

## ***Interactive comment on “Tsunami Hazard assessment and Scenarios Database for the Tsunami Warning System for the coast of Oman” by Íñigo Aniel-Quiroga et al.***

### **Anonymous Referee #1**

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#### General Comments

This paper describes the development of a tsunami scenario database and its application for a tsunami warning system and hazard assessment for the coast of Oman. The work is an important contribution to the description of the tsunami hazard for Oman. The use of the same set of scenarios for the warning system and the hazard assessment has merit. While I can not comment on the seismological sections of the paper, that aspect appears to have been carefully assessed through the analysis of previously published work.

There are some gaps in the background information, some of the choices made need

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to be justified, and there is a lack of verification. I have indicated below in 'Specific Comments' where I believe further effort may be required for the manuscript to be acceptable. The English is generally understandable, but the text needs some work. I have made a few suggestions for improvement below in 'Technical Comments' but am unable to do this for the entire manuscript. The final draft should be edited by a native speaker.

#### Specific Comments

1. I would recommend a slight change to the title. The publication essentially describes the development of a scenario database, which is then used for a real-time warning system and for a hazard assessment ( i.e. a long term hazard assessment). A better title would be 'Development of a Tsunami Warning System and Hazard Assessment for the coast of Oman'.
2. Line 36: It would be useful to indicate the locations of Muscat and the Gulf of Oman on Figure 1, for readers who are not familiar with the region.
3. Line 53: You note that tsunami warning systems are commonly built on pre-computed scenarios, but there are no references to back this up (although there are plenty of references to other hazard assessments in the next paragraphs). In order to better place this work in context, at least few other tsunami warning systems should be referred to and discussed. A starting point could be the various systems referred to within Greenslade, D. J. M., et al. (2014), An assessment of the diversity in scenario-based tsunami forecasts for the Indian Ocean, Cont. Shelf Res., 79, 36–45.
4. Line 145. You should refer to the other systems that this scenario database is similar to, rather than those it is different from (see references in paper above).
5. Section 2.2 How did you choose these 6 events? Did you make any effort to ensure that they are the worst cases, by, for example, examining the wave heights at the coast, or the run-up or inundation extents? Or is it just the highest magnitude earthquakes?

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6. Line 304: How do you know that the return periods are 'thousands of years'?
7. Lines 370-371. It seems to me that a better description of the objective of this research is: (1) the development of a scenario database, in order to provide the basis for (2) a tsunami warning system and (3) a tsunami hazard assessment.
8. Line 392. How many of these validation points are there? Where are they? For how long have they been installed? Please indicate on one of the figures the locations of these tide gauges. A table with various details of the tide gauges might also be useful (i.e. lat, lon, name, depth, first installed etc.)
9. Line 391-395. Are there any examples of tsunamis that have been observed at any of these tide gauges? A model/obs comparison would be very useful for validation of the system.
10. Line 416/table 4. How were the amplitude thresholds for the different threat categories selected? What is the difference between T1 and T2 in the header of the table?
11. Even if it is not possible to do any validation of the tsunami amplitudes with tide gauge observations, it should be possible to validate the threat categories. In particular, it would be useful to see what the Threat categories would be for the 1945 event, and whether that matches with the known impacts.
12. Line 427. Figure 5 shows that there are some small areas of overlap in the coastal grids. Were the results identical within these overlap areas? If not, how did you select which grid to use?

#### Technical Comments

Line 9: developing = the development of

Line 10: as it is the case of = such as

Line 10: remove 'followed'

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Line 11: remove 'obtained'

Line 16: propagated = modelled; feed = create; work = act

Line 17: case of tsunami = case of a potentially tsunamigenic earthquake

Line 29 occurred = occurring

Line 30: elaboration = development (and make this change at all other places in the text)

Line 30: on = for

Line 34: (NCSI, 2014) not in references

Line 39: recent = notable (1945 is not really recent)

Line 43: defend = suggest

Line 47: feeds the = supports a

Line 48: the tsunami hazard = a tsunami hazard

Line 50: the tsunami warning system = a tsunami warning system

Line 53: contain = are based on

Line 54: a new earthquake = a potentially tsunamigenic earthquake

Line 54: presents the closer = selects the closest

Line 61: the tsunami hazard = a tsunami hazard

Line 63: 'hazard degree for people instability'. It is not clear what this means (this phrase occurs in a few other places as well)

Line 97: scenarios database = scenario database (and elsewhere in the text)

Line 127: Strasser et al, 2010. The two Strasser papers in the reference list are identi-

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cal.

Line 129: The Leonard et al 2014 paper should probably be Leonard et al., 2010. Leonard et al 2014 does not seem to be relevant to this work.

Line 143: contemplate = cover

Line 157: Or = Either

Line 160: exclude = excluding

Line 262: Being the tectonic characteristics similar = Since the tectonic characteristics are similar

Line 358: Figure 5 and caption. It would be better to call the level 1 grid 'Regional' rather than 'Global', since it does not cover the entire globe.

Line 366. Jonkman et al reference should first appear here

Line 504-505: '...receive and then spread all the relevant data'. It is not clear what this means.

Line 519: 'aisled'? Not sure what this means in this context

Line 531: affection = impact (and elsewhere)

Line 624: You just need one Okada (1985) reference

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Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., <https://doi.org/10.5194/nhess-2018-221>, 2018.