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Discussions

Interactive comment on "Mapping flow distortion on oceanographic platforms using computational fluid dynamics" *by* N. O'Sullivan and B. Ward

A. Sterl (Editor)

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Unfortunately, I encounter problems in finding reviewers for this paper. Several potential reviewers declined, but in doing so one of them provided a rudimentary report. I reproduce it below (with his consent), because I think that it touches some important points. The authors should regard this Editor's Comment as a substitute for a full referee report and take it into account accordingly in their formal reply.

Andreas Sterl

Topic Editor

The authors have done extensive modelling to explore the optimum anemometer loca-

tions for their Eddy Correlation measurements. The major selling point of this paper is the model runs performed at different pitch angles of the ship. This is relatively unknown and would extend the current understanding of correcting direct measurements air-sea fluxes. However, I believe that the paper needs to address the following questions:

1. *The CFD code OpenFOAM used in the paper is run to a steady-state rather than producing a spatial and temporal description of the distortion of the turbulence by the presence of the ship. The authors need to make it clear how a mean airflow correction from a steady-state solver can be used to correct Eddy correlation (EC) fluxes. For example they state, "CFD modeling for the quantification of flow distortion for EC measurements was first conducted by Yelland et al. (1998) for the RSS Discovery and the RSS Charles Darwin." Yelland et al. (1998) did not correct EC measurements for the effects of flow distortion. Mean airflow corrections were applied to the inertial dissipation measurements of the friction velocity (u*).*
2. *A major result hinges around the increase of the wind speed error with increasing wind speed (Figure 5, 7 and 8), which has not been observed before. The z-axis (wind speed error) in the figures should be plotted as a ratio of (Anemometer wind speed/free stream undisturbed flow), not as the difference between anemometer pairs (see Yelland et al. (1998). Does the trend with increasing wind speed error exist in figures 5 and 7 when this is done? If the trend disappears then a simpler correction based on wind speed direction could be employed.*
3. *The paper as it stands is confusing and needs to be better presented to fully understand what model runs have been performed and what the results show.*

Interactive comment on Ocean Sci. Discuss., 9, 3485, 2012.