Natural Hazards and Earth System Sciences Discussions

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Comment on nhess-2021-126

Anonymous Referee #2

Referee comment on "Occurrence of pressure-forced meteotsunami events in the eastern Yellow Sea during 2010–2019" by Myung-Seok Kim et al., Nat. Hazards Earth Syst. Sci. Discuss., https://doi.org/10.5194/nhess-2021-126-RC2, 2021

The manuscript "Pressure-forced meteotsunami occurrences in the eastern Yellow Sea over the past decade (2010-2019): monitoring guidelines" by Kim et al. represent a worthy addition to the meteotsunami research of the eastern Yellow Sea, and I conditionally suggest it for publication.

My main concern is the quality of the English language which is rather poor. The manuscript MUST be proofread by either a native speaker with knowledge on the subject or someone with much better working knowledge of the language. I will not list any mistakes, but there are some in almost every sentence.

I now list some specific comments:

Abstract

- change "which shows a strong seasonal trend." to "revealing a distinct seasonal pattern."
- list "favourable conditions" which you have found
- change "the monitoring system" to "the meteotsunami monitoring system"

Introduction

- change "forced long waves" to "forced ocean long waves"

- change "to the pressure disturbance" to "to the atmospheric pressure disturbance"
- change "waves and their fundamental periods" to "waves and fundamental periods of shelves, bays or harbours".
- change "at that time remains unknown" to "was unknown at that time"

Observation system and pressure jump

- Change the title to "Observation system and extraction of meteotsunami generating pressure disturbances" or simply to "Meteotsunami monitoring system"
- It is implied (around line 115) that various intensities were tested, but no information on the results of these tests is given. Please explain how did you choose the 1.5 hPa/10 min rate. Also, have you tested intensities over shorter time intervals, e.g. XY hPa/5 min? Please discuss.

3 Classification of pressure-forced meteotsunami dates

- change the title; "dates" were not pressure-forced; sea levels were pressure forced or meteotsunami; perhaps: "Classification of pressure-forced" meteotsunami events

3.1 Characteristics of the accident events

- "which means the inverted barometer response" - no, the inverted barometer response is ~1cm/hPa - what you have here is much stronger - so, this means "resonant effect between the propagating air pressure disturbance and long ocean waves"!
- "phase relationship between pressure jump and high-frequency sea level.." - what "phase relationship"? "In-phase, out-of-phase, almost simultaneous appearance"?
- What kind of filter did you use? Please state and give an appropriate reference.
- Figure 3. and accompanied analysis/text - I like this idea for extracting the extremes. However, since the events are almost symmetric around zero I would consider looking at the wave heights instead of at amplitudes and extracting the events in a similar way.

3.2 Process of classifying pressure jump and meteotsunami dates

- Figure 4. It is not clear from this Figure what was excluded "Sample data collection: 68% (1 sigma)." I suggest writing "Exclusion of dates with less than 68% of available

data" - sigma is a strange variable to use when it comes to a number of data.
- change "was controlled in the first" to "was removed in the first"
- You say that you removed daily mean from daily samples. That is not really necessary if you filtered the data as well, and you have, as I understand?

4 Pressure-forced meteotsunami occurrences

4.1 Temporal and spatial occurrences

- Table 2. Mark the strongest amplitude of each event with **bold letters**, or underline. So, in the first row that would be **33.3** at MS station...
- Line 234-235. Discuss here or in discussion (better in discussion) why do you think that meteotsunamis are more common during March-May
- Figure 6. Think about adding some strength parameter to this Figure - for example, for each month try plotting median height at stations at which it was recorded.
- Line 240. change "The spatial vulnerability" to "The spatial spread" or "The spatial pattern".
- Figure 7. Instead of showing a total number of events, show the number of events per year - this way, the effect of shortness of time series will be removed.

4.2 Favourable conditions of pressure jump for meteotsunami occurrence

- In your list (line 260) condition (3) is the same as condition (2) but stronger - remove the condition (2).
- Figure 8. I like the idea
- Figure 9. I suggest adding another column in which filtered air pressure time series are shown, starting at the top with the northern stations, and ending, at the bottom with the southern stations - or another way around.
- It is not clear how were speed and direction of propagation assessed? From radar images or from air pressure data? Please explain. If from the radar data, confirm it with air pressure data.
- Figure 11. I like the idea of this Figure as well.

Discussion

- Please discuss reasons why do you suppose meteotsunamis are most common from March to May.
- Please give a point-by-point schematic (perhaps a figure) on how the meteotsunami warning system will be designed: Thus e.g., constant monitoring of air pressure, an

automatic warning to personal when air pressure rate of change surpasses a given threshold at one of the beacon stations, careful examination of all air pressure stations, determination of speed and direction as soon as possible, issuing a warning.

As a final note, I compliment the authors for the nice research and figures.