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Supplementary Information for Fourier Neural Operator-Based Surrogate Modeling of Offshore Tsunami Propagation and Its Application to Rapid Tsunami Source Inversion

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Table S1 Lower and upper bounds of the uniform sampling distribution for each fault parameter used to generate the training dataset. Note that fault width was not sampled independently but was set to half of the sampled fault length.

Parameter Name	Lower and Upper Bounds (Uniform Distribution)
x -coordinate	131.2°, 136.2°
y -coordinate	29.5°, 34.5°
Depth	0 km, 50 km
Fault Length	20 km, 200km
Strike	0°, 360°
Dip	0°, 90°
Rake	0°, 360°
Slip Amount	0 m, 10 m

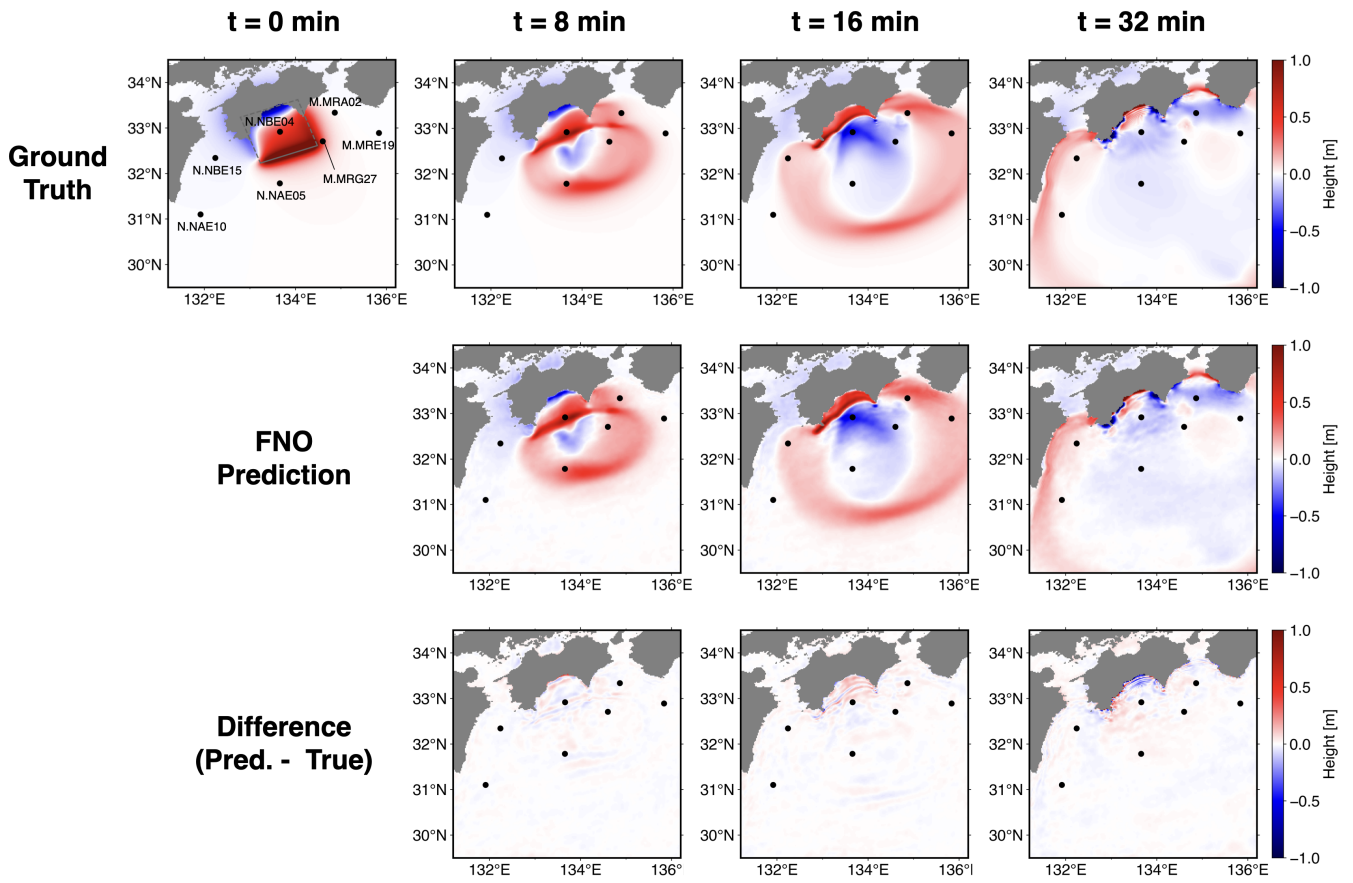


Fig. S1 Similar to Fig. 6, but for the case $k_x^{\max} = k_y^{\max} = 32$.

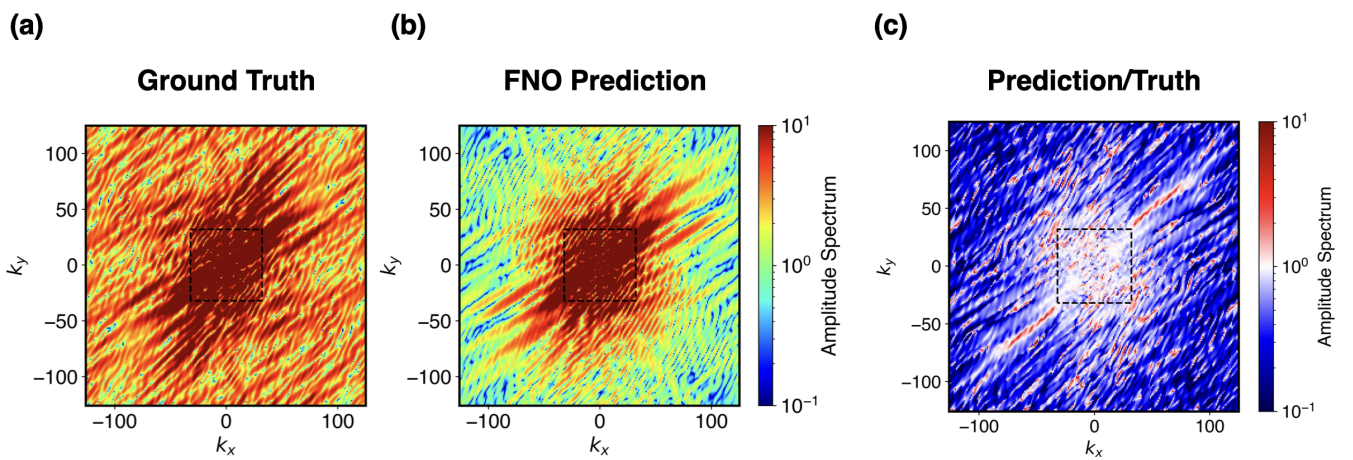


Fig. S2 Similar to Fig. 7, but for the case $k_x^{\max} = k_y^{\max} = 32$.

