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

Anonymous Referee #1

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The investigation of the quality and accuracy of numerical model (NWP) wind estimates is highly required by the oceanic and atmospheric community. ERA Interim is one of the most used models for forcing and air-sea interaction processes. ERA-5 is a new ECMWF re-analysis assumed improving ERA Interim data, including surface parameter estimates. In this paper, the authors investigate the comparison of both model winds, and the related variables, to ASCAT L3 product. Although, several papers and studies (some are referenced in this paper) came out with results aiming at the characterization of the difference between NWP (including ERA Interim) and scatterometer wind products (L2 through L4) at various spatial and temporal scales, this study is relevant and useful for the scientific community, especially interested in using ERA5 data. Throughout the paper, the authors use ASCAT L3 data as reference over global oceans. Such as-

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sumption should be better addressed in the revision version. The latter would include the impact of ASCAT L3 sampling on the comparison of wind and of the derivative data (divergence and curl). Even though the determination of wind divergence and stress curl accuracy is quite hard task, it would be interesting to assess the patterns of these parameters through comparisons with those obtained from independent remotely sources (e.g. QuikSCAT along common period (2007 – 2009)). I think the work deserves its publication after minor revisions.Â

Specific comments

â Page 2; Equation (1): I would say that few papers dealing with the calibration and validation of surface winds do use such kind of metric. It is quite common to estimate separately zonal and meridional RMS metrics. â Page 3; 2nd paragraph (Lines 6 -8): One may understand that upwelling dynamic relies mainly on the annual (steady) wind component. This is completely wrong. â Page 3; Eq (6): Obviously RMS1 is different of RMS2 in sense that the former only deals with one component (zonal in this case), while the latter aims at the characterization of difference based on the use of the two wind components. â Page 5; Lines 23 – 25: The calculation of the inter-annual variability from 2016 collocated data is not clear. â Page 7; Last paragraph: did the author investigate the impact of ASCAT sampling on eddy patterns shown in Figure 6. â Page 7; Lines 21 – 23: The figure 7 should be improved. The result mentioned by the authors and dealing with the underrepresentation of the equatorial stress curl is not clear, at least the difference is very small and somehow not significant. Please clarify. â Page 8; Figure 9 labelling requires improvement. Thanks. â Page 9; Lines 7 – 8: The CMEMS correction for ocean surface velocity requires details. For instance, the authors should clarify the spatial and temporal scales of correction. â Page 9; Figure 12 exhibits interesting pattern along equator. Positive and negative zonal difference are found along the Atlantic and Pacific equator zones, respectively. These patterns enhance the difference shown in Figure 5. Any explanations?

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