

Development of "Geofluid Map" in the Naruko district, NE Japan

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We recently address the development of the "Geofluid Map" that represents fluid distribution in the crust of Japan arc. In this presentation, we present the method of the development of the map about Naruko district, NE Japan.

Presumption of rock type from seismic tomography

First, we selected possible rock types by review of geologic maps and crustal sections deduced from studies of mantle xenolith (e.g., Takahashi, 1978). Measurement data of elastic wave velocity of these rock types in high temperature and pressure (e.g., Kern et al., 2002; Wang et al., 2005) were plotted on the V_p -poisson's ratio diagram. In NE Japan, rock types on the diagram can be divide into 3 groups mainly by the difference of V_p (C1: Granitic rocks, C2: Gabbroic rocks & Amphibolites, M1: Peridotites & Pyroxenites). By plotting recent data of seismic tomography in Naruko district (Okada et al., inpress) on the diagram, we deduced the distribution of rock types in crustal section of Naruko district.

Estimation of fluid distribution in crust

There are some studies about estimation of fluid content and distribution in crust (Ueshima, 2005; Mishina, 2006). Effective electrical conductivities of natural rocks depend on kind of rocks, content of fluid, connection of pore fluid and salt concentration in pore fluid. In consideration of the distribution of rock types deduced above, we estimated fluid content and distribution in crustal section of Naruko district using the recent data of electrical conductivity obtained by magnetotelluric observation in this area (Ogawa, personal communication).