

SCG084-P13

Room: Convention Hall

Time: May 25 17:15-18:45

Groundwater dating in Mizunami study site in central Japan

Yuichi Tomioka^{1*}, Takuma Hasegawa¹, Kotaro Nakata¹, Kazuyuki Goto¹, Kouki Kashiwaya¹

¹CRIEPI

Groundwater dating by C-14 and He-4 were conducted in the Mizunami study site in central Japan. The aquifer in the Mizunami study site is consisted in granitic rock fissures covered by sedimentary rock.

C-14 groundwater age of dissolved carbonate was estimated by the geochemical modeling code NETPATH. The results indicated that geochemical reactions of dissolution and precipitation of carbonate mineral affected on the C-14 concentration of dissolved carbonate in the sedimentary rock. C-14 concentration was decreased at some extent by precipitation of calcite in the granitic rock. The revising results of C-14 dating of dissolved carbonate become similar age of He-4 dating results.

Organic C-14 in the fulvic acid is good agreement with He-4 dating results without revising calculations like dissolved carbonate. If the He-4 dating results was indicated correct age, the fulvic acid age should be a good candidate of alternative dating method of C-14 groundwater dating. However, the collection of fulvic acid needs great effort for very low concentration of organic matter in the granitic rock groundwater.

Acknowledgements

This research entitled 'Research and development on groundwater dating technique' was carried out under contracts awarded by the Japanese Ministry of Economy, Trade and Industry (METI) to CRIEPI. In-situ investigations in Mizunami study site have been conducted as joint research with Japan Atomic Energy Agency. We thank Prof. T.Miyajima (Saga Univ.) and Assoc. Prof. H. Kodama (Saga Univ.) for sampling and enrichment of dissolved organic carbon.

Keywords: Groundwater dating, Carbon-14, Carbon-13, Dissolved organic carbon, Dissolved Helium