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NEW YORK GLACIOGRAM

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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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While not quite Quaternary, we have an on-going project at UVM that might interest Glaciogram readers.
The Landscape Change program is an on-line archive of historic imagery from Vermont. The archive contains nearly 7000 images and is growing daily. There are images of landslides, mining, floods, mountains, clearcutting, and road building dating from the mid 1800s until today.

Find the archive at:

http://uvm.edu/perkins/landscape

This is truly a community archive with anyone able to submit imagery or comments about existing records. We are currently adding thousands of images from the Vermont State Archives, many of which illustrate floods, road building and erosion from 1908 on through the 1970s.

We have used the image database extensively for teaching about both surface processes and environmental issues. Students from grade to graduate school have used and contributed to the archive.

The project is supported by NSF and the Lintilhac Foundation.

Duane Braun, Geosciences, Bloomsburg University, <dbraun@husky.bloomu.edu>

I am presently finishing the last few 7.5' quads. left to be mapped within the late Wisconsinan limit in northeastern PA. The quads. are just north the the late Wisconsinan limit on top of the Appalachian Plateau just north of the Alleghany Front. Picture Rocks and Sonestown quads. were done last year. Eagles Mere and Hillsgrove quads. are being worked on now.

In May, 2004, Jon Inners, Jack Ridge, and I hosted the 2004 Friends of the Pleistocene meeting at Great Bend, PA. Emphasis was placed on post-glacial erosion, till knobs representing ice margin positions from a stagnation zone retreat of the ice, and details of the varve record of Glacial Lake Great Bend. I have some guidebooks left, price $5.00, including postage.

The PA Geologic Survey is supposed to soon put the 30 or so 7.5' glacial deposit quads. in the Honesdale 1:100,000 quad. on their website. That is the area in the northeastern-most part of PA that borders NYS.

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Aleksis Dreimanis, Professor Emeritus, Department of Earth Sciences, University of Western Ontario, London, ON N6A 5B7, Canada

I just completed writing some revisions in the paper "Stratigraphy and sedimentation of the stratotype section of Catfish Creek Drift Formation between Bradtville and Plum Point, north shore, Lake Erie, Southwestern Ontario, Canada" with co-author Philip Gibbard. It has been accepted for publication in 'Boreas' in 2005. The 2.5 km long stratotype section is along the lake shore bluffs about 15 km WSW of Port Stsnley. It contains 9 local members, 6 of them consisting mainly of till. They represent the oscillating advances of the Huron-Georgian Bay and Erie lobes in the northern part of Lake Erie basin at the beginning of Late Wisconsinan.

Tough I have been a strong defender of using the term 'deformation till', in the above paper we have replaced this term by 'soft lodgement till', suggested by Hanna Ruszczynska-Szenajch, applying the term 'hard lodgement till' to the classical lodgement till. We were finding that these two varieties of till interchange repeatedly on short distances at several Catfish Creek till sections. Therefore they have to be considered as just two components of till deposited subglacially by a moving glacier.

I have been working also, with Latvian co-authors, on papers dealing with Pleistocene geology in 3 areas of Latvia, studied by me more than half a century ago. Now I am changing my former interpretations because of new data we are finding in the sections. It is fun to make progress in interpretations!

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Don Pair, University of Dayton, (don.pair@notes.udayton.edu)

Announcement

2005 Eastern Friends of the Pleistocene

The Glacial and Hydrochemical Stratigraphy of the Onondaga Valley Aquifer of Central New York State: The Good, The Bad, and the Brine

Field Trip Leaders: Don Pair (University of Dayton) and Bill Kappel (USGS, Ithaca, NY)
(other contributors will be added as we talk them into it)

Tentative Dates: Friday, May 20- Sunday, May 22
Overview

USGS – WRD research is focusing on the Onondaga Trough Valley of NY, a classic area of central NY's landscape. The USGS, in co-operation with USEPA-Region 2 and Onondaga County began this study in 2002 and on-going surficial and bedrock mapping associated with the STATEMAP program are helping to construct a stratigraphic framework that is being used in the

development of groundwater flow and brine migration models. These models are being used to support central NY's major urban geology challenge – improving the water quality of Onondaga Lake (purportedly the most polluted lake in the country) and fostering the urban renewal of the adjacent area. The Friends will see a unique story where the glacial geology and engineering geology intersect. They are needed to provide feedback on this developing subsurface model by helping place it in the glacial geomorphic history of the region.

Other details will follow in the near future.
Questions? Email: don.pair@notes.udayton.edu

Andrew P. Baker and Tara Curtin, Geoscience Department, Hobart & William Smith Colleges Geneva, NY 14456

Lake level fluctuations in Seneca Lake, NY during the Holocene

The sedimentary deposits of Seneca Lake, one of the Finger Lakes of New York State, contain a valuable record of post-glacial climate history and environmental change. Lakes respond to climate-induced changes in the hydrological balance (precipitation and runoff compared to evaporation and discharge) by changing the depth and area of the lake. Six sediment cores were collected from the littoral to the profundal zone of Seneca Lake to determine the history of relative lake level change over the past ~13ka.

