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NEW YORK GLACIOGRAM

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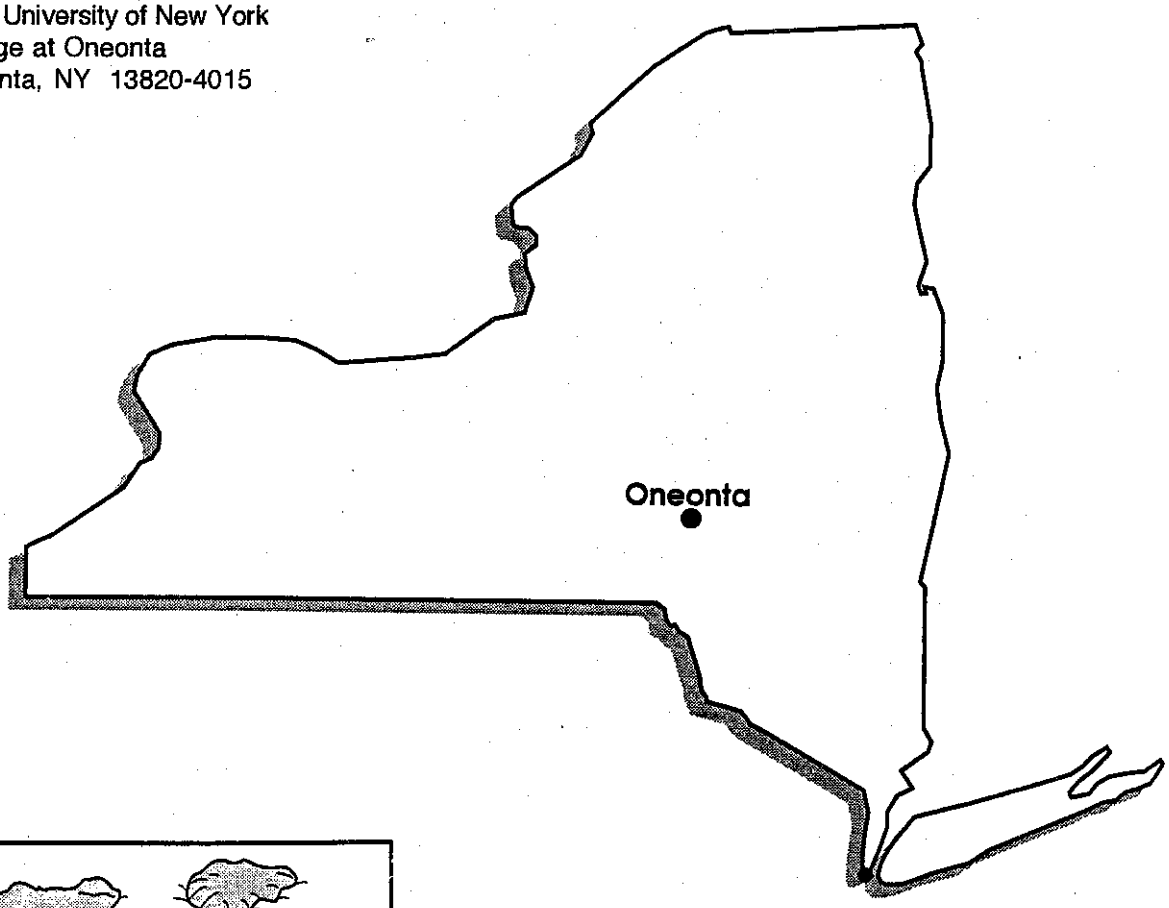

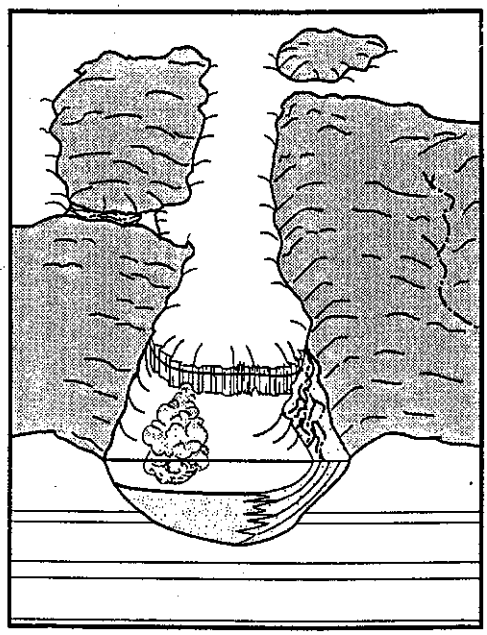

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EDITORIAL POLICY

The **GLACIOGRAM** is intended to be a 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.

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INVITATION FROM THE EDITOR

As you may know, the **Glaciogram** contains volunteered notes and project summaries. As the title implies, past issues have contained entries weighted toward Glacial Geology. Perhaps it's time to 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., but to date have not yet been included. Should your area of interest fall within this broader realm, please consider having your work included in the spring edition by forwarding a brief (300-500 words or less) summary at your convenience. Easily duplicated, simple, line diagrams and map figures (sorry, no photos) may also be submitted. Please pass this invitation on to friends and colleagues who may wish to share their work or be placed on the mailing list.

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Looking back at the last submission (Nov. '99) I am dismayed at the limited progress on various projects. I guess that's usual. Because of equipment failures and facility shutdown for several months, we still await an AMS date on the Grand River tufa deposit studied last summer by RICHARD MEYRICK (PDF). No results have been received on pollen samples from the site either. The alluvial fan paleosol at Scarborough was dated at near 9000 years; previously at another site in the same fan, charcoal from a paleosol was dated near 5000 years. We will have to go back and see if we can correlate the exposures across slump and vegetation (including poison ivy).

