The Geologic History of New York State

The Pleistocene

Ice Ages

- 100 / 40 ka glacial (cold) - interglacial (warm) cycles.
- Most recent glacial period = Wisconsin Interval.
- Peak glaciation 22,000 years ago.
- New York State completely covered by ice.
- Up to 1 mile thick ice overwhelmed all topography.
- All New York landscapes are glacially modified.
- Long Island was created by glacial deposition.
Extent of Continental Glaciers
Peak of Wisconsin Ice Age
App. 22 ka

Athabasca Glacier, British Columbia
Glacial Features and Deposits

- Erosional - carving the bedrock and landscape
  - glacial striations
  - chatter marks
  - U-shaped valleys and tunnel valleys
- Depositional - releasing rock, sand, and mud
  - drumlins
  - erratic boulders
  - moraines (till)
  - outwash
  - kettle holes and kames

Terminal / Recessional Moraines
Glacial features in New York

- Drumlins - tear drop-shaped hills
- Finger lakes, kettle ponds
- Wide, U-shaped valleys
- Bedrock striations, chattermarks
- Glacial boulders (erratics)
- Long Island (moraines and outwash plain)
- Tunnel Valleys (Long Island)
Drumlin fields, Ontario lowlands

- Tug Hill
- numerous valley glaciers
- Boonville Gorge
- Allegheny plateau

- Black R. Valley
- Little Falls Barrier
- Lake Iroquois
- Finger Lakes
- Iro-Mohawk R.

- Lake Ontario
- Oswego
- Sodus Bay
- Syracuse
- Rochester
- Buffalo
- Niagara Falls

Finger Lakes
Drumlins - Manitoba
Finger Lakes, New York

Glaciated Valleys
- Trough-shaped
- Underfit streams
Harbor Hills moraine, north of Hofstra campus

Necks, western Long Island - glacial tunnel valleys

Stratified drift (outwash delta), Caumsett State Park, Long Island
Glacial erratics, Smithtown Harbor, Long Island

Tunnel Valleys - formed by water flowing beneath the glacier
Formation of gaps in Ronkonkoma Moraine

Upper Lake, eastern Long Island - Glacial meltwater channel

Lake Ronkonkoma - Kettle Pond
Eroding terminal moraine, Montauk Point, New York

Hyde Park Mastodon locality, Hyde Park, NY
Home of Larry and Sheryl Lozier
Mastodon skeleton
Hyde Park, New York