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NEW YORK GLACIOGRAM

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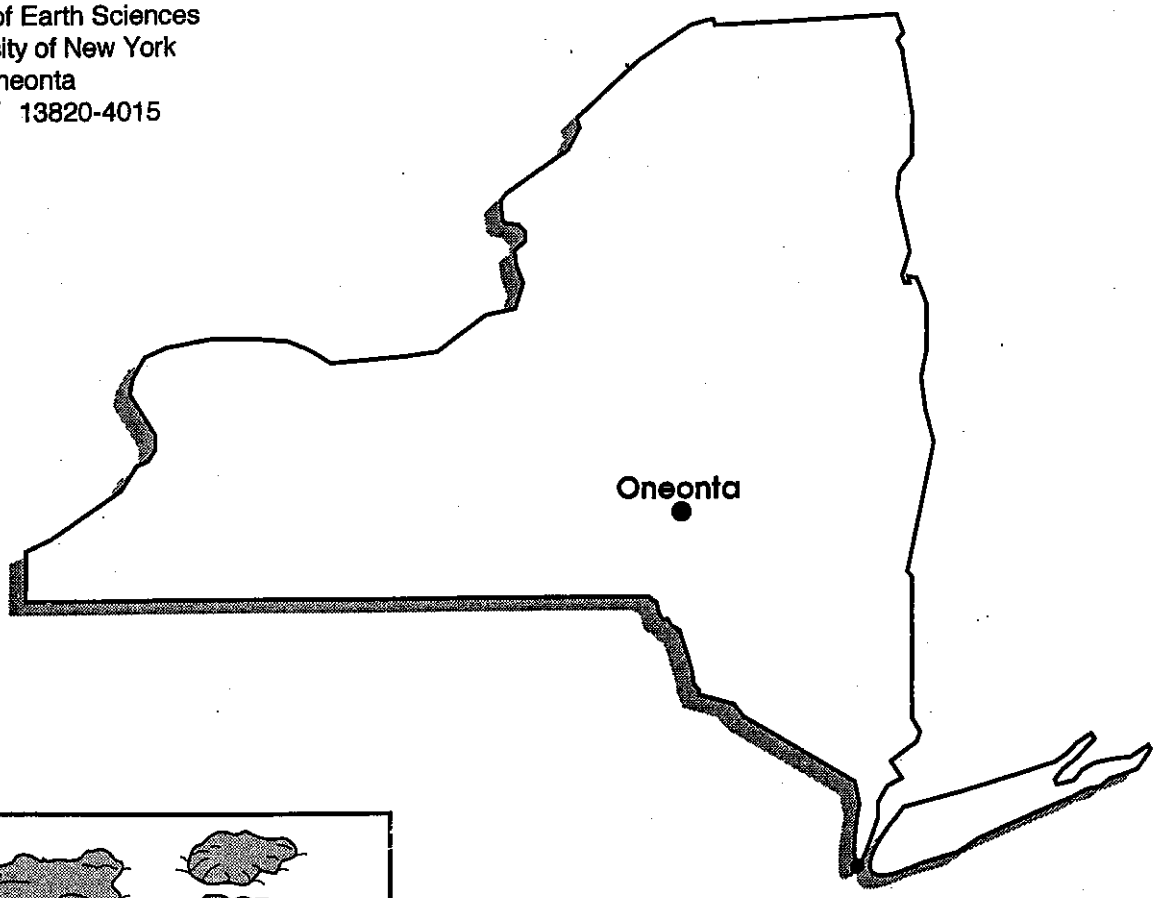

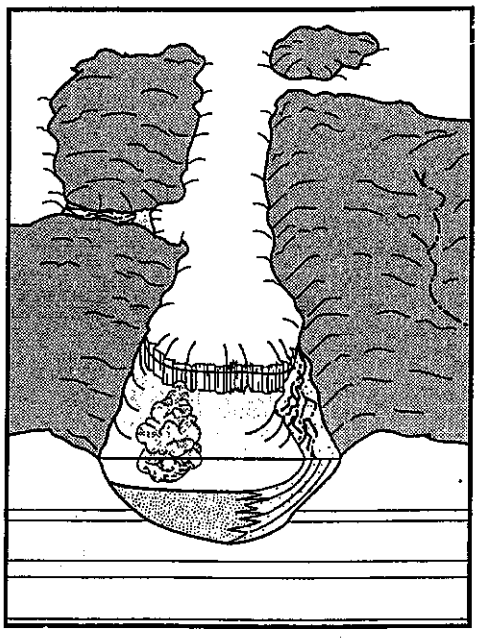

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EDITORIAL POLICY

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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Quaternary geology and Black Creek Watershed Management Planning, western New York:

Whitney J. Autin, James Zollweg, and Mark Noll, Department of the Earth Sciences, SUNY College at Brockport, Brockport, NY 14420 (dirtguy@esc.brockport.edu)

This summer we completed an environmental inventory of the Black Creek Watershed, a drainage basin that is tributary to the Genesee River in western New York. Regional to local interpretations of Quaternary geology have numerous applications to watershed management and planning. Producing environmental inventories for management planning typically includes analysis of landforms, surficial deposits, soils, and water resources.

The State of the Basin Report is an environmental inventory of the natural and human resources of the Black Creek Watershed. The report characterizes the watershed with respect to its physical features and cultural characteristics, identifies valuable resources within the watershed, analyzes current water quality and quantity conditions, and identifies critical issues facing the watershed in the future.

The Black Creek Watershed Coalition (BCWC) has been organized to work cooperatively on water quality and quantity issues in the Black Creek Watershed. A web site was created to disseminate BCWC information to its members and to the public at www.blackcreekwatershed.org. The complete *Black Creek Watershed State of the Basin Report* is available at the web site. The BCWC plans to continue its activities in areas of governmental policy initiatives, technical investigations, and public outreach and education.

The State of the Basin inventory was prepared using a Geographic Information System (GIS) as a central component of the project. The GIS provides interested persons a detailed view of acquired data, the ability to conduct additional analysis of watershed characteristics, and the ability to update the database in the future. The report includes a geographical description of the watershed, uses of land and water from the 1970's to the present, and water quality and water quantity summaries from available data. A map set accompanies the report to graphically illustrate spatial trends across the Black Creek Watershed.

Whitney J. Autin (continued)

A summary of problems and risks that can affect the future of the Black Creek Watershed has been presented for public consideration. Water quality risks include point sources discharges, agricultural sources of pollution and non-point sources from developed areas. Water quantity risks are associated with flooding and low flow conditions; it is recognized that water quantity issues may have relevance to water quality issues. The BCWC intends to develop and implement an integrated Watershed Management Plan to minimize water quality impacts and water quantity problems in the Black Creek Watershed to the most practical extent possible.

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Donald H. Cadwell, New York State Museum

I am currently working with Gordon Connally on the interpretation of core sections retrieved from lake clays deposited in Glacial Lake Albany. In the 51 ft of brown/gray moist silt and clay varves recovered at Crown Point (2002), there were eight distinct disturbances of the lake-bottom sediments. The disturbances are recognized as rip-up and redeposition of sediments, and could occur either during massive water inflow into the lake, or during lake drainage during catastrophic lowering of lake level, perhaps by erosion of the threshold of the dam. The big question is associated with attempting a correlation between R-events proposed by Clark et al. (2001) for the northwest Atlantic Ocean and Hudson-Champlain drainage events.

We are planning to drill a second hole this fall, east of the Hudson River and south of Glens Falls, to determine if varves are disturbed in the same manner as Crown Point.

