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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Stand-Alone Tsunami Alarm Equipment" *by* Akio Katsumata et al.

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Dear Referee #2

I am responding to your comments as the first author rather than the author on behalf of all Co-Authors.

- For locally-generated tsunamis, the challenge is to issue warnings fast enough for the population at risk to be able to evacuate the danger zone. Does a small, cheap, standalone warning system, either supplementing official warnings or substituting for them where no local warning system exists, make sense?

Many people, who should have heard tsunami warning, were killed by tsunami at the time of the 2011 Tohoku earthquake. We thought that plural information sources would help people to initiate thinking the tsunami risk.

At the same time, There are some places where tsunami warning system is not avail-

able. The appliance would help people living in such places to evaculate from tsunami.

- Could such a system be rendered robust and foolproof enough to be practical? This paper, while not completely answering these questions, at least raises the issues. The authors propose the obvious sensor: a MEMS accelerometer.

This is not a matter of the method. Robustness is related to the manufacture of a device. Only the methodology is described in the manuscript.

- The paper describes a good start, but what comes next? Every event listed is one for which the local population would feel such strong shaking that they should evacuate regardless of what the warning system says.

Frequency of strong ground motion is further more than that of tsunami. Many people do not start evacuation just only by strong ground motion in Japan. Small portion of strong ground motion events cause serious tsunami damage. I will add these explanation in the manuscript.

- But by far the most serious local warning situation–the reason someone might consider installing a warning system in the first place–is a tsunami earthquake, an earthquake with intensity so low that the local population feels nothing and so does not evacuate, but which is followed by a disproportionately large tsunami. Any stand-alone warning system *must* be designed to identify such slow-rupture earthquakes.

In the original manuscript, the process was initiated by strong seismic intensity. Because I started this work with seismic intensity meter, the method became indirect way. It is not necessary to depend on the seismic intensity to distinguish a large seismic event. We are changing the flow of the method in which we change the base of the method into the long-period seismic waves.

- While I would not insist that the authors go back and work out how their MEMS sensor system might be coaxed to provide such warnings, they must at least include a paragraph or two about how (or whether) their system and algorithms might be modified

to provide warnings for tsunami earthquakes.

Any systems have limitation from their instrumental implementation. Whereas I am changing the manuscript so that the slow seismic event would be included as the target, I would limit this paper only for the stand-alone system. A general warning system against the tsunami earthquake is more than the subject dealt in the paper.

-The discussion would have to include how they expect warning performance to change as they reduce the intensity threshold.

I am changing the manuscript so that the intensity is not a key factor any more.

I appreciate your many suggestions regarding the English expressions.

#Sorry for the very slow response.

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