Other radiocarbon dates were obtained in recent months from a stump 4m under cliff-top dunes at Wasaga Beach (modern) and a cedar stump at present (very low) lake level near Meaford on Georgian Bay (7000 years -- evidently exhumed from the Nipissing transgression).

The north campus borehole, mentioned last time, yielded about 50 cm of organic sediments (including visible molluscs). Subsamples were examined for pollen by JOCK MCANDREWS, who surprisingly reports an interglacial assemblage. The simplest correlation would place these sediments below those previously reported (Boreas,1984) which were dated 40,000 years. Obviously, we need a fully cored hole to bedrock but lack the money. The 1980 core ended 6 m above bedrock. The new hole has reddish till resembling Canning below the organics. Canning Till was tentatively correlated with the Bradtville Till at Port Talbot on Lake Erie and both were speculated to be equivalents of the Sunnybrook Till (Toronto) with an early Wisconsinan age. Later (1992) Aleksis Dreimanis suggested Bradtville may be Illinoian age. The new, still poorly documented, information may realign Canning and Bradtville tills. Analyses of tills from the 1999 borehole are in progress.

There is no further news on the Fernbank (NY) interglacial site, except that reports on molluscs (MILLER), vertebrates (SEYMOUR), and insects (MORGAN), are expected soon. I was able to visit JUNE MIRECKI at Charleston (S. C.) in March and comparative amino acid analyses on molluscs from Fernbank and the Don Brickyard should be available this summer. In a sense we have come full circle as that same comparison was my first involvement with AA dating in the late 1960's, work which was never finalized.

Speaking of the Don, we anticipate some excavation at the Brickyard late this spring to allow sampling for recovery of vertebrates from the Don Fm. When visited in 1998 at GSA, excavation uncovered only the upper half of the Don Fm.; this time we plan to go to the bottom and expose the lower, more fossiliferous part. The vertebrate work will be by KEVIN SEYMOUR of the Royal Ontario Museum.

In the Fort Erie project, adjacent to New York, STEVE DOUGLAS (M. Sc.) has completed fossil analysis from the beach pit and awaits an AMS date on basal organics indicated by pollen to be near 10,000 years old. A long ditch farther north exposed a buried organic zone from which another date is expected.

There has been some progress on manuscripts. A paper on marl molluscs by YANG, KARROW, AND MACKIE has been accepted by the Journal of Paleolimnology and a paper on time classification in the eastern and northern Great Lakes by KARROW, DREIMANIS, and BARNETT, has been accepted for Quaternary Research. Computer problems with drawings has caused months of delay in revising a paper on Woodstock quarry exposures (KRZYSZKOWSKI and KARROW). After a decade of effort, the Woodbridge paper (KARROW, MCANDREWS, MILLER, MORGAN, SEYMOUR, and WHITE) has been submitted. Two invited papers on Ontario neotectonics studies (with OWEN WHITE) and on late Paleoindian geological history are in progress.

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Duane Braun, 400 East Second Street, Bloomsburg University, Bloomsburg, PA 17815-1301; dbraun@husky.bloomu.edu

Last summer we mapped the northeastern-most corner of PA along the Delaware river. There is a bedrock rapids in the river at Skinners Falls that may mark the original head of the Delaware drainage. Additional seismic, gravity, and/or drilling work will be done to see if there is a buried channel on the PA side of the river. Both north and south of the site, well records indicate 30 meters or more of glacial deposits below present river level. The site is just downstream of the last barbed tributary to the Delaware on the PA side.

The streams draining north to the Delaware should have contained proglacial lakes during ice recession but no glacial lake sediments have been observed. They are probably there put the till deposits are so bouldery that outcrops along the streams are almost entirely boulder armored. There are some slump landforms but none are currently active.

The south draining streams, unlike in New England, contain almost no outwash. There are discontinuous ice-contact-stratified drift deposits that have an esker landform in places. The valleys tend to be partly blocked by a series of till masses ("valley choker moraines"), each mass a few km from the next. Small dams at most of those sites have turned the valleys into chains of recreational lakes. Probably during ice recession there were a series of local proglacial lakes in those valleys that captured most of the glaciofluvial sediment in a series of disconnected ice-contact masses. This effectively stopped the formation of a continuous downstream graded outwash valley train. Glacial lake sediments have been observed in a few places in these south draining valleys.

This summer we will be mapping along the PA - NYS line from Hancock to Great Bend to a bit west of Binghamton.

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In response to your latest Glaciogram request, I enclose the abstract of a paper which was submitted for publication this morning. As you may be aware, the best dates are from Port Washington, Long Island By Sirkin and Stukenrath.

Comment:

In a narrow flowband directed towards Montauk Point, the New England sector of the Laurentide Ice Sheet (LIS) created an unusually regular sequence of linear, bouldery recessional moraines between 26 and 18 ka under non-buoyant, topographically rough, rigid bed conditions. A revised chronology suggests that the ice sheet was experiencing slow recession and thinning well before the last glacial maximum (LGM) at 21 ka.

Request:

Is anyone aware of closely limiting maximum dates from Long Island or the lowermost Hudson River Valley obtained since the work of Cotter et al. 1986?

