

# ***Interactive comment on “Characterizing ERA-interim and ERA5 surface wind biases using ASCAT” by Maria Belmonte Rivas and Ad Stoffelen***

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**Summary:** The paper makes great use of a time honored type of analysis to examine wind in satellites and models. The results are scientifically interesting as well as illuminating strengths and weakness of the ERA-interim and ERA5. The quality and clarity of the work are largely excellent, although there are a few places where more cautious conclusions should be drawn. The link to currents is remarkable. Major Comments:

- 1) Abstract: the word ‘defective’ carries very negative impressions, and is not very descriptive. Please use a more effective word.
- 2) Page 2, line 20: How are the satellite and model winds collocated? What is done to make the locations and times match? This is particularly important for metrics such as

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the one at this part of the ms and on page 3, line 16.

3) Given that satellite winds tend to sample twice a day, the sampling of the diurnal cycle is regionally biased to certain times of day, which might not be representative of the other times of day.

4) Page 6, line 14: PBL stability is one of the two popular explanations for SST-related variations in wind vectors. Theory and observations indicate that this explanation is insufficient, and at least one other mechanism must be important (O'Neill et al. 2012)

5) Page 9, discussion of Figs. 13& 14. Please also discuss EKE changes in the Southern Ocean.

6) Page 11, around line 10: A more careful hypothesis is that Monin-Obukhov parameterizations are insufficient to explain the mixing in the lower atmosphere. While they are observed to work well near the surface, additional processes might be needed at in the mid and upper boundary-layer.

#### Minor Comments:

1) Page 1, Line 24: separate references with a comma.

2) Figure 5 caption: Should 'differences to ERA Interim' be 'differences from ERA Interim?' The same question applies to the following figures.

3) Page 10, line 4: change portray to portrait or portrayal.

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