Four lithofacies are recognized in the cores: mottled calcareous mud, marl, laminated sand, and laminated mud. The mottled calcareous mud lithofacies is inferred to represent a shallow lacustrine margin that was periodically exposed to the atmosphere. The marl was likely deposited in the shallow photic zone based on organism content (between 0 and 10m). Shell lags preserved in the marl may indicate past shorelines. The laminated lacustrine sand is interpreted as a lateral transition from littoral zone marl to profundal laminated mud. Today, well-developed laminations are forming at depths greater than ~50 meters. The quartz-rich sand lithofacies is moderately well-sorted and fine-grained. The laminated mud accumulated in the profundal zone. The mean grain size of the laminated sediment decreases towards the center the lake because of the winnowing of fine-grained material from coarse-grained sediment by waves and currents in the lake. This allows for deposition of relatively coarse-grained laminated sand nearshore coeval with deposition of fine-grained material offshore. Pebble lags in the marl and laminated sand may delineate past shorelines.

Several lines of evidence were used for lake level and climate reconstruction. Sedimentological features such as carbonate content, magnetic susceptibility, vertical and horizontal changes in lithology, and shell and pebble lags were used to track fluctuations in lake level. Fluctuations were inferred by looking at vertical and horizontal changes in the position of past shorelines and by tracking changes in lithology within and between cores. The position of the shoreline was determined by the distribution of shell and pebble lags. Pebble and shell lags and mottled calcareous mud were interpreted as evidence of lowstands while the laminated fine-grained sand was interpreted as evidence of a highstand.

There has been one large amplitude highstand and lowstand with several smaller scale oscillations in lake level as discerned by stratigraphic evidence preserved in Seneca Lake. The timing and relative amplitude of lake level fluctuations recorded in Seneca Lake were compared to previous studies in the Finger Lakes region to determine if the climate events causing

highstands and lowstands were local or regional. The large amplitude highstand in Seneca Lake occurred at ~10.3 ka. Relative highstands in other Finger Lakes, Canandaigua (Wellner and Dwyer 1996), Owasco (Dwyer et al. 1996), and Cayuga (Mullins 1998), were coeval. The largest amplitude lowstand in Seneca Lake occurred after ~10.2 ka. The lowest lake levels in Canandaigua, Owasco, and Cayuga Lake also happened immediately following the highstand (Dwyer et al. 1996, Mullins 1998). Multiple lower amplitude oscillations in lake level occur throughout the Holocene in Seneca Lake. The timing of these oscillations is not well-constrained. Available evidence indicates that lake level fluctuations were common in the Finger Lakes region during the Holocene. For example, in Cayuga Lake, lowstands occurred at ~7.8, 6.0, 4.2, and 2.0 ka and highstands occurred at ~8.8 and ~7.0 ka (Mullins 1998).

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Here is a note that relates glacial geology and groundwater from our recent work in the Oak Ridges Moraine. I have attached one figure and a second will follow (both can be reduced to ~3 cm high). Trust that this is ok.

The importance of glacial geology and sedimentology to groundwater studies has been highlighted in our recent work on the Oak Ridges Moraine north of Lake Ontario. Study methods are summarized below from a recent paper in Geoscience Canada. Recent publications and project details are listed on:

Oak Ridges Moraine website: http://sts.gsc.nrcan.gc.ca/orm/index.asp

The importance of glacial geology and basin analysis to groundwater management

To manage groundwater resources in a sustainable way in northern climates there is a need for regional knowledge of glacial aquifer systems. Improving regional knowledge, in light of scant hydrogeological data, requires a multidisciplinary approach that advances the geological understanding of a basin. Basin analysis - mapping and characterizing the reservoir potential of sedimentary basins as applied in petroleum exploration - provides an approach that is directly applicable to regional hydrogeology studies and related land use planning. Our recent work applies basin analysis to a glaciated terrain by integrating data from a variety of sources and scales of investigations to develop a hydrogeological model of the Oak Ridges Moraine Area (ORM), southern Ontario.

Basin analysis supports the progression from data compilation and geological conceptualization to model development, and ultimately, towards quantitative flow system analysis (Fig. 1). This is achieved notably by developing primary geological models of the stratigraphy, sedimentary architecture and origin of deposits of the ORM area. The analysis outlines two regional elements highly significant to groundwater flow in the area: i) dissected regional till uplands that form the principal aquitard, and ii) channels that breach the till and form hydraulic windows and important channel-fill aquifers. The important channel aquifer setting had not been previously recognized because its identification required a geological framework (Fig. 2) based on high-quality topographic, geological and geophysical data. Development of the regional geological knowledge would not have been possible using relatively poor-quality water well records alone.

The watershed approach that is embodied in basin analysis strongly enhances communication between geoscientists and engineers, planners, and other scientists. Better

understanding of regional hydrogeological settings also will improve the scientific basis for land use planning. Site remediation or development proposals generally rely on site-specific data and analysis, often restricted to shallow depths and predominantly for the purpose of site design. Such studies will benefit from regional knowledge of hydrogeological settings and the extent of flow systems beyond the site to watershed or basin scales. Accordingly, in our work we advocate investment in both high quality data and the regional approach that underlies basin analysis, thus permitting a much more accurate assessment of specific groundwater issues in complex hydrogeological settings found in Ontario and adjacent Great Lake states such as New York.