Donald H. Cadwell, New York State Museum, Albany, NY 12230

G. Gordon Connally, New York State Museum affiliate
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My work in Westchester County is moving ahead at last. The White Plains Quadrangle is in press. The manuscript is complete and one version of the map was prepared. However, there was a problem with the topographic base that is being solved in Albany. I hope that it will be available before the end of the year. Les Sirkin and I submitted the "final" map in 1993 and it will be the last in the line of Connally and Sirkin publications.

Field funds for the 2002 field season in the Mount Kisco Quadrangle arrived last 3 November - - with the first snow in Buffalo. Nevertheless, the 2002 half was completed in May and June and along with an additional quarter for 2003. The remaining quarter should be completed in October. I guess the manuscript will follow during the winter. Of course I only signed the 2003 contract in early September!

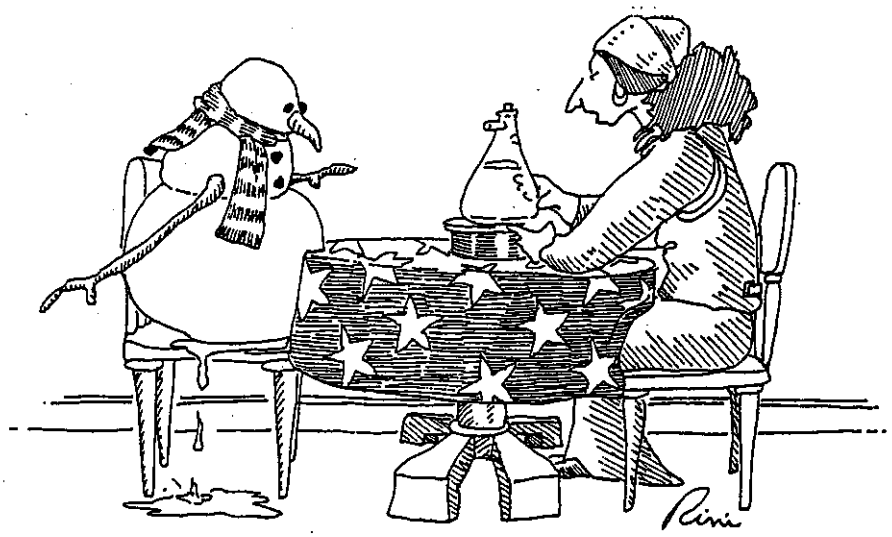
My current proposal for the 2004 field season is to begin the Ossining Quadrangle. Ossining is north of White Plains and west of Mount Kisco and will complete a solid block of three critical quads in Westchester County. Thus far I have found no evidence to refute a southwest to northeast retreat toward the Connecticut Valley. However, the Ossining Quadrangle promises evidence on the significance of Les' "Croton Moraine" position. If it turns out to be real, I suspect that Hudson Valley Lobe ice retreated to this position while Connecticut Valley (?) ice remained to the southeast.

Meanwhile, for the past three years I have been working with Don Cadwell in the Champlain Valley. We reported the results of our coring on the Crown Point Peninsula in a Northeast Section abstract last spring. Unfortunately, Albany withdrew travel support so we never showed up to discuss our poster. We hope to rectify the situation in Washington D. C. next spring. We cored originally in 2001 with a Geoprobe, but that proved unsatisfactory so we retrieved a split spoon core in 2002 that was discussed briefly during our NYSGA field trip in 2002. We suggest that the disturbed zones in the 10 m core may be attributed to WD-events in the Champlain Valley (see blow).

G. Gordon Connally (continued)

My most recent passion is attempting a correlation between R-events proposed by Clark et al. (2001) for the northwest Atlantic Ocean and Hudson-Champlain drainage events, which I call WD-events. I tried to drum up enthusiasm from several workers, but was met with a groundswell of ennui. Thus, I will submit an abstract on WD-event correlations for Washington and hope to make a stronger case at that time.

Finally, while returning through Buffalo city streets from a Bill's game, on a quiet Sunday afternoon, I stopped to examine a construction site on the corner of N. Division
and Michigan. The exposure exhibited three units. The lowermost was a massive, dense, 10YR, clayey silt 3 to 3.5 m thick. It is overlain by 8 to 45 cm of apparently identical sediment that is laminated to thin- bedded. At the top is 1 to 1.5 m of diamict that includes concrete and other construction debris. The lower unit is exposed for at least 50 m on the perimeter of the site; I observed only three subrounded limestone coarse-pebbles in the otherwise featureless unit. My tentative interpretation of the lower unit is a readvance till, entirely of homogenized lake silts. The gradual contact with the overlying stratified unit suggests to me lacustrine sediments deposited as the ice lifted off the till surface during melting and retreat. It is reported here because it may be of interest to someone, someday and I do not recall Parker Calkin ever encountering such a unit.



"You will be going through an important phase change very soon."

JOHN J. CHIMENT, Cornell Institute for Biology Teachers, 169 Biotech, Ithaca, NY 14853 (jjc1@cornell.edu)

Charophyte Flora of New York Pleistocene Kettles

Charophytes, the calcareous tests of fresh-water alga, are co-preserved in kettle ponds with Pleistocene vertebrates, including mastodon and mammoth. The abundance of fossil chara is related to current ground water pH and may correlate with preserved species of sphagnum known to prefer relatively basic environments. In very acidic environs chara either did not grow or their calcareous tests were not preserved.

Modern distribution of chara in New York State is relatively well known. Conservatively, about ten species are recognized; many of these have been variously subdivided by different workers. The Weigand Herbarium at Cornell University houses a major collection. In general, chara show some zonation correlated with latitude, but, interestingly, do not show a trend of increased diversity in warmer environs.

Samples of dried matrix from three sites known to contain mastodon fossils in southern New York have been examined. The "Gilbert/Cornell" mastodon site in Chemung Co. has not yet produced a recognizable charophyte flora. Abundant chara, representing at least two species, have been recovered from the "Lozier/PRI" mastodon site in Dutchess Co. The "Moffett" mastodon site in Wyoming Co. has, to date, produced a single charophyte.

Abundance and species of charophytes recovered from sample cores may be useful in predicting the likelihood of vertebrate fossils. Matrix samples from Pleistocene fossil sites would be welcome.

John J. Chiment (continued)

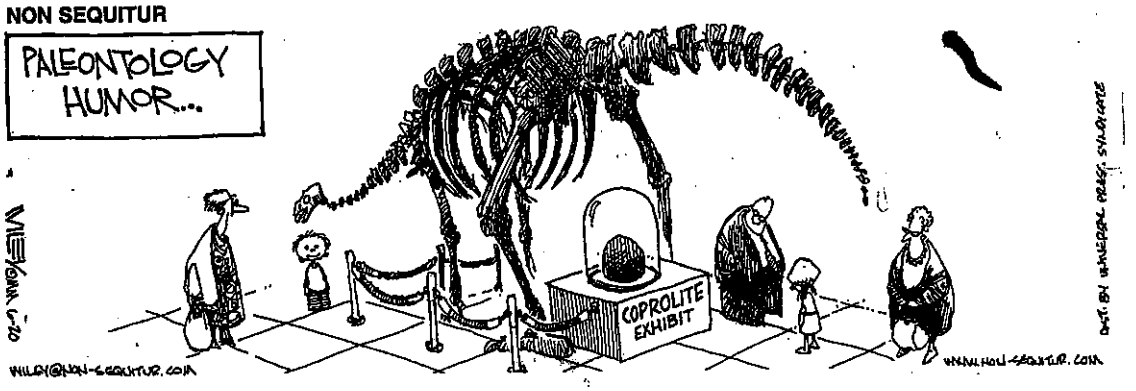
CHIMENT, JOHN J. and MYRON SASSER, Cornell Institute for Biology Teachers, 169 Biotech, Ithaca, NY 14853, jjc1@cornell.edu and MIDI, Inc., 125 Sandy Dr., Newark, DE 19713, sasser@midi-inc.com

Tuberculosis identification using Mastodon bones from the Pleistocene of New York State

Dr. Bruce M. Rothschild (Arthritis Center of Northeast Ohio, 5500 Market, Youngstown, OH, 44512, bmr@neoucom.edu) diagnosed tuberculosis in mastodons found in New York State based upon the presence of characteristic bony lesions. Tubercular lesions are also known in Old World populations of prehistoric humans. The introduction of this disease into the New World may have hastened the extinction of mammoths and mastodons as tuberculosis is transmitted today between humans and elephants in zoos and circuses.

