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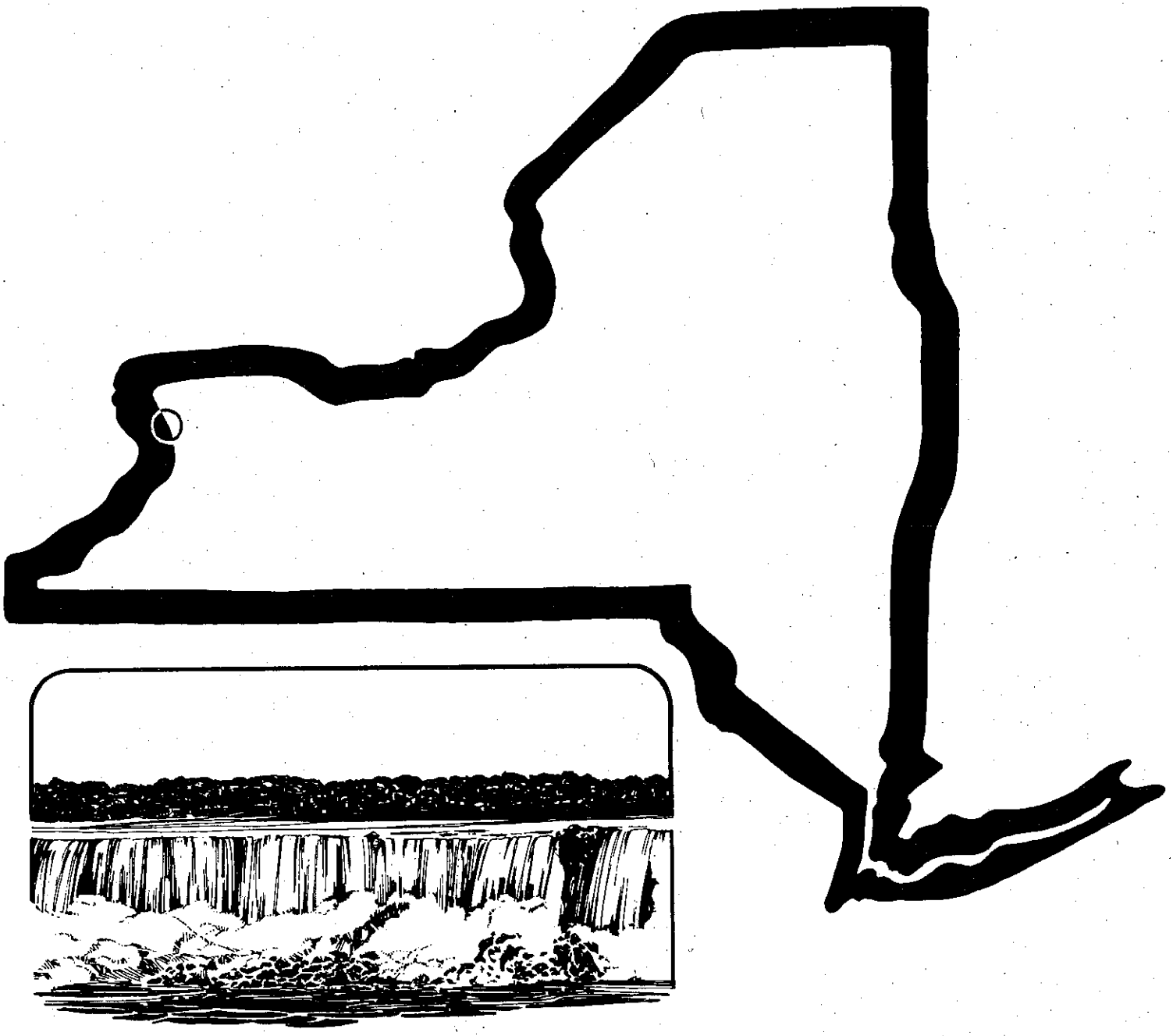
NEW YORK GLACIOGRAM



DEPARTMENT OF GEOLOGY

University at Buffalo

Buffalo, New York 14260

Editorial Policy

The Glaciogram is intended to be a collection of informal notes concentrated on Quaternary work relating to New York either directly or indirectly. It is not a formal publication and is not circulated to libraries, nor to individual not engaged in Quaternary research. The information included is often of a preliminary and tentative nature and as such should not be quoted and certainly not without communication with the appropriate authors. It is suggested that reference to information in the GLACIOGRAM be identified merely as informal communication.

