Review of volcanic-gas composition data in the JMA field survey reports, the1960s –2001

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This presentation describes the intermediate results of volcanic gases in old documents reported by the Japan Meteorological Agency (JMA) in the 20th century.
JMA started the scheduled volcanic-gas field observation at active volcanoes in the 1960s. It had been run three times per year until 2001. This observation was to detect three kinds of volcanic gases, carbon dioxide (CO_2), sulfur dioxide (SO_2) and hydrogen sulfide (H_2S). Their concentrations were measured using with indicator tubes on site by the local meteorological observatory or the weather station. This measured result was send up to the district meteorological observatory and the headquarters of JMA as the internal report. However they were not compiled systematically, remained analogue documents. We are compiling gas data scanned these documents.
Composition ratios of volcanic gases have availability of estimating volcanic activity (e.g., Hirabayashi, 1993). However, observers have not given so attention to the composition ratios in the observation. In this survey, we reviewed time series of the composition ratio of several volcanoes.
In Mt. Kusatsushirane, it is known that the $H_2S/(SO_2+H_2S)$ ratio increased and decreased rapidly just before the 1976 phreatic eruption (Ossaka, 1980). In addition to this, we dug up that the H_2S/CO_2 ratios at four fumaroles increased and decreased rapidly just before the 1982 - 1983 phreatic eruption in our survey.
Though the sampling and analysis on site at the day would not have satisfactory accuracy, precursory phenomena based on volcanic gas observation such as this encourage promoting the volcanic gas research for monitoring. We continue this survey to dig up other precursor changes of the gas component ratio.
In the presentation, we describe results of other volcanoes as well as Mt. Kusatsushirane.

Keywords: volcanic gas, composition ratio, Mt. Kusatsushirane, Japan Meteorological Agency