
 [JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-CG Complex & General

[A-CG42]Coastal Ecosystems - 1. Water Cycle and Land-Ocean Interactions

convener:Ryo Sugimoto(Faculty of Marine Biosciences, Fukui Prefectural University), Jun Shoji(Hiroshima University), Makoto Yamada(龍谷大学経済学部, 共同), Masahiko Fujii(Faculty of Environmental Earth Science)

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Substances from land which are brought by river and/or submarine groundwater discharge are important for the process of biological production in coastal areas. This session focuses on land-ocean interactions through water cycle. The aim of this session is to create interdisciplinary discussions on the research of connectivity of ecosystems, water cycles in terrestrial and coastal areas, fishery resources and biodiversity. Comprehensive discussion on the mechanisms that promote productivity and biodiversity in coastal ecosystems will be made from the viewpoint of land-ocean interactions. Presentations on water-material cycle in terrestrial and coastal areas, fishery resources, biodiversity and connectivity of the ecosystems are encouraged.

A companion session proposed as "Coastal Ecosystems - 2. Coral reefs, seagrass meadows, and mangroves" focuses on benthic communities in shallow-water ecosystems such as coral reefs, seagrass meadows and mangroves and is dedicated to promote researches on comprehensive assessment and monitoring of ecosystem functions and development of effective means for conservation and restoration. Main focuses of these two sessions are different. However, there are much of information that covers both sessions. Scientists who work on the related field will be able to obtain information and share them with other scientists if they attend to both of these sessions.

[ACG42-P06]Effects of the sea bed conditions on the spatial expansion of the heat derived from submarine groundwater discharge

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Submarine groundwater discharge (SGD) originating from terrestrial groundwater carries various substances with water as a carrier from the land to the sea. It is pointed out that the submarine groundwater discharge(SGD) originating from terrestrial groundwater supplies not only various substances with water as a carrier from the land to the sea but also supplies thermal energy from the land to the sea area. Generally, it is said that the form of outflow differs depending on the state of the seabed. For example, under sea bed conditions like rocky, SGD often spurt out. On the other hand, under sea bed conditions such as covered with sediments, SGD often seeps out. Finally, since the SGD flows into the sea, in the long term, regardless of the sea bed conditions, the substances contained in the SGD flow into the sea. However, depending on the flow rate, the thermal energy derived from the SGD may be lost before it flows into the sea. In other words, there is a possibility that the sea bed conditions which strongly influences the influx velocity of the SGD can strongly influence the spatial spread of the heat derived from the SGD at the coastal area. In this study, in order to examine how the spatial spread of the heat derived from the SGD differs depending on the sea bed conditions, the temperature distribution of the sea bed and surrounding seawater was investigated in three areas (Wakasa area, Obama city,

Fukui Pref.; Hiji-machi, Oita Pref.; Yuza-machi, Yamagata Pref.) with different sea bed conditions. The state of the sea bed is covered with sediments in the Wakasa area, Yuza-machi is sedimented thinly on the rocky area, and Hiji-machi is a sediment-free rocky place.

The observation results are as follows. In the Wakasa area, the influence of heat from the SGD on the temperature of the sea bed and sea water was not observed at all. In Yuza-machi, although it is a narrow spatial range, the influence of heat from the SGD on the temperature of the sea bed and sea water around the SGD discharge point was observed. In Hiji-machi, the influence of temperature was strongly observed only at the SGD discharge point on the seabed, but there was no spatial spread of influence. On the other hand, as for the temperature of the sea water, there was a spatial spread of the influence of the heat derived from the SGD. In this way, it became clear that the spatial extent of the influence of the heat derived from the SGD greatly varies depending on the state of the sea bed. In the presentation, we will discuss in detail the reasons for these differences.