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Natural Hazards and Earth System Sciences
Discussions

Interactive comment on "Hydroelastic analysis of ice shelves under long wave excitation" *by* T. K. Papathanasiou et al.

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The problem of tsunami interaction with ice shelf is really interesting for many tsunamis occurred in Pacific. Ice pieces moved by the climbed waves can significantly increase the tsunami impact on coastal structures. In given paper, authors use the linear theory of water and elastic waves in long-wave approximation to calculate the extreme values of bending moment which can induce the ice breaking. It is not a full solution of the problem of tsunami-ice interaction but it is important step to its solution. It is why I may recommend this paper for publication.

Meanwhile, I would like to comment given manuscript.

1. Authors motived their study by the iceberg formation in Antarctic (Sulzberg Ice Shelf)

during the 2011 Honshu Tsunami. Meanwhile, a lot of observations of tsunami-ice interaction is for coastal zone on runup stage, and this is more important for practice. For instance, I may recommend to cite the following paper: VICTOR KAISTRENKO, NADEZHDA RAZJIGAEVA, ANDREY KHARLAMOV, AND ALEXANDER SHISHKIN. Manifestation of the 2011 Great Tohoku Tsunami on the Coast of the Kuril Islands: A Tsunami with Ice. Pure Appl. Geophys. 170 (2013), 1103–1114.

2. It will be good to indicate in the text the critical values of the bending moment leaded to the ice break. It is not clear for readers that computed values of the bending moment can really induce the iceberg formation. I am not sure that ice breaking is related with exceeding of bending moment the critical value only. Perhaps, the computation of the pressure distribution along the ice will be also useful.

3. Authors took part into account the bottom slope before the ice filed. Its action is evident for wave amplification. Is it a good approximation for real bottom profile near the Sulzberger Ice Shelf?

4. Fig 1. shoaling, not soaling. . .

I recommend a minor revision.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 3057, 2015.