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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Meteotsunami occurrence in the Gulf of Finland over the past century" *by* Havu Pellikka et al.

Anonymous Referee #2

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GENERAL COMMENTS

The manuscript deals with an interesting and relevant topic. The authors use long sea level records (paper charts) to research the meteotsunami occurrence in the Gulf of Finland. The paper is well structured; the amount and choice of figures and tables are appropriate.

SPECIFIC COMMENTS

In the introduction of the manuscript, the authors write that meteotsunami has a period from a few minutes to a few hours. In summary of the eyewitness observations (in Pellikka et al., 2014) authors wrote that meteotsunami in 2020 and 2011 had a period of about 5–10 min. Also, in Pellikka et al., 2014 meteotsunami waves had periods

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Discussion paper

15–25 min in Helsinki and Hamina by tide gauges. In present research (Pellikka et al., 2020) authors used 15-min tide gauge data. The Nyquist frequency was 2 cycles per hour and the minimum period for these data (and for meteotsunamis) was 30 min. The period of meteotsunami in Fig 4a is visually from 40 min to 1 h and in Fig. 4b is about 2 hours. This period is greater than the typical period of meteotsunamis in the Gulf of Finland. The authors should clarify information about the calculated wave periods in the text of the manuscript.

The authors used atmospheric data from neighboring weather stations for analysis of wave origin. For 70% of cases, meteotsunami were confirmed by small jumps in atmospheric pressure. How much reliably is the one nearest weather station? Perhaps the atmospheric disturbance that caused the meteorological tsunami, did not appear on the current weather station during its propagation but was recorded at other stations in the Gulf of Finland. The authors should check other weather stations for air pressure surges for 30% of cases.

In the Introduction of the manuscript, the authors should review the typical periods and heights of the other sea level variations in the Baltic Sea, in particular storm surges and seiches in the Gulf of Finland. What period have natural oscillations (seiches) in bays of Hamina and Hanko?

In the introduction, the authors should report about meteotsunami in other parts of the Baltic Sea, in particular in the Gulf of Bothnia.

TECHNICAL CORRECTIONS

In the introduction, the authors write about the summer resident witnessed in Pellinki, in the Porvoo archipelago. This location should be shown on the map in Fig. 1. P. 2, line 18: internal –> eigen or natural P. 3, line 5: Is the study area the northern Baltic Sea? May be the northern part of the Gulf of Finland?

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