

INVESTIGATING ALLENBERG BOG TO CONSTRAIN THE PALEOCLIMATE HISTORY OF WESTERN NEW YORK

WHITESIDE, Racheal S., GUILD, Gavin A., CLEMENTS, Siobhan, and BRINER, Jason P. Geology Department and Environmental Geosciences Program, University at Buffalo

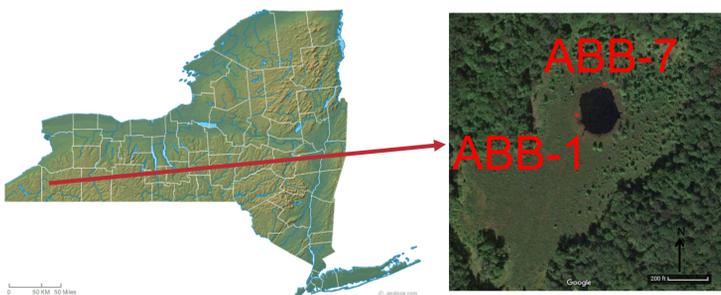
Objective

Constrain western New York's environmental change following Laurentide Ice Sheet retreat by analyzing post-glacial sediment changes across the Late Pleistocene-Holocene transition.



Study Area

Alenberg Bog located just outside of Napoli, western New York. The site covers 1.5783 km² and contains a small pond (1,858 m²) of open water surrounded by a discontinuous low shrub zone interspersed with dead trees, eventually giving way to a wooded forest.

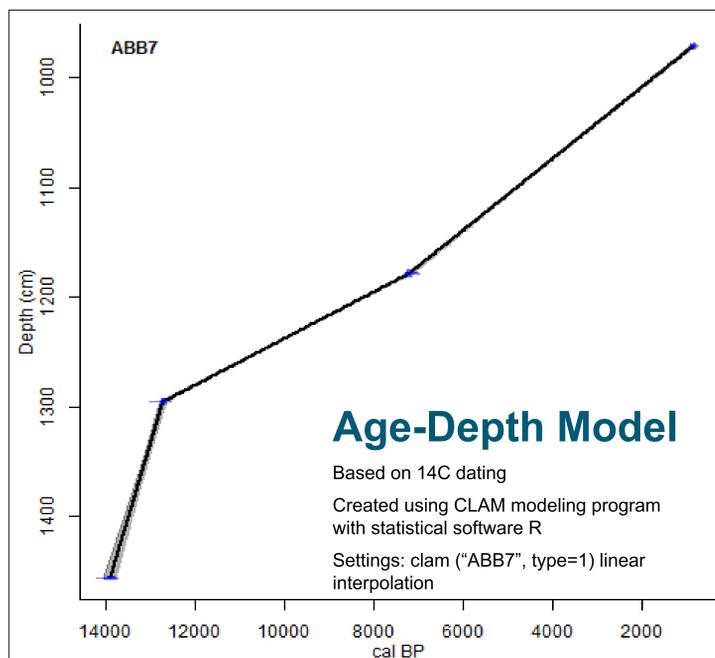
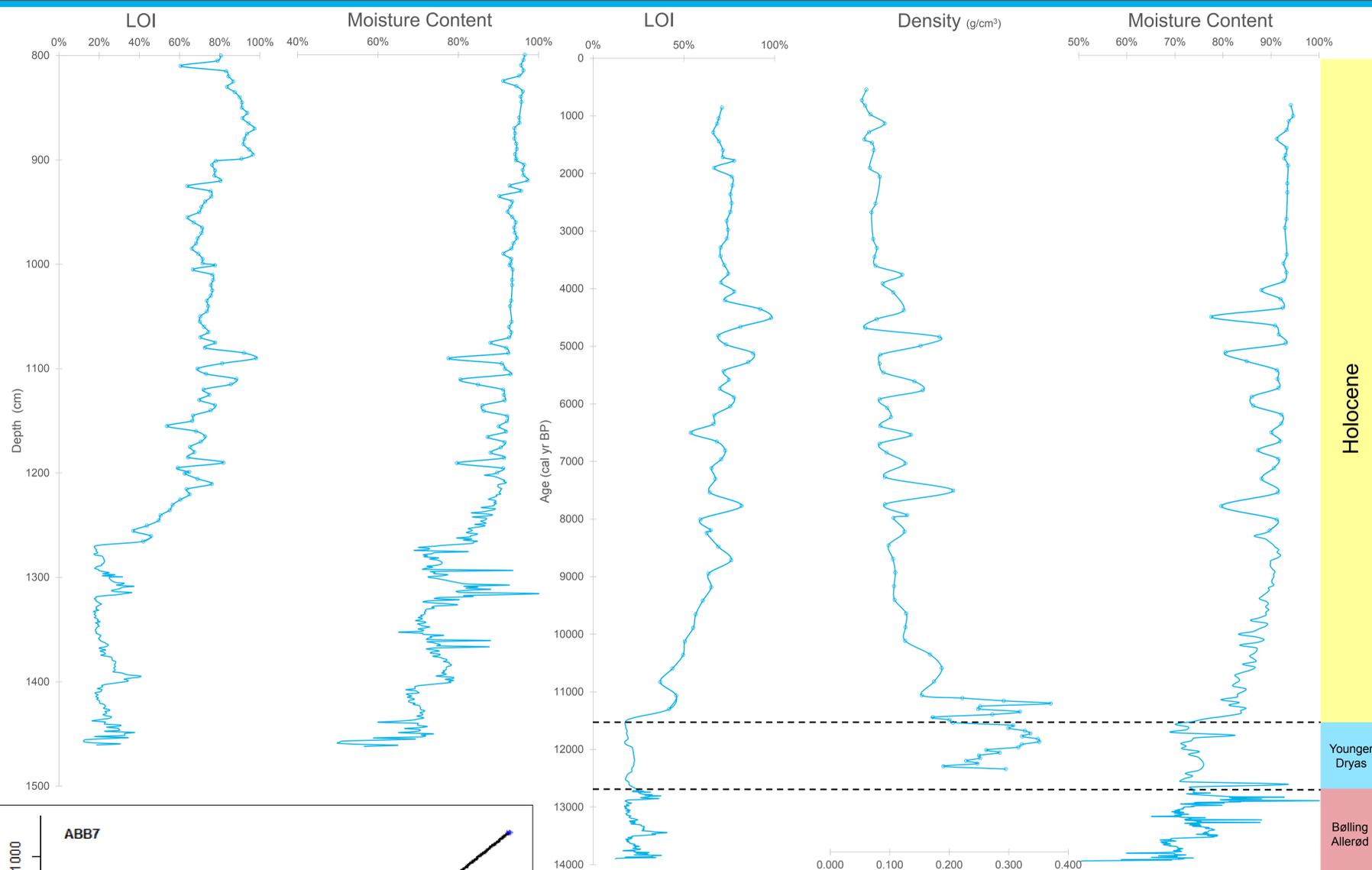


