

# Explanatory Text of the Urban Geological Map of the Northern Extension Area of Chiba Prefecture

By  
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## (ABSTRACT)

The northern extension area of Chiba Prefecture borders the southeastern part of Saitama Prefecture, surrounded by the Edogawa River to the west, the Tone River to the east, and the Tone Canal to the south. This area holds growing economic importance for the Tokyo metropolitan area due to the concentration of large-scale logistics facilities along national routes. Furthermore, as this area has concerns about significant damage from large earthquakes, the development of geological information is desirable for disaster prevention and mitigation.

Topographically, the study area includes uplands, lowlands, and artificially modified areas. The Shimosa Upland is widely distributed in a northwest-southeast direction. The Nakagawa and Tonegawa lowlands develop on the western and eastern sides of the Shimosa Upland, respectively. Narrow valley-floor lowlands develop along smaller rivers in the Shimosa Upland. Artificially modified areas are distributed along large rivers, such as the Edogawa and Tone rivers.

Geologically, the shallow subsurface part of the study area comprises the Middle to Upper Pleistocene Shimosa Group, Upper Pleistocene terrace deposits and the Kanto Loam Bed, Alluvium (post-LGM deposits), and artificial deposits (Fig. 1).

The Shimosa Group in this region is divided into the following six formations: the Jizodo, Yabu, Kamiizumi, Kiyokawa, Kioroshi, and Joso formations in ascending order. Each formation, except the Kioroshi and Joso formations, consists of a depositional cycle comprising terrestrial and marine beds formed under the influence of sea-level change during MIS 12–5c. The Kioroshi Formation is divided into lower and upper parts. In the study area, the upper part is distributed across nearly the entire region except where Alluvium is present, whereas the lower part is absent.

The terrace deposits younger than the Shimosa Group (younger terrace deposits) in the study area are distributed thinly and narrowly along incised valleys and are therefore difficult to distinguish from the underlying Joso Formation. The Kanto Loam Beds, composed mainly of volcanic ash soil, are divided into the Joso Clay and the Younger Kanto Loam Bed. They are treated as a covering soil layer. Consequently, neither the terrace deposits nor the Kanto Loam Bed are shown on the 2D geological map. However, readers can understand the vertical facies changes within these deposits from borehole logs displayed in 3D geological maps.

The Alluvium, referred to as “Chuseki-so” in Japanese, is uppermost Pleistocene to Holocene deposits formed under the influence of sea-level change. It is distributed beneath lowlands such as the Tonegawa and Nakagawa lowlands, and valley-floor lowlands. Beneath the Tonegawa and Nakagawa lowlands, the Alluvium is composed mainly of mud. In valley-floor lowlands, the Alluvium primarily consists of incised-valley fills composed of soft sand and mud deposited in fluvial environments.

Chronostratigraphic division		Lithostratigraphic division		Tephra	MIS
Quaternary	Holocene	Alluvium	Younger loam bed		1
	Pleistocene		Younger terrace deposits	AT	2 3
			Joso Clay	Hk-TP	4 5a 5b 5c
		Shimosa Group	Joso Fm.	On-Pm1	5d
			Kioroshi Fm. upper		5e
			lower		6 7a 7b 7c
			Kiyokawa Formation	Ky3	7d
			Kamiizumi Formation	Km2 Ata-Th	7e
			Yabu Formation	ND3-91.84	8
			Jizodo Formation	J4	9 10 11
		Kazusa Group		12	

Fig. 1 Stratigraphic summary around the northern extension area of Chiba Prefecture. Modified from Yoneoka *et al.* (2024).