International Session (Oral) | Symbol A (Atmospheric, Ocean, and Environmental Sciences) | A-CG Complex & General

[A-CG05_30AM1]Continental-Oceanic Mutual Interaction: Global-scale Material Circulation through River Runoff

Convener:*Yosuke Yamashiki(Global Water Resources Assessment Laboratory - Yamashiki Lab. Graduate School of Advanced Integrated Studies in Human Survivability Kyoto University), Swadhin Behera(Climate Variation Predictability and Applicability Research Program Research Institute for Global Change/JAMSTEC, 3173-25 Showa-machi, Yokohama 236-0001), Yukio Masumoto(Japan Agency for Marine-Earth Science and Technology), Yasumasa Miyazawa(Japan Agency for Marine-Earth Science and Technology), Toshio Yamagata(Japan Agency for Marine-Earth Science and Technology), Kaoru Takara(Disaster Prevention Research Institute, Kyoto University), Chair:Yukio Masumoto(Japan Agency for Marine-Earth Science and Technology), Swadhin Behera(Climate Variation Predictability and Applicability Research Program Research Institute for Global Change/JAMSTEC, 3173-25 Showa-machi, Yokohama 236-0001), Toshio Yamagata(Japan Agency for Marine-Earth Science and Technology)

Wed. Apr 30, 2014 9:00 AM - 10:45 AM 211 (2F)

The main purpose of this session is to promote discussion on mutual interaction between Continental zone and Oceanic zone. The global-scale material circulation induced by River runoff through oceanic general circulation as major topic on Continental-Oceanic Interaction, where the ENSO / IOD influence into continental climate as major topics on Oceanic-Continental Interaction. Numerical simulation and field observation of radionuclide transport from continental zone into ocean and its potential impact is also important topics of this session.

10:35 AM - 10:45 AM

[ACG05-P02_PG]modelling of radiocesium movement in catchment area of abukuma river, japan

3-min talk in an oral session

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Keywords:model, influx, radiocesium, Abukuma River

The great earthquake on March of 2011 followed by tsunami caused Fukushima Dai-ichi reactor meltdown which led to explosion and emission of radioactive substances into environment. As a result, Abukuma River, one of the most important rivers in Japan and its catchment area, received up to 2.25 x 10^6 Bq/m^2 of radiocesium. Previous study found that 80-90% of radiocesium influx to Abukuma River was in particulate form and it was estimated that 10 TBq of the radionuclide was released into the end point of the river, coastal sea of Sendai Bay. A lot of models of radionuclides movement had been developed, however just few models that account solid wash off process in catchment area . This study tried to simulate the influx of radiocesium into Abukuma River from its catchment area by modifying MOIRA model with addition on solid transport which was calculated with SWAT model. Deposition of the radiocesium was used as an input of the model. Then after, fixation process into surface ground, liquid wash-off by surface run off, and solid wash off by erosion are the mechanisms which govern the dynamic of the radiocesium in this model. The result at the model shows an agreement compared to the observed data. With R^2 value of 0.8 showed that the model could explain seasonal variability of observed data. However, as several uncertainties were observed such as quantification of storm effect and decontamination activities, further study to optimize and improve the result of the model is deemed

necessary