Project Overview

Miller (1973) extracted sediment cores from the same site. He extracted ~15 m of post-glacial sediment near the LGM terminal moraine and produced a pollen record, but never dated the sediment record. Following probing of a dozen locations to get a sense of bog depth, we extracted sediment cores from two locations within the bog adjacent to the open water pond. Sediments at each location were probed with a Russian peat corer and eventually collected with a Livingstone coring system in successive one-meter-long drives. At location 1 (15ABB-1: 42.251°, -78.883°) we only obtained basal sediments, which produced 0.3 m of sediment starting 10.0 m below the bog surface. At location 2 (15ABB-7: 42.252°, -78.883°) we collected 6.6 m of sediment from a depth of 8.0 m to 14.6 m below the bog surface.



Results



Methods

We completed basic sediment analyses (moisture content, density, and organic matter content) at a 5 cm resolution with the exception of basal core segments. One cm resolution was used on the basal sediments, and we are in the process of increasing the resolution to 1 cm on the rest of the cores. The overall core stratigraphy contains basal sediments that are glacial or near-glacial, overlain by lacustrine sediments and followed by peat.

Four samples were submitted to the NOSAMS laboratory for 14C dating. All samples were macrofossils of the plant/wood variety. The samples were taken at depths of 971 cm, 1178 cm, 1295 cm, and 1456 cm.

Conclusion

- The B-A expresses higher LOI values and a steep rise in Moisture Content while the Y-D maintains mostly constant LOI and Moisture Content with the exception of some spikes in Moisture Content
- Both LOI and Moisture Content rise during the Holocene
- The trends resemble Greenland ice core data therefore our organic matter trends match the North Atlantic climate
- Despite our site residing near the ice sheet limit our basal radiocarbon age is quite young. See Siobhan Clement's poster for discussion.

Works Cited

- Blaauw, Maarten. "Methods and Code for 'classical' Age-Modelling of Radiocarbon Sequences." *Quaternary Geochronology* 5.5 (2010): 512-8. Web.
- Miller, N. G., (1973). *Late Glacial And Postglacial Vegetation Change in Southwestern New York State*. University of the State of New York, State Education Department.