

## Heat discharge system through crater lake at Aso volcano, Japan

# Akihiko Terada[1]; Tsuneomi Kagiya[2]; Takeshi Hashimoto[3]; Hisashi Sasaki[4]

[1] AVL, Kyoto Univ.; [2] Graduate School of Science, Kyoto University; [3] Inst. Seismol. Volcanol., Hokkaido Univ.; [4] Kokusai Kogyo Co., Ltd.

A high-resolution Digital Surface Model and a commercial digital camera have enabled precise and continuous monitoring of the crater lake at Aso volcano. Combining the IR thermometry with the system, our simple and intensive observation from July 2006 onwards has provided more accurate measurements of lake volume and temperature, than any previous studies. The heat discharge stayed mostly constant at approximately 220 MW, except for an abrupt increase to 280 MW that coincided with a rapid decrease of the water level in August 2007. Simultaneously, an increase in temperature at a shallow depth was suggested by other observations. As was seen in this example, the crater lake responds to even slight changes of volcanic fluid supply, which can be well quantified by our method. Thus, a crater lake can be monitored more precisely than subaerial fumaroles whose energy estimation is often accompanied by large uncertainties. Our monitoring technique of a crater lake provides us information on a subsurface hydrothermal system beneath it, for which any in situ measurements are practically impossible.