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Interactive comment on "Measurements of Hydrodynamics, Sediment, Morphology and Benthos on Ameland Ebb-Tidal Delta and Lower Shoreface" *by* Bram C. van Prooijen et al.

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Dear Dr. Ganju,

Thank you for your review and suggestions to improve the manuscript. Below, we reply to each point. You indicated one aspect that is still of our concern: the calibration of the OBS. We explain below what we did. Unfortunately, the concentration values cannot be provided with sufficient confidence.

Best regards,

Bram van Prooijen

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This data release documents hydrodynamic and sediment transport measurements in areas of the Wadden Sea, landward and seaward of Ameland, and on the ebb tidal shoal. Overall, the report is clear, the data are accessible using accepted protocols (OpenDAP), and they will be of wide utility for coastal management locally and for basic sediment transport research globally. I have a few major suggestions, and a few minor comments.

We highly appreciate that the reviewer considers the data set of wide utility.

Major comments:

It would be helpful to add a table of dates and coverages for the platforms/instruments, unless this is somewhere in the repository/supplemental that I didn't see.

We included a table with the frames for the different campaigns. See table 2 in the text. Furthermore, the site where the data is stored provides viewing options now as well. The position of the frames is directly visible on an interactive map, see for example Figure 1 or: https://data.4tu.nl/articles/dataset/KUSTGENESE2_0_SEAWAD_Frame-Mounted_Velocity_Profiler/12705962

Within the text, it would be good to document the pre-deployment calibration steps for the various instruments. As it stands the calibration for only one instrument is described (LISST), and it is embedded in the post-processing section. I would at least add documentation on calibration of the optical sensors, compass calibrations for the velocity meters, and pressure-zeroing for the pressure sensors. It may seem trivial but it is important for inter-operability to know how instruments were prepared.

We agree that this aspect was not sufficiently described. Compass calibration for the instruments on the frames was carried out prior to the campaign. An example result

is shown below. We briefly explain the procedure in the text: "*The procedure for determining the offset of the compass was to rotate the mounting frame annotating every ten degrees the device heading angle (compass heading) and the true angle measured with high accuracy GPS (magnetic heading) not affected by the frame. This was repeated in reverse direction. An averaged compass deviation (from the two cycles) at a 10-degree interval was taken for the compass calibration.*"
OBS calibration is not straightforward. The OBS calibration was more problematic, as was discovered when we looked more closely at the full set of hydrodynamic and suspended particle measurements in the last year. A lab calibration was originally carried out with sediment from the bed. This sediment consisted almost solely of sand, which is reflective of the sediment composition across the ebb-tidal delta. An example of such a calibration is shown in Figure 3. During the campaign there are however strong indications that the suspended sediment contained fines advected from sources several kilometers away (see Pearson et al., 2019). These fines result in a significant response from the OBS at times when high suspended sand concentrations would not be expected (i.e. slack tide with few waves). The laboratory calibration with sand only (sediment from the bed) is therefore not representative. The OBS results are therefore limited to the voltage timeseries.
The following text is provided: "*A calibration was carried out at the laboratory of Utrecht University. Sediment (mainly sand) from the seabed was taken and mixed up in a mixing tank. The sediment concentration was slowly increased, obtaining the relation between voltage and sediment concentration. As the suspended sediment concentration in the field contained finesas well, the results from the laboratory (containing sand) cannot be translated directly into a concentration, see Pearson et al.(2019). Therefore, only the voltage output is provided.*"
The temperature, conductivity, pH, and DO sensors were calibrated prior to each campaign, following the procedures outlined by YSI Incorporated (2012). The sensors were placed in a container filled with water having known properties, and their readings were compared with the "true" values. The factory settings of the pressure sensors and ve-

locity sensors in the ADVs and ADCPs were used.

