http://www2.newpaltz.edu/glaciogram

VOLUME 41 • December 2009

Vol. 41 (2)

Editorial Policy

The *New York Glaciogram* is intended to be an annually compiled collection of informal notes concentrating on Quaternary work that relates to New York State either directly or indirectly. The Glaciogram is not a formal publication and is not circulated to libraries, nor to individuals not engaged or interested in Quaternary research. The information included is often of a preliminary and tentative nature, and as such, should not be quoted without direct communication with the appropriate authors. It is suggested that reference to information in the Glaciogram be identified merely as informal communication. Please contact individual contributors for permission to reprint any information published here.

Invitation From The Editor

As the title implies, past issues of the *New York Glaciogram* have contained entries weighted toward Glacial Geology. My predecessor believed, as do I, that we should expand the coverage to also include topics that may be closely related to glacial geology, such as limnology, palynology, soil science, ground water geology, environmental geology, etc. I will be collecting contributions for the next edition in the Fall of 2010. Deadline for next year's contributions will be Monday, November 29th, 2010. If you have any meetings, fieldtrips, or other announcements that you would like put on the Glaciogram website, please contact me. Over the next year I will also try working on making the Glaciogram picture archive functional. (I know I said that last year but ….). More likely to be updated is the Glaciogram e-mail list, to which only I can send to (for now). I will be creating a subscription button on the web-page when I have time. If you want to be subscribed before that function becomes operational, please send me an e-mail. Also, a special thank-you to all those who sent me old back issues. I will get them scanned and posted as time permits.

Contact:

John A. Rayburn, Editor
rayburnj@newpaltz.edu
Department of Geology
1 Hawk Dr.
SUNY New Paltz
New Paltz, NY 12561
Phone: 845-257-3767
Fax: 845-257-3755
http://www2.newpaltz.edu/glaciogram

Vol. 4 (3)

CONTENTS

ANNOUNCEMENTS:

SURVEY NEWS:

CONTRIBUTORS:

Vol. 41 (4)

(The Original FOP!)

The Northeastern Friends of the Pleistocene will hold their 73rd annual reunion on the weekend of June 4-6, 2010. The trip will be based in the Hanover-Lebanon area (NH-VT) and will visit sites relating to the Quaternary geology of this part of the Connecticut River valley. The trip leader will be Carol Hildreth, who has mapped the surficial geology of the region for the New Hampshire Geological Survey. Co-leaders include Meredith Kelly and Erich Osterberg (Dartmouth College) and Jack Ridge (Tufts University). The Friends have a long history as a "non-organization" with no dues, passwords, or other requirements. Anyone with an interest in glacial/Quaternary geology is welcome to attend! Registration details for the 2010 trip will be posted on the FOP website: http://www.geology.um.maine.edu/friends/

Woody Thompson
NEFOP Secretary
Maine Geological Survey
Woodrow.B.Thompson@maine.gov

****

http://w3.salemstate.edu/~lhanson/NEIGC/

The 102nd NEIGC will take place over Columbus Day weekend (October 8-10, 2010) hosted by the University of Maine at Orono is the latest word, but check for updates on the NEIGC or Glaciogram websites.

Tom Weddle
NEIGC Secretary
Maine Geological Survey
thomas.k.weddle@maine.gov

****

New York State Geological Association
http://www.nysga.net/

The 82nd meeting of the NYSGA will be hosted by the College of Staten Island/CUNY on September 24-26, 2010.

Alan Benimoff
NYSGA Secretary
College of Staten Island/CUNY
Email: benimoff@mail.csi.cuny.edu

****

Canadian Quaternary Association
http://www.mun.ca/canqua/index.html

Michel Parent
Ressources naturelles Canada
Commission géologique du Canada, CGC-Québec
490, rue de la Couronne, Québec (QC) G1K 9A9
Téléphone: (418) 654-2657
Fax: (418) 654-2615
E-mail: Michel.Parent@rncan.gc.ca

A joint meeting of CANQUA (Canadian Quaternary Association) and IAH-CNC (International Association on Hydrogeologists – Canadian National Chapter) will be held in Quebec City in the fall of 2011. The meeting will be hosted by the Quebec Geoscience Center and will be organized by Michel Parent (GSC-Q), Yves Michaud (GSC-Q), René Lefebvre (INRS-ETE) and Richard Martel (INRS-ETE). Conference information will be posted on the CANQUA website as it becomes available. We plan to organize regional/topical sessions in several fields of Quaternary science as well as in hydrogeology. The meeting will take place between mid-August and mid-October so that fieldtrips can be held in southern Quebec and adjacent areas.
****

Vol. 41 (6)

New York State Geological Survey

Andrew Kozlowski
akozlows@mail.nysed.gov
Glacial Geologist/ Senior Geologist
New York State Geologic Survey
New York State Museum
3140 Cultural Education Center
Albany, NY 12230
518-486-2012

It has been a busy and very productive year for glacial research activities for the New York Survey. We have several current projects that include collaboration with the New York City Department of Environmental Protection (NYCDEP), USGS Water Resources, U.S. Fish & Wildlife, and NYDEC. Our efforts have been fruitful and we have simultaneously been able to hire additional staff. At present our funding levels remain consistent and we remain optimistic that programs and projects will continue to grow.

First, we have hired two new staff members assistant staff Geologist Paul Stefanik, and research assistant Newton Krumdieck. Both Paul and Newt, have a strong and organized work ethic that sets the pace for our many projects. At present we have two projects in Central New York (CNY), one investigating the chronology and origin of the Syracuse Channels as part of our STATEMAP program. This project is in close collaboration with Don Pair at the University of Dayton, Tom Lowell at University of Cincinnati, Colby Smith at St. Lawrence University and William Kappel at the USGS WRD office in Ithaca. We have completed numerous borings and cored many localities within the channels and the Valley Heads Moraine and have obtained numerous AMS dates and valuable stratigraphic information.

Our other CNY project is an outgrowth of our partnership with the Great Lakes Geologic Mapping Coalition and is initiating a nine quadrangle mapping project to investigate the three-dimensional constructs of the sediment and landforms within the Montezuma Wetland Complex (MWC). Starting in September of 2008, NYSGS, along with colleagues from the USGS Water Resources and US Fish and Wildlife, initiated a project in the Montezuma National Wildlife Refuge seeking to substantiate reports of whole trees buried at depth. A study site was established south of Rtes 5 and 20 in the wildlife refuge. As data was gathered and more time elapsed, the study has become more multi faceted, looking at the origin of the Montezuma wetlands, the paleoecology of the area, the ties between Cayuga Lake and Lake Iroquois, and the deglacial chronology.

Initially we surveyed several potential sites with ground penetrating radar (GPR), hoping to produce specific targets. High organic content as well as a very saturated, fine grained substrate proved less than ideal for GPR results. Though the humans were dissatisfied with the work and results, the mosquito population of the area fed very well.

Despite the GPR results, we decided to return with a large tracked excavator in October 2008, and ended up digging three test pits down to a maximum depth of approximately 6 meters. Numerous complex stratigraphic layers were encountered, including peats, marls, and sands. An upper peat unit at approximately 1.5 meters deep yielded whole trees, in situ, as well as seeds, leaves, and insect fragments. The lowermost unit encountered was also a peat, which contained much woody material, seeds, and bryophyte fragments. Collaboration with Norton Miller of the NYSM has been invaluable in plant macro fossil Identification. Material suitable for AMS radiocarbon dating was obtained from nearly every stratigraphic unit, making it possible to construct an approximate timeline. Multiple wood fragments from the lowermost unit, obtained from two separate excavations, have dated this unit to the beginning of the Younger Dryas climatic event.

