**Ocean Science
Discussions**

Interactive comment on "Characterization of ASCAT measurements based on buoy and QuikSCAT wind" *by* A. Bentamy

Anonymous Referee #1

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General comments

The manuscript analyses the characteristics of the ASCAT backscatter measurements and wind retrievals, which have recently become available. A particular asset in this work is the use of buoy observations, providing scientific value to the manuscript. A few suggestions and points of concern are given below.

The author indicates that local buoy measurements are not representative of area-mean scatterometer winds. In literature estimates are given for such representative-ness error of 1 m/s in the wind components. The A0, A1 and A2 coefficients that are derived depend non-linearly on these component errors, which is a major concern in GMF estimation. While the GMF is estimated to an accuracy of 5%, the buoy errors

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are much larger and their residual effects in the A0, A1 and A2 estimation crucial. The author needs to elaborate on these buoy errors and how these errors propagate in the WVC diagnostics of A0, A1 and A2. Without explanation, it is not clear what the diagnostics should tell the reader about the C-band GMF.

The ASCAT scatterometer wind product has been stable since its very start. All EUMETSAT backscatter calibrations have been counteracted by corrections at KNMI as reported in their Cal/Val report. The KNMI corrections are based on at EUMETSAT parallel processed ASCAT backscatter data, and were found to be just linear scaling corrections in backscatter to a precision well within 1%. The wind product is monitored by the NWP SAF and KNMI on public web sites www.metoffice.gov.uk/research/interproj/nwpsaf/scatter_report/ascat.html and www.knmi.nl/scatterometer , resp., confirming this stability. In 2007 changes occurred in the ECMWF analyses though, when the ASCAT winds were introduced. With the above information in mind, it appears more likely that the author reports on a changing reference, ECMWF, rather than changes in ASCAT. Anyway, comparing to dependent ECMWF analysis data is of little scientific interest.

Detailed/technical comments

- p78l4: "with a spatial resolution" -> "on a spatial grid" ; the spatial resolution is 50 km

- p79l20,21: "with two spatial resolutions" -> "on two spatial grids" ; the spatial resolutions are 50 and 25 km respectively.

- P81l9,10: TAO buoys are averaged over one hour while the NDBC and UK-MF buoys are averages over 10 minutes. 10-minute averages can be more extreme than hourly averages and thus represent different measurements; why is the averaging performed ? Would uniform measurement characteristics not be better for comparison ? If the author is concerned about the time difference between the scatterometer and the buoys he may test with smaller collocation time differences.

- P81l19: Why is the collocation time window 1 hour when the measurements are hourly; +/- 30 minutes would be sufficient to capture all buoys.

- P82l7: "resolution" -> "grid" ; the DIRTH filters out small scales and thus increases resolution length scale beyond the swath grid.

- P82l11: To collocate two 25-km grids, a 18-km collocation distance is sufficient; why is 50 km used ?

- Why use ECMWF analyses that use the very ASCAT and QuikScat observations that you try to validate ? Comparison to short-range ECMWF forecasts would prevent this.

- P84l16: "predicated" -> "predicted"

- P84l25, 26: Modify to "Buoy and QuikSCAT wind data are further used in next sections to estimate the quality of ASCAT wind retrievals" or explain meaning of "Therefore".

- Table 1: second column: what speed boundaries are used? ASCAT, reference speed, or the average of both ?

- Table 2: ASCAT and QuikScat are used in ECMWF analyses; the reference data are thus dependent ?

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