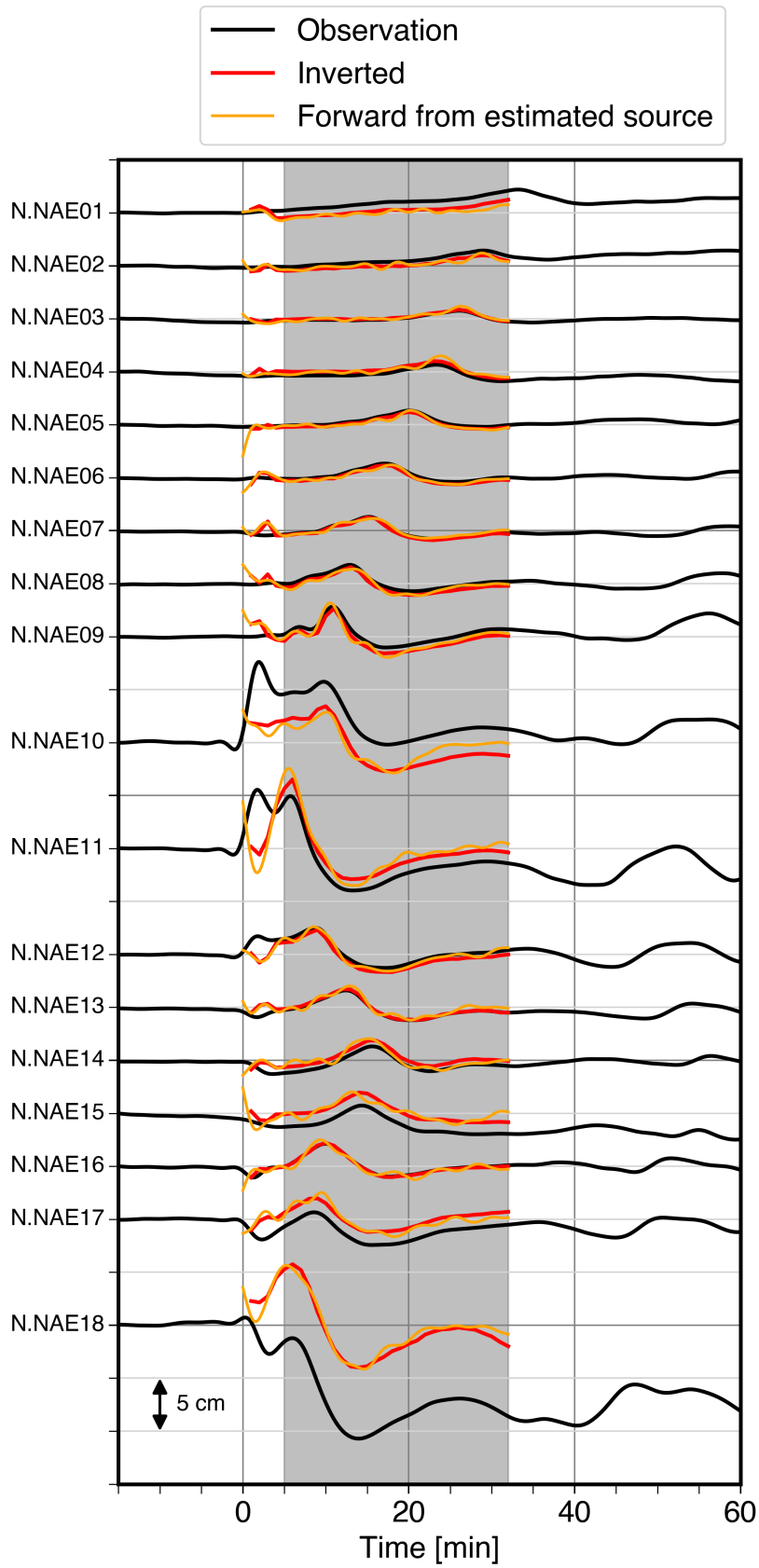


Fig. S3 Comparison of observed waveforms (black line), FNO-predicted waveforms (red line), and JAGURS simulations (orange) based on the initial sea surface height estimated by IHI for the 2024 Hyuga-nada earthquake tsunami. For the JAGURS calculation, the estimated source was upsampled to a 1001×1001 grid before computation. A 200-s low-pass filter was applied to the calculated waveforms.

