

## Seasonal fluctuation of Tritium concentration in precipitation at Akita, north east Japan

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Akita Univ. has joined the Global Network of Isotopes in Precipitation (GNIP), IAEA since 2016. We also provided a batch of precipitation samples which was collected in the Oga peninsula between Jan. 2015 and Jan. 2017. Tritium concentration,  $d^{18}O$ , and  $dD$  of these samples have been analyzed by IAEA. We will report the characteristics of time series and seasonal fluctuations of Tritium concentration in both sampling sites in this presentation.

The sampling locations of both sites are as follows; Akita Univ.: the rooftop of a three-storied building in Akita Univ. (ground EL: 9 m), the Oga peninsula: Hachiboudai hill which is located in the northwestern part of the peninsula (EL: 184 m). The sampling periods of both sites are two weeks (Akita Univ.) and one month (Oga peninsula), respectively.

Tritium concentration in the precipitation largely varied (from 1.6 to 9.1 TU) between Jan. 2015 and Sep. 2018. The time series of Tritium concentration showed an obvious seasonal fluctuation called "Spring peak" and increased between February and June. However, the Tritium concentration showed large fluctuations even in the Spring peak season. Accordingly, we estimated the origins of air mass and water vapor of the precipitation events which were the major events in each sampling period based on hourly satellite images, hourly precipitation, and daily weather maps (after Japan Meteorological Agency). As a result, the origins of air mass and water vapor were considered to affect the Tritium concentrations. For example, in the winter season, although the air mass that contains a high concentration of Tritium comes from the northeastern part of the Eurasian continent to Japan, the huge amount of water vapors with very low Tritium concentration is supplied to the air mass from the Sea of Japan. Thus, the precipitation, mostly snow, at Akita contains low Tritium concentration. On the other hand, in the spring season, the air mass still comes from the Eurasian continent, but the volume of water vapor that is supplied from the Sea of Japan largely decreases. Therefore, the precipitation at Akita contains relatively high Tritium concentration.

Keywords: precipitation, Tritium, Sea of Japan, spring peak