

2011年東北地震に伴う津波荷重変形の GEONET による検出 Detection of tsunami-induced deformation caused by the 2011 Tohoku earthquake using on-land GPS network

三井 雄太^{1*}, 日置 幸介¹
MITSUI, Yuta^{1*}, HEKI, Kosuke¹

¹ 北大理

¹Sci., Hokkaido Univ.

The 2011 Tohoku earthquake on March 11 caused massive tsunami. We first detect a land-deformation signal due to the tsunami using on-land GPS network. We focus on GPS stations along the Sanriku coast, and stack the GPS data at seven coastal stations and seven landward stations respectively. The data show that relative subsidence at the coastal stations to the landward stations had occurred on the order of 1 cm until almost 30 minutes after the Tohoku earthquake. We check whether the subsidence signal corresponds to simulated land deformation based on a tsunami simulation model, and confirm the tsunami hypothesis for the subsidence. We find that a popular elastic model with a stratified velocity structure (Gutenberg-Bullen earth model) for the Green's function leads to underestimation of the subsidence amount about 1/2-1/3. Effect of compliant materials near the surface may be important to estimate tsunami-induced land deformation.

キーワード: 2011年東北地方太平洋沖地震, 津波, 荷重変形, 観測とシミュレーションの比較

Keywords: The 2011 Tohoku earthquake, tsunami, load deformation, comparison between observation and simulation