1. Simplified basin analysis approach used in the regional hydrogeology analysis of the ORM glaciated terrain. The approach leads progressively from data base development early in a study to quantitative understanding of groundwater flow systems as the study matures.

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2. Stratigraphic framework of the ORM study area. The stratigraphic architectural model consists of five stratigraphic units (Paleozoic bedrock, Lower sediment, Newmarket Till, ORM and channel sediment, and, Halton Till) in addition to two unconformities. Lower sediment groups a number of formal stratigraphic units.

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The year 2004 has turned out to be my own "year of no summer". I expected to be particularly busy in March, April, and May, but the pace has not let up since and is expected to continue now to the end of the calendar year. My plan to collapse in June has been put off to January.

In March I had a three-week trip to Florida and turned over to RICK OCHES (University of South Florida, Tampa) 15 boxes of fossil molluscs collected for sea level study in 1984-91. Rick agreed to carry on the amino acid dating of molluscs after the default of another worker and the results are to be incorporated into larger studies. Rick will also carry on with comparisons between interglacial/interstadial sites in Ontario and New York. Moving of my office (August) and lab (still to come) required downsizing and Rick was happy to receive my Florida samples.

In April I was surveying Nipissing/Algonquin shorelines northeast of Wiarton (Bruce Peninsula) for 10 days. Three long profiles extended to Algonquin shorelines, including a wave-cliffed drumlin end and a tombolo gravel bar between Niagara Escarpment bedrock islands.

I was co-leader on 2 field trips for the Geological Association of Canada at Brock University, St. Catharines, in May. Pre-meeting was with ANDY BAJC on a 2-day trip in the Waterloo interlobate moraine. Andy is leading a 3-year project to develop the subsurface stratigraphy with a dozen cored holes to bedrock supported by geophysics by TONY ENDRES, Univesity of Waterloo, and JIM HUNTER, Geological Survey of Canada. This has a hydrogeology focus in association with the Region of Waterloo and the Grand River Conservation Authority. At the GAC meeting itself I was gratified to be honored by former students and colleagues at a special all-day Quaternary symposium. I also co-authored a

symposium paper with ROGER PAULEN and BETH MCLENAGHAN on the Cochrane advance and Lake Barlow-Ojibway. After the meeting I co-led a field trip with DARYL COWELL and JOCK MCANDREWS to Crawford Lake, a meromictic lake at the crest of the Niagara Escarpment north of Hamilton, Ontario.

Also in May, MIKE LEWIS and I co-chaired a session at the International Association for Great Lakes Research at Waterloo. Our session, titled "The Greater and Lesser Great Lakes" presented 9 papers, to be joined by up to 3 others to be grouped in a journal. For this meeting and on behalf of co-authors TED APPLEYARD and TONY ENDRES I presented a paper on pre-Nipssing transgression valleys at 4 sites in the Huron basin.

Moving activity picked up during the summer as I emptied a basement storeroom of cores and samples, dispersing much of it to core storage at the Region of Waterloo and the Ontario Geological Survey. Single days in the field were on resistivity at the Meaford Nipissing buried valley with TONY ENDRES and coring St. Agatha swamp for the M.Sc. thesis on marl molluscs by VERENA KULAK, with the help of JOHN JOHNSTON, newly arrived from the Indiana Survey. Verena will also study the molluscs from marl at Nichols Brook, New York. Holidays were hard to find this year but I managed to get away part of August between bouts of moving.

The fall will be busy teaching undergrad and grad Quaternary courses while MIKE LEWIS and I edit the Great Lakes papers for publication, and moving continues. In the lab, student help last fall and this summer nearly finished the washing and fossil picking from large bulk samples of clay from below the Fort Erie Peace Bridge archeological site. We are particularly retrieving molluscs and fish bones to supplement the M.Sc. thesis work by STEVE DOUGLAS (M.Sc. 2003).

Meanwhile, work continues on several papers, specifically the Fernbank site, with a recent submission on molluscs by BARRY MILLER, on the Leamigton site with chironomids by IAN WALKER and ostracodes by ALLISON SMITH, and the Sudbury basin shorelines with ANDY HEATH. RICHARD MEYRICK has a paper with me on molluscs in Scarborough alluvial fans all but ready for submission. Recently published were geology chapters with ALAN MORGAN in a book on the Grand River basin, a review of glacial history in an archeology monograph (Canadian Museum of Civilization Mercury Series) and a review for the OIS 5e to 3 history of 8 Ontario and New York sites in
Northeastern Geology and Environmental Science. Editing continues on the final report on the Brampton area for the Ontario Geological Survey.