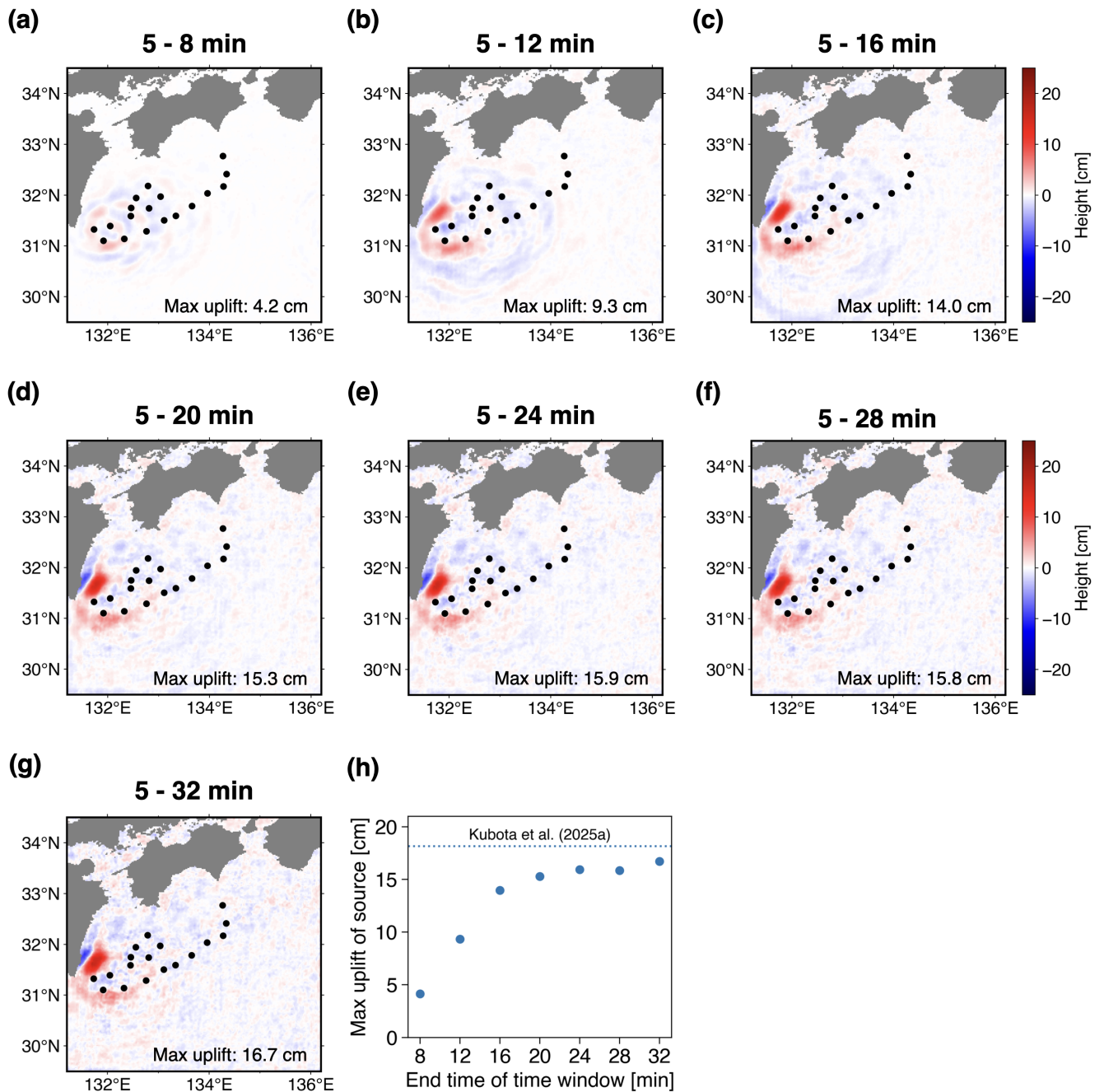


Fig. S4 Dependence of the IHI inversion results on the time window for the 2024 Hyuga-nada earthquake tsunami. (a–g) Estimated initial sea surface height as the inversion time window is progressively extended. (h) Variation in the maximum uplift of each estimated source.

