

Paper Number: 2861

## Detailed lithostratigraphy and sedimentary environment of the upper part of Kokumoto Formation with the Lower–Middle Pleistocene boundary

Kazaoka, O.<sup>1</sup>, Ogitsu, I.<sup>1</sup>, Yabusaki, H.<sup>1</sup>, Honda, E.<sup>1</sup>, Yoshida, T.<sup>1</sup>, Kameyama, S.<sup>2</sup>, Kagawa, A.<sup>1</sup>, Morisaki, M.<sup>1</sup>, Takeshita, Y.<sup>3</sup>, Satoguchi, Y.<sup>4</sup>, Nakazato, H.<sup>5</sup>, Nishida, N.<sup>6</sup>, Okada, M.<sup>7</sup>, Suganuma, Y.<sup>8</sup>, Izumi, K.<sup>9</sup>, Kumai, H.<sup>10</sup> and Nirei, H.<sup>11</sup>

<sup>1</sup> Research Institute of Environmental Geology, Chiba, Chiba city, Japan

<sup>2</sup> Environmental Protection division of Chiba Prefectural Government, Chiba city, Japan

<sup>3</sup> Institute of Education, Shinshu University, Nagano city, Japan

<sup>4</sup> Lake Biwa Museum, Kusatsu city, Japan

<sup>5</sup> National Institute for Rural Engineering, Tukuba city, Japan

<sup>6</sup> Geological Survey of Japan, AIST, Tukuba city, Japan

<sup>7</sup> Faculty of Science, Ibaraki University, Ibaraki city, Japan

<sup>8</sup> National Institute of Polar Research, Tachikawa city, Japan

<sup>9</sup> National Institute for Environmental Studies, Tukuba city, Japan

<sup>10</sup> Professor Emulates of Osaka City University, Osaka city, Japan

<sup>11</sup> Japan Branch of GEM-IUGS, Katori city, Japan

---

The Lower–Middle Pleistocene Kazusa Group, deposited in a bathyal–shelf setting in the Pacific Ocean with microfossils, is distributed widely in the Boso peninsula. The group is exposed continuously along Yoro River, Chiba section. The Kazusa Group consists of the Kurotaki, Katsuura, Namihana, Ohara, Kiwada, Otadai, Umegase, Kokumoto, Kakinokidai, and Chonan formations in ascending order [1]. The depositional rate is rapid, at about 2 m/kyr. The Chiba section therefore has a high potential to be an international stratotype section [2].

The Kokumoto formation, about 350 m thick, is subdivided into a lowermost part, lower part, upper part, and uppermost part. The lowermost part, about 60 m thick, consists of thick siltstone with thin sandstone bed and marker tephra, Ku6 and ku5. The lower part, about 120 m thick, consists of sandy alternations of sandstone and siltstone and contains the Ku3 tephra. The upper part, about 80 m thick, consists of thick siltstone without slump beds and thin sandstones and marker tephra (Byk zone [Byk-G, Byk-F, Byk-E, Byk-D, Byk-C, Byk-B, Byk-A], Koss2, Koss1-B, Koss1-A, Kosp-C, Kosp-B, Kosp-A, Tap-B, Tap-A, Tas-C, Tas-B, Tas-A, Ku2). The Matuyama–Brunhes boundary is in the Byk zone. The uppermost part, about 90 m thick, consists of sandy alternations of sandstone and siltstone with the Ku0.1 tephra.

The upper part consists of thick siltstone interbedded with thin, 1-3 cm thick, sandstone every 0.3-3 m and thin, 1-5 cm thick, sandy siltstone every 0.1-0.25 m without slumping, and thick mudflow bed. The siltstones have bathyal and sublittoral benthic foraminifera and many trace fossils. Grain size distribution in the siltstones is bimodal [3]. The main grain group comprises fine silt, and the subordinate group consists of very fine sand. These characteristics show a hemipelagic sedimentary environment in a deep-sea setting which, along with fine sand flows, suggests a deep sea slope. The thickness from Byk-G to Byk-A changes little laterally in the central part of the Boso Peninsula. This shows approximately uniform deposition. It is presumed that clastic sediments were supplied little around here from the source mountain area because this horizon belongs to warm stage MIS 19.

*References:*

- [1] Mitsunashi, T., Yasukuni, N., Shinada, Y., 1959. Stratigraphical section of the Kazusa Group along the shores of the Rivers Yoro and Obitsu. *Bulletin of the Geological Survey of Japan* 10, 83–98 (in Japanese).
- [2] Kazaoka, O., Suganuma, Y., Okada, M., Kameo, K., Head, M.J., Yoshida, T., Kameyama, S., Nirei, H., Aida, N., Kumai, H.. Stratigraphy of the Kazusa Group, Central Japan: a high-resolution marine sedimentary sequence from the Lower to Middle Pleistocene. *Quaternary International*, 383, 116-135, 2015.
- [3] Nishida, N., Kazaoka, O., Izumi, K., Suganuma, Y., Okada, M., Yoshida, T., Ogitsu, I., Nakazato, H., Kameyama, S., Kagawa, A., Morisaki, M., Nirei, H., 2015. Sedimentary processes and depositional environments of a continuous marine succession across the Lower–Middle Pleistocene boundary: Kokumoto Formation, Kazusa Group, central Japan. *Quaternary International*, in press.

