This paper presents an overview of a complex field campaign (multiple vessels, multiple moorings, two seasons) conducted in the lower Ems River, outer Ems Estuary, and dredged navigation channel which connects them. The motivating question is what mechanisms drive the high sediment concentrations and high rates of sedimentation (necessitating annual maintenance dredging) in the channel. This topic has been investigated before in this and other estuarine-tidal river systems, but the authors suggests that mechanisms traditionally cited (tidal asymmetry, residual circulation, etc.) seem too weak in themselves to explain the high SSC/trapping here. Part of the summary notes that exchange between the Dollard and channel may provide a temporary source/sink coupling (which fluctuates with river discharge) which causes the unusually high trapping. The authors note that decomposition of fluxes into residual, tidal pumping, and other terms may help fully explain the dynamics. In similar papers these calculations are usually included already, but this paper has been written to describe the dataset (and submitted accordingly to a journal dedicated to that purpose) and it is suggested that future papers will explore the dynamics in detail.

Specific comments include:

1. Line 61 – subject/verb agreement

   I am afraid we do not understand what is wrong with this sentence. Please make more clear what is wrong (if considered important)

2. Line 81 – grammar/typo – “even though model result that”

   Corrected (result ➔ reveal)

3. Line 85 – typo “ion”

   Corrected

4. Line 89-90 – As written, this sentence is somewhat confusing (based on the sentences which precede it)

   The reviewer is correct that the wording was unclear. We changed

   ‘This points to the presence of convergence of suspended sediment transport, which in turn conflicts with the large dredging volumes in the lower Ems River suggesting up-estuary transport. ‘

   Into

   ‘The only way to then explain the high siltation rates in such a dynamic area is is points to the presence ofstrong convergence of suspended sediment transport. However, strong convergence of sediment transport in the ENC conflicts with the large up-estuary transport discussed above.’

5. Throughout the paper – estuary should be capitalized in Ems Estuary, just as in Ems River

   Corrected

6. 112 – tons (plural)

   Corrected

7. Line 131 – this section discusses sediment transfer between the outer Ems Estuary and lower Ems River, and notes that strong flood dominance may promote trapping – but in line 81 the authors note that tides in the ENC (the navigation channel connecting those two regions) the tides are “asymmetric with higher ebb flow velocities.” Is there a spatial switch between flood dominant flows in the outer estuary to ebb dominant flows in the ENC to flood dominant flows in the lower Ems River? Please clarify.

   The confusion arising from the fact that we did not clearly mention earlier that the lower Ems River is very flood-dominant – the ENC is the anomaly here. Therefore the following sentence one section earlier

   ‘Approximately 1 to 1.5 million tons are annually extracted from the lower Ems River by dredging’

   Has been replaced by

   ‘The lower Ems River is strongly flood-dominant with a short period of high flood flow velocities (and a long period of weaker ebb flow velocities). The resulting trapping of sediments results in dredging requirements of approximately 1 to 1.5 million tons which are subsequently disposed on land’

8. Line 195 – correct “turbiditymeter sensor”

   Corrected (meter removed)

9. 218 – is it possible that the pipette method biases the results toward smaller flocs? (Or did the diameters agree well with what the LISST reported?)

   The subsampling does not influence the floc distribution. To better explain this we have provided more details on the subsampling by extending the section

   ‘Additional instrumentation was deployed onboard the stationary boats at Emden (SB_EMD) and Knock (SB_KNO) to measure turbulence and sediment settling properties. At SB_EMD, hourly water samples were taken with a Niskin bottle close to the bed and close to the water surface. A subsample taken with a pipette is inserted into a still and clear water settling column operated onboard, in which the water-sediment mixture settles from suspension. This settling is monitored with a high-resolution video camera. Postprocessing of the camera data reveals the size, shape, and settling velocity of all particles registered with the camera. ‘

   Into

   ‘Additional instrumentation was deployed onboard the stationary boats at Emden (SB_EMD) and Knock (SB_KNO) to measure turbulence and sediment settling properties. At SB_EMD, hourly water samples were taken with a Niskin bottle close to the bed and close to the water surface. A subsample taken with a pipette (with an orifice approximately 6-7mm in diameter, so large enough to not restrict large macroflocs passing through into the settling column) is inserted into a still and clear water

settling column (with the same temperature and salinity as the in situ fluid) operated onboard, in which the water-sediment mixture settles from suspension. This extraction technique has been successfully utilized in numerous recent laboratory flocculation studies (e.g. Mory et al., 2002; Gratiot and Manning, 2004; Graham and Manning, 2004; Mietta et al., 2009) and creates minimal floc disruption during acquisition transfer to the column. Settling is monitored with a high-resolution video camera, and postprocessing of the camera data reveals the size, shape, and settling velocity of all particles registered with the camera. '

10. Line 235-237 – the wording is a bit awkward here

    We agree. The sentence

    'The cross-sectional profiles were only deploying ADCPs except for CS_POG which towed a FerryBox (2018) or CTD (2019). Transects were continuously sailing back and forth over a GPS-steered track to cover the mouth of the Dollard (CS_DOL), the Emden fairway (CS_EFW) and the lower Ems River (CS_POG). '

    Is changed into

    'Only flow velocities (measured with ADCPs) were measured at the cross-sectional profiles CS_DOL and CS_EFW, whereas salinity and temperature were additionally measured at CS_POG (using a towed FerryBox in 2018) and a CTD in 2019).'

11. Line 237-238 – did stratification impact the ADCP calibration? (I.e., by additional distortion of the sound signal which is difficult to correct?)

    We used salinity profiles measured at nearby stations to account for that. This is now clarified by extending the sentence

    'The backscatter of the ADCP was calibrated to SSC using water samples collected at nearby stationary boats'

    Into

    'The backscatter of the ADCP was calibrated to SSC using water samples and CTD profiles collected at nearby stationary boats. The CTD profiles were used to compute backscatter attenuation by salinity and temperature, thereby accounting for stratification effects. The residual backscatter was calibrated to SSC using the water samples. '

12. Line 425 – interesting result

    Thanks

13. Line 449 – sediment concentrations rather than sediment dynamics?

    Indeed, corrected