

## ***Interactive comment on “Long-term coastal openness variation and its impact on sediment grain-size distribution: a case study from the Baltic Sea” by Wenxin Ning et al.***

### **Anonymous Referee #2**

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Comments to Wenxin Ning, Jing Tang & Helena L. Filipsson: Long-term coastal openness variation and its impact on sediment grain-size distribution: a case study from the Baltic Sea

This is a well-written and well-illustrated manuscript that is suitable for Earth Surface Dynamics

However, I would like to see a few more notes about the setting: are there only rocky coasts, or are there also patches of sandy shores? And what about shallow waters? All rocks? Some notes are found in 3.2, but more notes could be added to 2.1.

I also wonder how sand is transported to the core site. Does it happen during storms

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as storm sand layers? Is sand blown out on the sea ice during cold winters? Is sand transported by drifting sea weed or by drifting sea ice?

I would also like to see a few notes on the chronology of the core, at least a reference to Ning et al. (2016).

The main control on grain size distribution is distance to the shore, but this is apparently not mentioned. The closer to the shore – the more coarse-grained sediments. In Gåsfjärden, however, the sediments become more and more fine grained as the core site moves closer to the shore. This is not surprising, because the core site at the same time becomes more and more protected. The authors have developed a novel GIS-based approach that allows them to quantify down-core changes in grain size distributions in relation to changing fetch.

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