

## U, Th concentration database of basement rocks of Japanese islands with accurate location coordinates for geoneutrino modeling

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KamLAND is an anti-neutrino detector at the Kamioka Observatory. It can detect an antineutrino emitted in the decay of  $^{232}\text{Th}$  and  $^{238}\text{U}$  (geoneutrino). With the aim of determining the amount of radioactive elements contained in the earth's core and mantle with high precision, using the world's highest precision earth neutrino data obtained with KamLAND, Takeuchi et al. (in prep) conducted three dimensional lithological modeling of the crust of the Japan arc using the seismic velocity structure data. Based on the lithological map, Takeuchi et al. (in prep) constructed the 3D U-Th distribution map in the Japan arc crust. Using the 3D U-Th distribution map, Takeuchi et al. (in prep) evaluated the flux of the crustal origin geo-neutrino at Kamioka. Takeuchi et al. (in prep) showed that information regarding the spatial correlation of U-Th concentration of a rock type of interest is necessary to obtain the flux of the crustal origin geoneutrino with the higher precision. Geochemical data with precise sample locality is necessary to obtain information on such spatial correlation. For the purpose, we construct a new rock composition dataset of the basement rocks of the Japan arc crust with accurate location information using the database "DODAI" presented by Haraguchi et al. (JPGU-AGU2017). It consists of 1618 data points with geochemical data including U-Th concentration, accurate location coordinates, geological information and sample description.

We present U-Th concentrations and its geographical systematics of various rocks in the database, as well as its variations among various rock types, rocks suites.

Using the dataset, we can analyze spatial correlations of rock compositions between various rock suites or rock types in various spatial length from  $\sim 10\text{km}$  to the whole Japanese arc. Using the information on spatial correlations, we can obtain quantitative geoneutrino Probability density function (pdf) from Japan arc crust. Concentrations of multi-elements are included in this dataset, although dataset presented in Takeuchi et al. (in prep) consists only  $\text{SiO}_2$ , U and Th concentration. Using  $\text{K}_2\text{O}$  concentration in this dataset, we can calculate the surface heat flux map based on the 3D compositional map. The estimated surface heat flux can be used to evaluate model accuracy.

Keywords: Geoneutrino, Geochemical data, Arc crust, Basement rock