A new diagnostic tool for the rapid characterization of tuberculosis strains has been developed by MIDI, Inc. of Newark, DE. The technique uses high-performance liquid chromatography (HPLC) of mycolic acid extracts to characterize species of mycobacteria. Cell walls of mycobacteria are rich in mycolic acids--long-chain fatty acids about 40-100 carbons in size. We are attempting to extract mycolic acids from the interior of mastodon bones showing characteristic lesions on the surface and in x-radiograms.

Mastodon bones are from the Cornell/PRI collections. Bone cores and x-rays were made at the Cornell College of Veterinary Medicine. HPLC will be performed at MIDI, Inc.



Rhodes Fairbridge, Columbia University

Rhodes Fairbridge reports progress with his "interminable" (we quote) earth science encyclopedias:

.. Sediments and Sedimentary Rocks (ed. G.V. Middleton, McMaster), published
bu Kluwer, at an outrageous price, a very handsome volume nevertheless.

.. Coastal Science (ed. Maury Schwartz, Bellingham), ms. with publisher

.. Modern Climates (ed. John Oliver, Terre Haute), In progress, including "Sunspot Cycles" by RWF, who will supply an advance draft for any serious soul.

.. Paleoclimates (ed. Vivien Gornitz, NASA-GISS/Columbia, NYC). Good progress (a few volunteers needed).

.. Lakes, Reservoirs and paleolimnology (ed. R.W.F.). Modest progress (volunteers urgently needed, R.W.F.)

Others include Soil Science, Stratigraphy and Geomagnetism: all "dead in the water". Mike Rampino (NYU, NYC) is associate editor, and spent the summer hunting impact craters from the Sahara and who-knows-where.

All the best,

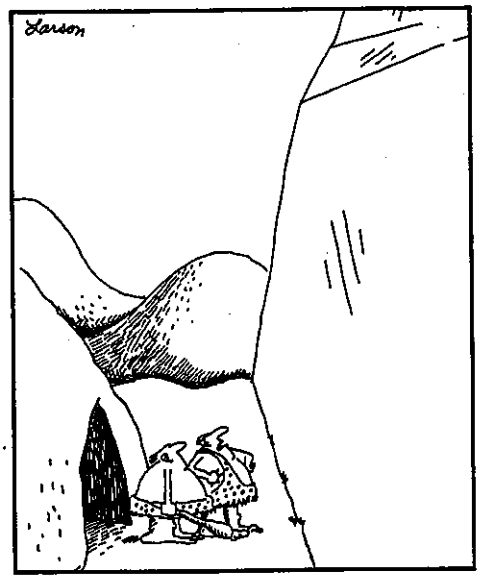
Rhodes

We had better publish this quick before our numbers change again

P. Jay Fleisher, SUNY-Oneonta, Oneonta

With colleagues Palmer Bailey (Army Corp of Engineers Cold Regions Research Lab, retired; Eric Natel, Kodak Research and Development; Heidi Natel, SUNY-Oneonta Master's candidate; plus undergraduate Geology majors Sam McTavy and Matthew Schreiber (Class of 2004) I conducted field studies at Bering Glacier, Alaska, in June, 2003. Partially funded by the Oneonta Foundation our field projects focused on mapping and interpreting the effects of glacial and glaciofluvial erosion on foreland terrain overridden by the 1993-95 surge, now being exposed by glacial retreat. Preliminary results will be presented at the Annual GSA Meeting, Seattle, 2003, and Sam and Matt will present a post summarizing their research at the Geological Society of America Meeting in Washington D.C. In March, 2004. The bottom line conclusion thus far reached is that the erosional effects of pressurized subglacial water associated with a surge-related outburst exceeds that of ice erosion by several orders of magnitude. Can the same effects be recognized for the Laurentide Ice Sheet in central New York State?

Following field work in Alaska, and for the second consecutive year, I joined Andy Russell's Keele University Group (United Kingdom) at Skiedararjokull, an outlet glacier of the Vatnajokull, Iceland. The purpose of this collaboration is to compare glacial processes, landforms and outburst events there with similar features and events at Bering Glacier, Alaska. This work was partially funded by a Faculty Research Grant through the Grants Development Office, SUNY-Oneonta, as seed money for a joint International Earthwatch Proposal currently under view.



"Say, Thag ... wall of ice closer today?"

David A. Franzi, Plattsburgh State University

I continue to work with John Rayburn and Pete Kneupfer on the glacial history and post-glacial rebound of the northern Adirondack Mountain and Champlain Valley region. John submitted a summary of that work to the Glaciogram.

Ed Romanowicz and I continue to conduct hydrogeological studies in the upper Little Chazy River watershed at our Altona Flat Rock field station. We shall be working with Fred Paillet and Andy Reeve (UMaine) to log one new well and conduct cross-hole pump tests to determine the fracture hydraulics of the flow system. Matt Becker and Greg Baker (UBuffalo) are planning to do a preliminary GPR survey this fall to determine the feasibility of a more extensive tracer study of fracture flow in the Potsdam Sandstone at the site. The Flat Rock field site continues to be an important base of operations for our Research Experiences for Undergraduates Program, which we hope to continue this summer pending approval of our renewal proposal.

Finally, I am working with two PSU students to put the final touches on a sediment survey of the Imperial Dam reservoir on the Saranac River in Plattsburgh. Trout Unlimited funded this study to support its proposal to remove part of the dam and install a fish ladder to provide access to potential upstream spawning areas for migrating fish species.

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Robert Gilbert, Queen's University

Glacial processes in southeastern Ontario

Work continues on the glacial landscape of the Frontenac Axis. During 2003 two more lakes (Charleston and Big Rideau) were surveyed using Chirp sub-bottom acoustic equipment. Maps of the morphology beneath the lakes, combined with digital DEM topographic data, provide a map of the bedrock surfaces. From this the role of subglacial meltwater processes are inferred in comparison to those being studied in Greenland (with J.A. Hyatt, Eastern Connecticut State University) and Antarctica (with E.W. Domack, Hamilton College, NY). The sedimentary record in the lakes provides evidence of the northeastward extent of Glacial Lake Iroquois, of processes immediately following the lake, and of the Holocene environment of the region. Following a report on the complex pattern of deposition in Devil Lake which bears on the glacial and post-glacial assessment, we returned and carried out a series of detailed limnologic observations through the autumn of 2002.

Results of these studies are documented in the following papers and presentation.

