A simulation of tsunami propagation with acoustic wave

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External displacement of the seabed causes compressive wave which propagates in the sea. This compressive wave has a stronger relationship with a tsunami because they are caused by the same source, and the compressive wave propagates faster than a tsunami. So we can use this compressive wave instead of seismic wave to estimate arrival time or the height of a tsunami.

In this study, we suggest the method to estimate the propagation of a tsunami. We have confirmed by numerical simulation considering compressibility of water that the compressive wave is caused by the displacement of seabed and that it propagates in the sea faster than a tsunami. The result of numerical simulation also shows the amplitude of the compressive wave is detectable at the observation points somehow far from the epicenter.