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G. Gordon Connally, 12 University Avenue, Buffalo, NY 14214

Progress on surficial mapping in Westchester County, NY is proceeding at a pace that can best be described as -- you guessed it -- glacial. The White Plains Quadrangle has reached a priority 2 status. It should be the next map published by the New York State Geological Survey. The Mt. Kisco Quadrangle was in the budget for this summer, but never made the cut. So, it has been pushed ahead to the summer of 2001 and the beginning of the new millenium.

An interesting picture is beginning to emerge in Westchester. I was able to do some reconnaissance work while working on the seismic risk survey during the summer of 1999. The reconstructed ice margin positions trend southeast to northwest. This, of course, is counter-intuitive. We expected southwest to northeast alignments. It now appears that it may well have been Connecticut Valley ice that occupied Westchester County immediately prior to deglaciation. Had the Hudson-Champlain Lobe ice already disappeared northward? Or had it ever even been there? I will try to do a little provenance work this summer, looking for possible alternatives.

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I have been cooperating with an M.S. student from Cleveland State who is working on a three-dimensional visualization of the Pleistocene sediments beneath the Terminal Tower in downtown Cleveland. We are using 75-year old samples from borings taken before the construction. Some holes are as deep as 240 feet and terminate in bedrock. Others contain fine-grained diamicts and lacustrine deposits from the Late Wisconsinan. Upland holes record some of the ancestors of Lake Erie including peat and mollusc fragments. Holes on the flood plain show how the Cuyahoga River is incised into these deposits. Engineers took representative samples of each unit. The calligraphy on the labels and linen cross sections is remarkable. There is a fairly well-organized public relations campaign associated with this study. Hopefully, we can raise money to fund the ams dates and isotopic analyses of the shells. My desire would be to receive enough funding to drill some new holes and do continuous sampling through the deposits of the ancestors of Lake Erie, or possibly some local company would donate time and a rig.

Holly Trembczynski is completing her study of the relation of river terraces to ancestral Lake Erie levels. She chose four northward flowing rivers: Rocky River, Black River, Vermilion River and Huron River. They are about the same size and head in the Defiance or Spencer moraines. Dominant terraces in these valleys are adjusted to the Maumee, Whittlesey, Warren, and Lundy levels. A low terrace projects to some undetermined elevation beneath the modern lake, possibly a level of Early Lake Erie, or to the estuarine fill. Paleoterrace gradients are of the same order of magnitude as the modern rivers. Steeper gradients correspond to greater changes in lake level. There is some effect of the higher relief of the plateau when compared to the till and lake plains.

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Quaternary environments of southeastern Ontario

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A number of small projects as weekend efforts and as part of teaching geomorphology and earth system science are ongoing in the local area. A study in 1998 of a pothole on a ridge crest will shortly be available (Gilbert, in press [a]). This unique feature is further evidence of the role of subglacial meltwater in creating both large and small elements of landscape. The study ties in with other work in the area over more than a decade, and with a new project on erosion marks (s-forms) in bedrock at Kangerlussuak, west Greenland (Gilbert 2000), the latter being carried out in collaboration with Dr. Drew Hyatt, University of East Connecticut.

We also conducted a study using ground-penetrating radar of a small dome in the Ordovician limestone at Kingston. Speculation (Gilbert, in press [b]) is that the feature is analogous to "frost blisters" (close relatives of rock pingos) in modern arctic periglacial environments, and was created by frost heaving in a severe permafrost setting before the onset of the last Wisconsinan glaciation.

A study of the late glacial and Holocene sedimentology of Devil Lake (40 km north of Kingston) is also going forward. A CHIRP subbottom acoustic survey conducted last October revealed four acoustic facies which are probably: (1) glacial proximal or subglacial sediments over bedrock, (2) glacial lake Iroquois sediments up to 40 m thick in depressions, (3) sediments representing a transition to Holocene environments following the draining of Lake Iroquois, and (4) Holocene gyttja. A short 2-m core from the last contains beautiful millimetre-scale varves that end about 2 ka BP with massive black gyttja above. We originally thought these were created by marl deposition, but the undergraduate thesis work of Jaclyn Cockburn has shown them to be diatom blooms. Further studies involving long coring and acoustic survey are directed to addressing questions of the northeastward extent of Lake Iroquois and other glacial lake phases, whether there is a Younger Dryas (or its relatives) signal in the transitional record, and of the Holocene environmental history of the region.

Gilbert, R. 2000. Erosion marks in bedrock at Kangerlussuak, Greenland: relation to continental glacial processes. 30th Arctic Workshop, Program with abstracts. pp. 69-71.

Gilbert, R. in press (a). The Devil Lake pothole: evidence of subglacial fluvial processes. Géographie physique et Quaternaire, 54.

Gilbert, R. in press (b). A Pleistocene frost-heaved dome in Palaeozoic limestone at Kingston, Ontario, Canada. Permafrost and Periglacial Processes. 11(2).

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Dear Glaciogram readers.

This June 3-4 we will be hosting the 63rd NE-FOP to highlight new work ongoing in the central Connecticut valley. Info for the trip is available on the web as:

63rd North East Friends of the Pleistocene
June 2-4, 2000, in the Connecticut Valley
"A New Drainage History for Glacial Lake Hitchcock:
Varves, Landforms, and Stratigraphy"

This field conference will focus on the classic Late Pleistocene drainage history of Glacial Lake Hitchcock, the large pro-glacial lake system that occupied the length of the Connecticut Valley in central New England. We will examine evidence that the lake drained sequentially as a series of subbasins associated with the downcutting of the early Connecticut River through the ancient lake floor as well as through a complex system of ice-contact and meteoric deltas throughout the valley. We will examine the stratigraphy and morphology of glacial, glaciofluvial and lacustrine (varves!) deposits associated with deglaciation along with post-Hitchcock dune complexes. New geochronological control provided by 14C and optically-stimulated luminescence ages shed new light on both the timing of events and gaps in our understanding of the drainage sequence coupled with regional glacioisostatic rebound. The trip headquarters will be at The Inn at Northampton, MA, same site as the 50th FOP.

