



Raspberry Pi in-situ network monitoring system of groundwater flow and temperature integrated with OpenGeoSys

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Raspberry Pi series is a low cost, smaller than credit-card sized computers that various operating systems such as linux and recently even Windows 10 are ported to run on. Thanks to massive production and rapid technology development, the price of various sensors that can be attached to Raspberry Pi has been dropping at an increasing speed. Therefore, the device can be an economic choice as a small portable computer to monitor temporal hydrogeological data in fields. In this study, we present a Raspberry Pi system that measures a flow rate, and temperature of groundwater at sites, stores them into mysql database, and produces interactive figures and tables such as google charts online or bokeh offline for further monitoring and analysis. Since all the data are to be monitored on internet, any computers or mobile devices can be good monitoring tools at convenience. The measured data are further integrated with OpenGeoSys, one of the hydrogeological models that is also ported to the Raspberry Pi series. This leads onsite hydrogeological modeling fed by temporal sensor data to meet various needs.