

## Fluid formation mechanism of deep chloride hot spring waters from the central Kanto Plain, Central Japan

\*Yoichi Muramatsu<sup>1</sup>

1.Tokyo University of Science

Chemical and stable isotopic ( $\delta^{18}\text{O}$ ,  $\delta\text{D}$ ) compositions of the fourteen non-volcanic chloride hot spring waters in the Central Kanto Plain, Central Japan, were analyzed to clarify the diagenetic evolutions of pore water in the Kazusa and Annaka-Awa Groups. The chloride spring waters originate through mixing of fossil sea waters with local meteoric water. The fossil sea waters with lower contents of  $\text{Mg}^{2+}$  and  $\text{SO}_4^{2-}$  and higher contents of  $\text{Ca}^{2+}$  and  $\text{Na}^+$  than those of the present sea water, are consists of two kinds of different  $\delta^{18}\text{O}$  value. B and  $\text{K}^+$  contents in the water from the Annaka-Awa Groups are higher and lower than those of the Kazusa Group, respectively. These chemical and  $\delta^{18}\text{O}$  compositions can be reasonably explained by the following diagenetic processes; Sulphate reduction process, calcite cementation, reaction of volcanic material to form smectite, ion exchange of smectite, and smectite-illite transformation. The oxygen isotope negative shift of the fossil sea water reserved in Kazusa Group reflects pervasive reaction of volcanic material to form smectite. Meanwhile, the oxygen isotope has positive shift of the fossil sea water reserved in the Annaka and Awa Groups, resulting from smectite-illite transformation.

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