The trip leaders include Janet Stone (USGS), Jack Ridge (Tufts), Tammy Rittenour (Univ. Nebraska), Julie Brigham-Grette (UMass), and Al Werner (Mt. Holyoke College) with cameo appearances by Dena Dincauze (UMass), Ed Klekowski (UMass), and Richard Little (Greenfield CC). Ed has produced a video of exposures of the glacial varves eroding under the CT river and Dick Little has just finished a new 50 min video on the history of Glacial Lake Hitchcock as part of his educational series.

As a part of her Masters thesis, Tammy Rittenour completed a spectral analysis of the entire 4,000 year Antev's varve sequence. This was done after making adjustments for gaps fixed by the work of Jack Ridge et al., 1999 to the north in Vermont and also with a new core capturing 1/3 of the entire Antev's record from the UMass campus filling a local gap here. After removing the biasing ice-proximal varves, we found that the melt record of varve thickness contains El-Nino-like frequency bands among other signals. A paper on this work will appear in SCIENCE May 5th (we think) demonstrating that El-Nino like teleconnections were operating 13.5-17.5 ka within 100 km of the Laurentide Ice Sheet. We will also provide a copy of the paper in the FOP guidebook.

For Registration fee, Banquet fee, and hotel accommodations please go to http://www.geo.umass.edu/quaternary/fopinfo.html
At this site, print out the registration form and mail it in with your check. Note discount for students!

Links on the Natural History of the Connecticut valley can be found at
http://www.bio.umass.edu/biology/conn.river/book.html
Follow Geology links to an overview of the Glacial Lake Hitchcock.

If you can't come but would like a copy of the guidebook, send me an email and I will reserve a copy for you. The price will likely be $10-15 but don't hold me to that yet.

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Robert Titus, Hartwick College, Oneonta, NY 13820

Robert Titus continues to feature ice age topics in his articles for Kaatskill Life magazine and the Woodstock Times. He has been working on the glacial history of North/South Lake State Park, Kaaterskill Clove and the Catskill Front. He is also developing articles on the history of Glacial Lake Grand Gorge in Schoharie Creek Valley.

He is planning a number of smaller projects focusing on local glacial events of the Hydson Valley, especially in the Woodstock area. He is very much interested in how the deposits of glacial Lake Albany influenced the development of landscape architecture at some of the Hydson Valley's grand estates. Pioneering architects such as Calvert Vaux took advantage of the flat lake bottom deposits to design landscapes.

He is interested in learning biographical insights about the Catskill geologists John Lyon Rich and George Halcott Chadwick, especially concerning where they disagreed on Catskill glacial geology.

Little of this work is peer reviewed and none of it should be considered professional research. All publications fall well otuside of the official scientific canon.

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Don Thieme, 203 7th Street, Apt. 5, Honesdale, PA 18431; dthieme@hotmail.com

Among the more complex pieces of alluvial stratigraphy I have been working with along the Susquehanna River is for cultural resources investigations conducted by Gray and Pape, Inc. of the Millennium Pipeline Corridor. The reaches at the proposed pipeline crossing in Broome County near Windsor, New York are somewhat unique in that the bedrock valley is over a kilometer wide. The river consequently had ample room to develop a complex braidplain during the late Pleistocene and to migrate laterally and incise arcuate meanders within its own alluvium during the Holocene. Middle Archaic through Late Woodland archeological contexts are sealed at variable depths within a T-1 alluvial terrace which stands from two to five meters above the river's base level (ca. 282-285) and generally correlates with surfaces previously described by Dineen (1993), Thieme and Schuldenrein (1998), and Vento and Rollins (1989).

Ten (10) radiocarbon dates for samples collected from both stratigraphic test trenches and archeological excavation units range in age from 13,880±130 B.P. to 460±70 B.P. and index the alluvial stratigraphy. Preliminary reconstructions suggest the existence of islands and multi-thread channel systems at the time of Middle Archaic or Late Archaic settlement. Sedimentation episodes and cultural occupations east and west of the active river channel may not be contemporaneous and additional investigations are ongoing at two prehistoric archeological sites which have been recommended as potentially eligible to the National Register of Historic Places.

REFERENCES CITED

Dineen, R. J., 1993, Postglacial terrace formation, lateral river migration, and prehistoric settlement patterns, in Archaeological Investigations in the Upper Susquehanna Valley, New York State, edited by R. E. Funk, p. 100-114: Persimmon Press, Buffalo.

Thieme, D. M., and Schuldenrein, J. S., 1998, Wyoming Valley Landscape Evolution and the Emergence of the Wyoming Valley Culture: Pennsylvania Archaeologist, v. 68, no. 2, p. 1-17.

Vento, F. J., and Rollins, H. B., 1989, Development of a Late Pleistocene-Holocene Genetic Stratigraphic Framework as it Relates to Atmospheric Circulation and Climate Change in the Upper and Central Susquehanna River Drainage Basin: Report to the Bureau of Historic Preservation, Harrisburg, Pennsylvania.

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Dave DeSimone, P.O.Box 272, 957 Babcock Lake Road, Grafton,NY 12082-0272

I shall be in Alaska both to visit my Williams students on the Keck project and pursue other interests. Perhaps one of these years I'll have a chance to visit you, Ernie, Don, et al in the field.

