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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Sea surface wind speed estimation from space-based lidar measurements" *by* Y. Hu et al.

Anonymous Referee #2

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General comments

This is a remarkably well-written article, an important contribution with a concise and clear line of thinking. It certainly opens many doors for future comparisons between measurements from various types of instruments, as well as on improving our understanding of wind-wave interactions at the air-sea interface, two points that maybe should be emphasized in the text. As some of my comments were already raised by reviewer #4, I only have a few questions and comments, that I hope will improve this paper.

Specific comments

The impact of cloud droplets, raindrops, and raindrop impacts on the ocean surface being at the center of many calibration discussions about radiometers and scatterometers (and even altimeters), I think it would be worth devoting a couple sentences (either in the introduction, or the final discussion) to highlighting the advantages (or disadvantages) that one might find in using one instrument vs. another, which would also be useful information for cross-validation purposes. If one were to compare, for example, lidar, radiometer, scatterometer, and/or altimeter wind speeds, what would be the ideal conditions for such a comparison and what would be the limitations?

In figure 6, top panel, would it be possible to choose a slightly different color scale, or at least shift it so that the transition from negative to positive differences be more obvious? As it stands now, the light green and darker green blend together, given the impression that it is overall more negative than it really is.

This might be an artefact, or a visual impression due to the color scale, but it looks like, in the northern hemisphere, the difference (in figure 6 again) is more negative on the western side of the ocean basins and more positive on the eastern side. Could you please comment on that? Similarly, the difference seems to lean towards positive numbers over the Indian Ocean, and in particular the Bay of Bengal...

Also (figure 6), do the white areas correspond to regions where there was no collocation of AMSR-E and CALIPSO measurements, or points where the data was discarded for some reason?

Section 4, last sentence: could you develop on the "AMSR-E wind speed bias"?

Future work: are there plans for comparisons with other sources of wind speed measurements or estimations (*in situ* winds? buoys? scatterometer winds?)

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Technical Corrections

I think there is a typo on page 2778, line 23: 1/γ gs

Interactive comment on Atmos. Chem. Phys. Discuss., 8, 2771, 2008.

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Interactive Comment