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-P04_PG]The relationship between monthly and yearly trend of Ammonia and SS loading at Rhine River and land use change

3-min talk in an oral session

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Keywords:Water Quality, loading, land use, Rhine River

Rhine River is the international river, which flows through several countries, so it is important to know and maintain the water quality. To estimate the gross loading to the marine environment is necessary for assessment of the current status of the coastal zone, especially for the water quality of Bays and Estuary zone. In this study, we estimate Ammonia SS loading at Rhine River by using GEMS/Water (Global Environment Monitoring System/ Water) Dataset and GRDC (Global Runoff Data Centre) Dataset. The procedure of this research is three steps. First, we have used the set of discharge data obtained from GRDC to be used for the loading estimation based on the observed data. Second, the locations of GEMS/Water and GRDC station have been compared to identify appropriate station to set the calculation loading. Finally, we have multiplied concentration and discharge to get the loading.The characteristics land use of Rhine River basin has been analyzed using the Global Land Cover Characterization dataset prepared by USGS.For land use change of Rhine River basin has been analyzed by using landsat5 and landsat7 images. The concentration and loading results show seven things :(1) From December to February, Ammonia concentration was higher than other months. (2) From January to

march, Ammonia loading was higher than other months. (3) Ammonia concentration was gradually decreasing except through1983 to 1987. (4) Ammonia loading was decreasing and the number suddenly dropped at 1989 (5) SS concentration was stable through 1979 to 1994 except 1983, 1984 and 1995. (6) From December to February SS loading was higher than other months. (7) SS loading was gradually decreasing and the number suddenly dropped at 1989. The Rhine river watershed is mainly forest and grassland by analyzing land use from USGS data. This land use affects water quality