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P. Jay Fleisher, Earth Sciences Department, SUNY-Oneonta, Oneonta, NY 13820-4015; 607-436-3375 (voice), 607-436-3547 (FAX), fleishpj@oneonta.edu

As my colleague Matt Lachniet put it, “it’s amazing how much work one can generate from a few weeks in the field.” He was referring to a manuscript that is currently in review dealing with macro-scale and microstructural evidence of deformation with till and related sediments beneath the surging Bering Glacier. This paper summarizes our poster (with Matt Lachniet and Ernie Muller) to be presented at the Fast Glacier Flow Symposium, Yakutat, Alaska, scheduled for June 10-14, 2002. This will be followed by two weeks back on the eastern sector of the Bering piedmont lobe where we will continue to map and document the rapid retreat in progress since the 1993-95 surge ended. In addition, our efforts will focus on comparing newly-exposed terrain showing the effects of having been overridden near the ice front and carved by subglacial water flow with the same terrain prior to the surge. This year the BERG field party will also include Palmer Bailey, Jim Albanese, Heidi Natel (graduate student) and two undergraduate, Richard Dworak and Tim Stewart. Fortunately, our 15-year history of field work here has the special reward of getting the before and after views of overridden terrain. This work

is directly related to our long standing attention to foreland stratigraphy, because we recently uncovered evidence of deformed fossil trees buried several meters below the surface, yet with directional indicators favoring deformation by overriding ice. Therefore, this summer we will be giving buried organic horizons special attention.

Another manuscript currently in review (with Palmer Bailey and Don Cadwell) summarizes a decade of rapid changes in the sedimentary environments along the eastern Bering ice front, with particular attention to bathymetric changes in two ice-contact lakes. We plan to repeat yet another bathymetric survey this summer.

Matt Lachniet, Ernie Muller, and I also have a week of field work planned in the Chugach foothills that stand as uplands above the 45 km wide Bering/Steller foreplain. During the past several field seasons we have found previously unknown evidence of the lateral and vertical extent of the late Pleistocene Bering/Steller/ Martin River Glacier system.

After Alaska and a brief stop back in Oneonta, I will be heading to Iceland to join Andy Russell and his group at the Skeidarajokull for a couple of weeks to compare field evidence of outburst landforms and deposits. Then I will return to Anchorage for the AMQUA Meeting in August.

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Kernan W. Davis, NYS Department of Environmental Conservation, 625 Broadway, floor 11, Albany, NY 12233

As a snoopy old dog, I must tell you, here are some of my favorite things to chase:
noxious chemicals and
glaciers and
sink holes and
ground water.

But, here in New York State's Inactive Hazardous Waste Remediation Program, the trail is always cold. The ground water entered the ground years or centuries ago. The spilling, leaking or dumping of the chemicals happened years ago. The glaciers melted in millennia past. . And the sink holes formed – who knows – millennia – years – weeks ago? All these elements came together into my lap suddenly last winter.

At some time, long ago, the valley of Cayuga Lake once stood full of air, not water. And into that valley, plenty of water drained, overland and through the limestone, eroding really big caves. You can still see them, if you scuba dive along the eastern shore, near Union Springs. You can see them, via down-hole video, in the Union Springs Village water supply wells.

One can trace a swath of karst terrain features from the shore of Cayuga north eastward to the vicinity of Owasco Lake's outlet. Do you suppose . . . ?

In the year 2000, about a week or so before Christmas, one of our hazardous waste remediation engineers approached me, asking about selecting drill hole locations, to find the source of a plume of contaminated ground water. They had observed chlorinated solvents in water drawn from public and domestic wells, drilled into deep bedrock between the Village of Union Springs and the City of Auburn, over a distance of some eight and a half miles. The highest concentrations were at the northeastern end of the data array, just outside of the city water supply district. Because there were no wells in the district, they wanted to spot locations to further chase the plume to its source.

What would YOU have suggested?

I told my colleagues to first investigate the most highly contaminated wells, in order to identify the water-bearing zones that deliver contaminants to the wells. Then, start drilling new wells, a few hundred feet away, to intercept that (or those) zones, east and northeast of the

known plume (the direction in which the concentrations were higher). Then, continue in the directions indicated by the highest concentrations of contaminants.

Did they do that?

No.

They drilled a series of holes north of the plume, each situated about 5/8th of a mile from an industrial plant, formerly owned by a large, multi-national corporation. Somebody had hypothesized "they must have dumped it and they got the money to pay for cleanup." But all those wells revealed no contamination. So, we turned it over to the Federal government agents, who, following the same hypothesis, drilled more wells closer to the defunct plant. They have not released their data.

Go figure.

I plan to retire from The State on May Day. I hope to have an outdoor celebration near our office by the Hudson River, complete with May Pole Dancing. Then I will begin a new career at home with my kids, while my wife resumes her geotechnical career.

Again, and again, I have thanked you of the academic world, for uncovering more and more of the marvels and mysteries of the geological sciences, so that we, in the industrial and governmental worlds can do our work more effectively.

Thanks for the ride. Here's where I get off.

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John A. Rayburn, Dept. of Geological Sciences, Binghamton University (SUNY), Binghamton, NY 13902, jrayburn@binghamton.edu

During the first weekend in March, Peter Knuepfer and I headed up to the Adirondacks to do some coring to further explore the history of proglacial Lake Vermont. We were met in Willsboro, NY (~35 km south of Plattsburgh) by David Franzi (SUNY Plattsburgh) and Curt Stager(Paul Smith's College); there we took a vibra-core of Long Pond. Long Pond is a stratigic location for my continuing study of Glacial Lake Vermont, because it was covered by the Coveville level, but abandoned during the rapid drop to the Fort Ann level.

