

# Late Pleistocene Paleogeography of the Kimotsuki Plain, southern Kyushu, Japan

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This study discusses the Late Pleistocene paleogeography of the Kimotsuki Plain by interpreting pre-existing borehole data and geophysical data. Present Kimotsuki Plain is composed of the Kasanohara Ignimbrite Plateau and the Kimotsuki Lowland, and faces the Shibushi Bay on the east. The major part of Kimotsuki Plain is covered with the Ata welded ignimbrite (ca. 110000 years B.P.) and the Ito non-welded ignimbrite with Osumi Pumice (ca. 30000 years B.P.). Several studies have investigated recent landform development of the Kimotsuki Plain after the deposition of Ito ignimbrite (e.g. Ishii, 2018; Nagasako et al., 1999; Yokoyama, 2000). However, the paleogeography before the deposition of Ito ignimbrite is yet to be clearly understood.

In this study, the bottom and top elevations of key strata were obtained from the geological columnar sections ( “KuniJiban” by Public Works Research Institute, “Geo-Station” by National Research Institute for Earth Science and Disaster Resilience and “Kyushu Ground Information Sharing Database” by Japan Geotechnical Society Kyushu Branch) and the electric geophysical exploration data (Kubota et al., 2005). Then, contour lines of topography of basement rocks were created at 50 m interval. The top of Ata Ignimbrite layer and the bottom of Osumi Pumice layer were projected along the longitudinal profile of Kushira River valley.

## [MIS5e (125 ka)]

The buried topography reconstructed from altitudinal distribution of basement rocks has a deep valley (>150 m below present sea level) along the Kimotsuki River and its tributaries in the Kimotsuki Lowland. The depression (250 m below present sea level) is recognized in and around Aira-cho district. Data showing the paleogeography before the deposition of Ito Ignimbrite is extremely limited in the coastal area of Kimotsuki Lowland.

The Kushira Formation (recorded in Sugawara 1986, named by Oki 1999), accumulated on shallow seabed during MIS-5e, is observed below the present sea level in the north of Kushira and the central part of the Kanoya City. This indicates that the Kimotsuki Plain has hardly been uplifted since MIS-5e. Considered from the distribution of basement rocks, the almost every part of Kimotsuki Plain occupied a corner of the Shibushi Bay during the Last Interglacial Period.

## [Just after the deposition of Ata pyroclastic flow (110 ka)]

Ata pyroclastic flow was deposited and welded. This occurred subaerial environment around Kasanohara and relatively deeper oceanic environment around the Kimotsuki Lowland.

## [30 ka - 20 ka]

After the deposition of Ata welded ignimbrite, the deep valley was formed along the Kushira River until the deposition of Osumi Pumice. The valley floor in the Kimotsuki Lowland, interpreted from the distribution

of basement rocks, was lower than the sea level at the timing of the Last Glacial Maximum. The coastline of Shibushi Bay was possibly situated near the present Kimotsuki Lowland in the last glacial period temporarily.

References: Ishii, Y. (2018) *Palaeogeography, Palaeoclimatology, Palaeoecology* 502. Kubota, T., Masumoto, T., Matsuda, S. and Furue, K. (2005) *Technical Report of the National Institute for Rural Engineering* 203. Nagasako, T., Okuno, M., Moriwaki, H., Arai, F. and Nakamura, T. (1999) *The Quaternary Research (Daiyonki-Kenkyu)* 38. Oki, K. (1999) *Occasional papers* 32. Sugawara T. (1986) *Essays in geology, Professor Nobu Kitamura commemorative volume*. Yokoyama, S. (2000) *Transactions, Japanese Geomorphological Union* 21.

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