

Changes of gravity and atmospheric pressure observed at Matsushiro immediately after the occurrence of the 2024 Noto Peninsula earthquake

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When the 2024 Noto Peninsula earthquake (M7.6) occurred on January 1, 2024, the superconducting gravimeters installed at the Matsushiro station, Nagano prefecture, recorded a ramp-like gravity change just before the first arrival of P waves. This is similar to the “prompt elasto-gravity change” associated with the earthquake faulting, but it appears to be too large considering the magnitude of the earthquake. If this is a real signal, it may suggest the existence of an unknown mechanism that has not been considered so far.

In addition to the gravity change, the barometer network deployed around Matsushiro clearly recorded signals that are likely to be atmospheric Lamb waves excited by the tsunami. Existence of this phenomenon has already been established, and its observation may contribute to quick estimation of the size of tsunami.

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