While not in New York, this summer and beyond brings me close as I begin surficial and hydrogeological work for Vermont. The pending contract calls for me to map the Arlington 1:24000 quadrangle, generating a series of map layers with an eye toward aquifer identification & protection, and slope stability. There are funds for one student assistant and I've begun advertising for a Williams student to gain some useful experience.

This January I teased Will Morgan (geo alum from Williams in '96) into comsidering detailed surficial mapping of the rugged terrain of the Dacks High Peaks Region. I recall some fine mapping which went into the state map by Guirrieri and Kelly and others (Dineen?) but primarily at the reconnaissance level. Wouldn't it be great to find someone determined and skilled enough to spend the time needed in the trailless areas to see what's there. Any deposits from alpine ice would finally answer some long-standing questions and raise some new ones. Will has climbed several 6000m peaks in the Andes so would certainly survive the effort. Additionally, he completed a dandy senior honors thesis in Quaternary geology. Hopefully, he'll take the bait and commit to grad school.

Recent grad Reg Hall ('98) completed an independent project investigating the impact of precipitation events on monitoring wells around the old Cole Field landfill situated along the Hoosic River in Williamstown. Reg hoped to see if there were any peculiar changes in the water table. The data hint that, perhaps not surprisingly, the Hoosic at high discharge...approaching bankfull conditions, recharges the shallow unconfined aquifer beneath the landfill at the river's edge. This old landfill, closed in 1972, has never been capped and fills a former wetland along the inside of a river meander. A follow-up project by a student in our geomorphology class supports Reg's notion. It's interesting because we all talk about gaining and losing streams in the classroom but don't often have data to point to, especially data for your backyard river.

On trips to Pittsfield, MA, for our Environmental Science course we saw some of the clean-up efforts there along the Housatonic River. How informative to look in one direction and see a D-NAPL plume emerging into the river bottom where remediation work was underway. Look the other way and see the pump-and-treat set-up intercepting an L-NAPL plume at the little river's bank. Unfortunately, the Hudson's clean-up has not come nearly so quickly and shall inevitably happen albeit at an order of magnitude greater cost.

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QUATERNARY GEOLOGIC MAP OF THE HAMLIN, NEW YORK 7.5-MINUTE QUADRANGLE

The Quaternary geology of the Hamlin, NY 7.5-minute quadrangle has been the field laboratory for the Geologic Mapping Team of the State University of New York, College at Brockport. Mapping the Quaternary deposits of the Hamlin, NY 7.5-minute quadrangle through a USGS - EDMAP cooperative agreement helps undergraduate students learn details of geologic map compilation and production, along with processes of glacial advance and retreat.

The Hamlin, NY 7.5 minute quadrangle is located in the Ontario Lowlands physiographic region of western New York. The field area is mostly an ancestral lake plain of Lake Ontario. The late glacial Lake Iroquois is the most distinctive of a succession of lake shorelines documented in the region. The surficial deposits in the area consists of mostly thin (generally <10 m) of ice contact glacial sediments overlain by lacustrine and beach ridge deposits. A lacustrine delta consisting of stratified sand and gravel deposits occurs in the northwestern part of the quadrangle. Beneath the surficial Quaternary deposits are Paleozoic shales of the Ordovician Queenston Formation. Late Holocene beach sediments and local alluvial deposits disrupt the continuity of the Late Wisconsinan sediments across the quadrangle. Topographic elevations across the quadrangle range from approximately 76 m (250 ft) along the Lake Ontario shoreline to slightly above 131 m (430 ft) along the crest of the ancestral Lake Iroquois shore. Surface landforms are predominately constructional, and slopes vary predictably and correspond to landform and lithofacies patterns.

The advance of the Laurentide ice sheet across the Hamlin Quadrangle produced significant erosion, as evidenced by the generally thin Quaternary cover over bedrock. Push ridges formed of ice-contact lodgement till are common south of the mapping area. Variations in the strength of the jointed and fractured bedrock probably effected glacial erosional processes. Ice retreat created many of the geologic features of the surficial landscape. The Lake Iroquois shoreline and genetically associated lake bed deposits mark a still stand of Lake Ontario immediately following the retreat of glacial ice into the Lake Ontario basin. The continuity of the lake plain is disrupted by the moraine ridges associated with the Carlton Moraine. This moraine trend shows evidence of multiple phases of deposition, as evidenced by the compound morphology of the moraine ridge and the lacustrine delta deposited along this trend. The moraine ridge complex across the Hamlin quadrangle represents a pause in the retreat of the Laurentide ice as it retreated back across the lake into Canada.

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Streams, lakes, bogs, data loggers and mud, a little bit of everything.

The last few years have been hectic working on a variety of projects. Below, I would like to briefly introduce the major activities by my undergraduates over the past year.

Tara Spitzer completed an honors project investigating the impact of hog farms on the Seneca Lake Watershed on TSS, nitrate, phosphate, and dissolved oxygen concentrations in local streams. She selected and compared subwatersheds that drain predominately hog farms, other agricultural land, or forested land. The results indicate that hog farms, at present levels, do not significantly impact the water quality any more than other activities in the other subwatersheds. See: The environmental impact of hog farming on the Seneca Lake Watershed and surrounding areas, Honors Thesis. T. Spitzer, 1999, Hog farming, A Newsletter of the Seneca Lake Pure Waters Association.

