

# ***Interactive comment on “Wind, waves, and surface currents in the Southern Ocean: Observations from the Antarctic Circumnavigation Expedition” by Marzieh H. Derkani et al.***

## **Anonymous Referee #1**

Received and published: 22 October 2020

This manuscript presents an observation data set of surface wind, surface waves and surface currents obtained during a 3-month oceanographic expedition in the Southern Ocean. The most original part of this data set was obtained by analyzing marine radar observations (radar WAMOS\_II) carried out from the research vessel.

It is a very good initiative to publish the details on this data set. Indeed, first, the number of local observations in this part of the oceans is very scarce, and there are not so many oceanographic research cruises. This hampers many scientific studies focused on this region and more generally studies in conditions of high wind and high sea-states. More generally, field observations of surface wind, waves and surface current remain very im-

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portant to progress on several topics related to the air/sea interface as : - better understanding or quantifying physical processes related to surface ocean waves (wave/wave interactions, wave/current interactions, wave/ice interactions, impact of wave on turbulence and ocean/atmosphere fluxes, - improving numerical modelling (wave models and/or coupled atmospheric/wave/oceanographic models), - validating and improving satellite products on wind, waves and current, particularly in extreme wind and wave conditions.

So it is very likely that the data will be used in future by scientist not involved themselves in this field campaign.

The manuscript is well organized and provides the main information to future users of the data set. Maybe, as suggested by the topic editor, more information could be given in the abstract and conclusion on the questions already addressed by the PIs of these measurements, and those that could be addressed in the future by external users.

In general, the methods and materials are well described. Some details are lacking but can be easily added (see below specific comments). References to instrumental design and processing methods are also pertinent (except some, see, below specific comments).

I checked, on some examples, that the data files are accessible and well documented. There are two documentation pages associated to the DOIs and an easy access to the data files through a structure in directory/sub\_directory/files organized by dates. Maybe a general calendar could be added so that a user can see immediately if data sets exist on their dates of interest. Also, one information which I could not find is: do you include somewhere in your data sets, the information on the sea-ice cover? (could be interesting if available)

A validation of the data set is presented in the manuscript, at least for what concerns the wave height (comparison with satellite data). For the other parameters, due to the lack of concomitant independent observations, I do understand that the validation re-

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mains limited. However, I suggest to add here some references to previous publications on WAMOS –II data sets to let the reader know what are the expected performances or known limitations on other parameters of the data set such as dominant wave direction, dominant frequency, directional spread, surface current.

Overall, my recommendation, taking into account the specificity of the ESSD Journal and its focus on original research data sets furthering the reuse of high-quality data, is to accept this manuscript , provided that some minor revisions are carried out, to answer my specific comments below.

See attached document for specific and detailed comments

Please also note the supplement to this comment:

<https://essd.copernicus.org/preprints/essd-2020-255/essd-2020-255-RC1-supplement.pdf>

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