Some of the terminology is unclear or inconsistent. For example, the term "tidal divides" is not a generally known term, and the use of "watersheds" to describe the landward drainage areas of the tidal channels is not the best choice. I think some time should be taken to tighten up some of these for clarity, mainly so the reader knows precisely where those ADCP measurements are being made without having to refer to the figure immediately. Perhaps the easiest terminology would be "tidal channels that drain the back-barrier basin" for the first use, and then "back-barrier tidal channels" after that?
The term "tidal divide" is often used to indicate the border of two different basins in the Wadden Sea. In Dutch, there is a special word for it: wantij. Searching scholar.google.com indeed indicates that tidal divides is mainly used by Dutch/German/Danish researchers. As watersheds is not the best choice either, we keep the definition "tidal divide". We first explain the location as the end of a tidal creek, and introduce the term tidal divide later on. We removed the term watershed.

Abstract: the abstract is awkwardly written. The details of the deployments probably don't need to be in the abstract, the reader will go to the map and table to decide if they can use the data. Suggest revising to something like this: "The dataset obtained from the field campaign consists of: (i) single and multi-beam bathymetry; (ii) pressure, water velocity, wave statistics, sediment concentration, con- ductivity, temperature, and bedform morphology on the shoal; (iii) pressure and velocity at six back-barrier locations; (iv) bed composition and macro benthic species from box- cores and vibracores; (v) discharge measurements through the inlet; (vi) depth and velocity from X-band 10 radar; and (vii) meteorological data."
We agree and modified the abstract accordingly.

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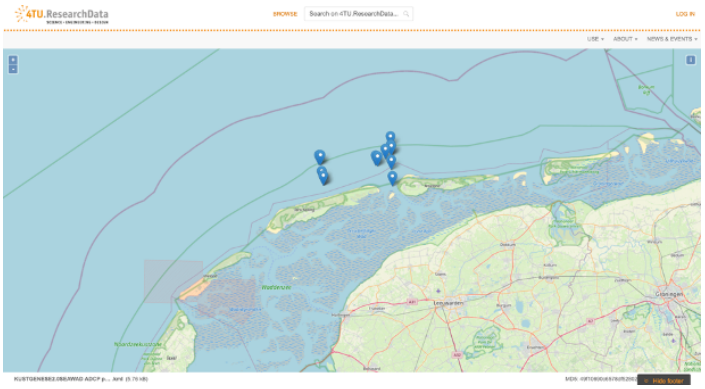

Fig. 1. interactive map with locations of the measurements.

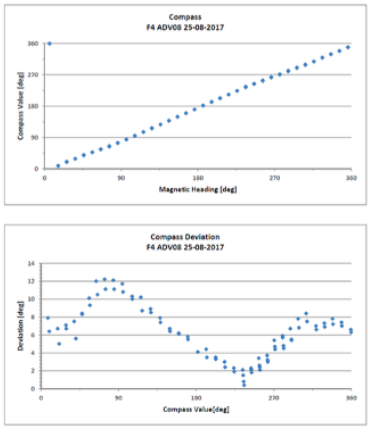

Fig. 2. calibration of one of the compasses

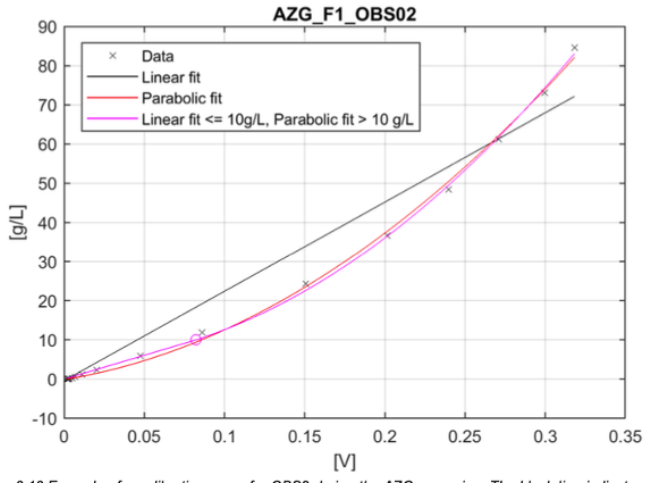

Fig. 3. calibration curve for the OBS in the laboratory.