We took the core in the deepest part of the lake (2.8 m of water), and managed to get through 8.5 meters of sediment. We bottomed out in 1-3 cm thick silty-clay glacial-lacustrine varves. There is about 2 meters of this silty clay, with the average varve thickness decreasing up-core, before a sharp contact with a fine sand/silt unit, which we interpret as the transition from Coveville level Lake Vermont to Long Pond. About 1 cm above this contact was an amazingly convenient piece of wood, which we will send off for an AMS 14C date. This will finally give us an age for the large flood discharged through the Hudson Valley during the Coveville/Fort Ann phase transition.

The fine sand/silt unit becomes increasingly more organic-rich up core. The top several meters are nearly pure green organic muck/gyttja. There was about a 55% compression of the sediments during the coring process, but it appears to be limited to the upper water logged organic rich sections of the core. Catherine Yansa (University of Wisconsin - Madison/Michigan State University) will do further pollen and plant macro-fossil analysis on this core.

At the NE-GSA meeting in April I presented results of our work last summer at the Salmon River site just south of Plattsburgh (see previous Glaciogram installment - Vol. 36 No. 2). The Salmon River core contained a stratigraphic record of the Fort Ann/Champlain Sea

transition. The pollen analysis done by Catherine Yansa indicated a significant decline in the percentage of pine and increase in spruce pollen at this transition. This record correlates to the glacio-lacustrine abandonment of Boyd Pond on the northwest side of the Adirondacks, reported by Anderson (1988), and therefore gives us an initial age estimate of 11,200 +/- 190 14C BP (Anderson's date for Boyd Pond) for the drop from Fort Ann level Lake Vermont to the Champlain Sea that sent a large pulse of freshwater into the Gulf of St. Lawrence.

Dave Franzi, Catherine Yansa, Peter Knuepfer, and I will be leading a NYSGA-NEIGC field trip next Fall that will start at the Altona Flatrock north of Plattsburgh, NY and follow the Lake Vermont shoreline south to the outlets near Fort Ann, NY. The Platsburgh Air Force Base bluff (identical stratigraphy to the Salmon River site), and the Long Pond site will be included as stops.

Anderson, T.W., 1988, Late Quaternary pollen stratigraphy of the Ottawa Valley - Lake Ontario region and its application in dating the Champlain Sea; in Gadd, N.R., ed., The Late Quaternary Development of the Champlain Sea Basin: Geological Association of Canada, Special Paper 15, p. 207-224.

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I would like to announce that John Rayburn, Peter Knuepfer, CatherineYansa and I will be leading a field trip through the Champlain Valley for the 2002 Joint NYSGA/NEIGC Field Conference on September 28th. We shall examine new morphologic and stratigraphic evidence that provide insights into the timing of late glacial events in the region and the relationships between Lake Vermont, contemporaneous proglacial lakes and the subsequent Champlain Sea. The trip begins on Altona Flat Rock, where breakout floods
from proglacial Lake Iroquois entered Lake Vermont, and ends near Fort Ann where we have discovered a possible new outlet for the Coveville Stage. The trip originates from the west parking lot of Hudson Hall on the SUNY Plattsburgh campus.

I shall refer you to John Rayburn's Glaciogram report for the details of a recent coring expedition to Long Pond near Willsboro, NY with John, Pete Knuepfer, Curt Stager, Plattsburgh alumnus Cara Gentry and a team of SUNY Binghamton graduate students. John's preliminary assessment of the core's contents is quite promising.

I have been using a one-semester sabbatical leave to become familiar with GIS technology and software and apply them to my work on the glacial geology of the northern Champlain Lowland and northeastern Adirondack Mountain region. I regret to report that after about three-months of "immersion-learning" about the only thing I've learned is how little I know about the subject. I shall press-on, however, and I hope to have some interesting new maps to show for this fall's NEIGC/NYSGA field trip.

Finally, we have been fortunate to receive NSF funding for two more years of our Research Experiences for Undergraduates Program at the Altona Flat Rock jack pine barrens. Thanks to all of my Glaciogram colleagues who referred students to us.

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Stephen Robinson, St. Lawrence University <srobinson@stlawu.edu>

Hello New York Quaternarists, and please allow me to introduce myself. I am Stephen Robinson, a new faculty member in the Geology Department at St. Lawrence University in Canton. Prior to joining St. Lawrence, I was on staff at the Geological Survey of Canada, and worked primarily on permafrost issues in northwestern Canada. My PhD is from the Department of Geography at McGill University in Montreal, where I studied carbon dynamics of discontinuously frozen peatlands for my dissertation. Although I will be continuing work in northern Canada, I also am aiming to start research with students in upstate New York, initially mapping glaciofluvial deposits with ground penetrating radar as well as hopefully starting some local peatland carbon research. Other research interests for the northern New York region include surface and groundwater monitoring and modelling, and possible climate change impacts. I look forward to talking to many of you at upcoming meetings.

