

# Gas Compositions of Fumarolic Samples from Taal and Kanloan Volcano in Philippines

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## Abstract

Taal volcanic is located on the southwestern of Luzon Island in the Philippines. It is hazardous because of its high level of activity and proximity to Manila. Kanlaon volcano is located in Negros Island, central Philippines. It is also an active volcano. They are related to subduction system of Manila trench and Negros trench, respectively. Fumarolic gas and bubbling gas of hot spring samples were collected in February 2007 from these two volcanoes to compare their compositions with others in the world.

Preliminary results of gas analysis for these samples show a similar composition of low-temperature fumaroles in the world, i.e., temperature  $<200^{\circ}\text{C}$ , and dominant with  $\text{CO}_2$  and  $\text{H}_2\text{S}/\text{SO}_2 > 1$ .  $\text{H}_2\text{O}$  is the major species of gas samples from both volcanoes; and  $\text{CO}_2$  is the dominant component after de-watering. Minor components include  $\text{H}_2\text{S}$ ,  $\text{N}_2$  and  $\text{H}_2$ . Kanlaon samples show similar compositions with those from Taal volcano, however, exhibit more  $\text{CH}_4$  than  $\text{H}_2$ . The gas composition of most of these samples falls in the range of affinity with convergent plate gases based on the plot of  $\text{N}_2$ -He-Ar. The high  $^3\text{He}/^4\text{He}$  ratios of those samples indicate a mantle-derived degassing source in origin.

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