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In situ measurements of tide gauge response and corrections of tsunami waveforms from the 2009 Suruga bay earthquake

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In situ measurements of tide gauge response to tsunamis were conducted at 5 tide gauge stations on the coast of Suruga bay, where small tsunamis were recorded from the 2009 Suruga bay earthquake (M 6.5). At these stations operated by Geographical Survey Institute and Japan Meteorological Agency, tide gauges are installed in the tide wells that are connected with outer sea by narrow intake pipes. In the measurements, water was poured into the well to measure the outflow response through the intake pipe, or drained from the well to measure the inflow response. The estimated tide gauge response, expressed as recovery times for a 1 m difference, was 5 to 7 min at Tago and about 3 min at Yaizu. At Uchiura and Shimizu-ko, the estimated recovery times are less than 1 min, shorter than the tsunami periods. At Omaezaki, we could not make significant water difference because the tide gauge response was very good to record short period components. The corrected tsunami waveforms from the 2009 Suruga bay earthquake are slightly different from the recorded one at Tago and Yaizu, but they are almost identical at the other three stations.

Keywords: tsunami, tide gauge, response, Suruga bay earthquake