Cory McSweeney initiated and Sandra Baldwin continued a study on the impact of atrazine on Seneca Lake. Atrazine is a common herbicide used to control broadleaf weeds in corn and other crops. The results indicate that atrazine was significantly below the maximum contaminant level set of 3 ppb by the EPA throughout the study but elevated levels were detected in subwatershed that drain agricultural land especially during the late spring to early summer months when atrazine is applied to the fields. See: The concentration and source of atrazine in Seneca Lake, New York, honors Thesis; Baldwin, S., C. McSweeney, and J. Halfman, 2000, The concentration and sources of atrazine in Seneca Lake, New York, GSA NE Regional Meeting.

Mark Flusche is just completing an honors project on the hydrogeochemistry of Zurich Bog, more specifically, the hydrogeocemistry of the northern floating sedge mat of Zurich Bog, northwest of Lyons, New York.

Jon Rumpf is just completing an honors project on the design of a pressure sensor and associated field housing to measure stream stage or lake-level by the newly designed HWS Data Logger. The HWS Data Logger in an inexpensive ($25), easy to build, microprocessor based, data logger that can sample an analog signal at user specified intervals (8 seconds to 6 days), digitize it and record it as an 8-bit integer until the data are downloaded to a host computer. The initial results look very promising. See: Dedrick, R., J. Halfman, B. McKinney, in press, An inexpensive, microprocessor-based, data logging system. Computers and Geosciences; or http://www.hws.edu/ACA/depts/geo/Logger/logger.html.

Long-term limnological monitoring of the limnology of Seneca Lake has revealed the impact of the exotic zebra mussel on the ecology and geochemistry of the lake. Since the initial detection of zebra mussels in Seneca Lake during the late summer of 1992, water clarity has increased, nutrient concentrations have changed, algal biomass has decreased, and calcium deposition to the lake floor has been redirected form an authigenic micrite to zebra mussel shells. However, the last few years these trends have reversed as the early invaders begin to die and sequestered nutrients are recycled back into the surface waters of the lake. See: Halfman et al., in press, The impact of the zebra mussel (Dreissena polymorpha) on the limnology, geochemistry and sedimentology of Seneca Lake, New York. A symposium on the environmental research in the Cayuga Lake Watershed.

Finally, I'm still busy investigating signals of paleoclimatic change preserved in the sediments of the Finger Lakes. Hank Mullins and I have a manuscript under review at Quaternary Research documenting the intensification of bottom wind-induced current activity in Owasco Lake. I presented analyses from a number of piston cores from Seneca Lake that reveal severe truncation of the late Holocene section that presumably reflects the same intensification of bottom current activity seen in seismic profiles in Seneca, Owasco and other lakes. See: Halfman, 2000, An abrupt climatic transition during the mid-Holocene: Evidence from high-resolution seismic profiles and sediment cores in Seneca Lake, New York. GSA NE Regional Meeting.

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Robert Jacobi, Joe Wallach, C. F. M. (Mike) Lewis, and I are editing a special volume of Tectonophysics that will be titled (tentatively) "Neotectonic of the Eastern Great Lakes Basin." The papers are all invited and include discussions of faulting in glacial deposits, bedding disruption in Holocene and Pleistocene deposits, significance of lineaments in the localization of modern earthquakes, and seismic significance of disrupted bedrock on the bottom of Lake Ontario, among others. The volume is expected to be published next year and should be of interest to many Quaternary workers. I hope to have a paper in it on an annotated history of neotectonic studies in New York State. If any of you have worked on the subject and would like to be referenced, please contact me and send a reprint.

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Mike Lewis, Geological Survey of Canada, Box 1006, Dartmouth NS B2Y 4A2, Canada (mlewis@agc.bio.ns.ca)

My co-workers and I will be presenting our work on climate telecommunications, meltwater flow and reconstruction of the paleo-Great Lakes, sonar backscatter of debris and combustion products in Lake Ontario sediments, and climate change implications of the sedimentary history of Lake Winnipeg at two meetings this year in eastern Ontario near the New York border:

1) at two geoscience sessions of the 43rd Annual Conference of the International Association for Great Lakes Research, IAGLR2000 meeting in Corwall, Ontario, May 23-26, 2000.

- The Sedimentary Record of Environmental Change in Large Lakes: Last Glacial Maximum to Last Year (May 23).
- Environmental Geology and Sediments of the Great Lakes (May 24).

The program is listed at (http://www.iaglr.org/conference/program.html).

2) at 8th International Symposium on Paleolimnology, Queen's University, Kingston, Ontario, August 20-24, 2000. More information is listed at http://biology.queensu.ca/pearl/paleo2000.html

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Donald Cadwell, New York State Geological Survey, Albany, NY

Determination of Shear-wave Velocities for Seismic Hazard Assessment in New York State

We have been working with determining the relative shear-wave velocities in various counties in New York. This past year we concentrated in Westchester County. We constructed a shear-wave generator to obtain the velocities in the dense population area, rather than risk blowing everyone up! Thirty eight seismic sites, with 179 P-wave and 180 S-wave measurements, were selected for analysis. The most interesting part is summarized in the following table of average velocities.

Comparison of mean S-wave velocities in Westchester County, compared with Onondaga, Rensselaer, Dutchess, and Columbia counties.

