

Interactive comment on “Multi-method observation and analysis of an impulse wave and tsunami caused by glacier calving” by M. P. Lüthi and A. Vieli

Anonymous Referee #4

Received and published: 20 December 2015

The authors present a fairly well-written paper which provides interesting results derived from a diverse data set collected with a Terrestrial Radar Interferometer (TRI), tide gauge, and video. The authors were very fortunate that there was a boat in the area and a calving event during their study period. The paper is worth publishing. However, there are a few suggestions that can be made to possibly improve the manuscript in addition to fixing some minor typographical and grammatical errors.

Some general comments: Considering that the TRI can also measure ice velocity, did the authors observe any velocity changes before and after calving?

It would have also been nice to see a more thorough description of the TRI DEM

C2526

processing. What software did the authors use to process these TRI data? Were the DEM interferograms filtered? Do you have any estimates of the elevation uncertainties in the final DEMs?

Did the authors see any parts of the wave (from 14:07 UTC) during the next minute's (14:08 UTC) TRI scan? If yes, would it be possible to try to get another estimate of wave speed by looking at how far the wave traveled between the two images?

The future danger potential section seems somewhat tangential to the rest of the manuscript, and can probably be summarized in a sentence or two in another section.

The Youtube videos should probably be hosted as backup elsewhere (and the authors will likely need to ask the people that uploaded the videos for permission).

Another minor point is the use of “...” to describe ranges of measurements throughout the manuscript. This seems to be very confusing. Could this be a typesetting error?

Some line comments: 6473 L25: The authors state that the glacier velocity was ~ 14 m/d in 2014. Was this measured with the TRI?

6475 L21: How is the volume uncertainty calculated?

6476 Eqn. 1: Maybe mention what g is, just to be clear.

6477 L5: Agrees with soundings, maybe elaborate on that just a little bit more (i.e., include a range).

6477 Eqn. 2: What is a_c ?

6478 L18-20: Some singular vs plural errors.

6479 L13-16: Maybe reword this a bit (or add the exact period when the glacier had a 50 m cliff). Right now, most of the paper states that the glacier cliff is ~ 200 m, but the sentence reads that the glacier has attained cliffs up to 50 m high. Maybe say that the

C2527

cliffs were usually ~ 50 m, but became higher at some point in time.

6480 Eqn. 5: What is m_s ?

Interactive comment on The Cryosphere Discuss., 9, 6471, 2015.

C2528