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

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

convener: Kazuyuki Kita (Faculty of Science, Ibaraki University), Yuichi Onda (Center for Research on Isotopes and Environmental Dynamics, University of Tsukuba), SHINOHARA ATSUSHI (大阪大学, 共同), Daisuke Tsumune (Central Research Institute of Electric Power Industry)

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-P11] Contribution of atmospheric Cs-137 concentration fluctuation and bioaerosol in Tsukuba, Ibaraki, 2013

*Naho Hayashi¹, Kazuyuki Kita¹, Yasuhito Igarashi², Kouji Adachi², Toru Kimura³ (1. Ibaraki University, 2. Meteorological Research Institute, 3. ATOX Co., Ltd)

Keywords: Cs-137, bioaerosol

Some of the radioactive materials released into the atmosphere by the Fukushima Daiichi Nuclear Power Plant accident in 2011 also flew to the northern part of the Kanto and deposited. At the Meteorological Research Institute in Tsukuba, Ibaraki, a small amount of radioactive material is detected from the collected atmospheric aerosol, a few years after the nuclear accident. Immediately after the nuclear accident, radioactive material was transported by direct transport from Fukushima, but in 2013 when the influence of direct transportation decreased, it is considered that Cs-137 once deposited around Tsukuba was scattered again.

In Namie Town, Fukushima, it is known that aerosol of biogenic origin was scattered in the summer, and from the observation of the scanning electron microscope (SEM) and the optical microscope, we found that the aerosol of this biological origin is fungi and spores like mushrooms and molds. Moreover, when this sample analyze DNA, many of them are basidiomycetes and ascomycetes. So it is considered that these spores are supplying Cs - 137 to the atmosphere, and it has been suggested that the bioaerosol contributes greatly to the re-scattering of radioactive materials.

Atmospheric aerosol in Tsukuba was thought to have scattered many carbonaceous aerosols such as black carbon. SEM and optical microscope analysis of air samples which radioactive materials are detected in trace amounts collected in Tsukuba in 2013, however, it has large amount of bioaerosol. So we consider whether scattering of Cs-137 concentrate is due to bioaerosol.