

下部-中部更新統境界 GSSP 候補地へのご案内 Invitation to the Tabuchi section, central Japan: A candidate GSSP for the Lower-Middle Pleistocene Subseries/Subepoch

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The Tabuchi section is a continuous marine sedimentary succession exposed in the Boso peninsula and is a Lower - Middle Pleistocene boundary GSSP candidate.

From the geological advantages and the easy access to the outcrops, the Tabuchi section seems to be the most suitable for the Lower - Middle Pleistocene boundary GSSP.

Geological characteristics

- *Tabuchi section is only candidate representing the Pacific realm.
- *Thick L - M Pleistocene sedimentary succession (>3000 m) (2.4 ? 0.5 Ma) .
- *Well exposed along the Yoro River with high sed. rates (ca. 2 m/kyr) & no visible breaks.
- *Well preserved calcareous nannofossils, planktonic foraminifera, diatoms.
- *Standard section for Japanese Pleistocene tephrostratigraphy (>50 ash beds).
- *Well established d18O isotope stratigraphy: Kokumoto Fm. corresponds to MIS 20?18.
- *M?B boundary is located ca. 1 m above a distinctive, widespread tephra bed (Byk-E).
- *High-precision U-Pb zircon age of the Byk-E.
Consistent with the latest astrochronology of marine sediments and Antarctic ice core.
- *A basis for immediate comparisons between, magnetostratigraphy, biostratigraphy, O isotope stratigraphy, absolute ages (40Ar/39Ar & U-Pb), and astrochronology.
- *Taking the M?B boundary as the primary guide to the L?M Pleistocene boundary, the Byk-E bed would serve as an appropriate level for the GSSP.

Access

There are well developed public transportations. You can reach to Tabuchi section within 2 hours from Tokyo and 3 hours from both international airports. There are big car parks. There are lodge and toilet.

The access to the Tabuchi section is very easy and convenient by car, bus and train with very small walk.

キーワード: 田淵セクション, 下部・中部更新統

Keywords: Tabuchi section, Lower and Middle Pleistocene

中下部更新統, 中上部上総層群の詳細テフラカタログ Detailed Tephra Catalog of Lower to Middle Part of the Kazusa Group, Lower to Middle Pleistocene, Central Japan

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房総半島に分布する上総層群は, 日本を代表する中下部更新統の一つである。上総層群は深海から浅海までの堆積環境で形成された連続的な堆積物で構成されており, 天然ガスとヨウ素に富む鹹水のリザーバとしても知られている。上総層群では古くから数多くのテフラ層の認定に基づき層序区分が行われてきた。著者らは, 中上部上総層群が分布する茂原地域における地質図幅調査の一環として, 従来のテフラ層序を再確認し, テフラカタログを作成した。上総層群大田代層中部の O7 から笠森層の Ks4 までの間で確認されたテフラは 139 層である。これらの中には中下部更新統境界を指示する Byk-E テフラも含まれる。テフラの同定には, 火山ガラス, 斜方輝石及び角閃石の屈折率とともに, 一部のテフラについては火山ガラスの主成分化学組成を用いた。房総半島北西部の銚子地域では同時代の地層について酸素同位体比曲線が求められており, テフラの対比により各テフラの MIS 年代を求めることができる。

キーワード: 中?下部更新統, 中?上部上総層群, テフラカタログ, 茂原地域, 房総半島, 千葉県

Keywords: Lower to Middle Pleistocene, Upper to Middle Part of the Kazusa Group, Tephra Catalog, Mobara District, Boso Peninsular, Chiba Prefecture

房総半島国本層における珪藻化石層序 Detailed stratigraphy of diatom assemblages from a core of the Kokumoto Formation collected in the Boso Peninsula, Japan

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Diatom analyses were conducted on a core of the Kazusa Group in the Boso Peninsula, central Japan, to reveal stratigraphic variations of diatom assemblages across the Matsuyama-Brunhes magnetic polarity boundary (MBB). The core is 54 m long collected near the Chiba section along the Yoro River, a candidate for the GSSP of the Early-Middle Pleistocene boundary. Stratigraphic variations of diatom assemblages in response to the glacial eustatic sea-level changes shown by the planktonic marine oxygen isotope record from *Globorotalia inflata*. Diatom assemblages in the lowermost part of the core are dominated by extinct species of *Actinocyclus ingens*, often observed in reworked deposits in the Kazusa Group. This part is correlated with the earliest stage of marine isotope stage (MIS) 19, and is dominated by reworked deposits that were accumulated during a low sea-level period. The extinct species suddenly decrease at a horizon of about 5 m below the Byakubi tephra (ByK) layer, during a gradual sea-level rise. Turbidity currents may have still affected the sedimentation at the site, although the lithology shows no turbidite layer above a horizon of about 8.5 m below the ByK. Above a level of 5 m below the ByK, marine littoral diatoms such as *Paralia sulcata* and *Cyclotella striata* become dominant, and have a peak at about 3 m below the ByK, coinciding with the lightest oxygen isotope value correlated with MIS 19.3. Above the peak abundance, the proportion of *P. sulcata* gradually decreases, and *A. ingens* re-increases at about 3m above the ByK, with a maximum at about 7m above the ByK, where marine isotope data show a maximum value. The re-increase of extinct diatom species suggests a sea-level drop. Thus the maximum of *A. ingens* at about 7 m above the ByK may be correlated with the MIS 19.2 sea-level lowstand. Therefore, the MBB that lies at 1 m above the ByK occurs between MIS 19.3 and 19.2. *A. ingens* can be used as a proxy of reworked deposits in the Kazusa Group.

