

Geochemical features and origins of hot spring waters from deep wells at a coastal plane in the forearc region of Kyushu Island

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The studied Miyazaki-Nichinan area is the most vast coastal plain located in the forearc region of the Kyushu Island, Japan, and there are many hot spring wells drilled to Tertiary sedimentary bed rocks mainly composed of mud and sand stones classified into the Miyazaki group and the Shimanto complex. We collected water and gas samples for isotope measurements and chemical analyses from most deep wells available in this area. From data analyses, it was shown that a group of the sampled hot spring waters is not paleo-seawater originated from pore water in marine sediments but is derived from dehydrated interlayer water in smectite originated from smectite-illite conversion. In this presentation, we report the isotopic and chemical features of the sampled waters and gases and the results of geochemical examinations on the sources of hydrothermal fluids at a depth in the studied area.

Viewed internationally, hot spring waters having the similar geochemical features exist in the West Coast and Alaska of United States of America, and so on (Davisson et al.,1994;Motyka et al.,1989;Dia et al.,1999), however it fell short of petrologically explaining the origin of the waters such as this study. Recently, it has begun to be aware that metamorphic water (dehydrated fluid from subducted oceanic plate) might become to be a source fluid of hot spring water (e.g.,Amita et al.,2003;Kazahaya et al.,2008). This study proposes that diagenic water originated in diagenesis of sedimentary rock will also be a source fluid of hot spring water. After this, we would like to collect more isotopic and chemical data on the forth source fluid of hot spring water.