

Hydrological effect on gravity at Matsushiro and detection of coseismic gravity change, Part 2

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In gravity observations, when we look at small changes in a time scale of several days, effects of rainfall and associated underground water in a similar time scale pose a difficult problem. We have already reported that we could apply a simple numerical model to this problem successfully and as a result we could detect permanent gravity changes caused by the 2003 Tokachi-oki earthquake. The Matsushiro Seismological Observatory, JMA, is monitoring the drip rate and the level of underground water table inside the hill where gravity observations are performed, as well as the amount of outside rainfall. This means that the percolation process of underground water is monitored at three different stages, namely rainfall as input, the drip rate as an intermediate signal, and finally the level of underground water table. Combining these data, we will develop a theoretical model of water percolation inside the hill to improve our method of rainfall correction for gravity.