Gilbert, R., 2003, Spatially irregular sedimentation in a small, morphologically complex lake: implications for paleoenvironmental studies: Journal of Paleolimnology, v. 29, p. 209-220.

Gilbert, R., and Lamoureux, S., in press, Processes affecting deposition of sediment in a small, morphologically complex lake: Journal of Paleolimnology.

Gilbert, R., 2003, Glacial processes on the Frontenac Axis, southeastern Ontario, based on lacustrine morphology and sediments: 34th Binghamton Geomorphology Symposium. Ice Sheet Geomorphology.

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Carol Griggs, Cornell University

Pleistocene to Present Dendrochronology, Upstate New York

The excavations of three mastodon sites in upstate New York - the Chemung/Gilbert/Watkins Glen site, the Hyde Park/Lozier site, and the North Java/Moffett site – have recovered almost 200 samples of wood with enough rings for dendrochronological analyses. About a fifth of them are of species common to this area in the Late Pleistocene. Radiocarbon dates and dendrochronological analysis have revealed that most of these are from the Late Pleistocene, before the Younger Dryas period, as early as about 14,500 cal BP (see graph).

A long history of deposit, preservation, and non-preservation is evident in the 43 samples from the Chemung site. Only two samples from the Hyde Park site contained sufficient rings for dendrochronological analysis – the earliest spruce sample of all and one of oak. Nearly one hundred samples from the North Java site remain to be measured and analyzed, mainly of hemlock, elm, and chestnut. One exciting question of the chestnut wood samples is whether they pre-date the existing chestnut migration date into N.Y.S. of 2,000 BP, concluded from pollen analysis by M. B. Davis and others.

The concept of covering the last 15,000 years in dendrochronological analysis is a result of these excavations, but I recognize the immensity of work involved. At this point I am concentrating on the windows of time that are covered by multiple numbers of samples and at some times, multiple species. The modern and historic site chronologies will provide possible analogs in comparison with the ancient data. Evidence of changes in climate from the Late Pleistocene to the present is possible. The data will also be examined for evidence of the North Atlantic Oscillation in the past.

I am very interested in sampling any wood that is exposed and/or collected from glacial and more recent deposits anywhere in New York State, the surrounding states and Canada. A sample's size is not necessarily important: I have one section of hemlock that is less than 10 cm in diameter, yet it contains 167 rings. The important factor is the number of rings: 100 is the minimum, and the more, the better. Any resulting research would be done in collaboration with the collector/information provider.

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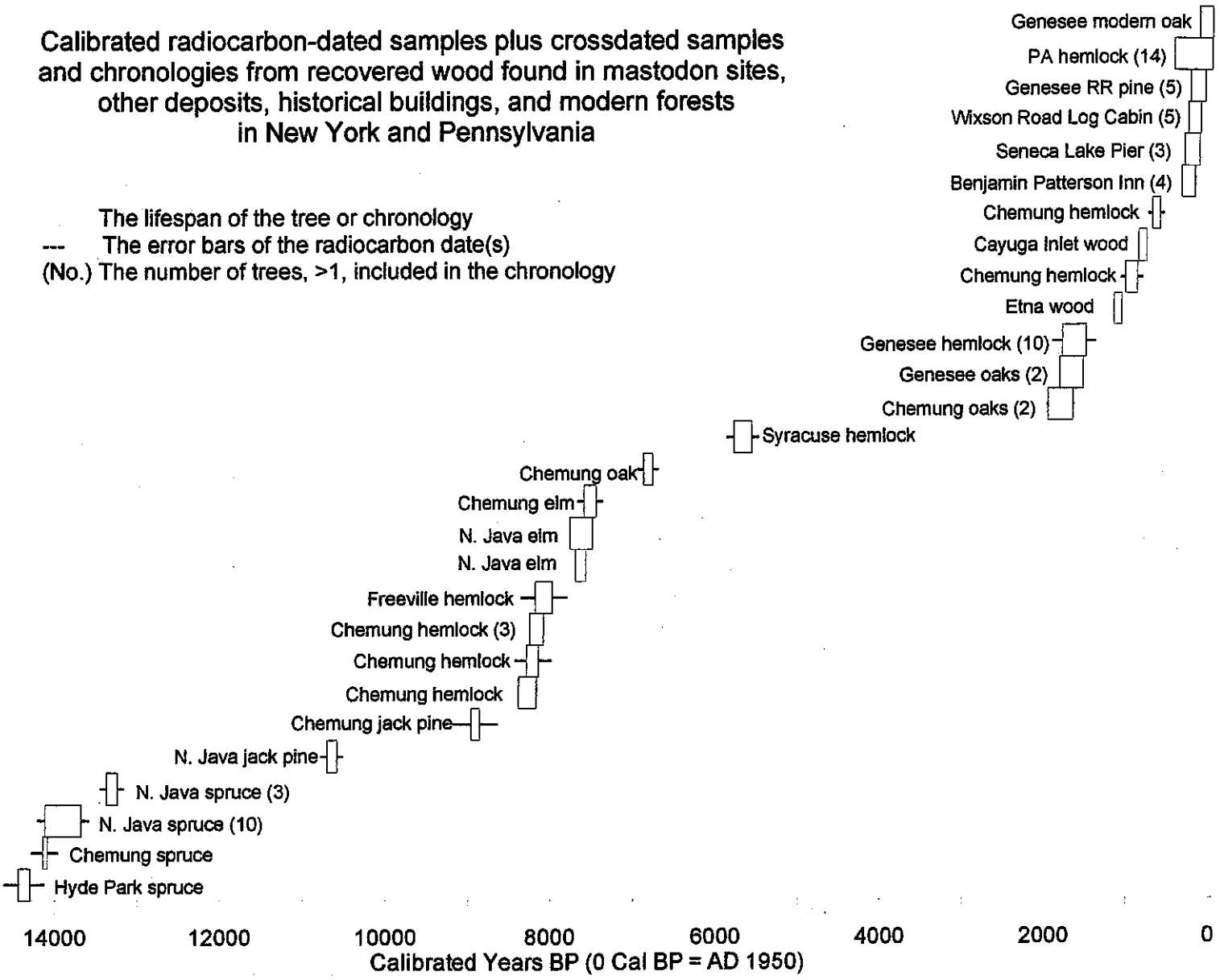
Carol Griggs (continued)

Calibrated radiocarbon-dated samples plus crossdated samples and chronologies from recovered wood found in mastodon sites, other deposits, historical buildings, and modern forests in New York and Pennsylvania

The lifespan of the tree or chronology
--- The error bars of the radiocarbon date(s)
(No.) The number of trees, >1, included in the chronology



Peter Knuepfer, Binghamton University and
P. Jay Fleisher, SUNY-Oneonta

Ice Sheet Geomorphology
Past and Present Processes and Landforms
34th Annual Binghamton Geomorphology Symposium
October 3-5, 2003
Binghamton University, Binghamton, NY

The 34th Annual Binghamton Geomorphology convened in Binghamton Oct. 3-5 on the topic of Ice Sheet Geomorphology: Past and Present Processes and Landforms. The conference was organized by Peter Knuepfer (Binghamton) and Jay Fleisher (Oneonta). Approximately 70 participants from the U.S., Canada, and Europe contributed to an excellent and stimulating set of 15 papers and 18 posters, plus lively discussions involving locations in Ireland, Fennoscandia, Iceland, Canada, Antarctica, Alaska, Minnesota, Pennsylvania and New York. A field trip lead by Duane Braun visited sites of deglaciation in northeastern Pennsylvania. The symposium honored the outstanding career contributions of Ernie Muller, Syracuse University. Papers will be published in 2004 as a special issue of the journal *Geomorphology* and concurrently as a stand-alone volume, which will be available from Elsevier.

