# Supporting Information for "Back-projection imaging of a tsunami excitation area with ocean-bottom pressure gauge array data"

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1. Figure S1: Comparison of the back-projection images at $t = 0$ sec and $t = -200$ sec.

## Additional Supporting Information (Files uploaded separately)

1. Movie S1: A GIF animation file of the back-projection result of the 2016 Off-Fukushima earthquake.

2. Dataset S1: A tgz compressed file for the back-projection image of the 2016 Off-Fukushima earthquake.

## Introduction

Figure S1 compares the back-projection images at $t = 0$ (i.e., the earthquake origin time) and $t = -200$ sec. Movie S1 and Dataset S1 are the GIF animation and the data set of the images at 0 – 1600 sec, respectively, as shown in Figure 7 of the main text.

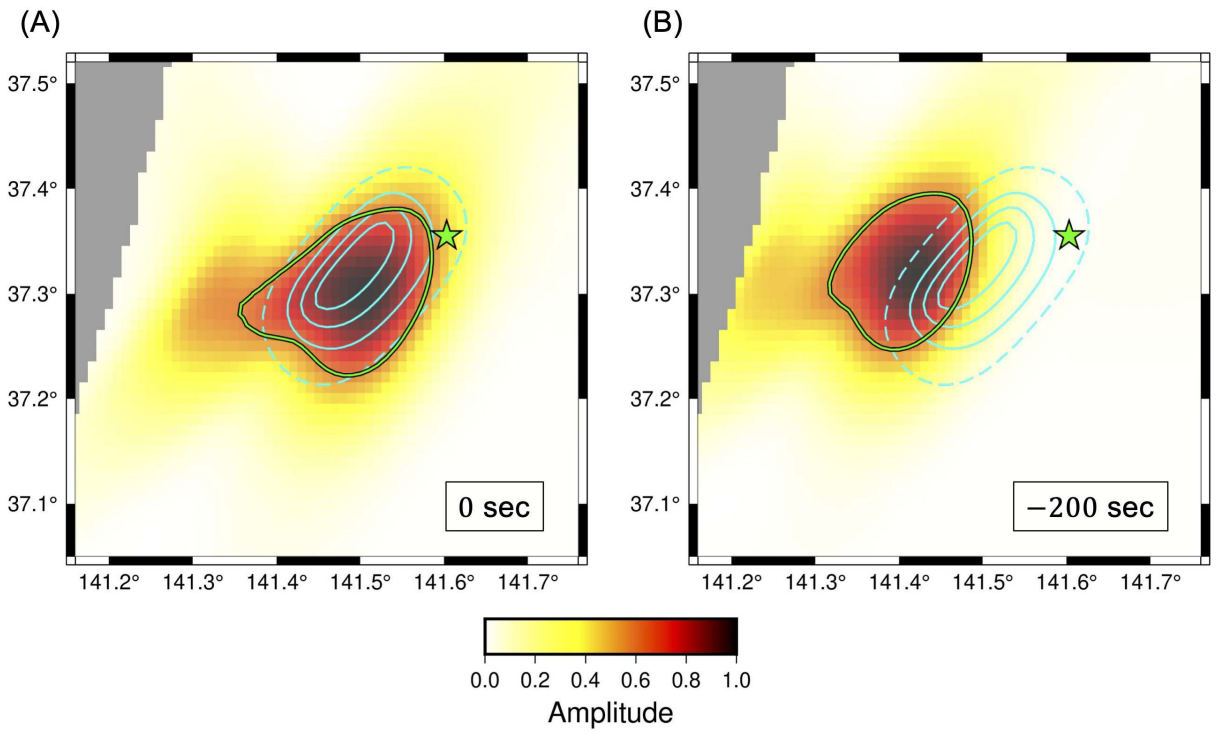


**Figure S1.** The comparison of the back-projection images at (A) $t = 0$ (i.e., the earthquake origin time) and (B) $t = -200$ sec. The green line represents the area with an amplitude larger than 0.6, and the cyan solid contours represent the subsidence for the single uniform fault slip model of Kubota et al. (2021) with the solid to be 0.5 m interval. The cyan dashed line indicates the 0.1 m subsidence. The green star is the epicenter of the 2016 Off-Fukushima earthquake. Note that (A) is the same as Figure 6(C) in the main text.

**Movie S1.**

(A) A GIF animation of the back-projection image, as shown in Figure 7 of the main text, and (B) of the synthetic tsunami height. The synthetic tsunami height was calculated by the JAGURS code (Baba et al., 2016) from the waveform inversion result of Kubota et al. (2021). The contours are the same as in Figure 7 of the main text, that is, the pink and blue contours represent the synthetic tsunamis in positive and negative, and the green lines represent the area with the back-projected amplitudes larger than 0.6, respectively.

**Data Set S1.**

The back-projection images at 0 – 1600 sec as shown in Figure 7 of the main text. Note that $t = 0$ means the origin time of this event and each image is normalized by its maximum value. The first, second, and third columns of each file are longitude, latitude, and amplitude, respectively.

**References**

Baba, T., Ando, K., Matsuoka, D., Hyodo, M., Hori, T., Takahashi, N., ... Saka, R. (2016). Large-scale, high-speed tsunami prediction for the Great Nankai Trough Earthquake on the K computer. *The International Journal of High Performance Computing Applications*, *30*(1), 71–84. doi: 10.1177/1094342015584090

Kubota, T., Kubo, H., Yoshida, K., Chikasada, N. Y., Suzuki, W., Nakamura, T., & Tsushima, H. (2021). Improving the Constraint on the $M_{\mathrm{W}}$ 7.1 2016 OffFukushima Shallow Normal-Faulting Earthquake With the High Azimuthal Coverage Tsunami Data From the S-net Wide and Dense Network: Implication for the Stress Regime in the Tohoku Overriding Plate. *Journal of Geophysical Research: Solid Earth*, *126*(10). doi: 10.1029/2021JB022223