

AHW023-18

Room:102

Time:May 25 15:00-15:15

Characteristics of water quality at Shiojiri Area, southern part of Matsumoto basin

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Matsumoto basin is located to slightly northward from the center of the Nagano Prefecture and surrounded the mountains (Hida-mountains and Tsukuma mountains). The complex alluvial fan is formed by the Metoba and Susuki river in the east part of the Matsumoto basin. The Matsumoto basin is from 500 to 700 m above sea level. There is some aquifer in the Matsumoto basin and large quantity of groundwater is stored in the basin. The people who live in Matsumoto city have been used the groundwater water or spring water for long period, and now that the water supply facilities is completed people use the groundwater or spring water for drinking water. In this presentation, the objective of this study is make clear the characteristics of water quality and stable isotopes in groundwater and spring water at Shiojiri City which is located to southern part of Matsumoto basin.

The water samples of groundwater and spring water have been samples at 14 sites. The EC value is from 30 to 413 $\mu\text{S}/\text{cm}$. The EC value is relatively low in the mountainous area and relatively high around the Shiojiri station (urban area). And the spring water of the limestone area also shows the high EC value. The pH is from 5.69 to 8.10. The pH is low in the urban area and high in the limestone area. The groundwater or spring water temperature is from 11 to 12 degree, this water temperature is almost corresponding to the annual air temperature in this area.

The water quality compositions of groundwater and spring water show mainly Ca-HCO_3 type. However, Na-HCO_3 type is also shown at deep groundwater samples, it is assumed that the residence time of this groundwater is relatively long. The NO_3 concentration is relatively high in the urban area, so it is considered that the water quality is affected by artificial influence. The stable isotope of oxygen ranges from -11.7 per mill to -11.4 per mill and hydrogen ranges from -84 per mill to -80 per mill. The isotope values in groundwater of Shiojiri area are almost corresponding to those of Matsumoto urban area (yabusaki, 2010). In the future, the investigation and sampling of groundwater and spring water at Shiojiri area will be continued, and finally the groundwater flow system of Matsumoto basin will be clarified.

Keywords: Matsumoto basin, Shiojiri area, water quality, stable isotope