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Richard Futyma (LA Group, P.C., Saratoga Springs, NY) and I have published our studies of postglacial development of the Bryon-Bergen Swamp, Genesee County, NY (Canadian Journal of Botany 79: 1425-1438. Dec. 2001). This sloping rich fen is a mosaic of marl and peat deposits, the accumulation of which was found to vary spatially and temporally during the Holocene. We used pollen and sediment stratigraphic data to decipher aspects of vegetation stability and change, by selecting a study site in the south central part of the 800-hectare mire complex for detailed paleoecological study.

Rich and I also collaborated on the preparation of a paper for Smith Symposium II (The Hiscock Site: Late Pleistocene and Holocene Paleoecology and Archaeology of Western New York State), the Proceedings of which will be published by the Buffalo Society of Natural Sciences later this year. In our paper, we present and interpret a high resolution and abundantly radiocarbon dated pollen diagram for Divers Lake in southwestern Genesee County and integrate the pollen record from this site with other paleobotanical records near the stratigraphically incomplete Hiscock basin, including our work at Byron-Bergen Swamp and a kettle hole wetland near the Lamb archaeological site. The Divers Lake record includes the first recognized occurrence in western New York of tundra vegetation on the basis of plant macrofossils such as Dryas integrifolia and associated seeds and fruits of other open ground plants.

I have been collaborating with Helen Delano (Pennsylvania Geological Survey, Middletown) and Noel Potter, Jr. (Dickinson College, Carlisle, PA) on investigations of sediments in a small sag pond in colluvium over dolomite. Kings Gap Pond is located in south-central Pennsylvania at the base of the northwest side of South Mountain at an altitude of 650 ft, 100 mi south of the Wisconsinan terminal moraine. Surprisingly, the Kings Gap Pond sediments contain a long record of tundra vegetation, on the basis of an excellent and stratigraphically robust assemblage of vascular plant and moss macrofossils. Organics at the base of the sampled section at 4.86 m have been dated at 16,080 ± 60 C-14 yr B.P., and a twig 2 m below the

sediment surface was 14,540 ± 50 yr B.P. Fossils of tundra plants yield to spruce needles and spruce needle parts above 14.45 C-14 ka. A pollen diagram to accompany the plant macrofossil stratigraphy is in preparation, as are other coordinated analyses of the sediment. Our work to date on this site was presented recently in a poster at a recent meeting of the Northeastern Section Geological Society of America (see Abstracts Programs NE Sec. GSA A-27. 2002).

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I am currently a regular geology columnist for Kaatskill Life, a regional quarterly magazine, and for the Columbia County Independent, a twice weekly paper. I also write for the weekly Greenville Press and occasionally for the Poughkeepsie Journal. I have been "covering" last winter's Schenectady slump and using it as a vehicle to introduce the general public to Glacial Lake Albany and its many hanging deltas. I have been doing a series of related articles on places such as the Vanderbilt Mansion and Franklin Roosevelt's home, discussing how slumping might damage these historic sites. I have also been researching articles on Glacial Lake Kinderhook for the Independent.

For Kaatskill Life I have been doing a series of articles on the geology of North/South Lake State Parks. I am currently studying a surprisingly large number of glacial spillways that were temporarily active at the close of the ice age in the South Mountain and North Point vicinities. These picturesque canyons are now part of the North/South Lake Park scenery.

In the near and medium term future I would like to do articles on the ice age geology of the upper Susquehana River basin and much more work in the eastern Catskills and Hudson Valley.

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Jason P Briner, INSTAAR and Dept. of Geological Sciences, University of Colorado Boulder, CO 80303

Dear Quaternary Geologists of New York,

I will be taking an assistant professor position at SUNY Buffalo this January, more or less replacing Parker Calkin. I'm a west-coaster who doesn't know much about these parts. Raised in the Seattle area, I have a B.S. from the Geology Department at the University of Washington (1996), a M.Sc. from Geology at Utah State University (1998), and a Ph.D. from Geology/INSTAAR at the University of Colorado (2003). I've had great advising over the years (Darrell Kaufman for M.Sc.; Gifford Miller for Ph.D.) and been involved in a number of fantastic projects. The bulk of

my past and ongoing research has been using cosmogenic radionuclides for glacial chronology in Alaska, and for Laurentide Ice Sheet history and dynamics in arctic Canada. Additional research has involved the application of lake sediments to glacial geology and Pleistocene and Holocene climate change studies. At SUNY Buffalo, I will have laboratory support for both cosmogenic radionuclide and lake sediment research, and hope to begin projects in New York, in addition to conducting research in, and bringing students to, arctic areas. I had an enjoyable and enlightening introduction to the glacial geology of western New York when Parker spared a couple of his days last August to show me around. Thanks Parker! (Parker, by the way, is happily living in Colorado and continuing to conduct research in Alaska.) I look forward to meeting the community of Quaternary Geologists in New York!

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Radiocarbon-dated tree-ring chronologies from mastodon sites, continued

The addition of wood from two more mastodon sites, one the Hiscock Site in Genesee County, NY, excavated by Dick Laub, and the other the Harmony Mills site in Albany County, NY, excavated by Norton Miller, filled in a very exciting time slot to my data – the Younger Dryas! The graph below shows the current data positioned along the Cariaco Basin 14C calibration curve. (No, I have not mistakenly placed the last N. Java chronology off the curve - that is at one time when there appears to have been a greater difference in the ocean vs. the atmosphere 14C content) Unfortunately, none of the samples were trees with more than 100 rings, but the spread of their radiocarbon dates is very nice.