In September of 2009, a Rotosonic borehole, initially intended to establish depth to bedrock in a central portion of the basin, bottomed out at 187 feet in sand because the drillers ran out of casing. The stratigraphy from the excavations was confirmed in the upper portion. In November of 2009, two other conventional boreholes to bedrock were drilled approximately two miles north of the previous site. Enough rod was brought to go to 300 feet, as previous studies of the wetlands proposed that the bedrock basin deepens to the north. Bedrock was encountered at a depth of 41 feet in the middle of the channel, and a depth of 73 feet under a drumlin on the side of the channel.

The Wolcott quadrangle in the Northwest portion of our study area is being investigated By Ed Evenson (Lehigh University) and his student Matt Gentosso as an EDMAP project. Matt is presently mapping and investigating the drumlins in this region using both macro-fabric and micro-fabric. Matts's progress is very encouraging and his results show much promise. As new data points are established, the story continues to become more complicated and complex; we anticipate continued work in this geographic area for years to come.

In eastern NY Paul Stefanik has spearheaded coring efforts in a study whose main goal is to achieve a more concise chronology to the formation of the sand dunes located in the cities of Albany, Colonie and Guilderland, NY. Several techniques such as GPR, OSL and Radiocarbon dating are being utilized. Our objective for this project is to employ OSL dating in combination with AMS radiocarbon to develop a time line for dune formation and stabilization. By sampling and dating sand grains found at both the top (crest) and at the bottom of the dune, a time constraint on the formation of the dune can possibly be determined. Organic material that is sometimes found in the low lying inter-dune areas can be used to support (or not support) the basal OSL dates.

Finding a dune that is suitable for OSL dating was a challenge given the significant development that has occurred in and around the Capital Region. However once located pits were hand dug at each dune site to a depth that would eliminate any cosmogenic contamination of the quartz grains, for crest OSL samples. Because of the size of the selected dunes (8 – 13m), a Geoprobe soil sampler was used to obtain basal sand in an attempt to obtain OSL dates for the base of the dune. Our premise was that any organic horizons buried within the dune would be recovered using this same sampling technique, and AMS dated.

At present, five excavations for dune crest OSL dates were made; dates are pending. Four Geoprobe cores have been collected from two dunes and the interlying interdunal lowlands; multiple organic horizons were recovered at depth and material suitable for basal OSL and AMS dates have been collected. Dr. Norton Miller of the NYSM has examined the organic horizons and identified numerous bryophyte species and other plant macrofossils that continue to add valuable information for this project.

In September of 2007 I began collaboration with Dan Davis of the NYCDEP to conduct detailed surficial mapping of glacial deposits along the Esopus Creek and its tributaries in the eastern Catskills in order to characterize source materials adversely affecting the water quality of New York City's Drinking water. Much has been learned and contributions from Dave Desimone (RPI) and Brian Bird (Skidmore University) and Colby Smith (St. Lawrence university) have played a large role in the progress made. Much of this summer's field work focused on the identification of an important ice margin near the Hamlet of Willow, NY. Detailed stratigraphic, sedimentologic and structural information has been collected and analyzed. This ice marginal position records multiple diamicton units interpreted to be tills and a thick sequence of varved sediments sandwiched between till units. The varves have been cored and counted. Behind the ice marginal position is a large valley with a basin morphology, laminated sediments 3 km north have yielded woody debris and branches in situ, these material are presently being dated by AMS radiocarbon. The information obtained from this study and continued mapping should provide a mechanism to evaluate the existing chronology in the mid Hudson Valley.

In October of 2008, two archeologists canoeing along the Walkill River in Orange County, investigated an odd looking log protruding from the stream bank. Upon further examination in turned out to be the base of a large probscidian tusk. The land owner contacted the NYSM and we assembled a team that included myself, Dr. Robert Feranec (Vertebrate Paleontologist at the NYSM), Dr. Jonathon Lothrop (Prehistoric Archeologist at the NYSM) and Dr. Norton Miller. Due the hunting season and concerns of the landowners our initial site visit was delayed until late December. At that time weather & site conditions did not warrant a more invasive investigation. Over the winter we decided to return in the Spring and initiate a more robust survey, by May a second tusk

appeared in the stream bank and in June we completed two GPR surveys to map out the site stratigraphy and attempt to identify additional remains. In early July the weather cooperated long enough for an emergency excavation to retrieve the Mastodon tusks. The tusks were buried under the famed “black dirt” and in a marl horizon, one of the tusks measured in excess of 9 feet in length. In addition to the tusks, abundant plant macro-fossils, a large piece of log and an abundance of datable material was retrieved from the site and is presently being analyzed and processed for radiocarbon dating.

During this interval it became apparent that much remains to be learned in the Walkill and “Black dirt region” We plan to initiate a drilling program this winter in close proximity to the Mastodon site and begin a mapping project in the Spring of 2010. Dr. Byron Stone of the USGS, has offered to collaborate and we are hopeful that three-dimensional mapping inclusive of geophysics, drilling and sound geology will continue provide valuable contributions that help us improve and refine the glacial history in this region.

Our efforts the last few years have been to develop an energetic and strong mapping program. We have been fortunate, and hope to continue to work hard and collaborate in order to address the fascinating geology in the region. Please don’t hesitate to contact us at the Survey or Museum were a resource and would love to hear from others in the community.

****

Vermont Geological Survey

http://www.anr.state.vt.us/DEC/GEO/vgs.htm

Laurence R. Becker
Vermont State Geologist and Director
Vermont Geological Survey/Division of Geology and Mineral Resources
Vt. Dept. of Environmental Conservation
103 South Main Street
Waterbury, VT 05671-2420
Phone - (802) 241-3496
Fax - (802) 241-4585
Web - http://www.anr.state.vt.us/dec/geo/vgs.htm

New Maps Available

The Vermont Geological Survey (VGS) has posted at
http://www.anr.state.vt.us/dec/geo/mapsonlineinx.htm
the following surficial geologic maps from George Springston, Norwich University; Stephen Wright, University of Vermont; John Van Hoesen; Green Mountain College; David DeSimone as a VGS employee; Jon Kim, VGS; with GIS, cartographic, and bedrock hydrogeologic support from Marjorie Gale, VGS.

- Springston and Wright, 2009, Surficial Geologic Map of Charlotte, VT
- Van Hoesen, 2009, Surficial Geologic Map of Rutland, VT
- Desimone and Gale, 2009, Surficial Geology and Hydrogeology of Dorset VT
- DeSimone, 2009, Surfical Geologic Map of the Town of Londonderry, VT
- Springston and Kim, 2008, Surficial Geologic Map of the Knox Mountain Area, Marshfield and Peacham, VT

Surficial Geology Related Posters and Presentations from Northeast GSA

The VGS is an active participant at Northeastern Geological Society of America meetings. Please see the following.

