

Earth Syst. Dynam. Discuss., referee comment RC2
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Comment on esd-2021-15

Anonymous Referee #2

Referee comment on "Salinity dynamics of the Baltic Sea" by Andreas Lehmann et al.,
Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2021-15-RC2>, 2021

The paper is a fine overview of the state of knowledge and the lack thereof concerning salinity in the Baltic Sea.

- Science: claims of periodicity appear not warranted – instead the term 30-year variability as used in line 603 is adequate. Also, the reference to “statistically significant” trends seems a little liberal – which time windows are tested, which autocorrelation has been assumed? What does “significance” of a trend really mean – that it can be discriminated from other trends related to (which?) low-frequency variability?
- The text does not discuss the role of small-scale variability, such as eddies and frontal dynamics – given the attention introduced by the Nobel prize, one wonders if these small scale “noise” features may give rise to low-frequency variations aka “stochastic climate model”? If nobody has thought about this issue, it should be mentioned under “gaps of knowledge”.
- Style: Very many details are presented – why not opening each section with a short (5 lines?) introductory summary of what the reader will find in the section?
- In Section 6, a reference to the sea level-text of the BEAR family may be useful.