Of the 153 samples in the North Java site, I have now measured 85 out of the 104 hemlock, ash and elm samples, and hope to build many 300-500+ year-long sequences from various Holocene periods from their data. From those chronologies, along with the other sites' chronologies already constructed, I will have plenty of windows in time to look at changes in tree growth and the climate.

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Michael Wilson, SUNY-Fredonia

During the past year, Rachael Heltz Herman, an assistant in our WaterNet project, and I, reduced the 50-or-so soil series in Chautauqua County to 11 soil parent materials categories and digitally overprinted these 11 colors as ArcGIS polygons onto digital 7.5-minute topographic maps and printed the resulting 25 maps at standard 1:24,000 scale. These are being used to aid both hydrologic and glacial-mapping fieldwork.

Mike

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Gordon Connally and I are continuing to examine cores obtained in Glacial Lake Albany lacustrine silts and clays, varved sediments deposited on the proglacial lake-bottom while the surface level dropped from Lake Albany, to Lakes Coveville, Fort Ann, and Greens Corners. We are examining cores from a 3 inch hollow stem auger, for disturbed sediment zones. We have identified disturbed sediments (WD-Events) with a range of thickness between 13 - 180 cm, and correlate them with R events in the north Atlantic Ocean. We will be examining a 50 ft and a 100 ft core this winter.

The New York State Museum will co-sponsor the Fifth Annual Earth Science Teachers Workshop in July 2005. This program is designed to facilitate hands-on investigation of the geologic evolution of New York State; establish close, continuous working relationships between New York State Earth Science teachers and the professional geologists from the New York State Museum; and help Earth Science teachers obtain additional experiences and prepare materials for use in teaching Earth Science/Physical Setting.

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Three aspects of my research are continuing on vegetational and climate history. The first two involve deglaciation, and the third focuses on recent climte history:

1) With technician Dot Kurdyla, we are examining a number of late-glacial records in the Bering Glacier region. This work is in collaboration with Ernie Muller, Jay Fleisher, and Matt Lachneit. LOI, pollen, and macrofossil analysis with AMS C-14 dating of the macrofossils is in progress on both sides of the Bering Glacier.

2) With graduate student Dee Pederson, technician Dot Kurdyla, and colleague Terryanne Maenza-Gmelch, we are examining deglaciation and carbon storage in various New York

wetlands. A new core from Sutherland Fen shows a high rate of sedimentation during the late-glacial, followed by lower accumulation rates during the Holocene.

3) A new initiative attempts to understand the last millennium of climate change in the Hudson Estuary marshes. Dee Pederson, Dot Kurdyla, and Agnes Sugar are working with us. High sedimentation rates in the marshes provide a high-resolution study of human impact and natural climate variability.

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I currently have two graduate students working on research projects in the Cortland area. David Perry, a local farmer, is studying the glacial geology of the Homer-Scott-Fair Haven valley at the south end of Skaneateles Lake. He is focusing on the geomorphology and making a surficial map, but has also obtained water-well records from throughout the valley to characterize some of the near-surface stratigraphy. He is finding that the surficial morphology of the Valley Heads moraine does not exactly match the subsurface distribution of till, and is also trying to decipher the relative contributions of local hillside versus Laurentide Ice Sheet sediment sources to the surficial deposits in the valley. Jason Graves, a teacher at Homer Central High School, is working on proglacial lake levels in the central Moravia quadrangle. He is using multiple methods to establish the elevations of delta surfaces and hopes to be able to relate his results to some of the recent work on isostatic rebound elsewhere in New York.

I have also continued working with undergraduate students in my Geomorphology class on field-based semester projects. Last year we focused on Hoxie Gorge, a small drainage basin to the southeast of Cortland, and this year we are working at Shackham Brook near Tully. Both study sites are small gorges that have complex histories of preglacial development, glacial infilling, and post-glacial re-excavation. The projects entail describing the surficial geology to establish the Quaternary history and then characterizing the present geomorphology, and have been great teaching exercises to engage students in fieldwork, data analysis and critical thinking.

Lastly, I am collaborating with John Rayburn (SUNY Plattsburgh) and Neil Pederson (Lamont Doherty Earth Observatory – Tree Ring Lab) on a tree-ring project in Willsboro. Our intent is to develop long tree-ring records from the Champlain Valley by extending living tree records back in time using house beams in historical structures.

Gordon Connally, 12 University Avenue, Buffalo, NY 14214 buffconns@att.net

Besides my Westchester County work, Don Cadwell and I made two presentations at the Northeast section last spring and led a field trip at NYSGA this fall. We presented "WD-Event Disturbances in the Champlain Valley" as a poster session. This related our varve work in the Champlain Valley to events beneath Lakes Albany, Coveville, Fort Ann and Greens Corners. Interestingly they scheduled the oral presentation "Timing of WD Events in the Hudson-Champlain Trough and correlative R-Events in the northwest Atlantic Ocean" exactly opposite

the poster session??? Anyway the integration of our now 21 WD-Events with the 8 R-Events of Clark et al. (2001) suggests a modified time scale for the Hudson-Champlain Trough The new time sale, translated into calendar years, is shown below. As noted in our talk, the date of the Bridport Readvance is a problem because it is not synchronous with the Middlesex and Bethlehem-Littleton Readvances in New England.

