

---

 Oral | Symbol M (Multidisciplinary and Interdisciplinary) | M-AG Applied Geosciences

## [M-AG38\_2PM2] 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), Teruyuki Nakajima (Atmosphere and Ocean Research Institute), Yasuhito Igarashi (Atmospheric Environment and Applied Meteorology Research Department, Meteorological Research Institute), Jun Matsumoto (Department of Geography, Tokyo Metropolitan University), Masatoshi Yamada (Institute of Radiation Emergency Medicine, Hiroshima University), Chisato Takenaka (Graduate School of Bioagricultural Sciences, Nagoya University), Masayoshi Yamamoto (Low Level Radioactivity Laboratory, Kanazawa University), Jota Kanda (Tokyo University of Marine Science and Technology), Atsushi Shinohara (Osaka University), Chair: Motoyoshi Ikeda (Hokkaido University)

Fri. May 2, 2014 4:15 PM - 5:00 PM 501 (5F)

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.

---

4:45 PM - 5:00 PM

## [MAG38-P02\_PG] Deposition and Migration of Radioactive Cs in the Matsukawa Ura and Feeder Rivers, Fukushima, Japan (Preliminary report)

3-min talk in an oral session

\*Shota KAMBAYASHI<sup>1</sup>, Jing ZHANG<sup>2</sup>, Hisashi NARITA<sup>3</sup>, Seiichiro SHIBANUMA<sup>4</sup>, SOMA-FUTABA FISHERIES COOPERATION, Members<sup>5</sup> (1. Graduate School of Science and Engineering for Education, University of Toyama, 2. Graduate School of Science and Engineering for Research, University of Toyama, 3. School of Marine Science and Technology, Tokai University, 4. Cbec, 5. Soma-Futaba Fisheries Cooperation Matsukawa Ura Branch)

Keywords: Radioactive Cs, Matsukawa Ura, Brackish water area

Radionuclides were released into the environment by the associated accident at the Fukushima Daiichi Nuclear Power Plant (FDNPP). Radioactive Cs that are released from FDNPP and is deposited on the land will migrate to the ocean finally through the surface flow. In this study, we were intended to determine the actual transport of radioactive material in the system of river - estuary - ocean as a model area the feeder rivers and Matsukawa Ura located in Soma City, Fukushima Prefecture. Sediment sampling were continuously obtained from Matsukawa Ura and feeder rivers (Uda River, Koizumi River, Ume River and Nikkeshi River) from September 2013. The radioactivity of the Gamma ray nuclide was measured using a

Ge semiconductor detector. Radioactive Cs activity in the Ume River and Nikkeshi River, which are located on the south side were higher than that in the Koizumi River and Uda River, located on the north side, because that reduced rainfall led to the increases in radioactive Cs concentration, except for the Nikkeshi River effected by heavy rain. Thus, it is thought there is a strong correlation between precipitation and radioactive Cs inventory of Matsukawa Ura, and the river flow in brackish area is dominant by the increasing precipitation which led to the increasing of flow rate, result in the river bed sediment inflowing to Matsukawa Ura. So it suggests that radioactive Cs activity has decreased because of increasing precipitation. In the Nikkeshi River, radioactive Cs activity was increased and sediment was changed to fine grain size at the same time after heavy rain as compared with before. This is considered that fine particles have been transported due to salt water intrusion during returning from overflow to the calm water after the heavy rain event. Transport situation of radioactive material in the river - estuary - ocean system revealed that physical and chemical process contributes significantly influence on it such as water flow and dynamics of fine sediment.