

# **Pleistocene Glacial, Interglacial and Interstadial Stratigraphy, Long Island, New York**

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The Pleistocene stratigraphic record in Long Island includes depositional sequences of two glaciations (Illinoian? and late Wisconsinan), the last interglacial (Sangamon) and interstadial (mid Wisconsinan), and the latest postglacial interval. The oldest glacial deposits are of Illinoian (?) age and include till, outwash and lacustrine facies. This older drift underlies younger, late Wisconsinan, glacial deposits. Its upper strata were deformed and thrust by the advancing, late Wisconsinan ice sheet. Its undeformed surface crops out near sea level in southeastern Long Island. Erosion during the higher than present Sangamon sea may have contributed to the drift's low-relief.

An in-place, subsurface marine clay, the Gardiners Formation, was deposited during the last interglacial. This unit lies between 110 and 150 feet below sea level beneath the southeast coast and is about 30 feet thick. It contains microflora and microfauna indicative of warm climatic conditions. It is not the equivalent of glaciolacustrine clays and thrust masses of marine sediment known as 'Gardiners Clay'. The latter, which contain a cold-water fauna are found as clasts in the late Wisconsinan moraines in eastern Long Island. However, clasts of mid-Wisconsinan age estuarine and coastal sediment emplaced in the late Wisconsinan end moraine in western Long Island contain a pollen zonation revealing a cold-warm-cold climatic fluctuation for that interval. These sediments were excavated from an embayment north of western Long Island during the last glaciation. Mid-Wisconsinan 'warm climate' clays also occur in place off the south shore. A possible postglacial marine clay, the 20 Foot Clay, formed locally in south shore embayments. Correlations based on radiometric ages and fossil content have been made between Sangamon and mid-Wisconsinan strata of Long Island and the mid-Atlantic coastal region to the south. Sangamon, mid-Wisconsinan and late Wisconsinan pollen zonations facilitate these correlations.