Kim and Springston, 2009, Bedrock Control on Surficial Deposits and Groundwater Issues in Part of the Knox Mountain Granite Pluton: Northeast VT

Springston, 2008, Terrain Analysis using LIDAR Topographic Data: A Case History from Williston, Northwest VT

This LIDAR example reveals wave-washed till slopes within the Upper and Lower Fort Ann stages of glacial Lake Vermont reveal subtle, contour-parallel “bathtub rings” that appear to represent down-stepping shorelines. The map is also effective for discerning contacts between surficial deposits, such as between a lacustrine terrace and a till slope. Combined with digital orthophotos and high-resolution GIS surface water and road layers, it is a highly effective tool for mapping surficial deposits and landforms.

Related to the use of surficial geologic information, the VT State Geologist convened a symposium on natural hazards. He kicked off the session with a summary talk entitled: “The Vermont Natural Hazard Experience and the NESEC State Geologists” He is the chair of the NESEC State Geologist group. In May, 2008, the Northeastern States Emergency Consortium (NESEC, Directors of the Emergency Management Agencies for 8 states in the Northeast U.S.) invited the State Geologists in the region to form a NESEC State Geologists group. The State Geologists advise NESEC on natural hazard issues. The Vermont Geological Survey (VGS) has long been involved in natural hazard investigations and our experience played an important role in developing focus for NESEC coordination. Relevant items highlighted before the Directors of Emergency Management included: Liquefaction and amplification maps for schools and critical infrastructure, landslides, coastal erosion and support for LIDAR.

VT examples employing surficial geologic maps and information include a range of activities. Seismic hazard studies include a refinement of HAZUS-MH input data for Burlington to account for amplification of seismic waves within the surficial materials. The potential for amplification and liquefaction was reviewed at the VT Yankee Nuclear Power Station with focus on blow counts and 22-35 feet of layered silt, silty sand, sand, and gravel. For post event mitigation planning, slope stability studies are investigated at

many sites throughout the state, including a large landslide in Jeffersonville. A landslide mapping protocol that is under development will make use of new LIDAR topographic data and field information to identify natural slopes susceptible to failure. Mapping of surficial geology and fluvial geomorphology in several watersheds has resulted in an improved understanding of the variation in stream bank and bed erodibility in various surficial materials and has shown the need for understanding the underlying surficial geology in order to understand the response of streams to changes in land use.

Other related talks from the hazards symposium included:

Geotechnical Constraints Imposed By Localized Lacustrine Deposits—Are They Misunderestimated?: Wunsch, David R.

New Hampshire Geological Survey and Landslide Susceptibility Mapping In Maine: Foley, Michael E**.** and Loiselle, Marc C., Maine Geological Survey

VGS Hazard Grants and Surficial Geology

The VGS is to receive a nationally competitive pre-disaster mitigation grant (PDM-C) from FEMA to develop a potential slope instability mapping protocol that will become part of the State Hazard Mitigation Plan. The protocol will primarily employ LIDAR or ERDAS Imagine georeferenced airphotos with surfical geologic data.

VGS received a FEMA, National Earthquake Hazards Reduction Program grant to develop a amplification and liquefaction map for Burlington, Vermont. Surfical geology by Stephen Wright will be employed plus seismic refraction studies conducted in cooperation with Norwich University and engineering analysis by Professor Mandar Dewoolkar at the University of Vermont

Surficial Geology (1:62,500) as a Digital Statewide Coverage

The surficial geologic maps of Vermont, mapped and compiled by the Vermont Geological Survey from 1956-1970, were recently digitized. The data were released through Vermont Center Fro Geographic Information (VCGI) at http://www.vcgi.org/. VCGI and the Vermont Geological Survey worked with VHB Pioneer Environmental Associates to digitize the original 1:62,500 scale surficial maps. In the dataset, surficial geologic features, plus rock outcrops, are represented as polygon, line and point features. Edge matching and inconsistencies in adjoining geologic units on the 15 minute quads were resolved by referring to the 1:250,000 scale 1970 Surficial Geologic Map of Vermont by Stewart and MacClintock. VCGI provided oversight, georectification, and metadata for the project. VGS provided quality control and data review. Personnel at VHB Pioneer Environmental Associates were responsible for georectifying images, digitizing data, and edge-matching quadrangles. Stone Environmental had previously digitized 9 quadrangles. There are no intended updates to this dataset. New surficial geologic maps at a scale of 1:24,000 are being completed by the Vermont Geological Survey and are posted through VCGI or at the VGS web site. Thanks to Marjorie Gale of the VGS for her efforts on this project

****

Vol. 41 (12)

Ontario Geological Survey

Andy Bajc
andy.bajc@ontario.ca
933 Ramsey Lake Road
Sudbury, ON P3E 6B5

The Ontario Geological Survey has been busy generating 3-dimensional (3-D) maps of Quaternary deposits throughout southwestern and south-central Ontario for the past 7 years. Abigail Burt is nearing completion of a 3-D study of the Oro Moraine located just north of Barrie and is in the initial phase of a study in the Orangeville-Fergus area focusing on the composition of the Orangeville and Paris-Galt moraines. In 2007, Andy Bajc completed a 3-D study of Quaternary deposits in the Regional Municipality of Waterloo and is currently nearing completion of a 3-D study of the Brantford-Woodstock area to the south. As part of the 3-D mapping program in the Brantford-Woodstock area, 40 continuously-cored boreholes were drilled to bedrock. This enabled a good understanding of the stratigraphic framework for this area. Numerous radiocarbon-dated sub-till organic deposits were encountered as part of the drilling program and are attributed to the Elgin Subepisode (formerly Middle Wisconsinan). Paleoecological analyses of these deposits are currently underway with Barry Warner and Paul Jasinski of the University of Waterloo. The results of this study were presented at the AGU meeting held in Toronto during the spring of 2009. Geological and paleoecological study of a sub-till organic sequence encountered in the Zorra quarry near Woodstock, Ontario is underway with Paul Karrow of the University of Waterloo and others. Several radiocarbon dates ranging between 42.9 and 50.5 ka BP have been obtained from the site.

A project looking at the Dundas buried bedrock valley which extends westward towards Lake Huron from the west end of Lake Ontario was initiated in 2006. Ten continuously cored boreholes were drilled in geophysically-defined locations along the interpreted thalweg of the valley to characterize the infilling sediments and evaluate the feature for its potential to host significant aquifers capable of augmenting municipal water supplies. One of our cored holes was drilled in Copetown, Ontario and extended to a depth of 650 feet (198 m) without intersecting bedrock. All of the fill is interpreted to be associated with the final retreat of the Erie-Ontario ice lobe during the Michigan Subepisode (formerly Late Wisconsinan). The results of this study were presented during the fall of 2009 at the GSA Annual Meeting in Portland.

For more detailed information on the Ontario Geological Survey and its ongoing projects, one is invited to visit our web site at:

http://www.mndm.gov.on.ca/mines/default_e.asp

****

Vol. 41 (13)

David Barclay
david.barclay@cortland.edu
SUNY Cortland

My work in Alaska continues. The most significant recent accomplishment has been development of master tree-ring chronologies for hemlock and spruce that span the last 2000 years for the Prince William Sound region. These are being used to crossdate trees killed by pre-Little Ice Age glacier advances that previously were only approximately dated by radiocarbon; the results show distinct phases of ice advance in the first millennium AD that were comparable in spatial extent and temporal spacing to advance phases of the more recent and better known Little Ice Age. Publications describing this work are at my SUNY Cortland website web.cortland.edu/barclayd/index.htm

In New York State I am now in the second year of collaborating with John Rayburn to develop long tree-ring chronologies from historical structures in Willsboro (on Lake Champlain). Field sampling is quite a contrast to my work in Alaska as we are coring beams in barns, attics and basements; abundant bird feces, musty crawl spaces, precarious positions and a mummified squirrel are the abiding memories from last summer. Nonetheless, results so far are very promising, with preliminary crossdates for one structure being tree-cutting dates in the 1760s, which is when Willsboro was founded.