Parker E. Calkin

Paul Bierman - Geology Department, University of Vermont

Quaternary researchers at the University of Vermont continue to be busy investigating a variety of topics. With recent hires, we now have three faculty (Rob Young, Andrea Lini and Paul Bierman) and nine MS students whose research involves Quaternary and Holocene geology and surface processes. Rob and his students (Beth Nadeau, Graham Bates, and Lauri Walker) have been investigating lacustrine, coastal, and wetland processes in Lake Champlain and on the Atlantic margin. Their work was featured in three GSA abstracts and a special session on hurricane Fran at the Denver meeting. Andrea directs our environmental stable isotope laboratory and along with Suzzane Levine and Mike Abbott has been investigating the stable isotope signature of carbon in sediment cores from Vermont ponds and oxygen isotopes in groundwater and precipitation from northern Vermont; results of this work were also presented at GSA. I've been busy supervising the cosmogenic isotope lab and helping four of my current students wrap up their MS theses. Together, Amy Church, Tim Whalen, Lin Li along with Andrea and Tom Davis and I, are beginning to understand better the episodic sedimentation that affected Vermont lakes, river terraces, and alluvial fans during the Holocene. Sarah Brown will be following up on this work investigating the timing and sedimentology of inorganic sedimentation events in Vermont Ponds -- are they indicators of paleostorminess? Kim Marsella, Tom Davis and I are just completing a large cosmogenic project on Baffin Island which showed that ice was extensive in the late Pleistocene and left the fjord rapidly about 9 ka. With all this work coming to an end and several new NSF sponsored projects about to begin, UVM Geology is looking for a few, new MS students next year. Please encourage your students excited about the Quaternary to learn more about our program and our faculty by reading our Web page
http://beluga.uvm.edu/geowww/geohome.html

Parker E. Calkin - Department of Geology, University at Buffalo

I have been occupied with studies of Holocene glaciation in the Gulf of Alaska area for many years - including the past summer, and have not made headway in New York. Our students are focusing on areas of Icy Bay as well as Yakutate Bay and Prince William Sound these days. An important core of this work is putting together long tree-ring chronologies to give more precision to the glacial chronology and also to make as clear as possible the association of climate change. At the March NEGSA meeting, Masters student Julie Gloss will present "Tree-Ring-Based Glacial Chronology of Icy Bay, Gulf of Alaska".

Don Coates reports in an informal note that he and his wife have moved full time to Cape Cod. His address is:

Donald R. Coates
18 Savery Ln.
Falmouth, MA 02540-3106.

I call your attention to a two messages of new glaciogram contributors:

1. John Menzies is advertising a technical workshop made for glacial geologists.

2. Scott Stanford is announcing the late spring NE Friends of the Pleistocene Reunion.

Tom Davis - Department of Natural Sciences, Bently College

Although I have not recently worked in New York state, during the past two years I have made numerous trips to northern Vermont to work with my colleague Paul Bierman, and his students at the University of Vermont. Paul and I have been funded by NSF Polar Programs to use cosmogenic exposure dating to test different deglaciation hypotheses for the Pangnirtung area on Baffin Island. Our M.S. student, Kim Marsella (B.A. w/ highest honors, Bates College, 1994), has analyzed over 140 samples from glacial boulders and molded bedrock surfaces for ^{10}Be and ^{26}Al. The cosmogenic data suggest to us that the most recent glaciation of the area was during the late Wisconsinan, rather than during the early Wisconsinan, as previously suggested. We have presented our data at the annual GSA meetings in 1995 and 1996, and will present two posters at the AGU meeting in San Francisco in December 1996. We are also pursuing a similar, but unfunded, cosmogenic study of mountainous areas in northern New England in an attempt to estimate the style and timing of deglaciation.