The conference was motivated by the fact that continental ice sheets have continued to be a focus of research in Quaternary geology and glacial geomorphology throughout the last 30 years, since the 5th Binghamton Geomorphology Symposium in 1974 focused on the general topic of glacial geomorphology. Some of the most important work in this period has included an increased understanding (sometimes with considerable controversy) of the role of subglacial meltwater in landscape evolution in glaciated terrain; the role of surges, jökulhlaups, and ice streams in continental glaciers (both active ones, such as Antarctica, and Pleistocene ice sheets, such as the Laurentide); and active processes at the base and margins of modern ice sheets in Alaska, Iceland, and Antarctica. Thus, it was timely that the 34th Binghamton symposium return to the topic of glacial geomorphology, although we limited the coverage to ice sheet environments, emphasizing processes, materials, and landforms.

The following papers and posters were presented:

Papers:

Jasper Knight; Geomorphic evidence for active and inactive phases of late Devensian ice in north-central Ireland

Grahame J. Larson, Daniel E. Lawson, Edward Evenson, Richard Alley, and Oskar Knudsen; Glaciohydraulic supercooling in former ice sheets?

Andrew J. Russell, Matthew J. Roberts, Helen Fay, Philip M. Marren, Nigel J. Cassidy, Fiona S. Tweed, and Tim Harris; Icelandic jökulhlaup impacts: implications for ice-sheet hydrology, sediment transfer, and geomorphology

Laurence C. Smith, Yongwei Sheng, Francis J. Magilligan, Norman D. Smith, Basil Gomez, Leal A.K. Mertes, William B. Krabill, and James B. Garvin; Geomorphic impact and recovery from the 1996 Skeidarársandur jökulhlaup, Iceland, assessed with repeat-pass airborne

Richard Alley, T. K. Dupont, B. R. Parizek, S. Anandakrishman, D. E. Lawson, G. J. Larson, E. B. Evenson; Outburst flooding and surge initiation in response to climatic cooling: An hypothesis

Jon Pelletier; Glacial-lake formation beneath ice sheets

Jon Harbor, A. Stroeven, D. Fabel, Anders Clarhäll, and J. Kleman; Cosmogenic isotope evidence for a subglacial sliding-frozen boundary at the bed of the late glacial Fennoscandian ice sheet

Carrie Jennings Patterson; Terrestrial ice streams–the view from the lobe

Eugene Domack, Robert Gilbert, Angelo Camerlenghi, and David Amblas; Subglacial morphology and glacial evolution of the Palmer Deep outlet system, Antarctic Peninsula

Julia Smith Wellner, John Anderson; History of the East Antarctic Ice Sheet offshore North Victoria Land - evidence for grounded ice during the Last Glacial Maximum

John Menzies; Jaap.J.M. van der Meer, & James Rose; Till - a glacial "tectomict"; a microscopic examination of a till's internal architecture

P. Jay Fleisher, Matthew S. Lachniet, Ernest H. Muller, and Palmer K. Bailey; Subglacial deformation of trees within overridden foreland strata, Bering Glacier, Alaska

Steven Sadura, I. Peter Martini, and Tony Endres; Morphology, genesis and land use of a well-developed end moraine near Guelph, ON, Canada

Richard A. Young; Middle Wisconsin ice dynamics in the Genesee Valley, NY: a unique stratigraphic record of Heinrich surges

Duane D. Braun; Deglaciation of the Appalachian Plateau, northeastern Pennsylvania - till shadows, till knobs forming "beaded valleys: systematic stagnation-zone retreat revisited

Posters

Ewa Smolska, Piotr Szwarczewski; Dorota Giriat, Piotr Angiel; Texture characteristic of the contemporary, coarse outwash sediments of Falljökull and Fláajökull in SE Iceland

Nicolaj K. Larsen, Jan A. Piotrowski, and Poul Christoffersen; Glacier surge interpreted from a landform assemblage: Elisebreen, Svalbard

James Gray, John C. Gosse, Christophe Kinnard, and GeneviPve Marquette; A re-interpretation of weathering zones and glacial history in Nakvak Valley, Torngat Mountains using exposure dating

Maryse Hénault-Tessier, J.T. Gray, and J.C. Gosse; Influence of glaciation in high altitude zones of northern Gaspésie, Québec

Pawel Olejczyk and James Gray; Evidence of gneiss-like lithologies in Gaspésie: an alternative interpretation for erratic block provenance and dispersal

David Barclay; Rapid advance of an iceberg calving glacier, Icy Bay, southern Alaska

John A. Rayburn, Peter L.K. Knuepfer, and D.A. Franzi; A series of large late glacial meltwater floods through the Hudson and St. Lawrence valleys, New York

Robert Gilbert and Eugene W. Domack; Evidence of subglacial meltwater erosion and deposition from the continental shelf of Antarctica

Robert Gilbert, James A. Hyatt, and Jennifer Vinci; Fluvial erosion forms in bedrock created by meltwater flow from the Greenland Ice Cap at Kangerlussuak, West Greenland

Robert Gilbert; Glacial processes on the Frontenac Axis, southeastern Ontario, based on lacustrine morphology and sediments

Andrew J. Russell, H. Fay, T.D. Harris, M.J. Roberts, and F.S. Tweed; Preservation of jökulhlaups within subglacial sediments

Timothy D. Harris, Andrew J. Russell, F.S. Tweed, and M.J. Roberts; Morphological and sedimentary signatures of glaciohydraulic supercooling, Iceland

Fiona S. Tweed, M.J. Roberts, and Andrew J. Russell; Hydrologic monitoring of supercooled discharge from Icelandic glaciers: hydrodynamic and sedimentary significance

Andrew Kozlowski, A.E. Kehew, and B.C. Bird; Tunnel channels of the Saginaw lobe, southern Michigan

Vesna Kundiç, Sidney R. Hemming, Gilbert N. Hanson, and Daniel M. Davis; Provenance and age of loess at Wildwood State Park, Long Island, NY

Waldemar Pacholik, Gilbert N. Hanson, and Sidney Hemming; Using erratic boulders to map the basement in Long Island Sound

Brendan Kober and P. Jay Fleisher; Transport agents and depositional environments interpreted from quartz grain SEM microtextures, Bering Glacier, Alaska

Hazen Russell, David Sharpe, Tracy Brennand, Peter Barnett, and Charles Logan; Tunnel channels of the Greater Toronto and Oak Ridges moraine areas, southern Ontario

Paul Karrow, University of Waterloo, Waterloo, ON, Canada

Over the past year study of the Hyde Park (NY) mastodon site molluscs was completed and a report was submitted, coauthored with GERRY MACKIE, University of Guelph, to the project coordinators at the Paleontological Research Institution at Ithaca. A monograph report on all the multidisciplinary studies at the site is being assembled for publication by PRI.

J. N. HAAS, Innsbruch, Austria, has joined the Fernbank interglacial group to study the diverse plant macrofossils from this site near Ithaca NY. A paper was presented on his study at the INQUA congress at Reno in August, coauthored with J.H.MCANDREWS and I.

