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SIT40-14 会場:416 時間:5 月 1 日 15:00-15:15

東北日本のヘリウム同位体比分布；地質構造との比較
Distribution of the helium isotope ratios in northeast Japan in terms of geological setting

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The distribution of slab fluid defined by high Li/Cl ratios conforms the area of ”hot fingers”(Tamura et al., 2002) in Northeast Japan (Kazahaya et al., submitted). Conversely, the high $^3He/^4He$ ratios distribute wider and do not match with slab-derived fluids indicating that some of the mantle-derived helium would not be transported with magmas or slab fluids but directly upwells as mantle-derived fluid. The $^3He/^4He$ ratios vary along the volcanic front showing an areal contrast; such as a low-ratio-area close to volcanoes are observed in the central part of Tohoku. We propose here an extended helium upwell model which can explain the spatial variation of $^3He/^4He$ ratios with the following concept; 1) The most important constraint for mantle helium upwelling is the crustal structure divided by tectonic lines; Hatagawa Tectonic Line (HTL) divides the Kitakami and Abukuma belts. Ryoke belt and north part of Abukuma belt is torn apart by number of faulting events. The rest of parts, Abukuma granitic province and Kitakami province form very large stable blocks which might prohibit helium to upwell from mantle. 2) A view from U-Th content in the crust is im-portant to understand the flat distribution of mantle helium in back-arc region; Low U-Th crust in the back-arc with less crustal ^4He production is favora-ble to explain the flat and high $^3He/^4He$ signature, such as oceanic crust might have.Tanakura Tectonic Line (TTL) divides the thick crust of con-tinental margin (sedimentary prism and granite) with Ryoke belt.

キーワード: ヘリウム同位体比, 東北日本, 空間分布, 地質構造
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