WD1; Lake Greens Corners drains north	12,800		R3
Lake Greens Corners	13,100		
WD3-2; Lake Fort Ann drains south		13,200 to 13,100	R4
Lake Fort Ann	13,550		
WD4; Lake Coveville drains south	13,750 to 13,550	R5	
WD5; Lake Iroquois drainage resumes		13,750	
WD8-6; tributary lakes drain		13,860 to 13,750	
Lake Coveville		14,100	
WD9; Lake Albany drains south		14,100 to 14,000	R6
Bridport Readvance	14,100		
WD10; initial Lake Iroquois breakout		14,150	
Luzerne Readvance	15,075		
WD10-14, Mohawk Valley drainage II		15,500 to 14,800	R7
Rosendale Readvance	17,800 to 16,500		
WD17, Mohawk Valley drainage I	19,500 to 17,800	R8	
WD18		22,100	
WD19		22,200	
WD20		22,300	
Terminal Moraine, Initial Lake Albany		25,710	

Our field trip in the Fulton Chain went well. We even had two fresh exposures at Burkes Cabins, on the shores of Raquette Lake (1762 ft). We presented our evidence for suggesting that inside-out deglaciation of the Adirondacks began over the Raquette Lake depression with Glacial Lakes Raquette (1840 ft) and Fulton (1805 ft). The Raquette Lake depression is the drainage nexus between east-flowing Hudson River, north flowing Raquette River, southwest-flowing Moose River, and south-flowing West Canada Creek drainage. We then traced the sequential development of Glacial Lakes Inlet (1760 ft), Old Forge (1740 ft), and Thendara (1720 ft) that preceded the Fulton Chain along the Middle Branch of the Moose River. We ended at the huge boulder train, pictured in the guidebook article, which marks the southwest breakout that ended Lake Thendara.

Finally, the news from Westchester County is somewhat more upbeat than usual; less like the usual a broken record. The final(?) edition of the White Plains Quadrangle, now 11 years in process, actually is in my hands. The Mount Kisco Quadrangle, immediately northeast of White Plains, has been prepared for review. And the mapping continues to progress. I finished the eastern half of the Ossining Quadrangle this past summer and will finish the remainder during the 2005 field season. It now appears that recession was north-northeast toward the Harlem Valley, rather than northeastward toward the Connecticut Valley. Perhaps we will be able to display the three maps in Saratoga. Detailed mapping of Lake Albany and Coveville features is proving to be instructive.

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Middle Wisconsin Ice Advance in the Genesee Valley: Progress Report, September 2004

Ongoing 14C dating of the abundant wood and organics at the Elam-DeWitt, middle Wisconsin site in the lower Genesee Valley near Scottsville, NY, has provided 25 new ages. These additional dates continue to show a bimodal distribution of ages for reworked (circa 36,600 to 47,000 14C years BP) interstadial materials from two deformation tills and for in-situ (circa 33,000 to 35,000 14C years BP) samples from proglacial lake varves formed by two oscillatory ice advances. The glacial sequence overlies fluvial sediments (disconformity) whose upper beds are dated between 36,000 and 41,000 BP (maximum age of exposed disconformity). We now have 68 14C ages (12 pending) on well-preserved samples. The stratigraphy and chronology of this unique site confirm the age of the previously inferred interstadial (Plum Point = Farmdale Phase of Elgin Subepisode; Karrow et al, 2000, J. Quat. Res., v. 54, p. 1-12) bracketed between 36,500 and 49,000 years BP in a variety of previously published journal papers. This interstadial ended in the Genesee Valley when ice advanced at least 30 km south of Lake Ontario at a time approximately coincident with the published age of Atlantic Heinrich Event H4 (circa 35,000 BP). The shallow preservation of this mid-Wisconsin stratigraphic section indicates that not all ice advances, including the late Wisconsin event, scoured the Finger Lake troughs to bedrock. The implications are that other such pre-late-Wisconsin sections may be preserved in Finger Lake troughs and valleys. This is further substantiated by the recovery of well-preserved (non-carbonized) wood dated at 43,000 + 1800 14C years BP at a depth of 26 meters below a late Wisconsin moraine from a boring 18 km southwest of the Elam-DeWitt site.

Other Quaternary publication of potential interest:

The June 2000 Symposium Monograph on the Colorado River (Grand Canyon Association Monograph 12) is now published for those with an interest in the geomorphology of the southwestern US. This monograph (Colorado River, Origin and Evolution) contains 33 well indexed, peer-reviewed papers (100 authors) and extended Appendices of K-Ar ages on the late Cretaceous to Quaternary history of the Colorado Plateau and surrounding regions. Nine of the papers specifically deal with erosion rates, including fission track and exposure age studies in a variety of settings. The non-profit Grand Canyon Association has a web site describing the volume at:
http://www.grandcanyon.org/bookstore/index.cfm?fuseAction=results&category=Scientific%20Monographs

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