Fossil picking from the 13 ka site at Leamington, Ontario, ended in August, 2003 and ostracodes were sent to ALISON SMITH at Kent State U, and chironomid head capsules to IAN WALKER at Okanogan College in BC. As soon as these identifications are completed this project can be wrapped up and a paper submitted. This is one of two sites near Lake Erie over 13 ka and yielding a surprisingly rich fossil record from the Mackinaw interstadial. It has been compared with Nicholls Brook NY, but dating at the latter is in doubt.

Finally, in August, with machine help from the Toronto Conservation Authority, KEVIN SEYMOUR, Royal Ontario Museum, and I excavated at the Don Brickyard hoping to recover vertebrate fossils of the last interglacial. We have 143 bags (ca. 3 kg each) to wash down over the next year. In early May, I started Algonquin shoreline surveys between Meaford and Wiarton on southwestern Georgian Bay. Most notable was a big gravel bar complex at the Slough of Despond. This work is intended to continue in the future northward up the Bruce Peninsula. George Stanley apparently did extensive surveys in the area in 1938, but only published an abstract.
This work continues to be carried out between snow melt and hardwood foliation in the spring.

MIKE LEWIS (GSC, Dartmouth NS) and I are organizing a session on "The Greater and Lesser Great Lakes" to be held in May 2004 at the meeting of the International Association of Great Lakes Research at the University of Waterloo. Anyone interested in presenting a paper on this theme should contact us as soon as possible. Abstract deadline will be late fall.
Let's keep geology on the program at IAGLR! With TED APPLEYARD and TONY ENDRES (UW) we plan to present a paper on pre-Nipissing valleys in the Huon basin.

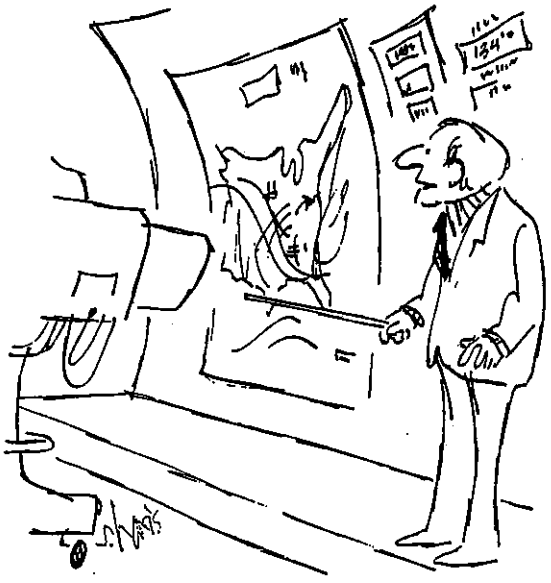
Paul Karrow (continued)

The American Association of Stratigraphic Palynologists will meet at Brock University in St. Catharines before this Glaciogram is published. A paper will be presented by STEVE DOUGLAS, with ROB MACDONALD and I on the paleoenvironmental record at Fort Erie from Steve's M.Sc. thesis (2003). 14C dates show early downcutting of the Lake Erie outlet.

My paper from Denver GSA 2002 honoring the work of Ernie Muller is in press with Northeastern Geology and Environmental Science. It compares the stratigraphy of eight sites in southern Ontario and western New York.

Also in press are a review of history from 10.5 ka to 8.5 ka in an archeology volume from the Canadian Museum of Civilization, a commentary from Smith Symposium II, and a geology chapter with ALAN MORGAN in a forthcoming book on the Grand River of Ontario. THe Ontario Geological Survey has begun preparing for publication my Quaternary geology report on the Brampton area (west of Toronto) mapped in the late 1980's.

Paul Karrow, University of Waterloo, Waterloo, ON, Canada



"... and the record low for this date is 147° below zero, which occurred 28,000 years ago during the Great Ice Age."

John Menzies, Brock University

Progress continues with the development of the Micromorphology Lab at Brock with major additions to our thin section collection from Ontario, Quebec, Denmark, Switzerland, Germany and Antarctica.

We have been developing a new techniques of statistical analyses on thin section microstructure collation. We hope to publish this new material over the winter.

Micromorphology Workshops are still being requested, the latest to students from the Universities of Bern and Zürich in Switzerland, where I gave a workshop in the lab (2 days) and in the high Swiss Alps (2 days) for the field component of the course.

This summer two papers appeared in Sedimentary Geology (157, 31-48.)and Boreas (32, 314-327) on our work, as well a major paper on tills as "tectomicts" appearing in Quaternary Science Reviews (22, 1659-1685).

Research into geoarchaeology using micromorphology has begun with requests to work on several sites in southern Ontario. This is a new and exciting avenue that easily lends itself to microscopic work.

Several large grant proposals are in the writing both in Canada and Germany, the latter on a possible deep drilling project (ICDP) at Hieldelberg.

WWW: http://www.micromorphology.brocku.ca

http://www.bh.com/bookscat/links/details.asp?isbn=0750642262

http://www.focalpress.com/default.asp?isbn=0750642262

John Menzies, Earth Sciences, Brock University., St. Catharines, Ontario

Norton G. Miller, New York State Museum, Albany, NY

Dick Laub (Buffalo Museum of Science) informs me that the proceedings of the second Smith Symposium, Late Pleistocene and Holocene paleoecology and archeology of western New York, is at an advanced stage of production and will be issued as *Bulletin of the Buffalo Society of Natural Sciences*, vol. 37, later this year. It contains many papers of interest to the Quaternary community, including updates on an impressive array of discoveries made at and near the Hiscock Paleontological and Archeological site, Genesee County, New York, since the publication of the first Smith Symposium proceedings in 1988.

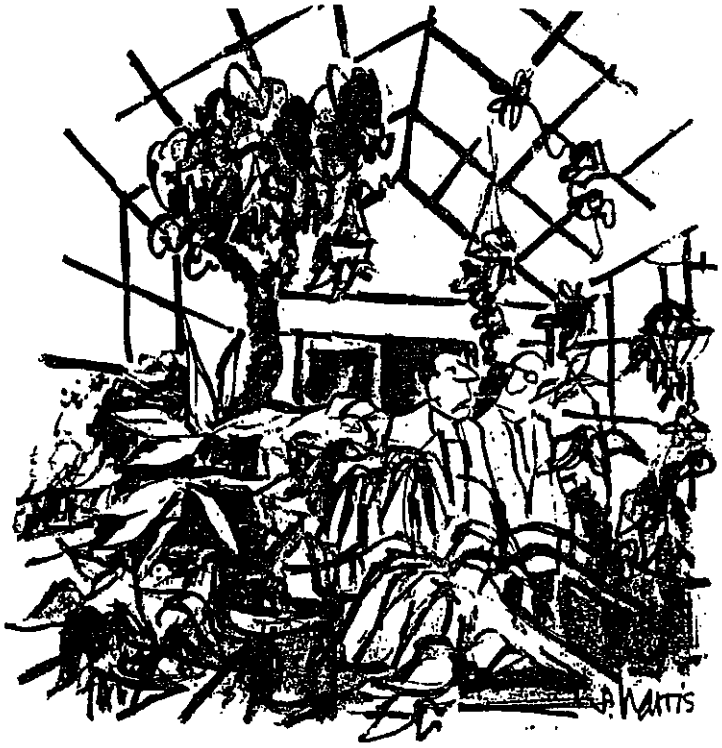
A forthcoming volume of *Palaeontographica Americana*, expected early in 2004, will be devoted to research at three mastodon sites in New York State, including the Hyde Park site in Dutchess County, New York, where one nearly complete mastodon skeleton was recovered in 2000. The bones have been cleaned, stabilized, and re-articulated, and the result of this work was on display for the dedication of the Paleontological Research Institution's new Museum of the Earth in Ithaca, New York, on 25 Sep 2003. The skeleton looms over visitors and is from a senior-citizen male that shows its age, osteologically speaking. The Museum of the Earth occupies an inspiring new building perched above Cayuga Lake. It is being filled with exhibits that will interest every visitor.

