

2024年能登半島地震により内灘町で発生した地盤災害

On the geohazards in Uchinada Town triggered by the 2024 Noto Peninsula Earthquake

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During the 2024 Noto Peninsula Earthquake, diverse geohazards were widely observed in Ishikawa, Toyama, and Niigata Prefectures. In particular, Uchinada Town experienced extensive liquefaction and lateral spreading, leading to serious damage to residential areas and infrastructure. Typical damage included blockage of drainage channels by slope failures, large lateral ground displacements affecting houses, and widespread tilting and deformation of major roads.

To clarify the subsurface conditions and mechanisms responsible for these phenomena, we conducted integrated field investigations at the most severely affected sites, including Multichannel Analysis of Surface Waves (MASW), Electrical Resistivity Tomography (ERT), and cone penetration tests. In addition, sand samples collected from liquefied layers were subjected to undrained static and dynamic ring-shear tests.

The MASW results indicate the presence of sand layers with low shear-wave velocities, gently dipping over a wide area. ERT surveys reveal a shallow groundwater table, suggesting highly susceptible conditions for liquefaction. Laboratory test results show that the sampled sands readily liquefy under shaking levels comparable to those of the main shock. Moreover, liquefaction was re-induced in samples that had previously liquefied, implying a strong potential for repeated liquefaction at the same sites. This finding provides a plausible explanation for historical records indicating liquefaction in the same area during a major earthquake approximately 100 years ago.

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