

Analytical method of noble gases using cuttings to understand distribution and origin of noble gases in accretionary prism in precise -

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In this study, we measured noble gases from cuttings crushed in a vacuum, and obtained a data set of noble gases free from air contamination. As a result, the contribution rate of air-saturated interstitial water could be determined, and the helium isotope ratio released from the slab of the Philippine Sea Plate could be determined accurately. In addition, mantle-derived helium laterally would be supplied from wedge mantle around 1503 mbsf. Based on the lithology and hydrocarbons distribution, the sandstone layer distributed between 1000 and 1500 mbsf could play a role as flow path of deep-rooted gas from great depths. To obtain more accurate in-situ information than gas analysis using mud gas, we propose gas analysis using cuttings as an international standard for exploration of noble gas distribution during drilling.

Keywords: cuttings, noble gas, analytical method, accretionary prism