

## ***Interactive comment on “FerryBox Data in the North Sea from 2002 to 2005” by Wilhelm Petersen et al.***

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The dataset presented is valuable and I recommend sharing it with the scientific community through this publication. However, more work is needed regarding the text accompanying the dataset.

The manuscript presents a dataset collected with a flow through system installed on ferries (FerryBox) operating daily between Cuxhaven (GE) and Harwich (UK) from 2002 to 2005. The parameters recorded and presented are temperature, salinity, dissolved oxygen, turbidity, and chlorophyll a fluorescence. The calibration of the data is partially presented and a brief overview of a few parameters is presented.

The manuscript is easy to read but could be better organized for example, by adding a

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sub-section for each parameter which will help the reader better navigate through the manuscript. A paragraph synthesizing the limitation of the dataset (e.g. temperature offset, uncalibrated chlorophyll a) as well as a complete description of the uncertainties associated with each measurement (as mentioned by reviewer #2) should be included.

It's not clear why there are two turbidity and dissolved oxygen sensors. Are they agreeing well with each other?

It's not clear what the collected water samples are used for? Could you provide example of laboratory analysis and quality measurements performed?

The depth of the water intake of the flow-through system is close to 5 m: it varies with the load of the ferries and the sea state. It's not at a fix depth of 5 m as mentioned line 48.

Salinity measurements in a flow-through systems can be affected by bubbles going through the system usually manifested by spikes of low salinity values, was the data quality checked for this? Looking at the validation of the salinity (figure 2), it seems that there is a typo in the equation which shows an offset of -1.053 not present on the data plotted.

How are the dissolved oxygen measurement affected by the bubbles entering the system and the debubbler? If it's affected could you QC times with bubbles? Was the oxygen concentration compared with in situ samples (not going through the FerryBox system, tubing and pump)?

There is information missing concerning the quality control of the scattering data. If I understood correctly the turbidity measurements are derived from an empirical relationship with particulate backscattering. Again, bubbles in the system will introduce spikes in the signal that should be removed from the dataset either using manual QC or an automated script. However, this should be done with caution as some of the spikes could also be due to large particles such as aggregates or zooplankton. How

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was the SCUFA-II sensor mounted? Was there any wall effect of the box in which the sensor was mounted? If yes were those removed from the signal? Could you specify the calibration coefficients used?

Deriving total chlorophyll a from fluorescence is tricky has mentioned in the manuscript. It would be worth mentioning which correction are necessary and pointing the user to the data or documentation if available. Here is a non-exhaustive list of corrections that should be applied to retrieve a better estimate of chlorophyll a concentrations:

- Correct for Non-photochemical quenching during daytime using a modelled photosynthetically active radiation (PAR), mention that this is not needed most of the time as the ferry travels overnight.
- Correct for colored dissolved organic matter contamination (CDOM) if CDOM measurements are available (Xing et al. 2016)
- Is Total chlorophyll a derived from HPLC samples available or any other measurements of chlorophyll a concentration available? This would help to adjust the manufacturer slope factor converting from engineering units to ug of chlorophyll a / liters (Roesler et al. 2017)

What type of pump is used with the FerryBox systems? If it's not a peristaltic or diaphragm pump phytoplankton will be damaged before taking measurements of chlorophyll a which should be mentioned in the description of the dataset.

Line 92 and 93 the figures numbers are offset by 1.

It could be worth mentioning how long is the transect of the ferries?

## References

Roesler, C. , Uitz, J. , Claustre, H. , Boss, E. , Xing, X. , Organelli, E. , Briggs, N. , Bricaud, A. , Schmechtig, C. , Poteau, A. , D'Ortenzio, F. , Ras, J. , Drapeau, S. , Haëntjens, N. and Barbieux, M. (2017), Recommendations for obtaining unbiased chloro-

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Xing, X. , Claustre, H. , Boss, E. , Roesler, C. , Organelli, E. , Poteau, A. , Barbieux, M. and D'Ortenzio, F. (2017), Correction of profiles of in situ chlorophyll fluorometry for the contribution of fluorescence originating from non algal matter. *Limnol. Oceanogr. Methods*, 15: 80-93. doi:10.1002/lom3.10144

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