I also have a couple of glacial geology projects going in Cortland County. Using LIDAR I am getting a fresh look at the glacial geomorphology of the area, with highlights including some beautiful eskers and push ridges in segments of the Valley Heads moraine, subtle lineations from basal ice sheet erosion on summits, and braiding patterns on Valley Heads-age outwash. I am also continuing to explore some SUNY Cortland property in the south of the county that features a classic Finger Lakes gorge with alternating Holocene and pre-LGM segments.

I have found an intriguing diamicton overlying bedrock at the base of the gorge (photo on right); it is very compact with no exotic clasts and my preliminary interpretation is that it is weathered bedrock and colluvium that pre-dates the last glaciation. If anyone has bright ideas for dating this material then please let me know.

****

Paul Bierman
pbierman@uvm.edu
UVM Geology Dept.
Professor ,Chair, GSA QGG
Delehanty Hall
180 Colchester Avenue
Burlington, VT 05405
802-656-4411(v)
802-656-0045 (fax)

Just a short note to the Glaciogram to say that after five up and down years at UVM, we are back to working full steam ahead and then some in our new laboratory facility extracting ^{10}Be and ^{26}Al from quartz. You can see the lab, our projects and many of our recipes at:

http://uvm.edu/cosmolab

In the past 4 months, we've processed over 250 samples, more than we've ever measured in the course of a whole year. Some of these samples come from clasts collected from the Greenland Ice Sheet while others come from both boulder and bedrock exposures outside the margin. Our initial data, presented by Lee Corbett and Joseph Graly (UVM MS Candidates) at GSA Portland (Oregon that is), show that high surfaces in the Upernavik area, northwestern Greenland have the expects latest Pleistocene exposure ages in the valley bottoms for both bedrock and boulders but that high elevation surfaces have longer exposure times - discordant between boulders and bedrock. Perhaps we are seeing ice cover once frozen to the bed?

****

G. Gordon Connally
buffconns@att.net

I have been working on two projects in recent months. One is the detailed surficial geology of the Hopewell Junction 7.5' Quadrangle in the Hudson Valley. The second is the detailed surficial geology of the Buffalo NW and Buffalo NE 7.5' Quadrangles. Both revealed a bit that is new.

The only significant change in Hopewell Junction is that Glacial Lake Fishkill was a much more complex depositional environment than that envisaged by Connally and Sirkin (1986). It developed as the glacier retreated from the Shenendoah Moraine, mapped as Fishkill Valley Sequence 1 and consisted of two phases. The higher phase had a dam at ±250 feet (76.2 meters) while the lower phase had a dam at ±210 feet (64.0 meters). Quite evidently the dam that had contained the Sequence 2 outwash was breached and reduced ±40 feet to initiate the lower phase represented by Sequence 3 outwash. The ice margin was in the Pleasant Valley Quadrangle to the north while Sequence 3 outwash was deposited.

However, the striations are even more interesting. I observed and recorded only three convincing sets of striae, although three full days were spent searching for them in the fall of 2008. The first set was observed on the Poughquag Quartzite, in the Hudson Highlands, shown in the southwest corner of the map. The direction is a N 40° E. The second set was observed along Route 52, about 0.6 miles (1.0 kilometers) west of the intersection with Route 376 at East Fishkill. The direction is N 42° E. The third set is on a side road, another 0.7 miles (1.2 kilometers) farther west. The direction is N 30° E. The striations are distinctly different from the drumlin orientations that all are slightly west of north. Not only is the northeast direction puzzling, but so is the scarcity of striations. In most exposures the bedrock surface appears to be waterworn, completely lacking in glacial polish. In a few other exposures the surface appears to have been glacially plucked.

The paucity of striae and the waterworn nature of the local bedrock surface in the vicinity of Hopewell Junction, suggest that there was a significant layer of liquid water beneath the advancing ice. The thick lacustrine deposits that underlie the glacial outwash in the Fishkill Creek valley probably developed beneath the Woodfordian glacier and not just in front of it. Subglacial meltout might even have eroded the very deep bedrock basin beneath Fishkill Creek. If the Woodfordian glacier initially advanced out of the Hudson River trench and toward the east, it evidently was deflected back toward the west as it approached the Hudson Highlands. Very likely the thickest and most rapid ice stream was channeled through the narrow defile that had been eroded by the Hudson River through the Highlands. Thus, the straie record flow toward the Hudson River channel rather than away from it, contrary to the picture painted by Connally and Sirkin 1973.

Connally, G. G., and Sirkin, L, 1973, Wisconsinan history of the Hudson-Champlain Lobe. In Black, R. F., Goldthwait, R. P., and Willman, B. E. editors, The Wisconsinan Stage: Geological Society of America Memoir 136, p. 47-106.

Connally, G. G., and Sirkin, L, 1986, Woodfordian ice margins, recessional events, and pollen stratigraphy of the Mid-Hudson Valley. In Cadwell, D. H., editor, The Wisconsinan Stage of the First Geological District, eastern New York: New York State Museum Bulletin 455, 50-72.

****

Dave De Simone
hawkeye272david@yahoo.com
De Simone Geoscience Investigations
957 Babcock Lake Road
Petersburg, NY 12138

This term I am again teaching Field Methods at RPI and enjoy the treat of teaching a course I once took as a student. The class is delightfully small and we've done a variety of field studies in bedrock, surficial and hydro. This year's Indy projects include

a surficial map of Moreau Pond State Park, continuation of a bedrock and surficial mapping project in Grafton Lakes State Park begun by 2 students last year, Hudson River sediment analyses, soil analyses, Poesten Kill gorge geology, and a study of Cape Ann geology by a student who happens to live there. By the time you read this, Indy projects will have been presented at a poster session and I should be busy grading their reports. Interest in surficial mapping is about as high as it was with last year's class. There's always the hint that the department will accept 1-2 Master's students who are interested in doing a mapping project with me. There's no guarantee but if you're interested please contact the RPI E&ES department and specifically indicate your desire to work with me. That might set the ball rolling.

My class again attended the NYSGA meeting and we enjoyed the mixed glacial-archaeology trip on Saturday and the Esopus Creek hydrology trip on Sunday. Extra thanks to Byron for teaching some good stuff to members of my class at the last stop on Saturday. The Sunday NYSGA trip took us through part of my field mapping project for the NYS Geological Survey completed this fall. I hope to get back there and continue the research with John Rayburn's summer group in the years ahead. One season of mapping in the Catskills does not make an expert. However, it is apparent the older works of Rich and Cadwell can be re-examined in a new context and alternative interpretations of the geology and deglacial history may be a timely contribution to the efforts of Dan Davis and colleagues. My map of the Phoenicia quad looks quite different from either Rich's or Cadwell's maps. No deltas with verifiable topsets were observed. No outwash sediments were mapped in the basins of the proglacial lakes in the Esopus drainage basin. Deeper water glaciolacustrine sediments appeared to fall into 2 distinct facies, rhythmites and a massive silty diamicton with abundant stones.

