

Effect of underground water on superconducting gravimeter observation at Ishigakijima

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Superconducting gravimeter observation at Ishigakijima, Japan was launched in 2012 with the purpose of detecting potential signals associated with slow slip events. To date, we have not been very successful in distinguishing slow slip signals from surface water disturbances, because interactions between the ocean and the underground water make it difficult to model their effects on gravity. In 2015, there were relatively dry periods at Ishigakijima, which were broken by the approach of typhoons. In these events, observed gravity changes were correlated with the sea level, highly likely to indicate its relation with the underground water level. On the other hand, the data from soil moisture sensors at the gravity station showed that the soil water near the surface was independent of the underground water. Based on these observations, we will present results of detailed analysis taking into account the interactions between the ocean, underground water and atmosphere, and their effects on gravity.

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