[JJ] Evening Poster | A (Atmospheric and Hydrospheric Sciences) | A-HW Hydrology & Water Environment

[A-HW26]Water Environment and Geology in Urban Areas

convener:Takeshi Hayashi(Faculty of Education and Human Studies, Akita University), Kei Nishida(Interdisciplinary Centre for River Basin Environment, Interdisciplinary Graduate School, University of Yamanashi), Hiroaki SUZUKI(日本工営株式会社　中央研究所, 共同)
Wed. May 23, 2018 5:15 PM - 6:30 PM Poster Hall (International Exhibition Hall7, Makuhari Messe)
The scope of this session is to create an interdisciplinary forum on the most recent advances in water environment and environmental geology research in urban areas. Various kinds of studies concerning environmental issues on water and geology in urban areas (e.g. water balance, water cycle, water resource development and management, inundations, hydrogeology, pollution and remediation, geohazard, basic law on the water cycle) are welcome from academia, industry, and government as well as wider geographic diversity.

[AHW26-P06]Distribution and chemical composition of gas seepage on the Boso Peninsula, Chiba

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Keywords:gas seepage, natural gas

The Boso Peninsula, south to east Chiba, is the largest field of natural gas dissolved in formation water in Japan with methane concentration of >99%. The gas seepage related to the subsurface gas accumulation have often been observed on land of the central part of Kujukuri plain to Otaki area and have been used as fuel by local residents, methane has been continuously released from the underground to atmosphere in this area. However, the detailed distribution, seep rate/volume etc. are not well known, in addition, the potential effect on the global warming or carbon cycle model has not been discussed. In this research, we mapped the seep location together with geological setting and collected gas samples to reveal the source, migration, and seep process of these gas by analyzing chemical and isotope composition. The gas seepage is usually located near the boundary between low permeable alluvial mudstone and sandy formations of the Kazusa Group, and is likely constricted by the change of permeability. The seep gas is composed of >75% methane and trace amounts of carbon dioxide, ethane, nitrogen derived from the atmosphere, methane is microbially produced in anaerobic environment. The δ^{13}C value of methane is stable at around -70‰, indicating methane is generated mainly by carbon dioxide reduction and by acetate fermentation with some contribution of methane oxidation near the surface. These gases are mainly derived from deep gas dissolved in formation water and delivered through the permeable layers near the formation boundary to the surface.