My contribution to the Hyde Park project included the analysis and interpretation of plant macrofossils from a stratigraphic suite of sediment samples taken near the mastodon skeleton. The depositional basin is an oxbow of a stream that drained from the recessional moraines to the north in the Hudson Valley. Fossils of tundra plants accumulated early in the history of the basin by overbank deposition (from ca. 13,000 to 12,200 C-14 yr B.P.). These are replaced abruptly by spruce needles, which later in the sequence are joined by fossils of balsam fir and tamarack. Most of the Holocene record is missing from the site, because the basin had filled to capacity shortly after the Pleistocene/Holocene transition. The macro-paleobotanical record is an unusually full one, and the leaf-seed-fruit and moss record of tundra vegetation is the first one in New York to be known in such detail. Five AMS ages for leaves of *Dryas integrifolia* or spruce needles provide chronological control. A companion study of the history of the Hyde Park wetland using fossils of mosses and aquatic plants and sediment distribution and lithology was prepared with Peter Nester (PRI and Cornell University) for a *Geological Society of America Special Paper* entitled Wetlands Through Time.

Norton G. Miller (continued)

I was called to Cohoes, New York, in November 2002 by the City Historian, who had noticed logs in "soil dug up" by a backhoe during the installation of a new water main near the Harmony Mill where the bones of the Cohoes mastodon were discovered in 1866. We initially hoped that the organics might be the same age as the mastodon (ca. 11,000 C-14 yr B.P.), but the wood proved to be younger, 10,500 C-14 yr B.P., or mid-Younger Dryas, which immediately focused our interest. I was able to convince the City and the contractor to open the trench again late this past summer, when we uncovered more wood (including fragments of paper birch trees with the bark intact), peat, and cones of white spruce and tamarack, small beaver-chewed logs, and an array of other plant fossils. The site is also interesting geologically, because an enigmatic clay bed occurs stratigraphically higher than the organics, where, on the basis of our understanding of Hudson-Mohawk valley lake history, none should be. Bob LaFleur has joined me in this work. Additional radiocarbon dates are pending, and we have developed several working hypotheses about this deposit and its history and paleoenvironmental setting. Pollen analysis, further study of the plant macrofossils (including wood identification), and other work lays ahead.

Norton G. Miller, Biological Survey, New York State Museum, Albany, NY 12230-0001 (518-486-2010), nmiller2@mail.nysed.gov



Harold, I've heard of Green House Gas,
but 'that' is not funny.

Don Pair, University of Dayton
Statemap-supported mapping in southern Onondaga County continues. Eight 1:24,000 quadrangles have been completed and an update on the research was provided at the Ernie Muller Symposium at the 2002 GSA in Denver. The abstract from that meeting is included below.

GLACIAL MORPHOSTRATIGRAPHIC INVESTIGATIONS IN CENTRAL NEW YORK STATE: NEW VIEWS ON OLD PROBLEMS

On-going mapping associated with the USGS STATEMAP program has afforded the opportunity to re-examine the classic glaciated landscape of central New York State. Using digital tools available through GIS, glacial researchers can take a new look at the Finger Lakes basins, through valleys, drumlin fields, moraine complexes and ice border drainage channels of a landscape that has long provided a rich morphostratigraphic record of glacial events. This newest look at the region is a consequence of geomorphic studies, analysis of sediment exposures, and a parallel bedrock geology study connected with the 1:24,000 scale mapping of eight quadrangles in southern Onondaga County.

The results of this effort have defined surficial units, refined bedrock stratigraphy, and identified landforms. The data has been entered into a digital database, and the following GIS coverages generated: bedrock geology units, formation contact confidence, faults, dip direction, outcrop locations, surficial geology units, moraine ridges, ice border drainage channels, eskers, and drumlins. Attributes associated with these layers include age, thickness, lithology, and orientation. Layers for all eight quadrangles have been merged to form complete coverages for the entire region. Additionally, a hillshade was generated from 10m resolution DEM data. The hillshade product provides both an extraordinary new view of the glacial landscape of this region, and also allows the various surficial and bedrock geology layers to be directly draped on the hillshade image.

The GIS database constructed provides a dynamic viewing method where specific glacial landforms can be quickly referenced to the characteristics and spatial distribution of the underlying bedrock and/or surficial sediments. This approach to one of the classic regions studied by E. H. Muller has provided a new way to investigate the connections between glacial landforms, sediments, bedrock topography, and substrate lithology.

PAIR, Donald L. and Katherine R. Schoenenberger, Department of Geology, University of Dayton, 300 College Park, Dayton, OH 45469-2364, don.pair@notes.udayton.edu

Dorothy M. Peteet, NASA/Goddard and Lamont Doherty Earth Observatory

Researchers and data from both coasts of North America continue to converge at the Lamont-Doherty Earth Observatory Palynology Lab! Three graduate students have recently finished projects examining the vegetation and land use history recorded in various wetlands in New York State.

1) Elizabeth Sage Margraf studied Rhododendron Swamp in the Mohonk Preserve from early/mid-Holocene to the present. The results of the vegetation reconstruction show shifts in the climate and indicate Native American influence and the arrival of Europeans.

2) Debby Kleinstein also found evidence for European settlement in Saw Mill Creek, Staten Island. Shifts in regional pollen rain show an increase in disturbance species when Europeans arrived and increases in spruce and beech during the cooler, wetter Little Ice Age.

3) Dee Pederson presented the results of her research at this past American Geophysical Union and Ecological Society of America meetings regarding the past 1500 years of vegetation change in Piermont Marsh, located just north of NYC along the Hudson River. The environmental conditions in the Hudson River Valley have undergone many interesting changes over that time period, including intervals of high charcoal.

We have done lots of fieldwork in the State of New York this year! And from the west coast, another graduate student, Kirsten Sauer, just completed an investigation of the vegetation and climate history in a migration corridor in south-central Alaska, near the Bering Glacier. The importance of migration corridors to the long-term survival of species in the past suggests that they will play an important role in the future survival of many species.

I have further work ongoing in the Hudson River Estuary and am interested in linking the vegetation record with past terrestrial carbon storage and correlating botanical and carbon data with Landsat images. Dee is continuing her analysis of soil carbon storage in a watershed in Black Rock Forest, NY. Kirsten is now a technician in our lab and will be assisting with the Hudson River estuary work and with work farther north, at Lake Ontario.

