[EJ] Evening Poster | M (Multidisciplinary and Interdisciplinary) | M-AG Applied Geosciences

[M-AG33]Dynamics of radionuclides emitted from Fukuchima Dai-ichi Nuclear Power Plant in the environment

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Sun. May 20, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe) The Great East Japan Earthquake caused the severe accident in TEPCO Fukushima dai-ichi nuclear power plant (FDNPP), leading to emission of huge amount of radionuclides to the environment. They have been transported and diffused by atmospheric motion, depositing them to soil and vegetation. Deposited radionuclides are dynamically shifted in the earth environment; atmosphere, soil, inland water, ocean, and ecosystem. To understand this dynamic shift in the environment and for the long-term prediction of the disaster by the radionuclides, investigation and discussion based on not only the earth sciences including ecology but also on the radiochemistry and other related sciences.

In this session, various efforts to understand the dynamic behavior of radionuclides emitted from FDNPP accident in the earth system as well as to predict their influences on the environment. It is expected that this session will offer a good opportunity to discuss radionuclides in the earth environment from wide aspect and to exchange information in various research fields.

[MAG33-P08]The impact of wildfires on radioesium concentration in the particulate matters in small forest area, Satoyama in Namie town, Fukusihama

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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 performedt 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 radiocesiumm 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.