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Gravitational deformation and bedrock groundwater discharge in a hillslope underlain by accretionary sedimentary rocks

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Prediction of location and timing of deep-seated catastrophic landslides requires 1) detection of topographic signals formed by preceding gravitational deformation, 2) understanding of hydro-geological structure constrained by discontinuities in bedrock, and 3) revealing response of deep groundwater to rainfall infiltration. We curried out investigation of topography and geology, and hydrological observation in a high relief dip slope underlain by accretionary sedimentary rocks in Katsuragawa, Shiga Prefecture Japan. The observed hillslope has many scarplets and bedrock springs. Discharge from these springs shows a variety of response to rainfall, implying existence of multi system of groundwater aquifer in the bedrock.

Keywords: deep-seated catastrophic landslides, gravitational deformation, deep bedrock groundwater, bedrock spring, rainfall-runoff processes