Also, I have helped Paul and his students initiate a lake sediment coring program in northern Vermont, which led to completion of a M.S. thesis titled "Environmental changes inferred from pollen analysis and ^{14}C ages of pond sediments, Green Mountains, Vermont," by Lin Li, in September 1996. Lin Li's thesis focused on two sites, Sterling Pond (at an elevation of 917 m on the Mount Mansfield 7.5" quad) and Ritterbush Pond (at an elevation of 317 m on the Eden 7.5" quad). Our oldest acceptable radiocarbon age from near the base of Ritterbush Pond is 12,020 ^{14}C yr BP, which is about 2000 years older than a radiocarbon age proposed by Sperling et al. (*Northeastern Geology*, 11:106, 1989) to date closely deglaciation from small cross-valley moraines mapped by Wagner (*GSA Bulletin*, 81:2465, 1970). Thus, we feel that the deglacial chronology for the Green Mountains is not drastically different from that in the White Mountains (Waitt and Davis, *American Journal Science*, 288:495, 1988), if one ignores the 13,900 ^{14}C age from Mirror Lake in west-central New Hampshire.

Finally, about a year ago, I nominated Paul Bierman for GSAs Donath (Young Scientist) Award, which he received at the annual meeting in Denver in October 1996. I believe that Paul is the first geomorphologist - Quaternary Geologist to receive this prestigious award. I will let Paul summarize the numerous other projects that he has initiated since his arrival at UVM four years ago.

Aleksis Dreimanis - Dept. of Earth Sciences, U. of Western Ontario

This summer and fall were spent mainly on clearing a backlog of co-operative projects with various European geologists.

A paper on subglacial clastic intrusive sheets in S.W. Ontario, jointly with Martin Rappol from The Netherlands, was completed and accepted for publication. As a result of recent field work in Latvia, a set of ridges near Riga in Latvia, formerly thought to be buried endmoraines, were re-interpreted to be drumlins with glaciotectonic structures in their cores; a report on this study, with three co-authors, was presented by one of them, Vitalijs Zelčs (his name was misspelled as Felcs on p. 6 of the last issue of New York Glaciogram) at the 56 Scientific Conference of the University of Latvia in September.

Papers on penultimate marine interglacial deposits in W. Latvia, with Laima Kalnina and Silvija Mūrniece as co-authors, and a detailed stratigraphic study of Catfish Creek Drift in its type area, with Phil Gibbard from Cambridge, U.K. as co-author, are in preparation.

John Delegate investigated drumlin sections along the Lake Ontario bluffs for his Ms. thesis this summer.

Gary D'Urso - Dept. of Geology and Geography, West Virginia University

I am well into a Ph.D dissertation modelling the paleohydrology (Q and v) of the L.Wisc. meltwaters from the Grand River lobe in central western PA. The particular basin is the 398 square mile eliptical drainage basin of Slippery Rock Creek (SRC), the axis of which roughly parallels the ice margins.

The SRC basin contained some of the largest Wisc. proglacial lakes along the southeast Laurentide margin. Throughout the Pleistocene, these and older lakes are believed by many to be part of a drainage change which lead to the development of a remarkable gorge along SRC, the geological centerpiece of McConnells Mill State Park. Theory has it that the gorge was initiated by sustained flow over a now-eroded col from one of these older lakes then modified by rapid lowering of a younger lake.

I am presently trying to survey cross-sections of SRC and Muddy Creek before winter sends me home until spring. My field evidence of paleoflooding is primarliy in the form of stream competance data. My initial observations lead me to expect that the model will show no large-scale flooding.

Other field observations of the support this low-flow prediction. Some mapped ice marginis are physically arguable and their historic appearance in the literature seems serendipitously associated with the creation of a state park. Some deposits suggest lower lake levels than those currently suggested and there is geomorphic evidence which argues against powerful (catastrophic?) lowering of a lake in a key spillway.

The scenic gorge along SRC is used by many as evidence of glacial geomorphic efficacy in niorthwestern PA and, therefore, believed to be Pleistocene in age. It is interesting that at the same time rough locations of ice margins are sketched or waved at where the rough topograhic relief to the south becomes subdued to te north meaning, generally, that deeply incised valleys in this region are a sign of age and high volume valley fill is a hallmark of glaciation.

