

Chemical and isotopic compositional diversity of thermal water on Bandai, Adataro volcanoes

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A model of hydrothermal system beneath Bandai volcano and Adataro volcano were proposed by chemical and strontium isotopic studies. Bandai volcano is an active volcano situated on the east of Aizu basin in Fukushima prefecture, northeastern Japan. It has four main bodies; Obandai, Kushigamine, Akahaniyama, and a part of Kobandai. The volcanic activity has extended since middle Pleistocene and phreatic eruptions are main events lately. In 1888 a most part of Kobandai was lost in exploding with massive debris avalanche. Adataro volcano is an active volcanic chain situated on the east of Mt. Bandai. Five main bodies (Kimenzan, Minowasan, Tetsusan, Adatarayama, Osyozan) range north and south. The volcanic edifice was formed by repeated eruptions of calc-alkaline magmas. Based on the anion compositions and pH values, thermal water samples from Bandai volcano and Adataro volcano were divided into five types (acid-SO₄, neutral-Cl, neutral-Cl-SO₄, neutral-HCO₃, neutral-Cl-HCO₃) and four types (acid-SO₄, acid-Cl-SO₄, neutral-SO₄, neutral-HCO₃), respectively. Strontium isotopic study showed most of the fluids reacted with Quaternary volcanic rocks or the basement rocks beneath volcanic rocks. Although strontium isotope can independently provide some constraints on the origin of the fluids, multi-element isotopic study will enable to establish more detailed origin of the fluids.