

## Identification of glacial meteoric water using noble gas temperature, in the northern part of Japan

TAKUMA HASEGAWA<sup>1</sup>, KOTARO NAKATA<sup>1</sup>, YUICHI TOMIOKA<sup>1</sup>, TOMOKO OHTA<sup>1,2</sup>, SHUNICHI OKAMOTO<sup>1</sup>, ATSUNAO MARUI<sup>3</sup>, ISAO MACHIDA<sup>3</sup>, REO IKAWA<sup>3</sup>, MASAHIKO ONO<sup>3</sup> AND SHINJI MATSUMOTO<sup>3</sup>

<sup>1</sup>Central Research Institute of Electric Power Industry (CRIEPI)

<sup>2</sup>Nagaoka University of Technology

<sup>3</sup>The National Institute of Advanced Industrial Science and Technology

Presenting Author: [t-hase@criepi.denken.or.jp](mailto:t-hase@criepi.denken.or.jp)

For radioactive waste disposal, it is important to evaluate the stability of groundwater flow. Thus, it is important to identify glacial meteoric water (GMW), which could be older than 20,000 years. Noble gas temperature (NGT) will help to identify GMW [1]. Therefore, we applied this method to groundwater sampled from the Sarobetsu Formation at a depth of 90~400 m in a deep borehole at coastal area, Hamasato, Horonobe, Hokkaido [2].

He, Ne, Ar, Kr, and Xe of 20 samples were measured, and NGTs were estimated [3]. As a result, NGTs at the depth of 90~300 m were about -0.4~1.2 °C. On the other hand, NGTs at the depth of 300-350 m were about 7.0~8.3 °C, which is a little bit higher than the annual average temperature of 6.6 °C at meteorological observatory in Wakkanai. The difference of NGTs are about 8-9 °C, which roughly coincide with modern analogue method[4]. Therefore, the groundwater at the depth of 90-300 m could be GMW, and the groundwater at the depth of 300-350 m could be recharged after the glacial period. These results coincided with water isotopes ( $\delta D$  and  $\delta^{18}O$ ) and  $^{14}C$  age.

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