Surficial mapping projects in Dorset and Londonderry, VT, were completed with digitization of the last map layers by Marjie Gale of the VT Survey. Yey to Marjie who has already been too busy with the forthcoming VT bedrock map. Hopefully, 2010 will bring new surficial mapping projects in NY, ME, NH and/or VT. The past 2 years have seen a substantial increase in my geoarchaeology work with projects in NY and VT and I anticipate further growth in 2010, perhaps expanding into other states. The intellectual challenge keeps me mentally fresh; and, you can't beat the joys of having so much stratigraphy to look at in trench after trench after trench. Too bad surficial mapping projects can't incorporate a good budget for backhoe operations!

Mental freshness apparently does not carry over into my enjoyment of the mountains. Recently, I managed to either step badly or have rotten luck and ruptured the plantaris tendon of my left leg. Can you say "ouch?" If my last birthday didn't make me feel old enough, the discovery that this tendon rupture is colloquially known in the medical trade as "the injury of the aging athlete" made me feel that much older. But, apparently no wiser.

****

Bob Dineen
eskers@dejazzd.com
P.O. Box 197
Lamb Cottage
Geigertown, PA 19523

Does anyone know of any archeological or geological studies of the Holocene Susquehanna River terraces that have been conducted in the last twenty years? I'm interested in up-dating the work that I did with Bob Funk of the NYS Museum.

****

Eugene Domack
edomack@hamilton.edu
Dept. Geosciences
Hamilton College
Clinton, NY 13323

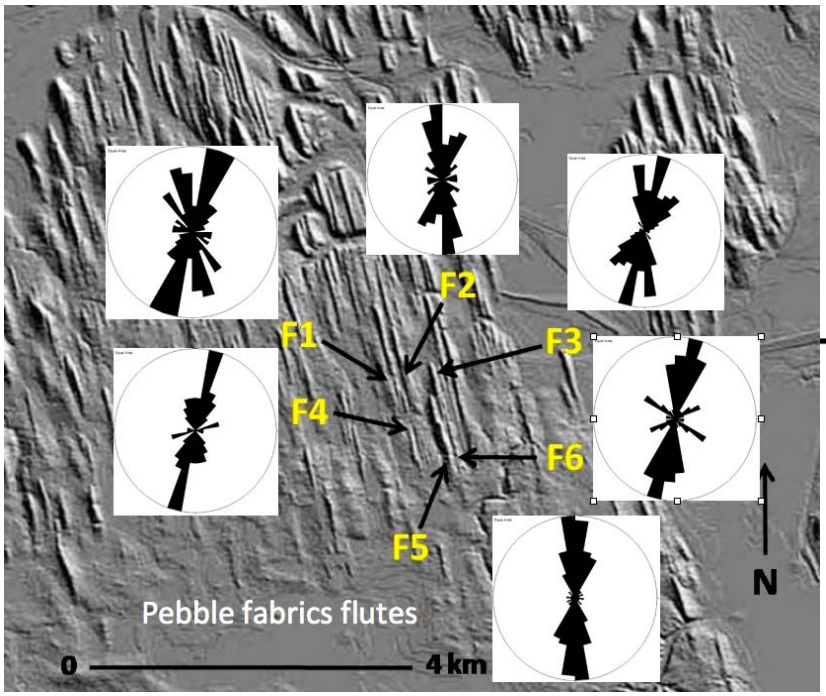
We continue to work on the landscape association in the eastern end of the Oneida Lake basin. The newly acquired LIDAR data from the Oneida County survey has revealed some spectacular landform assemblages from the eastern end of the basin that we are incorporating into the evolution of the Oneida Lake Basin, which includes Late Glacial stage events that bracket Glacial Lake Iroquois. We also are integrating a high resolution bathymetric survey of Oneida Lake and radiocarbon and OSL dating of beach ridge and shoreline features. This later (OSL) work is in collaboration with Dale Hess (Brock University) and Lewis Owen (Univ. Cincinnati).

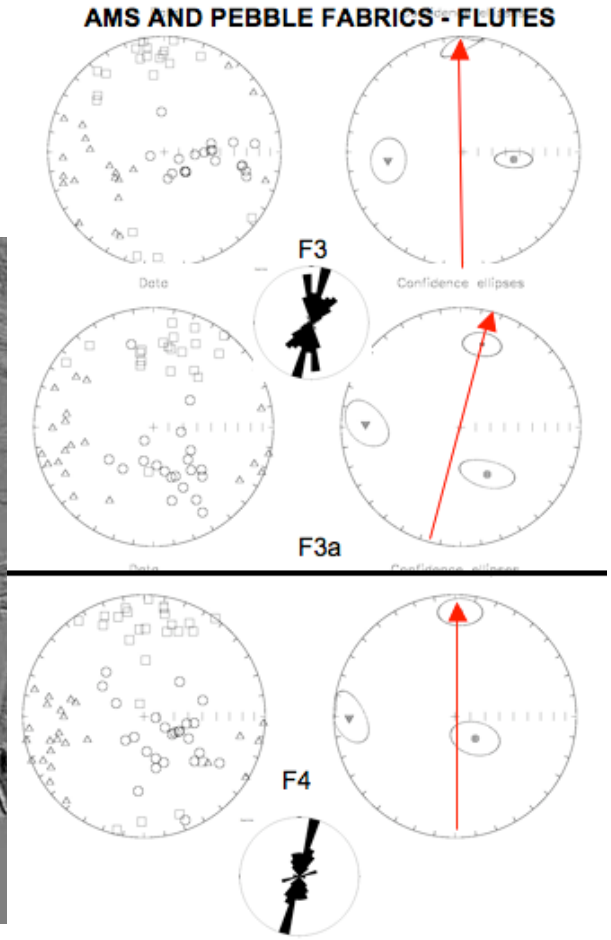
****

Edward B. Evenson
Professor, Earth and Environmental Sciences
Lehigh University
31 Williams Dr, Bethlehem, PA 18015
610-758-3659
ebe0@Lehigh.EDU

I am working with Andy Kozlowski (NYSGS), Ken Kodama (Lehigh) and my graduate student, Matt Gentoso (BS - PSU), on a project in the Weedsport drumlin and flute field. We are comparing traditional pebble macrofabrics (which almost perfectly align with the long axis of the streamlined bedforms, to AMS magnetic (micro) fabrics. Our research has two objectives: 1) to determine if macrofabrics and microfabrics (AMS) faithfully record ice flow (our limited data set says they do) and 2) investigate the kinematics of till deformation around and along streamlined bedforms. We are also preparing a surficial geology map of the Walcott Quadrangle with support from the USGS-EDMAP program and the NYSGS.

Vol. 41 (18)





****

P. Jay Fleisher
fleishpj@oneonta.edu
Earth Sciences-SUNY
Oneonta, NY 13820

SUNY-Oneonta.Fields work at Bering Glacier, Alaska in June/July 2009 successfully added new information to a database that includes decades of study at this site. Of primary interest is new information pertaining to rates of ice front retreat and downwasting. GPS mapping along a kilometer of glacier terminus on the eastern piedmont margin confirmed rates of retreat on the order of 40 to 60 meters per year from terrain free of major ice-marginal drainage. This coupled with solid-ice downwasting rates of 7 cm per day are consistent with results of studies during the past decade. Although these rates have significance when related to annual changes in weather conditions, the database does not extend far enough into the past to be related to climate change. Ongoing studies of Neoglacial events depicted in newly exposed stratigraphic associations demonstrate that past surge events are represented by units containing meter-size, angular and rounded boulders previously ascribed to outburst floods from a persistent conduit system. Final interpretation awaits the results of radiocarbon dating of samples from buried forest horizons and peat zones common to foreland stratigraphy.