キーワード: 国本層, パラリア サルカータ, アクチノキクルス インゲンス, MIS19, 松山 - ブリュンヌ境界, GSSP
Keywords: Kokumoto Formation, *Paralia sulcata*, *Actinocyclus ingens*, MIS19, Matsuyama-Brunhes boundary, GSSP

東京湾不整合と万田野寒冷期 The Tokyo Bay Unconformity and the Mandano Ice Age

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関東フォーク・ベースンの前期更新統は深海堆積相をしめすが、次第に浅海化する。東京湾不整合によって浸食される。この不整合下位に上総層群が分布する。

この不整合は、東京湾岸の地下で発見されており、International Stratigraphic Guide に沿って模式地も東京湾岸の地下にある。そして、一連の不整合現象は東京湾側で顕著であるが、北東方向の長南町周辺からは整合となる。

地上では、海退期のデルタ堆積相の万田野層直下に認められる。万田野層の中部泥層は、上下に2分され、下半部は淡水域の環境を示し、*Picea maximowiczii*, *Tsuga diversifolia*, *Fagus crenata*, などの植物遺体が発見されている。つまり、当時の植生は、寒冷系の植物からなる植物群で構成されていたことが示唆される。また、大阪層群で知られる満池谷寒冷期と同一寒冷期の可能性も高い。関東フォーク・ベースン=関東深海盆が、始めて陸化した現象でもある。

中部泥層の上半部は汽水域となり、さらに上位の砂礫相には海生貝化石が多産し笠森層の浅海層へとかわる。笠森層の堆積時には、関東平野は関東大陸棚と呼ぶにふさわしい堆積環境にあったようである。

キーワード: 東京湾不整合, 万田野寒冷期, 上総層群, 下総層群, 関東大陸棚

Keywords: Tokyo Bay Unconformity, Mandano Ice Age, Kazusa Group, Shimohusa Group, Kanto Continental Shelf

福島県南相馬市塚原海岸に分布する中期-後期更新世境界にあたる塚原層の古地磁気
および古環境学的研究
Paleomagnetic and paleoenvironmental studies for the U-M Pleistocene boundary Tuk-
abara Formation

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The Tukabara formation distributed along the Tukabara coast, Minamisoma City, Fukushima Prefecture, which is considered to have been deposited at early part of the last interglacial period, since the sediments suggested a transgression that leads to the marine isotope stage 5e. The base of the Tukabara formation consists of a basal gravel layer and the Tagashira tephra bed which is detected at the MIS 5/6 boundary in the Images MD01-2421 core taken from off Kashima, Pacific side of the central Japan. The main part of the formation consists of a 7 meter thick varved siltstone including enough diatom and pollen fossils to reconstruct paleoenvironment. Previous paleomagnetic studies reported a reversed polarity from this siltstone layer which was correlated as the Blake excursion. Here we report results of reexamined paleomagnetic and rock-magnetic analyses.

The silt layer, consisting of the main part of the Tukabara formation, is divided into following three parts based on paleomagnetic characteristics; Upper Zone: unstable magnetization direction after both of alternating-field thermal demagnetizations, Middle Zone: stable magnetization direction after both of alternating-field and thermal demagnetizations, Lower Zone: stable magnetization direction after alternating-field demagnetization but after thermal demagnetization. Rock magnetic and paleomagnetic experiments exhibit that the Upper Zone of the siltstone has significantly low magnetization intensities which is supposed to be due to a weak geomagnetic field caused by the Blake excursion during the deposition.

We will also report preliminary results of paleoenvironmental reconstruction using microfossil analyses. Diatom fossils were produced from all of the silt stone layers. Based on diatom assemblages, the silt layer is divided into three parts as follows; Diatom Zone 1: a marine genera dominance zone at the bottom part, Diatom Zone 2: freshwater genera dominance zone at the middle part, Diatom Zone 3: marine genera dominance zone at the top part. In the Diatom Zone 2, a shallow water genus *Rhaphoneis* is not seen and a freshwater cosmopolitan species *Diploneis elliptica* is abundant. Furthermore, a lot of varves can be well observed this Zone. This indicates that the zone is supposed to be deposited under a stagnant condition caused by a closed estuarine like environment with a fresh water discharge.

キーワード: 中期-後期更新世境界, 古地磁気, 古環境復元, Blake イベント

Keywords: Upper-Middle Pleistocene boundary, Paleomagnetism, Paleoenvironmental reconstruction, Blake event