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Electromagnetic volcano-monitoring of Taal volcano, Philippines, under the SATREPS project

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We launched a five year (2010-2014) project to develop earthquake and volcano monitoring capability for effective disaster mitigation in the Philippines under the SATREPS (Science and Technology Research Partnership for Sustainable Development) program. Although the major objective of the program is to enhance the seismological and deformation monitoring of earthquakes and volcanoes in the Philippines with the aid of broadband seismometers and GPS network, our group are in charge of electromagnetic monitoring of volcanoes. We selected Taal volcano as our target area, which had frequently erupted and killed local people on Volcano Island (the central cone) for the past centuries. In November, 2010, we installed an integrated real time EM observation system with one magneto-telluric station and three highly-sensitive Overhauser proton magnetometers to watch the hydrothermal and magmatic system in the shallower part of the volcano. The data quality is extremely high thanks to no commercial electricity on the island. Furthermore, to clarify the 3-D resistivity structure of the volcano, we have a plan to make a magneto-telluric survey in FY2010-2012. The results will be included in our presentation. Other experimental studies are also planned such as magnetic susceptibility and Curie temperature measurements of the rock samples.

Keywords: Taal volcano, Electromagnetics