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Ocean Science Discussions

Interactive comment on "Effect of variable winds on current structure and Reynolds stresses in a tidal flow: analysis of experimental data in the Eastern English Channel" *by* K. A. Korotenko et al.

Anonymous Referee #2

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The paper presents the analyses of some turbulent properties of a non stratified flow in the eastern English Channel. The study is based on ADCP data recorded during 12 days in 2009 and qualitatively related to the wind and tide characteristics. From my point of view, the set of data and the results of data processing are interesting by themselves. However, a comparison of the presented results with those of other scientists working on tidal flows is missing. According to standard requirements in good international publications, what these measurements confirm and what is new should be clearly discussed.

On the other hand, turbulent parameters cannot be presented without a detailed de-

scription of the assumptions made about data processing. In this paper the methods section has been substituted by an appendix containing a detailed summary of the procedures based on well known works of other authors. This appendix may be interesting but it cannot substitute a methodology section in which specific assumptions made for this data set should be justified and discussed (Ex: P2239 L 12 and L 15).

I recommend reviewing the article in light of the previous comments to greatly increase the interest of the paper and broaden its audience.

Some other minor observations:

P2217 L11: 20 m in the abstract L17: up to which depth above the bottom? L19-L20: Better in a methodology section where you can justify the A1approach.

Figure 2:- Panel (a) is confusing and irrelevant. Wind direction already is shown in panel (d) and mean and gust speed are already presented in panel (b). Please check legend (wind gust velocity is smaller than mean speed). It is not clear what the WW3 model provides to this paper. If relevant, would you please explain it better based on figure 2(c) and indicate how this information is used later? In such a case details of the model configuration for this study should be included in a methodology section. If not relevant, I would not mention it and remove the corresponding data.

P2221 L15-26: The paragraphs are too long for a phenomenology that according to the authors is irrelevant. Data do not justify such a discussion either.

P2222 L4-L5. References already given in the introduction. Please, choose the better location for them and introduce the work of other groups.

P2223 L9: LOCAL hydrodynamics? P2222 L5: “Saline stratification was not observed..”. Please clarify.

Figure 4: Please check the legend for cross and along shore velocity spectra in figure 4. Plots in figure 4 will benefit from fine grid lines or at least of some indication of the semidiurnal and diurnal frequencies. A diurnal peak within a series of 12 days cannot

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be shown with the use of an appropriate filter? Please justify it. Maybe the interpolation of the 6 s gaps affects the data more at 10 mab than at 2 mab and so the slope of the spectra appears to be -5 instead of -5/3? Please comment. Why does the bimodal structure observed in figure 4(a) (P2224 L16) look like it is not in agreement with what is presented in figure 7? Could the bimodal structure be a noise artifact? I would suggest deleting plots 5 and 6 because figures 4 and 7 already contain them. Note that units on the x axis of figure 6 should be cps not cph. And again, please, comment about possible interpolation effects (1c/6s = 0.16 cps).

P2229 L 7. Always?

P2231 L1-L4. Long, irrelevant sentence but, unfortunately, it is true that although the figures are nicely presented they do not allow a deeper analysis. Readers will understand better if the authors indicate at which time and the depth to look to appreciate their observations and where on the time series such a behavior is repeated.

P2232 L 13: On the plot it looks like the minimum is 10-6 Wm-3.

Figure 9: Please check the incongruence between the legends and the description below the figure.

Figure 10. Which is the value or the regression coefficient for the ebb and flood fits? Which would be the value of the drag and the regression coefficient for a single fit containing the two regimes? Please comment on the results in comparison with those found by other authors on tidal flows.

P2235 L 22-28. It should be better justified in the text; try to include a figure illustrating it.

Interactive comment on Ocean Sci. Discuss., 9, 2215, 2012.