

Continuous soil diffuse CO₂ flux measurement at Aso volcano, Japan

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Carbon dioxide is a major volcanic gas component which gives important information for monitoring volcanic activities. This gas is not only emitted as volcanic plumes from craters and fumarolic areas but also widely emitted through soil surface of volcanoes as invisible emission called "diffuse degassing". There are several advantages for monitoring the soil diffuse degassing, because the soil gas usually do not have corrosive acidic gases and its temperature are generally low. Thus, it is much easier to carry out continuous monitoring compared to that for high temperature fumarolic gases. Many precursory changes have been reported related to soil diffuse flux of CO₂ prior to the volcanic eruptions or to significant changes of volcanic activities. We set up a CO₂ flux station (West systems, Italy) for continuous monitoring of soil CO₂ diffuse degassing at Aso volcano, Japan, in early Jan. 2016. The station was set about 1 km south-west from the rim of a currently active crater of Mt. Nakadake near Hondo observatory of Kyoto University. The station is powered by solar panel system and measures the soil CO₂ flux every hour by the accumulation chamber method together with various meteorological parameters such as air temperature, air pressure, humidity, precipitation, wind speed and etc. At least until mid Feb. 2016, the CO₂ flux has been low ranging below 0.28 moles/m²/day. In the presentation we will introduce our measurement at Aso volcano, discuss influence of various meteorological elements to the diffuse CO₂ flux, and compare the flux with the volcanic activities of Aso volcano.

Keywords: Aso volcano, volcanic gas, CO₂ diffuse degassing