Annual retreat continues to expose the effects of large-scale, subglacial scouring that produced kilometer-scale basins at surge-related outburst sites. This combined with proglacial terrain modification due to sandar development constitutes the basis for understanding the profound significance of subglacial hydraulic erosion associated with surge-related flood events. In 22 years of continuous field study, this glacier has never failed to teach us something new about Neoglacial processes in central-coastal Alaska.

****

David Franzi
SUNY Plattsburg
Phone: (518) 564-4033
E-Mail: david.franzi@plattsburgh.edu

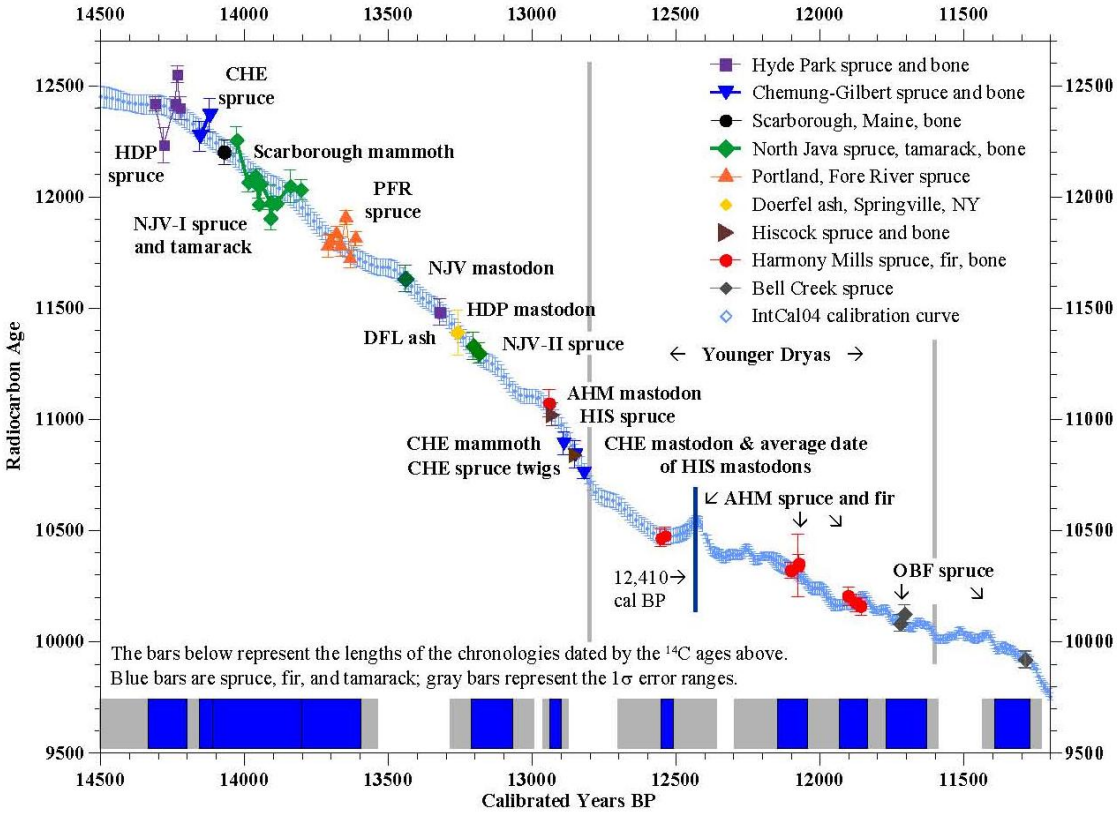
This fall, my SUNY Plattsburgh environmental geotechnology class uncovered several bones, most likely from a harbor seal, from exposures of Champlain Sea mud at the former Plattsburgh Air Force Base marina. The accidental find occurred as the class collected mud samples for a slope stability analysis of the bluffs along the present shoreline of Lake Champlain. The class collected the tibia and fibula from both legs, an astragalus, a tarsal bone and a phalange, but left the rest of the remains undisturbed. Subsequent excavations with Bob Feranec, Curator of Vertebrate Paleontology at the NYS Museum yielded four vertebrae, four ribs, a molar and half of the mandible with a canine tooth attached. Bob extracted collagen from one of the fibula bones and sent the sample to NOSAMS for radiocarbon dating. The find represents the second phocid fossil recovered from the Champlain lowland. The left tibial shaft from another harbor seal, originally misidentified as a hooded sea, was found in Plattsburgh in 1901. I have submitted an abstract on this with Bob Feranec and John Rayburn to the NE/SE GSA meeting.

Vol. 41 (20)

Carol Griggs
cbg4@cornell.edu
Cornell Tree Ring Lab
B48 Goldwin Smith Hall
Ithaca, NY 14853

Pleistocene to Present NE North American Dendrochronology, 2009 update:

The graph below shows three additions to last year's radiocarbon dates of wood and bone from the late Glacial chronozones that were found in NE North America. They include dates of an early ash log found at the Doerfel site in Springville, NY, and the Hiscock mastodon bones (R. Laub); the date of a mammoth found in Scarborough, ME (T. Weddle), and new dates from Bell Creek spruce samples that I reported last year. Two chronologies have been built from the Bell Creek spruce, both over 130 years in length; the patterns in both chronologies show brief periods of extreme change in the trees' environment through the last years and just after the YD ended. Analysis of what caused these changes is underway; whether the causes are site- or regional-specific is critical.



****

Les Hasbargen
hasbarle@oneonta.edu
219 Science 1 Building
Earth Sciences Dept., SUNY
Oneonta, NY 13820

Greetings from Oneonta to all Glaciogram readers! Many thanks to John Rayburn for keeping the Gram going. It has been a busy year. I have continued my work on unraveling floodplain stratigraphy at Pine Lake Environmental Campus of Hartwick College. GPR reveals a maze of buried channels and bars underlying the modern floodplain, and we are working on a model for floodplain development which helps to explain what we see. Namely, we are ruling out floodplain growth from lateral migration of Charlotte Creek. We are also ruling out significant historical vertical accretion of the floodplain. Rather, the floodplain appears to grow vertically and laterally in fits and starts. Episodic floods both scour and blanket parts of the floodplain. Buried anastomotic channels which bear a remarkable resemblance to modern bars and channels suggest some degree of lateral shifting of the channels. Trough-like truncations in GPR stratigraphy suggest some lateral migration of channels occurs as well. The ensemble mosaic of stratigraphy depicts a shattered record with many pieces removed. We are continuing to refine our characterization of the subsurface through the development of user-friendly software (undergraduate research projects abound!). Especially worth of note is the contribution from Emmon Johnson, an undergraduate in Earth Sciences and Math & Computer Science. He has worked on GPR imaging, and he is now working with LIDAR elevation data sets that were recently released from FEMA (flood project) for parts of the upper Susquehanna River basin. We hope to use these exquisitely detailed data sets to explore fluvial and glacial features in Otsego County. We suddenly have a lot more projects to work on! We are happy to share our data, so let us know if you are interested.

