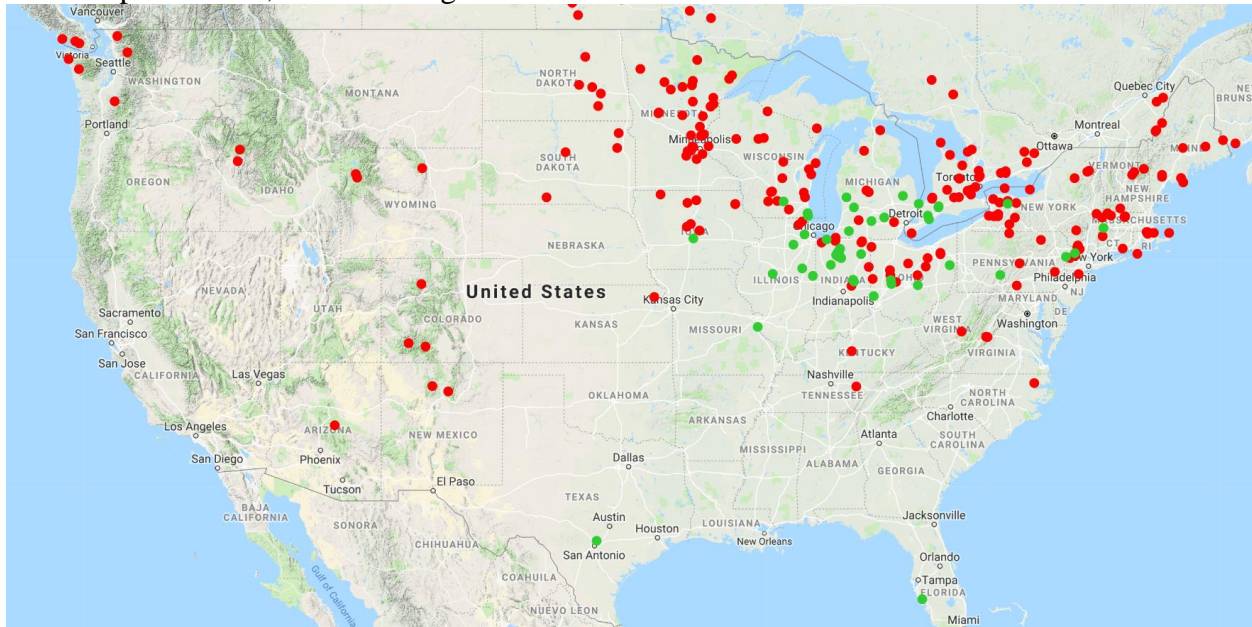
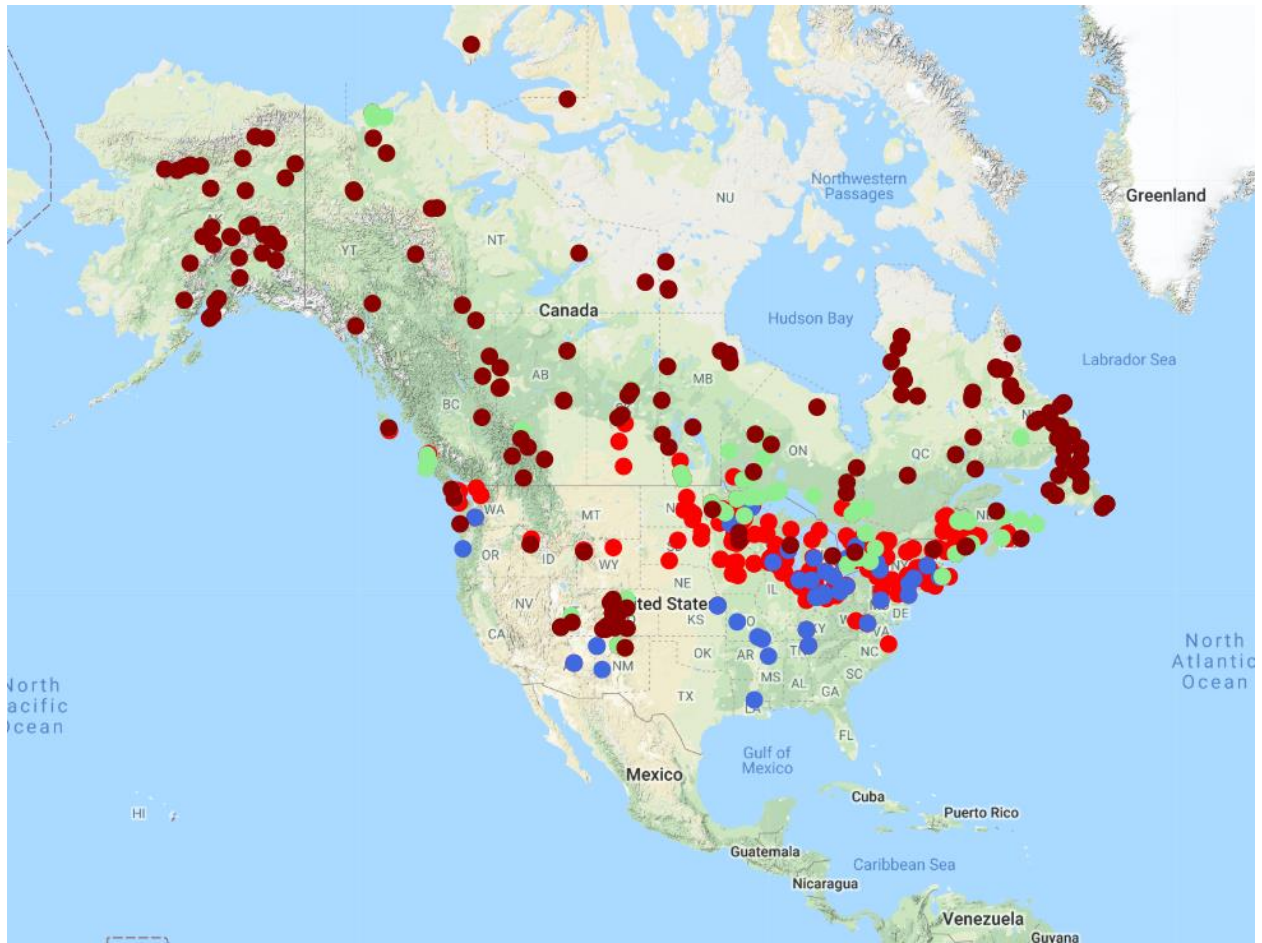


