Ocean Sci. Discuss., 5, S29–S32, 2008
www.ocean-sci-discuss.net/5/S29/2008/

Ocean Science Discussions

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

A. Bentamy

Received and published: 9 June 2008

I would like to thank the reviewer. I have really appreciated his/her comments that helped me to improve the manuscript. I feel really sorry about typo mistakes in the first version. I did my best to avoid any new problems in the revised manuscript. All reviewer comments were considered and responses are provided hereunder.

Reply to General Comments

Reviewer: The founding concerning the hind wind speed behavior of ASCAT data that underestimate QuikSCAT measurements it is interesting and it deserves further explanations. If possible it would be useful to expand the buoy analysis (table 1) in order to present wind comparison for wind speed range greater then 20 m/s (this may require to enlarge the time period considered). As it is presented now, it is not clear which

Full Screen / Esc
Printer-friendly Version
Interactive Discussion
Discussion Paper

data set (ASCAT or QuikSCAT) should be trusted more for high wind speed regimes.

Reply: I agree with the reviewer. It would be useful to extend the collocated buoy wind speed ranges beyond 20m/s. However, the number of such events reported by buoys is quite poor. Indeed, using all hourly MFUK and NDBC wind measurements during the period March 2007 through March 2008, only 0.46% (and 0.16% of data exceed 18m/s and 20m/s, respectively. To meet the reviewer requirement, buoy and ASCAT are collocated during the extended period: March 2007 – March 2008. Even though the statistical parameters characterizing the differences between buoy and ASCAT winds are reduced with respect to the new sampling length, the changes are small and do not yield any new significant insights in buoy and ASCAT comparison results. As expected the number of high wind conditions is increased. The sampling length of collocated buoy wind speeds higher than 18m/s and 20m/s is 551 and 194, respectively. Using only buoy winds higher than 18m/s, the mean and rms differences between buoy and ASCAT wind speed are 1.13m/s and 1.32m/s, respectively. The collocation of buoy and QuikSCAT data during the extended period (March 2007 – March 2008) indicates that for buoy 10-m neutral wind speeds higher than 18m/s, the bias and rms differences are -1.23m/s and 1.57m/s, respectively. Obviously, ASCAT and QuikSCAT tend to underestimate and overestimate buoy high winds, respectively.

Change: Page 17 : The finding differences for high wind conditions may be associated to the results derived from buoy and scatterometer wind comparisons. As stated in section 3.2, ASCAT tend to underestimate high winds. Moreover, for buoy winds exceeding 18m/s, the mean difference between buoy and ASCAT winds reaches 1.13m/s with a rms difference of 1.32m/s. Similar comparisons are performed from collocated buoy and QuikSCAT data. They indicate for high buoy winds (greater than 18m/s), QuikSCAT retrievals are overestimated with a bias of -1.23m/s and rms difference of 1.57m/s. Therefore the discrepancy between QuikSCAT and ASCAT observed for very high wind speeds should be carefully considered.

Reviewer: The paper do not present any insight on the kinetic energy spectral behavior

OSD

5, S29–S32, 2008

of the ASCAT data in comparison with QuikSCAT. Given the importance of this topic for air-sea interaction studies, the absence of this part should be somehow explained.

Reply: The reviewer is right. However, the main reason is the paper is dealing with comprehensive comparisons between ASCAT retrievals and surface wind derived from in-situ or from QuikSCAT. Furthermore, significant estimation of the kinetic energy spectral from scatterometer winds (over swaths) request a large number of samplings at locations of interest. The paper only examines ASCAT data available during the period March – November 2007. The investigation of the kinetic energy spectral from ASCAT measurement will be investigated as a part of the enhancement of the estimation of the gridded wind fields from remotely sensed data. We are expecting to submit the results for publication in future. For the reviewer, I am showing in the following figure the spectral analysis of wind speed from QuikSCAT (red) and from ASCAT (blue) estimated along two sections in north Atlantic and in tropical Atlantic Ocean. The calculations are performed from wind observation during November 2007. Again such results should be considered carefully and are not significant due to the short sampling used for spectral estimations. They indicate that QuikSCAT content are higher than ASCAT especially for wavelength ranging between 500km and 100km. One should notice that ASCAT are provided over WVC of 25km while the ASCAT wind resolution is 50km.

Rq : Figure may be provided to the reviewer.

Reply to technical corrections

Reviewer: Figure 3: remove label a), b) c) since they are not referred in the caption Reply: Correction is provided. Thanks Change: Figure 3 : Scatterplots of wind speeds (left column) and directions (right column) derived from QuikSCAT and ASCAT (top: a) and b)), ECMWF and ASCAT middle: c) and d)), and from ECMWF and QuikSCAT (bottom: e) and f)).

Reviewer: Table 1: change "0." with "0" in row NDBC/ASCAT (ALL) column Wind Di-

OSD

5, S29–S32, 2008

rection (Bias) change "16." with "16" in row TAO/ASCAT (ALL) column Wind Direction (Std)

Reply: Thanks. Corrections are provided. Change: OK

Reviewer: Table 2: change "0." with "0" in column Global (QSCAT/ASCAT), row Direction (X bar).

Reply: Thanks. Correction is provided. Change: OK

Interactive comment on Ocean Sci. Discuss., 5, 77, 2008.