****

Dale Hess
dhess2@brocku.ca
Department of Earth Sciences
Brock University
St. Catharines, ON L2S 3A1

We have submitted a paper to Sedimentary Geology where we investigated subglacial bedforms of varying morphometry in the New York Drumlin Field. Several interesting observations were made upon carrying out a microstructural analysis of drumlinized sediments exposed at Chimney Bluffs State Park and within a megaflute near the interior of the field. Grain lineations displayed in thin section follow a geometry consistent with Riedel shearing. In addition, we have not observed a relationship between bedform shape and internal sediment characteristics (i.e. rheology). See the upcoming published work for details (authored by myself, John Menzies, and Jason Briner at UB).

We've also had some fun using a recently acquired image analysis workstation at Brock. Stay tuned for a *soon to be submitted* manuscript on a comparison of macrofabric and microfabric. I'd be interested in hearing about any sites in your field area that may be OSL or cosmogenic exposure dating friendly. We have acquired some preliminary data in an effort to better constrain the chronology of Laurentide deglaciation from central and western New York State, so any tips regarding potential locations for expansion of this work would be appreciated. Included in this preliminary collection is work carried out by Eugene Domack, Lewis Owen and myself where we applied OSL and radiocarbon dating methods to paleo-shoreline sequences near Oneida Lake. Please catch up with me at NEGSA or by email for discussion of other sampling sites in your neighborhood.

****

Paul Karrow
pfkarrow@sciborg.uwaterloo.ca
Department of Earth and Environmental Sciences,
University of Waterloo, Waterloo, Ontario, N2L3G1.

Early in 2009, a paper with a 2008 date and authored by Rufus Churcher and I described post-glacial vertebrates at Hamilton, Ontario (Canadian Journal of Earth Sciences 45, 1487-1500). A faunal list of 4 fish, 2 amphibians, 5 snakes, 6 birds, and 30 mostly small mammals, originally ascribed to glacial Lake Iroquois, was later dated as 4300 BP.

A similarly long-running study of interglacial sediments on the west shore of Cayuga Lake, NY, at Fernbank with A. Bloom, J. N. Haas, A. Heiss, J. H. McAndrews, B. B. Miller, A. V. Morgan, and K. L. Seymour appeared in Quaternary Research (72, 132-142, 2009). The sequence of cool over warm fossiliferous sediments is in many ways similar to that of Toronto across Lake Ontario, but Fernbank has a much shorter list of taxa.

Now being revised after review is a paper with John Clague on Canadian urban geology for a special series in Geoscience Canada for the International Year of Plant Earth.

The year's publication record rounds out with four conference papers:

1. With Wehmiller, Oches, Portell, Sanford, Tilling, Belknap, and York on Florida aminostratigraphy and the sea level record. GSA, St. Petersburg.
2. With Bajc, Jasinski, and Warner on SW Ontario sub-till organic sites. GAC-AGU, Toronto.
3. With Russell on the Highgate Mastodon, GAC-AGU, Toronto.
4. With Haas, Heiss; and McAndrews on paleoecology of the Fernbank interglacial site. Paleontological Society of China, Nanjing.

Other work is mainly centered on Quaternary fossils. We hired a summer student to compile and update the known occurrences of mastodons and mammoths in southern Ontario. This was an outgrowth of our involvement with the Highgate mastodon. Some tens of new finds were added to the record, with recent discoveries including Barrie, Orangeville, and Stratford. An intriguing New York link is the mammoth skeleton found in 1887 by J. Henry Peck of Stanley, NY, in Simcoe County, Ontario. Parts were lost in a fire in the Dufferin County Museum, Shelburne, Ontario, a tooth went to Elmira College, NY (confirmed still extant) and the rest went to Lafayette College, PA. but cannot now be found. The Highgate mastodon site also yielded giant beaver, the earliest found in Canada and only one of two in Ontario (the other at Toronto from the interglacial Don Fm.).

As reported in 2008, work continues on a fossiliferous (molluscs, ostracodes, plants, insects) channel fill at Zorra quarry below Catfish Creek Till, the Innerkip interglacial/interstadial (plants, molluscs, ostracodes, mites, vertebrates, insects) site, and the UW campus interstadial/interglacial site (plants).

****

Ben Laabs
laabs@geneseo.edu
SUNY Geneseo
1 College Circle
Geneseo, NY 14454

I am working with Jeff Munroe (Middlebury College) on reconstructing the extent and timing of mountain glacier and pluvial-lake changes during the last glaciation in the northern Great Basin, Utah and Nevada. The project involves field mapping, lake-sediment coring in high alpine basins, cosmogenic surface-exposure dating of glacial features, and numerical modeling of glaciers and lakes, and currently supports three students in the Geological Sciences department at SUNY Geneseo. A significant outcome of this research that may be of interest to the glacial community in New York is the development of a cosmogenic-nuclide preparation lab at SUNY Geneseo. The lab is designed for processing of rock and sediment samples for cosmogenic aluminum and beryllium in preparation for AMS analysis. Although my research focuses primarily on glacial/paleoclimate history in the western U.S., I am interested in exploring collaborative research opportunities elsewhere; especially in New York!

****

Vol. 41 (24)

Norton G. Miller
nmiller2@mail.nysed.gov
Biological Survey
New York State Museum
Albany, NY 12330

With colleagues in Maine (Woody Thompson, Tom Weddle, Bob Nelson) and at Cornell (Carol Griggs), I have been revising a manuscript containing an account of our work on glacial deposits and fossil biota in an exposure of the Presumpscot Formation in Portland, Maine, excavated in 2007 during building construction. Both logs and shelly marine fossils occurred together and with peat that contained large moss and insect assemblages. We have obtained a lengthy series of AMS and long-count beta-decay radiocarbon ages on diverse organics. Preliminary results of this work have been presented as posters at various meetings of the Geological Society of America, and elsewhere, and now we are closing in on manuscript submission. Included is a new assessment of the marine reservoir effect on radiocarbon ages that helps in aligning the deglacial chronology for southern Maine with the New England varve chronology. Carol Griggs and I are working on logs and other organics of Younger Dryas age from an intensively studied deposit of peat found during storm sewer construction near potholes that contained the famous mid-1800s Cohoes, New York, mastodon.

A preliminary account of our findings, which include dendrochronological, pollen, and plant macrofossils analyses, and extensive AMS radiocarbon age determinations, was published in the guidebook for the 71st Annual Reunion of the Northeastern Friends of the Pleistocene (2008). Bob Dineen and I continue our interest in the chronology and associated vegetational history of glacial lakes in the Hudson River valley. There has been substantial recent interest in this topic, but not all of the problems have been worked through satisfactorily, although significant progress during the past decade is evident. What we now know bears little relationship to where we were 15-20 years ago, and more advancement and surprises are likely. In collaboration with Paul Karrow and others I (and students) have been picking plant macrofossils from samples of the Innerkip organic bed in Ontario, Canada, in a multidisciplinary effort to establish whether these beds, which are beyond radiocarbon dating, are interstadial Wisconsinan or interglacial. Plant macrofossil diversity is considerable, but most of what we have found so far is from aquatic plants.