Key to the chronology of drainage change and the creation of SRC gorge is a specific proglacial lake, unarguable evidence supporting the existence of which is absent. Unarguable evidence is not necessary but it does open the door for alternatives. There is some geophysical evidence, for example, that begs for analysis by suggesting there may be basement anomalies and structural control of SRC. If accurate, SRC and the gorge are pre-Pleistocene.

Anyone out there familiar with HEC-2 and it's numerous commercial versions? Some help could speed me along this winter and I amy graduate by next Christmas. ;) Thanks in advance and nice meeting you all.

Robert K. Fakundiny - State Geologist, New York State Geological Survey

I have been working on the form and possible mechanisms of a rock-block slide on the east side of Bare Mountain above the Tully (Lafayette) mudslide in southern Onondaga County. The mapped blocks are extremely long (~1 km), intact, have small displacements from their in situ bedrock sources (10 to 40m), and have no visible toes. The intact condition of these delicate blocks suggest that they moved slowly, possibly eased downward against a buttress of wasting ice in the Tully Valley. Advancing ice could have oversteepened the valley wall to trigger the movement. Stagnant ice may have held the blocks back and prevented catastrophic movement. Proglacial lacustrine deposits and valleyside alluvium, delta deposits, and colluvium could have buried the toes before all the buttressing ice melted and thus loaded the bottom of the blocks. Modern mudslides at the valley wall, such as the Tully (Lafayette) mudslide, might remove enough load to reinitiate movement. If so, we may have some serious landslide hazards in the Tully and other "Finger Lakes" valleys. Geophysical studies of the buried parts of the slide blocks, drilling on the side of the valley, and pollin studies of sediments in backscar depression bogs may help determine morphology and age of the rock-block slides. Search for similar rock-block slides in central New York is warrented.

Jay Fleisher - Department of Geology, SUNY College at Oneonta

Field research at Bering Glacier by New York State group continues

The New York State based, Bering Glacier research team once again conducted very productive field work during the summer, 1996. Ernie Muller, Dorothy Peteet and I continued projects initiated in 1994 involving the analysis of foreplain stratigraphy for the purpose of defining Neoglacial surge cyclicity and cored bogs in uplands adjacent to the broad piedmont lobe from which we expect to find data leading to an interpretation of chronology and maximum extent. Considering that the Bering piedmont lobe is 30 km wide, with numerous remote uplands rising above the foreplain, there are many sites yet to investigate. Consequently, we are looking forward to follow-up work in 1997.

In addition, I worked with Don Cadwell, Palmer Bailey and two SUNY-Oneonta students (Ken Casamento and Brian Roosa) in gathering data to determine several post-surge parameters of Tsivat and Tsiu Lakes (ice-contact lakes along the eastern ice margin). As a result, we now have a pre-surge, surge and post-surge data base that includes the location and estimated discharge of a primary subglacial conduit system, limnic thermal shifts related to discharge of supercooled water, fluctuations in suspended sediment load (turbidity), seasonal changes in lake level and detailed pre- and post-surge bathymetry of both lake basins. The jokulhlaup of July, 1994 ended the first of two surge phases and significantly altered this ice-contact system. We are currently collating data for the analysis of this impact. Fortunately, we have the details of pre-surge conditions (some reported in GSA abstracts, 1989 through 1996, others in brief publications Jour. Geol. Educ. and Jour. Glaciology) and can make specific comparisons that will shed light on the surge process at Bering Glacier. We are planning to put another party in the field in 1997.

Paul F. Karrow - Dept. of Earth Sciences, University at Waterloo, Ontario

As planned at the time of the last Glaciogram, another foray to Manitoulin Island was made in late April after a visit to the outlet that carried upper lakes drainage at North Bay between 10,000 and 5,000 years ago. However the surveys on Manitoulin did not get finished and several more days will be needed in the spring of 1997. Work may carry on on the Huron north shore if bench marks can be found to survey some high level deltas and beaches there.

Planned attendance at Winnipeg GAC and Midwest Friends was cancelled when grant funds were severely cut. Travel has, been curtailed since. That was compatible with the continued preoccupation with editing the urban geology volume for the GAC with Owen White. With 21 papers sent to the GAC, the end of editing is coming into sight. Busyness has not slacked off though as I have three courses this fall and significant campus committee work.