Surficial material ( ) = Total # locations		Onondaga County	Rensselaer County	Dutchess County	Columbia County	Westchester County	Mean
Fill	(16)	116 m/s				253 m/s	175 m/s
Outwash	(24)	103 m/s	208 m/s	155 m/s	368 m/s	313 m/s	231 m/s
Kames	(20)	288 m/s	195 m/s	331 m/s	440 m/s	271 m/s	305 m/s
Lake sand	(19)	114 m/s	289 m/s	300 m/s	569 m/s	164 m/s	287 m/s
Lake silt & clay	(23)	165 m/s	292 m/s	378 m/s	356 m/s	298 m/s	312 m/s
Alluvium	(10)	116 m/s		171 m/s	472 m/s	183 m/s	216 m/s
Till	(36)	982 m/s	513 m/s	484 m/s	734 m/s	607 m/s	664 m/s
Swamp	(2)					186 m/s	186 m/s

Some possible reasons for different velocities include:

1. Different wave generation techniques were used.
2. The composition of all glacial units are not the same. Kames, for example, do not always have the same composition and density
3. The influence of the water table (we could always pick bedrock)

The simplest method for FEMA to catagorize regions across the US is with the use of census tracts, because they have access to all of that data. This includes population distributions, building types, construction types for industrial sites; infrastructure for roads, pipelines, highways, power, hospitals, schools, etc. It is necessary, therefore, to use weight averaging of surficial materials and shear-wave velocities for each census tract. The size and shape of census tracts vary, but with no regard to geology — only convenience.

I welcome questions and comments.
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Three opportunities presently on my calendar focus on the potential for interplay between interests of archeology and glacial geology. On April 27th, the first of these was held at the New York State Museum in Albany where 17 papers dealt with "Current Topics in Northeast Geoarchaeology". The term is new in my vocabulary, but it neatly signifies the close ties between two fields. On the one hand, archeologists in search for prehistoric sites benefit from recognition of proglacial landscapes. In complementary fashion, dating of Holocene landscapes often derives from examination of archeological sites.

The second of these opportunities comes on June 3-4 when the Friends of the Pleistocene meet at Amherst, MA. Hosted by Julie Brigham-Grette and a handful of associates we will review the history of deglaciation in the Connecticut River Valley, a classic varve-defined chronology, verified and elaborated by recent studies. When and where will the first fluted tip turn up in landscape or stratigraphic section in "peninsular" New England?

The third among these opportunities is presently in development and planning stage at the Buffalo Museum of Science where Richard Laub in 2001 will host the Smith Symposium II to summarize 20 years of research since first investigation of the Hiscock Site, midway between Buffalo and Rochester. (See Vol. 23, Buffalo Society of Natural Sciences, 1988).

Meanwhile, with all these opportunities developing in New York, I look forward to another field season with Jay Fleisher, Don Cadwell, Palmer Bailey and other member of the BERG research group returning to Alaska this summer for our 13th year on the Bering Glacier foreland.

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P. Jay Fleisher, Earth Sciences Department, State University College, Oneonta, NY 13820-4015; 607-436-3375; fleishpj@oneonta.edu

To friends and colleagues from P. Jay Fleisher, SUNY-Oneonta

This academic year has barely provided enough time to synthesize field notes from last summer, and another field season is just around the corner. But, before getting to that, I would like to convey thorough satisfaction with the Matanuska Field Forum hosted by Ed Evenson, Dan Lawson, Grahame Larson and Richard Alley, plus associates, in March. A very enthusiastic group of active participants were shown basal ice features (frazil ice) that hitherto may have been considered site specific, but actually has broader implications. An association moraine, primarily consisting of various types of sediment flows, provided a flash back of a moraine on the Niagara Sheet that is characterized by familiar kame and kettle topography, yet enigmatically contains silt considered to be lacustrine. It may be time to revisit this moraine with the Matanuska Glacier in mind. Interestingly, very similar frazil ice features are present at Bering Glacier.

After twelve consecutive summers of field work at Bering Glacier, I am pleased to announce that the Bering Glacier Research Group (BERG, including local colleagues Ernie Muller, Don Cadwell and Matt Lachniet, plus Palmer Bailey and two of my students Evan Mankoff and Mike Senglaub) will once again establish a camp on the eastern foreplain to follow-up on several post-surge projects. With the Matanuska Field Forum experience in mind, we will be giving special attention to frazil ice features related to venting supercooled water. We will also be adding a new segment of our data base that involves comparative studies at Sheridan Glacier (subject of poster at most recent NEGSA), where last year we gathered data for the first approximation of a bathymetric map of Sheridan Lake, which is dammed by a moraine at the glacier terminus.

During the second segment of our field work, Ernie, Matt (graduate student, Syracuse University) and I will continue mapping the Late Pleistocene, terrestrial extent of the combined Bering/Steller piedmont lobe. Supported by the National Geographic Society, we have located multiple sites on coastal bedrock uplands where glaciogenic material is found beneath muskeg. Matt is doing the microstructure analysis of these materials to supplement observable field evidence. Our mapping last summer (1999) by doubled the amount of evidence found in 1998, thus establishing reason to believe that Martin River Glacier may have coalesced with others to form a single large coastal ice field, all fed from Chugach Mountain sources.

An invitation to join Bob Carson (Whitman College) and Bob Newton (Smith College) at a Keck field project for undergraduate students will have me in Juneau for a few weeks before returning to the Bering with Ernie for another week in late July/early August. By then I should be ready for some fresh New York State corn.

