

Coupled simulation of landslide, tsunami, and ground deformation for the 2017 Nuugaatsiaq event in Greenland.

There have been a number of improvements but I still remain with a number of worries. Can the title of the paper be changed to read “ground motion” or “ground displacement” rather than “ground deformation”? We have done it elsewhere in the paper and it does change the impression of what we conclude.

Line 22 (abstract): deformation → displacement

Line 68: “if the data are corrected” is not really appropriate (there is nothing wrong with the raw data. How about “if the data can be processed and correctly interpreted in near-real time”?

I do not get this new sentence added between lines 107 and line 109. (“The high frequencies ...”) I have looked at <https://doi.org/10.1002/grl.50437> (Yamada et al., 2013) and I do not understand how this paper leads us to conclude that high frequency waves on the seismic signal are related to the interaction between the slide and the water. The word “water” does not appear in Yamada et al. (2013). I think the impact of rock on rock followed by multipathing and coda generation are far more likely to result in an observable seismic signal than the interaction between the rock and the water. The impact of the rock on rock will be first order – the impact of rock on water will be second order when it comes to the seismic signal. I am not saying that Yamada et al. is not a relevant reference here but I do not see how you justify this sentence based on this work.

Figure 1: Please remove the words “Initial Tsunami” from the figure. If you are able to demonstrate that this HF seismic signal comes from the water waves then please do but to me this looks like ordinary seismic coda – this is what I would expect to see from a landslide falling onto dry land. Coda wave energy lasts a long time without any effect of water. There may be a small contribution to this from the water waves but I do not think it would be measurable or separable from the seismic coda. I may be wrong about this, but I will need convincing!

(I see in your responses that you write “As a coda wave generated by the landslide movement, amplitude is too large.” Why? I don’t think so. To me this is quite normal amplitude for seismic coda.)

Line 121: deformation → wave propagation, or solid earth displacement

Line 241-244. Again, we have the claim that the high frequency seismic energy near the start of the seismogram is due to tsunami generation/water waves. I am not saying that this will not have an impact on the seismic waves but I think it will be small compared with the landslide mass itself. The sentence beginning “By considering ...” I do not understand. Why does the seismic travel-time of 5-10 seconds mean that the impact fades quickly within 2 minutes?

Figure 6:

Can you taper the data at the start of the window, or extend it prior to doing the filtering? It just looks wrong not starting from zero. Why does the FDM start at zero but not the Boussinesq? I do not see from panel (a) why there should be any significant difference when applying the same filter. Applying a taper to the start of the window and then filtering would be better than displaying the waveforms like this.

Line 303: “sea area”? Does this mean “water” or “open sea” (in which case how is this defined?)

Please do a global search for the word “deformation” and think carefully as to whether this is the word you want to use or not, given that this is usually interpreted as permanent change. I see it many times. I do not understand the new sentence lines 361 – 363. “filtering seismic records is sensitive ...”? The response does not need to be flat in order to glean useful information. In short period seismology the instrument response was almost never flat!