

ポスター会場 (2日目) | 一般セッション: S15. 強震動・地震災害

📅 2025年10月21日(火) 17:00 ~ 18:45 📍 P15会場 (502+503)(502+503)

[P15] 強震動・地震災害**[P15-03] Numerical modelling of strong ground motions during the Noto-Hanto earthquake on January 1, 2024, using the spectral element method.**

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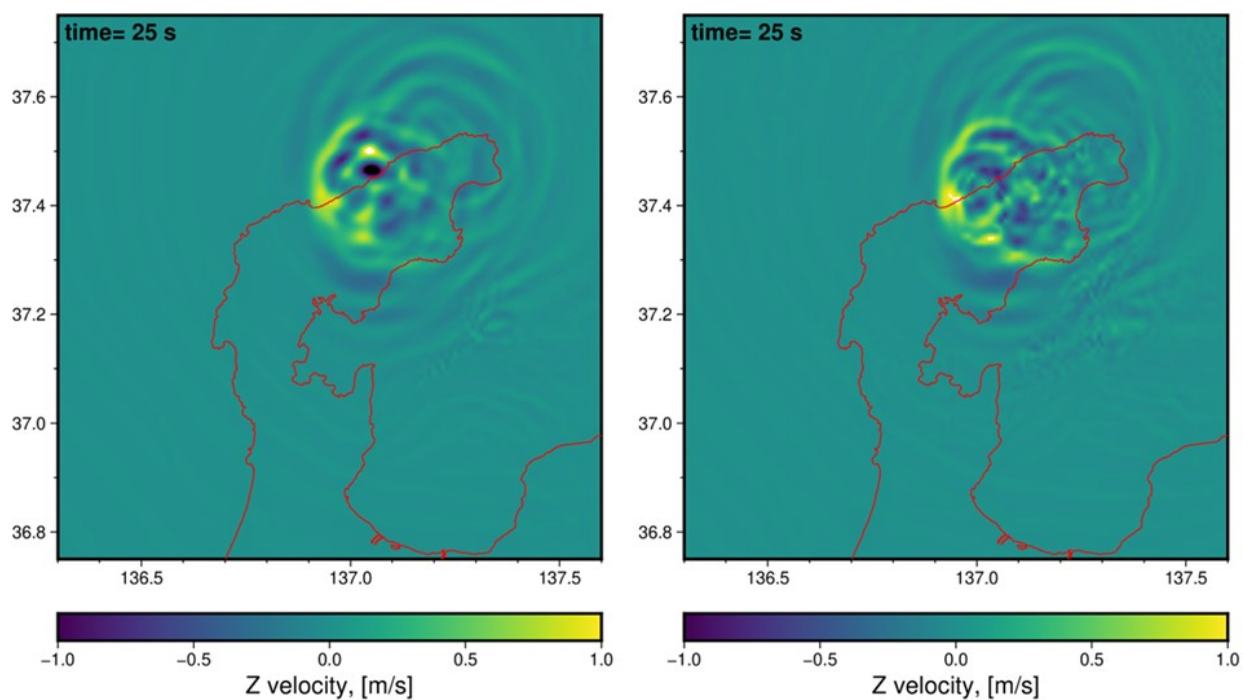
We present the results of numerical modelling of strong ground motions caused by the Noto-Hanto earthquake on 2024/01/01. The modelling was performed using the spectral element method with the SPECFEM3D code [e.g., Komatitsch & Tromp, 2002].

The modelling was performed on a curvilinear grid adjusted to the shape of the sedimentary basin as well as to the topography of the Earth's surface and the bathymetry of the ocean bottom. Minimum resolved period of our simulations was 3 seconds. Ocean loading effect on seismic wave propagation was taken into account under the approximation [Komatitsch & Tromp 2002]. For our simulations we used the Japan Integrated Velocity Structure Model [Koketsu et al., 2012].

The rupture process was described by a kinematic source [Somei et al., SSJ, 2024], which was created using the empirical Green's Functions method (EGF). The kinematic source [Somei et al., SSJ, 2024] contains six strong motion generation areas (SMGA) occupying approximately 22% of the total area of the fault plane. Kinematic simulation for the EGF model requires additional setup for the slip rate functions (SRF). We tested three different SRFs: the traditional "smoothed triangle", the SRF proposed by [Graves & Pitarka, 2004], and the SRF proposed by [Nakamura & Miyatake, 2001]. The simulation results for the three different source-rate functions listed above are compared with each other.

References

- Komatitsch, D., & Tromp, J. (2002). *Geophysical journal international*, 150(1), 303-318.
Koketsu, K., H. Miyake, and H. Suzuki (2012). 15th World Conf. on Earthquake Engineering, Lisbon, Portugal, 24-28 September, Paper Number 1773.
Somei, K., Kurahashi, S., Yoshida, K., Miyakoshi, K. (2024). Source Model of the 2024 Noto Peninsula Earthquake from the Broadband Ground Motion Records. SSJ Fall Meeting, Niigata, Japan.
Graves, R. W., & Pitarka, A. (2004). Proceedings of the 13th World Conference on Earthquake Engineering, paper №1098.
Nakamura, H. & Miyatake, T. (2000). Zisin 53, 1-9.



Vertical velocity field in the calculation domain 25 seconds after the earthquake starts. The calculations were performed on a regular grid (left panel) and a curvilinear grid adjusted to the shape of the sedimentary basin as well as to the topography of the Earth's surface and the bathymetry of the ocean bottom (right panel).