geometrical picture of the situation, with no measured information on its dynamical, implicitly  $(f, \theta)$ , behaviour.

A possibly more serious one concerns the measurement of the wave spectrum. Figure 5 at page 8 provides a clear perspective of the logical flow of actions and data. It is clear that the availability, hence the measurement, of the  $E(k, \theta)$  spectrum is a key point, obviously required, apart from other needs, to estimate the Stokes drift. However, how to measure  $E(k, \theta)$  is not detailed and developed enough in my view. The SWIM approach of Danielle Hauser et al (2017) is cited, but SKIM is a different instrument and its performance should be described in more details.

Corrections. No particular corrections (however, I did not read carefully every single line). On the way I spotted three minor typos:

page 18 lines 2 and 16

page 20 line 6

Very good project. Congratulations (and apologies for the short comment),

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Interactive comment on Ocean Sci. Discuss., <https://doi.org/10.5194/os-2017-65>, 2017.

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