1. Latitude: 43.4178
Longitude: -89.73205
2. A) Alabama – Pinckneyville Creek Site 19
B) New York – Clear Pond
3. Wisconsin, Iowa, Colorado, New Mexico
4. A) 1645 sites
B) ~3200 person years
5. The dense network of sites stretching from Minnesota to Nova Scotia results from the retreat of the Laurentide Ice Sheet which generated kettle lakes (and other similar environments) suitable for the preservation of pollen in a sedimentary archive.
6. Spruce = red; mastodon = green



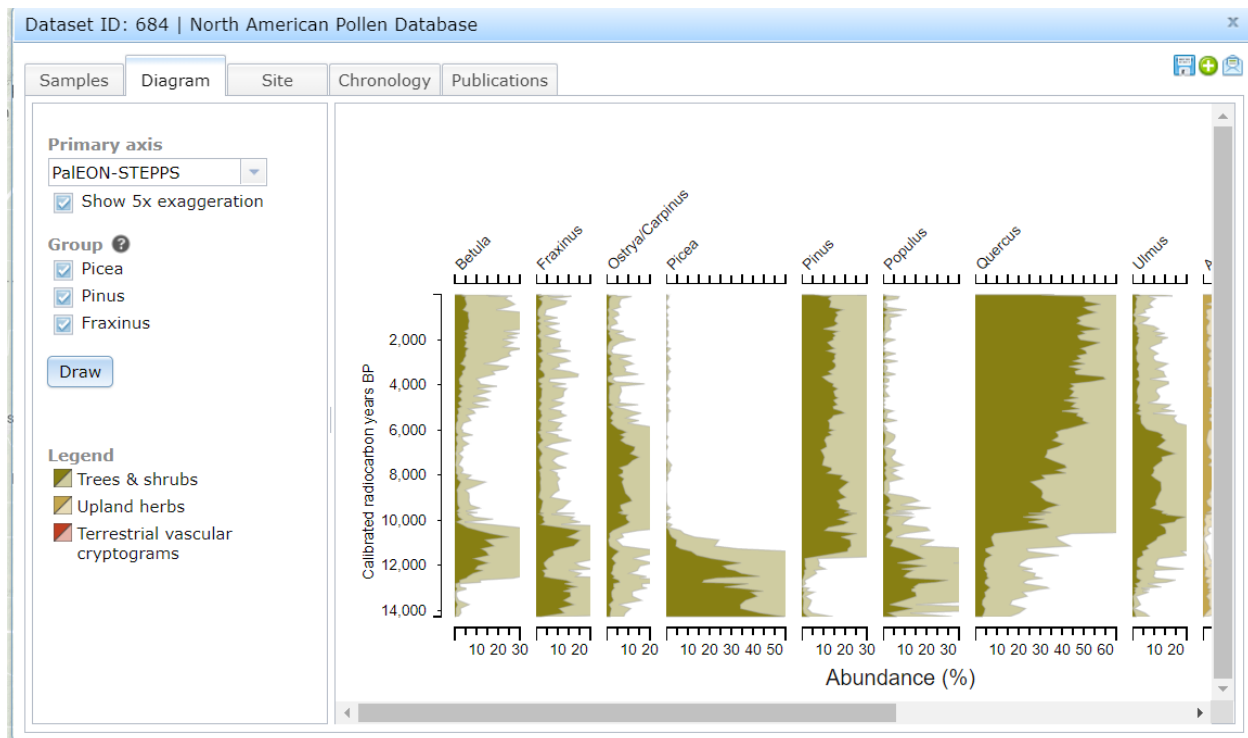
Mastodons do not tend to live in areas highly dominated by spruce – the highest abundance of mastodon occurs on the southern margin of sites with peak spruce abundances. One possible explanation for this phenomenon is the low nutritional value of spruce needles relative to broadleaf taxa, largely because of the high tannin content of spruce needles. It could also be possible that mastodons are climatically excluded from the regions with highest spruce concentration. Spruce is a cold adapted conifer, therefore areas with higher spruce abundance should be colder which may exclude mastodons.

