

Review of esdd-3-79-2010 :

Measuring hydrodynamics and sediment transport processes in the Dee estuary

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General comments

The topic is interesting and the paper is well organized. Anyway I believe that few, minor, revisions should be considered before publishing the manuscript. Here follows my observations and suggestions to the authors:

About the figures

Figure 1

Missing color scale legend, it should be [m]. Negative values in the colour bar should be explained since it is not of immediate understanding.

Figure 3

I cannot see any change between original and despiked data after then ordinal 2000. The plot is not clear enough, you may consider to add a plot of differences between original and despiked data, also adding a panel to the figure. Explicit "Hs". What exactly means : "Number of Data " (X-axis label)?

Figure 4

The caption of this figure is not clear, please clarify. The figure might be subset in labeled panels and the caption should refer to the labels. i.e. : top panel : label : a etc.... In the caption : a) Time series of current velocity (flood : positive, ebb : negative), b) water depth, Another solution is to color (red/blue) the line which represent the time series. Also you may add vertical grid lines.

Figure 5

You should inform the reader explicitly about the vertical axis meaning. Also you should add minor ticks to the horizontal axis, i.e. each 25 units

Figure 6

Salinity and Temperature profiles are so similar !? The figure is hardly readable, you should find another way to represent these data, perhaps with a multiple panel figure grouping flood/ebb events, so the comparison might be easier. Also T/S plots might be added.

About data availability

The author should give details about data access at BODC and data policy.

About the manuscript

Section 1, row 25-29 (pag 81)

The sentence "The Dee is a macrotidal estuary characterized by the presence of waves at its outer margins, strong tidal flows in its channels, and a mixed seabed usually muddy sands or sandy muds. The overall transport direction, in or out of the main outer channels of the estuary, is probably grain-size dependent" reports data and consideration on the Dee estuary. To my opinion you should add citation(s) about the Dee estuary, so the reader might want to know more about the environment where data has been collected

Section 2 page 82 rows 18-21

Does the sentence “The Dee Estuary presents a mixture of sediments containing a range of non-cohesive and cohesive sediments and, therefore, the threshold of motion of the bed might be a complex process dependent on several conditions” report your interpretation of data or some conclusion taken from literature. Please clarify and, if the case, add proper citation(s)

Same observation for the sentence in page 83 rows 1-3

Section 3 pag 84 row 23

Please explicit OBS acronym.

Section 4, row 2-4 (pag 86)

You write : “Figure 3 shows an example of the despiking algorithm on the data. It can be seen that the method properly removes the spikes. It has to be noted that the data was very clean and only a few spikes were found in the raw data.” It seems to me that the dataset shown in figure 3 is not “very clean”. It seems also that the despiking procedure works only in the first part of the window (from zero to about 2000)

Section 4, row 18 (pag 86)

The PUV method needs a citation even if it dates back to the 1970’s and should be known to everybody.

Section 4, equation 1

All symbols must be explained after the equation, C_p , C_u , ρ , σ , g are missing. Also give a proper citation for the equation.

Section 4, equation 2

Is it an original equation ? if not a citation is due. Explanation of “ g ” is missing.

Section 4, equation 3

Explanation of “ f ” is missing.

Section 4, row 7-10 (pag 87)

If the author wish to start a discussion about the benefits of the PUV method more detail has to be given, otherwise I suggest to remove these sentences.

Section 4, row 11-13 (pag 87)

As said before, more detail has to be given about data access. It may be the case to have a dedicated section to this topic.

Section 5, subsection 5.1 All paragraph

To my opinion the hydrodynamic description is too concise and should be extended. The statements expressed in this section need to be supported by data representation

Section 5, subsection 5.2 row 13 and following

The sentence :”... the distributions correspond to times when the smallest particles dominate (to reduce possible shifting of the distribution due to flocculation).” needs to be clarified.

“It shows a dominance of small particles with a diameter of around 70 microns which represent the limit between silt and very fine sand, “ ok ” there is also an important contribution of fine sand. “ too short, please clarify. To my opinion this figure deserve a deeper comment, since the ms focusing on sediment transport. ”, Both locations show the same pattern in size distribution, “ ok ” but larger concentrations at the Welsh channel.” Too short, please clarify and possibly give a reason to this feature.

Section 7 “Conclusions”

To my opinion this section looks like more to an introduction that a conclusion. In conclusions you should summarize only the “findings” of you experiment and/or the benefits effectively given to the scientific community. I suggest to write a shorter, clearer conclusion.