Sulfur isotope geochemistry of groundwater collected from Aso, Kumamoto Prefecture

Chika Kawatani[1]; Junichiro Ishibashi[1]; Nobutaka Shimada[1]; Hitoshi Chiba[2]

[1] Earth and Planetary Sci., Kyushu Univ; [2] ISEI, Okayama Univ.

Akamizu is known as Fe-rich groundwater found in the northwestern part of Aso-dani, Kumamoto Prefecture. We studied chemical composition and sulfur isotope composition of groundwaters in this area to discuss distribution and origin of Akamizu. Based on their chemical composition of major elements, groundwaters were classified into 4 group; TypeI is Ca-SO4 type found in western side of Nishitake river, TypeII is Ca-HCO3 type found in northern side of Kurokawa which is outskirt of Aso caldera rim, TypeIII is rather SO4-rich found in southwestern part of TypeI area, TypeIV is rather HCO3-rich found in eastern side of Nishitake river. Typical Akamizu is classified as Type I.

Among groundwaters of TypeI and TypeIV, good correlation between Fe and SO4 concentration, suggesting common origin of these species. Considering previous studies reporting significant amount of pyrites were included in sedimentary layer distributes in the northwestern part of Aso-dani, oxdation of pyrites during groundwater circulation well explains origin of Akamizu. Sulfur isotopic composition of sulfate showed rather heavier values (delta34S = +9.7 - 16 per mill), may be considered as influence by microbiological activity during pyrite accumulation.