7. Blue = 21,000 ka to 18,000 ka; light red = 15,000 ka to 12,000 ka; light green = 10,000 ka to 7,000 ka; dark red = 5,000 ka to 1,000 ka



The observed northward spruce migration is likely attributed to spruce tracking its climatic niche through space from the end of the Last Glacial Maximum to the late Holocene (dynamic equilibrium). Since spruce is sessile the observed range shift is a result of the slow migration of spruce propagules that were likely wind dispersed.

8.

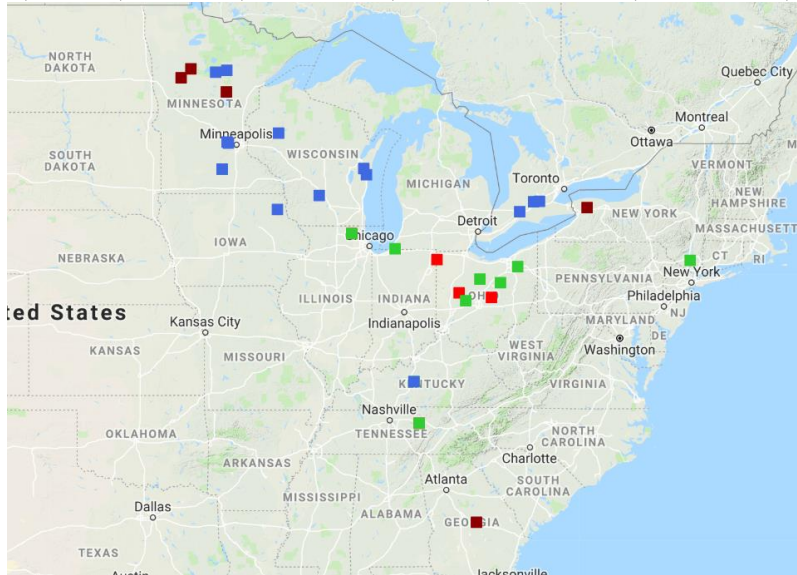


The most abundant plant taxa prior to the end of the Pleistocene was *Picea*. *Quercus* became the most dominant taxa after the onset of the Holocene.

9. There are 13 age controls for Devils Lake and of that 11 are radiocarbon dates. The other two are the Euro-American settlement horizon and core top.
10. Maher, L.J., Jr. 1982. The palynology of Devils Lake, Sauk County, Wisconsin. Pages 119-135 in J.C. Knox, L. Clayton, and D.M. Mickelson, editors. Quaternary History of the Driftless Area. Field Trip Guide Book 5. University of Wisconsin-Extension, Geological and Natural History Survey, Madison, Wisconsin, USA. Notes: Prepared for 29th Annual Meeting Midwest Friends of the Pleistocene, Prairie du Chien, Wisconsin, May 22 and 23, 1982.
- Bender, M.M., D.A. Baerreis, and R.A. Bryson. 1980. University of Wisconsin radiocarbon dates XVII. Radiocarbon 22(1):115-129. [DOI: 10.2458/azu_js_rc.22.599]
11. *Quercus* is the most abundant taxa at a depth of 1 cm.
12. The figures below show the establishment and spread of no-analog communities throughout the Great Lakes Region of eastern North America. These communities were a mix of taxa (e.g. *Picea*, *Ostrya/Carpinus*, *Fraxinus*) that today only co-occur in low abundances, but were widespread throughout the Great Lakes landscape. *Ostrya/Carpinus* establishment is indicative of no-analog community establishment and this taxa doesn't appear in the Great Lakes Region until ~17,000 ka remains there until ~9,000 ka. Comparing sites with high *Ostrya/Carpinus* abundance with those of high

Picea abundance suggests that no-analog communities were most widespread from 17,000 ka to 9,000 ka. While *Picea* remains highly abundant in eastern North America after 9 ka *Picea* migrated well north of the Great Lakes Region where it no longer co-occurred with *Ostrya/Carpinus*.

Ostrya/Carpinus with abundance > 15%; red = 17,000 ka to 13,000 ka; green = 13,000 ka to 9,000 ka; blue = 9,000 ka to 5,000 ka; brown = 5,000 ka to 1,000 ka



Picea abundance > 30%; black = 21,000 ka to 17,000 ka; red = 17,000 ka to 13,000 ka; green = 13,000 ka to 9,000 ka; blue = 9,000 ka to 5,000 ka; brown = 5,000 ka to 1,000 ka

