

## The impact of wildfires on radioesium concentration in the particulate matters in small forest area, Satoyama in Namie town, Fukusihama

Hayate Yoshioka<sup>1</sup>, \*Hiroshi Okochi<sup>1</sup>, Gai Cho<sup>1</sup>, Naoya Katsumi<sup>2</sup>, Kazuhiko Ninomiya<sup>3</sup>, Kazuyuki Kita<sup>4</sup>, Yasuhito Igarashi<sup>5</sup>

1. Waseda University,, 2. Ishikawa Prefectural University, 3. Osaka University, 4. Ibaraki University, 5. Meteorological Research Institute

Radioactive substances were released into the atmosphere from the Fukushima Daiichi nuclear accident due to the Great East Japan Earthquake, which occurred on March 11, 2011. Among these, radioactive cesium has a long half-life, so environmental and health effects have been concerned yet. Fukushima prefecture accounts for 70% of the forest, most of the radioactive cesium is still retained in the forest, and the resuspension mechanism of radioactive cesium from the forest area is unknown. In this study, we used levoglucosan and n-alkane (n = 18 - 36) as a biomarker of forest fire and a biomarker of plant wax, in order to elucidate the resuspension mechanism of radiocesium from the forest canopy, respectively.

Sampling was performed by using high volume air samplers at Namie High School, which is located about 30 km northwest of Fukushima Daiichi Nuclear Power Plant and analyzed for measuring biomarkers and radiocesium in the particulate matter. In 2016, forest fires occurred in Date City (30 km northwest of the sampling point) on March 30, and in Minami Soma city (about 20 km northeast from the sampling point) on April 3. When air mass arrived from Date City and Minami Soma City during the period from 8th to 12th April, the concentration of radiocesium and two biomarkers such as levoglucosan and n-alkane increased together. On the other hand, both radioactive cesium and n-alkane concentrations increased, but levoglucosan concentrations did not increase in some cases (April 28, 2016). The molecular weight distribution at the time of high concentration of n-alkane indicated that there are two patterns, namely physical wear of plant wax (only odd carbons; n = 27, 29, 31 increase) and mixing of physical wear of plant wax and fossil fuel burning (Increase of odd carbons; n = 27, 29, 31 along with even carbons).

In this presentation, we also discuss the forest fire occurred in 2017.

Keywords: radiocesium, biomarker, levoglucosan, Satoyama, resuspension