

## Development of a new data acquisition system for landslides driven by solar cells

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Recently, rainfall-induced landslides occur frequently. In order to mitigate landslide disasters, understanding of the landslide process and early warning is important. In this study, self-potential (SP) approach has been attempted to develop an early warning system for rainfall-induced landslides. The laboratory experiments of landslides under the controlled artificial precipitation and a sandbox have been performed. Their results show the capability to monitor the subsurface water condition using the self-potential method. However, laboratory experiments have limitations in scale and soil layers. Therefore, it is necessary to verify the obtained results by a field (in-situ) experiment and we selected landslide site in Pelabuhan Ratu, Indonesia as a field experiment site.

However, the data logger system runs down frequently because of electrical power failure in Indonesia. In order to overcome this problem, it is necessary to develop the new data acquisition system avoiding the use of commodity type PC with commercial power source. To achieve this purpose, we marked out solar cells, batteries as the DC power sources, and data acquisition equipment equipped with CPU and memory and built the data acquisition system.

We set up this new system at Chiba University and conducted running test. From the result of running test, the new data acquisition system has been running for 6 months without stopping. And assuming the rainy day, we carried out running test reducing the output voltage of solar panels. In the result, this system operated for about 2 weeks under the assuming rainy condition. From these results, it is hoped that the new data acquisition system can records more stable than the conventional one. The details will be given in our presentation.