Title aaaaaa bbbbbbbb ccccccccc, Boso Peninsula, Central Japan

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Abstract

The Kanto sedimentary basin occurred in Green Tuff movement at the Miocene and developed in Island Arc movement since the Pliocene. In this sedimentary basin, It consists of Miura Group, Kazusa Group, Shimosa Group, Kanto loam formation, Alluvial formation and Artificial formations in ascending order. Methane is included in Miura Group, deposited from the Miocene to the early Pleistocene, and Kazusa Group, deposited from the late Pliocene to the early Pleistocene. These Groups accumulated mainly in deep sea.

Large quantity of high purity methane is included particularly in groundwater and strata of Kazusa Group. Kazusa Group distributes in subsurface in central part of Boso Peninsula. The natural gas which spouts up into the air, is used for house fuel since late Edo era in Otaki Town, eastern Kazusa region.

Keyword: Uwagasu, Natural Gas, Kujyukuri Plain

日本語要旨：

日本語表題

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　九十九里地域では，南部において古くから上ガスの存在が知られていた．そのため，建物はガスが室内に溜まって爆発が起こらないような工夫がなされたり，家庭燃料として使われてもきた．近年,九十九里地区に広く分布する上総層群中の水溶性天然ガスの採取が広範囲に行われるよう・・・・・・・そして，このような，分布の違いは，沖積層の谷の分布に関係し，この谷が分布しないところでは，細い帯状に分布し，この谷が分布すると推定されるところでは，谷の両翼に沿って上ガスが密集して分布していることが推定された．特に，この谷の凹地部には厚い粘土層が分布しており，これが上総層群から噴出する天然ガスの帽岩の役目をなしており，この粘土層が途切れる谷の縁からガスが吹き上がっているものと推定される．

Introduction

The Kanto sedimentary basin occurred in Green Tuff movement at the Miocene and developed in Island Arc movement since the Pliocene. In this sedimentary basin, It consists of Miura Group, Kazusa Group, Shimosa Group, Kanto loam formation, Alluvial formation and Artificial formations in ascending order. Methane is included in Miura Group, deposited from the Miocene to the early Pleistocene, and Kazusa Group, deposited from the late Pliocene to the early Pleistocene. These Groups accumulated mainly in deep sea.（Fig.1，Fig.2）(Nirei, 1988)．

Fig.1, Fig.2

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Large headline

Middle headline

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* (Fig.6). \*\*\*\*\*\*\* \*\*\*\*\*\*\*\*\*\*\*\*\* \*\*\*\*\*\* \*\*\*\*\*\*\*\*\* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*.

Fig.6

Small headline： abcd efgh ijklmn \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* (Fig.8, 9, 11).

Fig.8, Fig.9, Fig.11

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・・・

Conclusion

1. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*.

2. \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*.

Acknowledgement：abc defg \*\*\*\*\* \*\*\*\*\*\*\*\*\*\* \*\*\*\*\*\*\*\* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*. Dr.\*\* \*\*\*\*\*\*\*\* \*\*\*\*\*\*\* \*\*\*\*\*\* \*\*\*\*\*\*\* \*\*\*\*\*\*\* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*.

Reference

Decker, P.L., 1986, Style and mechanics of liquefaction-related deformation, lower absaroka Volcanic Supergroup (Eocene), Wyoming. SPECIAL PAPER 240, Geological Society of America, 71p.

Daus, B., Hempel, M., Wennrich, R., and Weiss, H., 2010, Concentrations and speciation of arsenic in groundwater polluted by warfare agents. Environmental Pollution, Elsevier ，158, 3439-3444．

Fowles, J., Weinstein, P. and Tsrng, C., 2005, Environmental Medicine. in Selinus O. ed. Essentials of Medical Geology, Elsevier Academic Press, 541-562.

Paim, P.S.G., 1995, Alluvial palaeogeography of the Guaritas depositional sequence of southern Brazil. Special Publication Number 22 of the International Association of Sedimentologists, Blackwell Science Ltd, 3-16.

Schuchert, C., and Lomgwell, C.B., 1932, Paleozoic deformations of the Hudson Valley region, New York. American Journal of Science, vol.23, 305-326.

Voss, F.I. and Duaaan, S.M., 2014, Editors: Online re-publication of legacy articles on the oasion of Hydrogeology Journal 27th anniversary, 1993-2014, Hydrology Journal. doi: 10.1007/s10040-012-0928-1

Hosse: 法末，Nagaoka: 長岡，Oguni: 小国，Ojiya: 小千谷

Caption

**Fig.1** Location of survey area and Geological map of southern Kanto Area. （added to Nirei et al.(1987)）.