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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Uncertainties in wind speed dependent CO_2 transfer velocities due to airflow distortion at anemometer sites on ships" *by* F. Griessbaum et al.

Anonymous Referee #1

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This paper is a clear and well-written contribution to the discussion about the uncertainties inherent in shipboard observations and parameterizations of the gas transfer coefficient. With the caveat that this reviewer is not an expert in such calculations, the model study appears to capture the important characteristics influencing mean wind speed determinations from ships as typically deployed on research vessels, and perhaps to a lesser extent on VOS's.

The results presented here appear to be robust, and certainly the explanations offered seem intuitively reasonable. It would have been nice to have included a discussion of the turbulent spectra and potential implications for eddy covariance studies, but I

appreciate that that was outside of the scope of the intended paper.

One point to consider is that the same sorts of wind speed errors are inherent in both the observations used to derive k (from dual tracer studies etc.) and those used to estimate fluxes (from research vessels or VOS's). Doesn't this mean that these biases should cancel (at least to some extent)? ie, the parameterizations were derived with overestimated winds, but the flux calculations are also made using overestimated winds. Perhaps the authors should address this point in the manuscript.

I also wondered to what extent uncertainty in wind measurements was incorporated into the published uncertainties associated with various parameterizations. It would be worth noting whether this was included in various studies, or not. I seem to remember that wind speed errors were discussed in detail in some of the early dual tracer papers.

Overall, I think this is a useful contribution to the field and to ACP.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 18839, 2009.