

Dear authors and editor,

The paper “Synoptic observations of sediment transport and exchange mechanisms in the turbid Ems estuary: the EDoM campaign” provides the data and preliminary analyses of an extensive field campaign in the Ems, carried out by an excellent team. There is no doubt that this is an impressive data set that needs to be published. The Journal ESSD Ocean would be a suitable journal.

My concern is a bit more in how the manuscript is written now. My three main points are:

1. The manuscript is written from the viewpoint of what the authors wanted to do with the data set and what they would like to do with it. This makes sense for a data report. By publishing in ESSD, you would however also invite other researchers to work with the data. Some additional paragraph(s) in the introduction and Section 5 would help then.
2. Although the data provides a wealth of interpretation options that are not fully explored yet, the present manuscript is already quite extensive in interpretation. The aim of the journal ESSD mentions: “*Any interpretation of data is outside the scope of regular articles.*”, see https://www.earth-system-science-data.net/about/aims_and_scope.html. Some interpretation will of course help the reader understanding the data, but the authors could reconsider whether all descriptions/interpretations are really needed. Some could better be used in a follow-up paper where the focus is on the interpretation.
3. Processed data is provided, without the raw data or high-resolution data. Some data also seems to be missing, while other data is averaged over 10 minutes. This makes it difficult/impossible to check the data or using it for different types of analysis. This limits the use of the data. For publication, I would highly recommend to upload the full data sets, including high-frequency processed (despiked) results and raw data.

Suggestions below are mainly along the same lines.

Section 1:

The three indicated research questions (line 78 onwards) are very specifically framed towards the Ems. This framing was of course needed to justify the campaign. These measurements could however also help to understand other systems where such campaigns were not performed. The introduction could put the campaign in a wider perspective, to attract potential users.

Furthermore, the questions are also not that clear yet. For example: Line 78 onwards: *The first is that while transport mechanisms in the lower Ems River has been studied in great detail (see references above) less ... sediments landward (van Maren et al., 2015a).* From this description, it is hard to distill the exact research question. Rewriting in shorter sentences might help. Line 422 already provides a clearer question: “*One of the motivations for the EDoM campaign was to understand the mechanisms leading to landward transport in the ENC.*”.

Section 2

This section discusses the design of the experiment. Subsections 2.1-2.3 do however mainly discuss processes and have some overlap with the introduction. It is not (always) clear why these sections are really needed for the design of the campaign (2.4). Subsection 2.4 is quite brief. Some more considerations on why these exact locations were chosen would help the reader. Why not a larger/smaller area of interest? Why this setting of moorings, frames and boats?

Section 3

This section discusses the instrumentation. A clear overview is given. Also here, a few considerations would help. For example, why are the instruments on the mooring chains positioned at 1.5, 3.5 and ~7.8 m above the bed?

Section 3.2 discusses the data processing. Outliers were removed, but how? Is the raw data stored as well (in case outliers might have been interesting data)? Can you indicate with a few lines how calibration of the OBSes was done and whether the calibration curves are in the data set?

Line 211: *“However, with the high concentrations in the Ems estuary acoustic and optical instruments become progressively less reliable, making accurate water sampling an important source of data. In order to minimise the potential impact of methodological errors all water samples were therefore analysed in the same laboratory.”* This directly raises the question how (un)reliable the data are. In view of the use of the data by others, a reflection of the authors on this would help. In this paper, I would prefer that above an extensive interpretation of the data.

Section 4

This section starts directly with interpretation of the data. Would it be possible to include a section on how well the instruments worked? For example, did OBSes reach their upper limit? Any biofouling? How (un)reliable were the acoustic and optic instruments in the high concentrations? Is a comparison made between samples and acoustic/optic instruments? What were the findings? See also line 211.

Section 4.3 is not balanced with the previous subsections, where the data is elaborated in more detail. Some of the findings have been published already apparently. It was also not directly clear where to find the floc data.

Section 5

Section 5.1 gives a clear overview of the findings. As indicated above, Section 5.2 mainly discusses the plans of the project team. Some of the mentioned plans for future research likely started already, as the data set is there for a couple of years now. This section could be modified to make the paper more attractive for other researchers. How could and why should researchers from outside the project team use the data set? Which type of data could be used for comparisons between estuaries for example? Which data can be used for intercomparison of instruments? What kind of things could not be analyzed by the research team, because a lack of experience?

Section 6

The data availability section is not clear enough. It states that “most data” is stored on the repository. This directly raises the question why not all data is stored there, and which data is missing and why. Data has been averaged to 10-minute intervals, reducing the possibilities for analyses outside the project team. The statement in line 219: *“We encourage use of the EDoM data by non-participants of the measurement campaign although all use of the data should be communicated with the responsible surveyors.”* is a bit weird. I would recommend to open the data set completely, without such restrictions.

The data on the repository is divided over different directories. It is now a bit difficult to find the observation stations from Table 2 in the repository. Adding the directories in Table 2 might help?