

# Explanatory Text of the Urban Geological Map of the Central Area of Chiba Prefecture

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(ABSTRACT)

The central area of Chiba Prefecture is a highly urbanized area encompassing parts of Chiba, Ichihara, and Sodegaura cities. Both lowlands and uplands have seen significant commercial and residential development, while industrial complexes have been constructed on reclaimed land facing Tokyo Bay.

The Urban Geological Map of the Central Area of Chiba Prefecture shows the distribution patterns of strata in the shallow subsurface based on borehole data. The computer-generated 3D geological model is browsable as 2D and 3D geological maps, and the borehole data used in the analysis are also accessible.

The central area of Chiba Prefecture is underlain by the Middle (Chibanian) to Upper Pleistocene Shimosa Group, Upper Pleistocene terrace deposits (younger terrace deposits), Kanto Loam Bed including the Joso Clay and younger loam bed, post-LGM (Last Glacial Maximum) deposits, and artificial fills in reclaimed land (Fig. 1). Among them, this geological map focuses on post-LGM deposits and artificial strata.

The Middle (Chibanian) to Upper Pleistocene Shimosa Group is divided into seven formations, each of which consists of a sedimentary cycle formed by a single sea-level fluctuation, comprising terrestrial and marine beds. Both are composed of unconsolidated sand, mud, and gravel. The Upper Pleistocene terrace deposits are mainly distributed along the margin of the uplands. They consist mainly of unconsolidated gravel and sand beds. The Kanto Loam Bed including the Joso Clay and the younger loam bed is volcanic ash soil covering uplands.

Post-LGM deposits were formed in response to sea-level rise after the peak of the Last Glacial Maximum. Beneath coastal lowlands, a buried flat surface widely developed at elevations ranging from -20 to 0 m. In the Miyako, Murata, and Yoro River lowlands, buried valleys developed by incising this flat surface. Among them, the valley in the Yoro River Lowland is particularly large, and the deepest part of the valley reaches the elevation of -40 m.

The post-LGM deposits in this area can be divided into lower and upper parts. The lower part is distributed within buried valleys and consists of fluvial gravel, sand, and silt, often accompanied by peat or organic silt layers. The upper part consists of mud, sand, and gravel deposited in marsh, inner bay, and fluvial environments, and is distributed not only within buried valleys but also on buried flat surfaces. The surface layer of lowlands is composed of sandbar/beach ridge, natural levee, abandoned channel, and marsh/valley floor deposits.

Reclamation along the Tokyo Bay coast in the central area of Chiba Prefecture was carried out from the mid-1960s to the mid-1970s using a sand-pumping method, which employed sediment from the sea bottom of Tokyo Bay. Such artificial fills in reclaimed land consist of sand and mud, often containing shells.

Chronostratigraphic divisions		Lithostratigraphic division		Tephra	MIS	Facies	Depositional environment		
Quaternary	Holocene	Artificial fills Reclamation/banking		Kanto Loam Bed (Younger loam bed)	1	Reclamation, banking	Sand, mud, etc.	Reclamation, banking	
		Sand bar/beach ridge, natural levee, abandoned channel, and marsh/valley floor deposits				Sand bar/beach ridge deposits	Sand	Sand bar, beach ridge	
		Post-LGM deposits				Natural levee deposits	Sand	Natural levee	
						Abandoned channel deposits	Sand, mud	Fluvial channel	
						Marsh/valley floor deposits	Mud	Marsh, valley floor	
	Pleistocene	Upper	Younger terrace deposits		AT	2	Post-LGM deposits	Sand, mud, gravel	Bay, beach, fluvial
			Kanto Loam Bed (Josso Clay)		Hk-TP	3			
						4			
						5a	Younger loam bed	Volcanic ash soil	Terrestrial
					5b	Younger terrace deposits	Sand, gravel	Fluvial	
	Chibanian (Middle)	Shimosa Group		On-Pm1	5c	Josso Clay	Volcanic ash soil	Terrestrial	
				Hk-KIPs	5d				
					5e	Shimosa Group	Sand, mud, gravel	Bay, beach, fluvial	
					5e				

Fig. 1 Stratigraphic summary in the central area of Chiba Prefecture.