

Ground surface deformation of small mud volcano by repeated measurements of terrestrial laser scanning (Muro, Japan)

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We perform terrestrial laser scanning to detect changes in surface morphology of a mud volcano in Muro, Niigata Prefecture, north-central Japan. The study site underwent significant deformation by the strong earthquakes in 2011, and the surface deformation has continued in the following years. The point cloud datasets at different scan times were registered by minimizing the closest point distance of the point clouds at stable ground features, and centimeter-order deformations in the central domain of the mud volcano were detected. The spatial pattern of the deformation, together with some geophysical measurement data, will be used for analysis of physical mechanics of the mud volcano.

Keywords: mud volcano, TLS, point cloud, DEM