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Hydrochemistry and genesis of volcanic hot springs around the Haruna volcano

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Major chemical and isotopic (d18O, dD and d34S) compositions in hot spring waters from thirteen wells and four spring waters around the Haruna volcano, Gunma Prefecture were analyzed to discuss water-rock interaction to make chemical properties of deep fluid. The chemical compositions of the waters described in terms of relative concentrations of ions allow us to distinguish chloride-type (Na-Cl, Ca-Cl) and bicarbonate-type (Na-HCO3, Ca-HCO3) waters. The major chemical compositions of the waters are controlled by the following mechanisms: (1) formation of kaolinite by weathering of plagioclase (2) dissolutions of calcite, gypsum and anhydrite.Fluid- mineral interaction calculation results show that most deep fluids in the field are supersaturated with kaolinite, and undersaturated with calcite and anhydrite.

Keywords: Haruna volcano, Hydrochemistry, genesis, hot springs, water-rock interaction