Dorothy M. Peteet, NASA/Goddard Institute for Space Studies, 2880 Broadway, New York, NY 10025; (212)-678-5510, Fax (212)-678-5552; dpeteet@giss.nasa.gov (T,Th) and Lamont Doherty Earth Observatory, Room 204 New Core Lab, Palisades, NY 10964; (845)-365-8420, Fax (845)-365-8154; peteet@ldeo.columbia.edu (M,W,F)

John A. Rayburn, Binghamton University

I have finished constructing late-glacial isobases for upstate New York from a combination of my Champlain Valley strandline data, Donald Pair's St. Lawrence Lowland data (cf. Pair, Karrow, and Clark, 1988), and other published regional isobase data. I will be presenting these results at the Seattle GSA meeting in November. Interestingly, I have found that a statistical best-fit model for the strandline data supports a regional linear (south to north) rebound pattern in upstate New York, like that suggested by Koteff and Larson (1989) for the Connecticut River Valley, rather than the expected northerly increasing rebound rate. I have used the constructed isobases to approximate the latest Pleistocene paleotopography of upstate New York using an 80 meter digital elevation model, which has allowed me to calculate the areas and volumes of the various stages of proglacial lakes Iroquois and Vermont as well as estimates for the discharges produced by falls in lake levels due to lake confluence and/or outlet shifts. These results are being prepared for a QSR manuscript. I am also using the isoabse and meltwater volume calculations to model the mechanisms of isostatic rebound in this region with the help of Dr. Patrick Wu at the University of Calgary. I am hoping to have some results from the rebound modeling ready for presentation at the spring AGU meeting in Montreal.

John A. Rayburn, Department of Geological Sciences, Binghamton University, Binghamton NY, 13902. jrayburn@binghamton.edu

"We've got enough rocks—what we need is better intelligence."

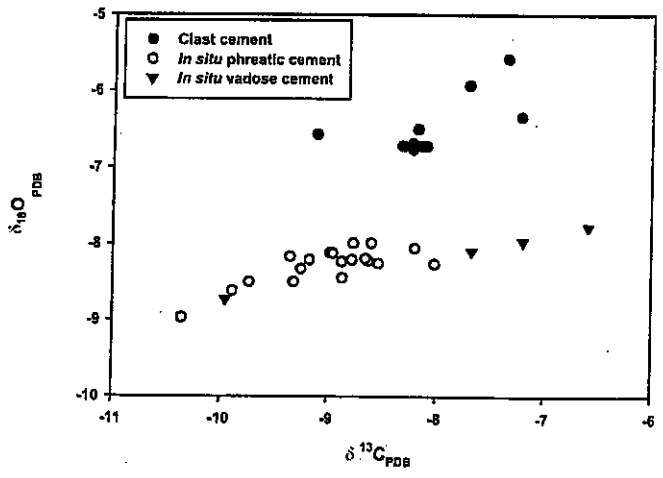
Bruce Selleck, Colgate University

Janet Baran, a Colgate undergraduate, and I published the results of her senior research project this year as noted below. Further work on concretionary cements in Holocene and Pleistocene glacial/postglacial deposits is planned. In particular, I am interested in examples of carbonate cements in glaciolacustrine or glaciofluvial materials in the Mohawk Valley, Champlain Valley and Tug Hill/Black River Valley regions. I would appreciate an email from any Glaciogram recipients who have seen examples of materials resembling those reported in Selleck and Baran (2003). Radiocarbon dates and isotope data are given below

Selleck, B. and Baran, J. (2003) Petrology and stable isotope geochemistry of Holocene and Pleistocene calcite cement in kame terrace gravel, central New York State; Northeastern Geology and Environmental Science, v. 25, no. 3, p. 186-196

Table 1 Radiocarbon Ages – Norwich Calcite Cement

Sample #	Material	Age (14C yr B.P; 13C corrected)
AP-9-4	Isopachous single-layer phreatic in situ cement	4,510 ± 85 (GX-25896)
AP-9-34	Multilayer phreatic in situ cement	4,475 ± 85 (GX-25895)
AP-13-C	Isopachous single-layer clast cement	>32,710 (GX-26234)



Bruce Selleck, Geology Department, Colgate University, Hamilton NY bselleck@mail.colgate.edu

Donald M. Thieme, Georgia Perimeter College

My latest project in northeastern Pennsylvania was to collect samples from both glacial deposits and postglacial alluvium for optical dating. Jon Inners of the Pennsylvania Geological Survey went with me to several sand and gravel pits and outcrops, and he was instrumental in getting me access to the "Honey Hole" pit at the terminal moraine.

We can date any sand that has been exposed to light during deposition using infrared stimulated luminescence (IRSL) here in Dr. George Brook's laboratory at the University of Georgia. The method should work for proglacial fluvial deposits and possibly even some sands deposited within "ice-contact stratified drift." Right now we are working on the samples that I collected from the Honey Hole pit on Friday,
May 16, 2003. Dr. Pradeep Srivastava has been running the laboratory and will be dating my samples.

I collected my samples by simply driving cores of PVC pipe into the wall of a pit. The ends of each core have to be sealed from exposure to light, and I used duct tape for this. I have a webpage online that reports all of the fieldwork and explains the method. The webpage also discusses the potential significance of the results, which will probably be obvious to most readers of the Glaciogram.

Donald M. Thieme
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Lawrenceville, GA 30043

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Robert Titus, Hartwick College

Robert Titus, of Hartwick College, continues to write about Catskills and Hudson Valley geology for the popular press. He has recently added the Columbia County Independent so his "stable" of publications. He is also writing for Kaatskill Life magazine and the Greenville Press. All in all, he has a potential readership numbering in the tens of thousands. He leads numerous nature walks and he does many speaking events every year for local civic groups so he is reaching the general public. The second, revised edition of his book "The Catskills in the Ice Age," from Purple Mountain Press, is currently out and selling well. Titus is currently writing articles about the Albany Pine Bush, Plattekill Clove, The city of Oneonta, and the Glacial Lake Albany.

Robert Titus, Geology Department, Hartwick College, Oneonta, NY

Richard A. Young, SUNY, Geneseo

THE CONTINUING SAGA OF THE GEOLOGY OF THE GENESEE VALLEY, NY

A peat-rich exposure along the Genesee River near Avon that first appeared to be a potential Wisconsin glacial section has proven to be a very old landslide initiated at approximately 12,166 14C years BP (12462 BC corrected calendar age). Nine wood ages cluster between 12,166 and 11,640 BP, a range slightly in excess of 500 years (Figure). One of two additional dates on green moss in the peat layers gave a slightly older age (12, 486 BP). The section contains a chaotic gravel and clay unit (diamict?) at the base that rests on varved clays, presumed to be the failure surface. The younger-upward sequence of ages indicates that the slide ponded sediments along the edge of the river. The "pond" filled with peat and stratified clay over an interval of at least 1400 14C years (1800 years using calendar corrected ages).

Although the sequence itself is not of great geologic significance, it provides an example of a consistent stratigraphic record developed from closely grouped AMS wood ages. The range of ages also demonstrates that vegetation in the form of well established trees had developed within a few hundred years of postulated ice withdrawal from the Genesee Valley. Dates on basal organics from cores elsewhere in the valley had suggested previously that the recovery of major vegetative cover at the glacial/postglacial transition was closer to 11,000 years BP.

The position of the slide at modern river level (within one foot of the modern channel base) demonstrates that the Genesee River rapidly incised to its present level following deglaciation. The site is immediately north of the large Fowlerville moraine complex. The local physiography suggests, but does not prove, that the Fowlerville moraine had been breached between 12,486 and 12,166 BP, thus placing a limiting age on any late glacial or postglacial lakes attributed to damming by the Fowlerville moraine (Muller and others, 1988, Northeastern Geology, v. 10, no. 2, p.112-133).

Richard A. Young, SUNY, Geological Sciences, Geneseo, NY 14454

"I'LL SAY THIS FOR THE ICE AGE — IT PRODUCED SOME GREAT HOCKEY PLAYERS."

AMERICAN SCIENTIST 8/2001

Rock Art

Thomas McGuire, Cave Creek Digital, Cave Creek, AZ, sent this unusual weathering pattern, more as a curiosity than a sentiment.