We continue to search for the “smoking gun”. I have been fortunate over the past year or so to work with a reconstituted (and rejuvenated) Pleistocene group at the New York State Museum/NYS Geological Survey. Glacial geologist Andy Kozlowski and his crew (Newt Krumdieck, Paul Stefanik), Bob Feranec in paleontology and stable isotope chemistry, Jon Lothrop in archeology, me in paleobotany/paleoecology, and others have been collaborating. Our work includes studies on the mobility of the Albany Pine Bush dune field (which presumably became inactive in the late Pleistocene); what we have named the Tunkamoose mastodon, tusks of which and samples of associated sediment for

analysis, were obtained several months ago from the Wallkill black earth area in Orange County, NY; and the Montezuma stratigraphy drilled under Andy's leadership and which contains two stratigraphically separate peat beds containing diverse plant macrofossil assemblages. Every day, it seems, someone stops by with something new to discuss, and so much is going on it has been hard to keep up. We welcome visits from our colleagues in Quaternary Studies.

****

Dorothy Peteet
petee@ldeo.columbia.edu
Room 204 New Core Lab, LDEO
Palisades, NY 10964

A joint effort in compiling and analyzing new field data and previous literature led to a New York State Geological Association (NYSGA) field trip led by Dorothy Peteet, John Rayburn, Kirsten Menking, Guy Robinson, and Byron Stone. The field trip is NYSGA 2009 Trip 4 entitled: "Deglaciation in the Southeastern Laurentide Sector and the Hudson Valley – 15,000 Years of Vegetational and Climate History" and is available as a pdf. We organized an AGU session on the timing of deglaciation in the southeastern sector of the Laurentide margin, and continue to puzzle over the stark contrast in AMS ^{14}C chronologies from lakes/ponds in the region compared to ^{10}Be dating on glacial erratics and varve chronologies.

With help from NOAA's SeaGrant funding and a Tibor Polgar fellow sponsored by the Hudson River Foundation and HNERR, we have made progress on analyzing macrofossil and XRF records from many of the Hudson marshes. The record from Iona Island is published as a Polgar report.

We published a paper in Quaternary Research (vol 72: 207-217) entitled: "Climate and vegetation history from a 14,000-year peatland record, Kenai Peninsula, Alaska", and continue to work on other Alaskan peat records.

****

Greg Pope
popeg@mail.montclair.edu
Dept of Earth & Environmental Studies
Mallory Hall 252
Montclair, NJ 07043

My students and colleagues have been engaged in work situated at the NJ School of Conservation in northwest New Jersey (not far from Port Jervis), on two fronts.1) Associated with a larger ecosystem study of the local water body, Lake Wapalanne, my

Biology colleague Dr. Mary Egan obtained 1.5m core of the lake and pre-lake sediments. The lake dates to CCC days, but the sediments are part of a terrace of Big Flat Brook, and we are eager to see how far back it may go. We (Drs. Mike Kruge, Josh Galster, Sandra Passchier, Mary Egan) are currently engaged in particle size, chemistry, organic content, and pollen analysis of this core, results will be presented (initially) at the 2010 Annual AAG Meeting in Washington, DC. We may attempt another core this winter. 2) My students in Geomorphology have assisted me in surveying a discontinuous boulder bed in and around the Lake Wapalanne vicinity. The boulder bed has a fabric aligned with the valley axis, in addition to secondary fabric orientation suggesting post-deposition (periglacial?) adjustment. The boulder bed is likely some form of lateral or subglacial moraine, though a flood/outwash deposit is also possible. We hope to have a paper ready for The Middle States Geographer shortly (online, Spring publication, if accepted). Any thoughts or questions, please drop me a line

****

John Rayburn
rayburnj@newpaltz.edu
Dept. of Geology
SUNY New Paltz

Another year, another Glaciogram. Thanks to all those who contributed! It's a very strong turn-out this year, and a healthy looking volume. I'd like to begin my contribution by advertising my three seniors who did research projects with me this year. (Note: all three will be presenting their work at the NE/SE GSA meeting in March.)

Kira Baca worked on a 195 year tree ring record from a stand of Red Oaks in the Champlain Valley, successfully relating ring width to meteorological conditions. We greatly acknowledge the assistance of David Barclay (SUNY Cortland), since dendro is very new to me (but not unlike varves, it turns out). Kira also acted as assistant editor on this volume of the Glaciogram!

Amanda Lang worked on sedimentology and micro-paleontology of a core from the Catherine Creek wetland at the south end of Seneca Lake. We would like to acknowledge the assistance of Tara Curtin (Hobart and William Smith) and her students, plus Peter Knuepfer (Binghamton University) and his students. It took all of us to wrestle the New Paltz vibracore in and out of the wetland. It was a *very* wet wetland this summer.

Katherine Lawrence worked on a geophysical survey (hammer seismic), sedimentology and micro-paleontology of a recent landslide in the Champlain Valley. We would like to acknowledge David Franzi (SUNY Plattsburgh) for the loan of the hammer seismic equipment, and Tom Cronin and the USGS for use of their (very cool) drill rig.

Finally, I would like to announce that Shafiul Chowdhury (SUNY New Paltz) and I have been awarded an NSF-REU grant to study "Watershed Characterization Focusing on the Source of New York City Water". The program will begin this summer. Please pass the word along to your undergraduates, or colleagues who would know of interested students. (Better yet… give them your copy of the Glaciogram and go print another.) We have begun accepting applications. All relevant information is available on the website, or contact me directly.
http://www.newpaltz.edu/geology/nsf-reu/

****

Robert Titus
Hartwick College
titusr@hartwick.edu

This year I have begun writing weekly columns for four newspapers of the Hudson Catskill Newspaper Chain. These are the Register Star of Hudson, the Daily Mail of Catskill, the Courier of Columbia County and the Windham Journal. I continue to write popular science columns for Kaatskill Life magazine and the Woodstock Journal. Many of my columns have been about the Hudson Valley and Catskills ice age history. These reach a potential audience of about 30,000 readers. I do about 20 speaking events per year now and many of these introduce the general public to ice age topics. My wife Johanna (Dutchess College) and I are working on a popular science book about the Hudson Valley during the Ice Age. The book is aimed at the region's general reading audience.

****

Tom Weddle
Maine Geological Survey
Thomas.K.Weddle@maine.gov

This photo of a multiple striation locality is representative of changing ice flow directions during the late Wisconsinan in eastern coastal Maine. People should feel free to use it (source below).

Location is on the southeast shore of Graham Lake, Ellsworth, Maine, found during mapping of the surficial geology of the Ellsworth 7.5-minute quadrangle this summer as part of the Maine Geological Survey - U.S. Geological Survey cooperative STATEMAP program. Striations that are directed toward the right side of the photo trend 155-degrees and are the older set; striations directed toward the viewer are younger and trend 180-degrees. Striation pavement surface is on Cambrian age Ellsworth Schist; the dark zones on the surface are structural features in the bedrock.

Photo by land owner Ed Damm, of Bar Harbor, Maine.

****

Mike Wilson
SUNY Fredonia
Michael.Wilson@fredonia.edu

Much of my time was spent the past year looking at functionality of erosion controls on small streams, approximately 2nd to 4th order with base flows less than one cubic meter per second. Geomorphology classes are involved in these projects for about five or six of their lab sessions each autumn. During my travels I collect the occasional sample for C-14 dating and one fist-sized sample sent in this year produced six dates from twigs and woody debris, ranging from about 1,000 to 8,000 years BP ... and I and another experienced field geologist thought we were looking at exposed late-Pleistocene buried-valley stratigraphy. I will re-examine the site and possibly re-date the material next summer. Other activities of mine include examining geological or geotechnical QA/QC information for old nuclear waste and power plant sites to see if these sites would stand up to review today.