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Eugene Domack and Todd Rayne, Hamilton College

Oneida Lake Project

This past academic year Beth Hiscott ('00) finished her senior thesis "Paleoenvironmental Development of the Eastern Shoreline of Oneida Lake, New York: Evidence from surficial mapping, areal photography, and shallow geophysics " and a first draft of the surficial geology of the Sylvan Beach Quad. Beth presented her results at the spring NE GSA meeting at Rutgers University. The highlights of the first year include the following:

1) The oldest and easternmost beach ridge in the ridge complex dates to around 10,700 radiocarbon years BP based upon uncorrected radiocarbon (AMS) dates on Sphearium molluscs. These fossil bivalves are abundant in the pebble and gravel beach facies of the ridges. The oldest of which may in fact be a bay mouth bar that marks the earliest shoreline of a prehistoric Oneida Lake.

2) The surficial map is available on computer format and hard copies can be obtained from Gene Domack at Hamilton College.

3) At least four sets of alluvial deposits exist for the Fish Creek valley, based upon mapping of meander scar size and paleochannel widths. Buried tree trunks from a channel fill in the oldest of these complexes now has been dated to around 9000 calender years BP based upon two replicate dates of buried tree trunks. These are exposed in the cut banks along the northern side of Fish Creek.

4) GPR profiles document extensive and rapid shoreline progradation with possible hiatus (lake level) changes within the sequence.

Work this summer by Cynthia Fadem ('01) will concentrate on excavation and deep drilling of the beach ridge complex with the goal of developing a progradation rate for the shoreline based upon additional radiocarbon dating. We will also explore other cut-bank exposures along Fish Creek for additional details on the alluvial history.

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Dr. David Franzi, Center for Earth and Environmental Science, SUNY-Plattsburgh, Plattsburgh, NY 12901, david.franzi@plattsburgh.edu

I don't have too much to add since the last glaciogram. We received a NSF-REU (Research Experience for Undergraduates) grant to fund our interdisciplinary study of the Altona Flat Rock jack pine barrens in Clinton County, New York. The "flat rocks" comprise a discontinuous, 30-km long belt of sandstone pavements (exposed sandstone surfaces) created by flood erosion associated with the breakout of glacial lake Iroquois across the Covey Hill threshold. The REU research will attempt to better understand ecosystem-level processes in the pine barrens, particularly the linkages between the hydrogeology of the sandstone pavements and composition and structure of the plant and animal communities. We will also evaluate the disturbance impact of the January, 1998 ice storm, which had a particularly devastating effect upon the jack pine forests. The current project is funded for 2 years so I hope that my "glacial" colleagues will look for our advertisements next year and encourage their students to apply.

More information about the Altona Flat Rock jack pine barrens can be found at the following URL; http://faculty.plattsburgh.edu/david.franzi/esfl/esflhome.html

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Julieann Van Nest; Research Geoarchaeologist, New York State Museum, Research and Collections Division, 3122 Cultural Education Center, Albany, NY 12230; 518-474-5814 jvannest@mail.nysed.gov

Julieann received M.S. and Ph.D. degrees in geology from the University of Iowa, and B.S. degrees in geology and anthropology from the University of North Dakota. She has worked on several geoarchaeological projects in the Midwest and Northern Plains. Her main focus of research in New York is the newly initiated Schoharie Valley geoarchaeology project. First efforts of this project will be reconstruction of the postglacial alluvial chronology of the valley using solid sediment cores extracted with a Giddings soil probe, combined with a suite of radiocarbon-dates expected to come largely from point bar facies. These geological data will be used as an aid in locating archaeological sites that date to different time periods, and will mesh with the museum's ongoing archaeological research in the Schoharie led by John Hart. Other New York projects include geoarchaeological study of the Early Archaic Haviland site on Cobleskill Creek, with Louise Basa and the SUNY-Cobleskill archaeological field school, and the Lamoka Lake site, with Cregg Madrigal and the Rutgers University archaeological field school. Julieann continues her interest in the geoarchaeological study of soil and sediment used in Hopewell mounds, and is organizing a symposium on mounds and earthworks, sponsored by the Geoarchaeology Interest Group, for the 2001 meeting of the Society for American Archaeology in New Orleans.

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P.S.

An offer from John Menzies, Brock University, St. Catharines, Ontario, Canada

As many of you know, John Menzies is leading the way with very interesting research on the micromorphology of glaciogenic materials. He recently contacted me with an offer to conduct a 2-day workshop at a time and place yet-to-be arranged. This fits well with an aspect of ongoing research at Bering Glacier currently being conducted by Matthew Lachniet, Syracuse University, who plans to incorporate his results in his dissertation. Knowing that this type of investigation would be of interest to Glaciogram recipients, I have taken the liberty of reprinting below the abstract of a paper presented by John at the Geological Society of America Annual Meeting last fall in Denver. I would welcome your reaction to John's idea for a workshop.

11:25 AM Menzies, John

SUBGLACIAL PROCESSES AND DIAMICTON EMPLACEMENT - REVEALED USING MICROMORPHOLOGICAL ANALYSES

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Micromorphological analyses of numerous diamictons has lead to the development of a taxonomic classificationn of microstructures observed in diamictons. Based on this taxonomy, interpretation of likely processes ongoing at the glacier-bed interface can be inferred, as can the style of emplacement of these diamictons. It is readily apparent that most diamictons have undergone ductile, brittle and polyphase forms of deformation in their emplacement. Evidence of significant porewater movement, geochemical diffusion and clay translocation can be seen in most of these diamictons. The diamictons exhibit various phases of deformation often compounded; that would indicate reworking, rafting, thermal modification, and other attributes all suggestive of deformation before, during and after emplacement. The implications of these studies on the manner of diamicton deposition are profound, calling for a significant reappraisal of processes of diamicton sedimentology. A further offshoot of this research is to re-examine stratigraphic interpretations based upon multiple 'till' sequences.