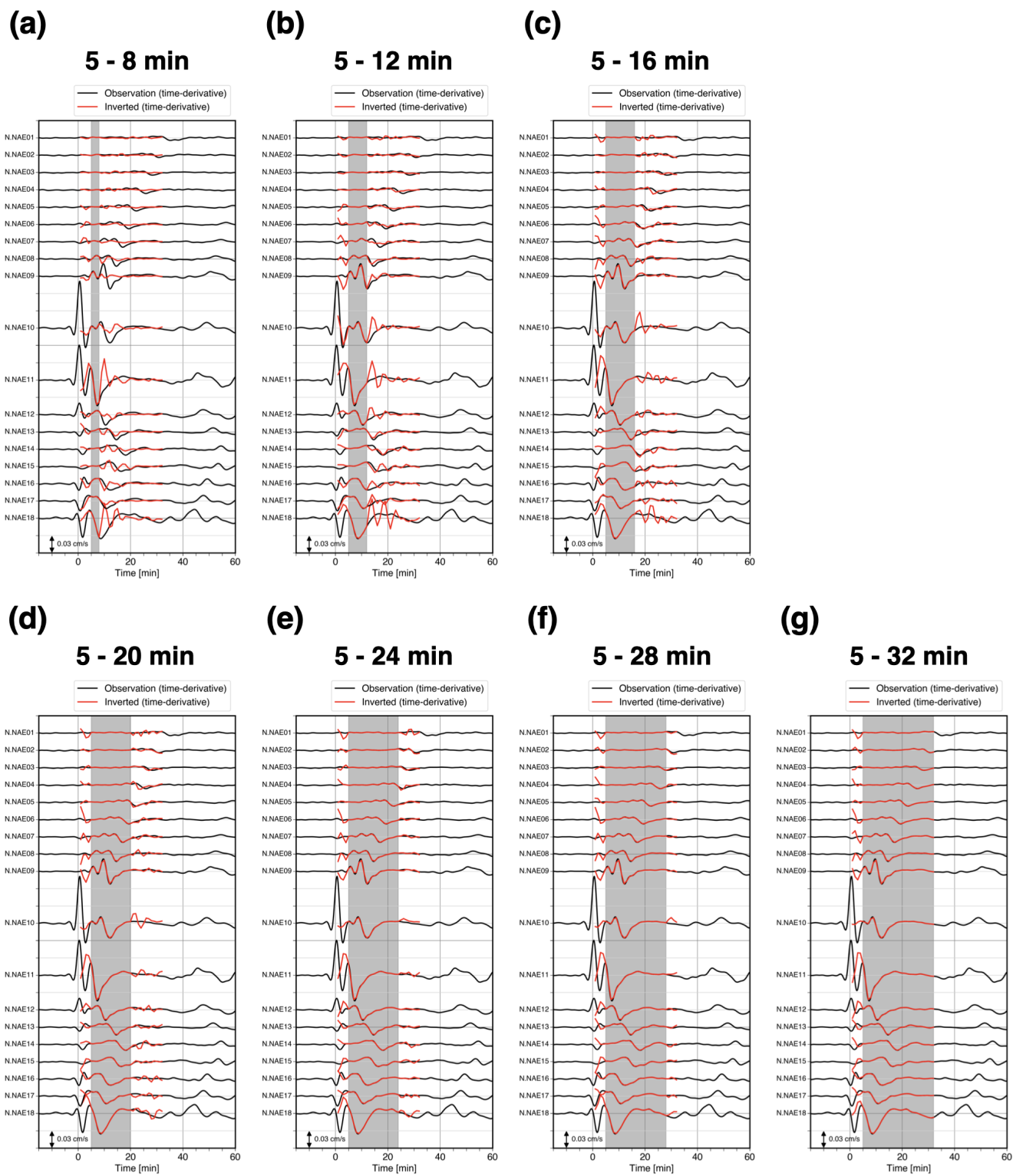


Fig. S5 Comparison of observed and predicted time-differentiated waveforms as the time window for IHI inversion is progressively extended.