Meanwhile the long awaited paper with Vico Paloschi on the Waterloo Moraine is finally (nearly two years in press) out in Zeit. für Geomorphologie. A paper on the Mill Creek (Michigan) sub-till fossil site is in final revision for Palaeo^3 (with B.B. Miller, J. Mirecki, and K.L. Seymour). A Woodbridge site ms. is in active preparation with J.H. McAndrews, B.B. Miller, J. Mirecki, A.V. Morgan and K.L. Seymour. A time classification paper is also in final revision for QR with H. Johnson, A. Hansel and several others.

There has been "movement" among my graduate students with Simon Gautrey completing his M.Sc. report on the subsurface stratigraphy of the southern Waterloo moraine and Jenny Yang her M.Sc. thesis on molluscs in marl at Cambridge, Ontario. During the past year while employed by Parks Canada at Cornwall, Ontario, Remi Farvacque is nearing completion of his M.Sc. thesis on Pukaskwa National Park paleoenvironments. Andy Stuart is back to thesis writing (M.Sc. on Sibley Peninsula raised shorelines in Lake Superior) after a summer mapping for the Ontario Geological Survey with Peter Barnett in the Oak Ridges Moraine near Lake Simcoe. Roger Paulen did geochemical sampling for drift prospecting near Timmins, Ontario adjacent to his M.Sc. thesis area (funded by G.S.C.). Astride Silis (M.Sc.) continued sampling and analyzing ostracode assemblages from Lake Algonquin sediments of the eastern Huron basin. John Johnston carried out an M.Sc. study of post-Nipissing beach complexes at Wasaga Beach and Ipperwash on Lake Huron.

Tom Edwards has continued his stable isotope geochemistry program with visitor Dan Hammarlund from Sweden and several students (Brent Wolfe, Jean Birks, Maureen Padden) with study sites in the Prairies and northern Canada and Russia.

John Greenhouse, our exploration and well log geophysicist, has retired as part of the early retirement program this year at the University, forced by government budget cuts which resulted in 240 faculty and 160 staff leaving. John will continue on a part-time basis to teach and supervise students.

This year is our 30th for the Quaternary Discussion Group, which brings us off-campus speakers in the fall term from a 100 km radius, and internal speakers in the poor-travel winter months. A year ago we were told about archeological studies at Fort Erie on a Nipissing-age terrace. This year we heard about equivalent material at Sarnia for the Blue Water Bridge pier excavation. Other talks this fall have dealt with Toronto subway geology, diatoms in arctic lakes, and drumlin studies in Ontario and Latvia.

John Menzies - Departments of Geography and Geology, Brock University

MICROMORPHOLOGY OF GLACIGENIC SEDIMENTS

A Technical Workshop

to examine the making, description and interpretation
of thin sections of glacigenic sediments

22-27 June 1997

Departments of Geography & Earth Sciences
Brock University
St. Catharines, Ontario L2S 3A1
CANADA

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For details, please contact one of the above organisers at the earliest opportunity, at the latest by **January 10, 1997**; or contact John Menzies by e-mail at **jmenzies@spartan.ac.brocku.ca**

Donald Pair - Department of Geology, University of Dayton

Research continues in both New York and Ohio. Funding through the USGS Statemap program produced a surficial geology map of the South Onondaga 7.5 quad. This will be used in association with ongoing landslide susceptibility studies being undertaken by a consortium from the USGS, NYSGS, and Syracuse University. These efforts were initiated following the massive landslide near Lafayette in the spring of 1993. Mapping will continue this summer on the Otisco Valley and Tully quadrangles in an effort to better delineate the alluvial and glaciolacustrine deposits. I would welcome any suggestions, observations, and in particular to learn of any subsurface records that readers of the Glaciogram might know of from this long-studied region of New York.

In other news, a paper was published in Quaternary Research on the paleomag. record from the Western Adirondack Borderland and a contribution to the subglacial meltwater debate will appear in a special issue of Sedimentary Geology. Work still continues on subglacial calcite deposits and recessional ice borders in the Adirondacks.

Given my total lack of success finding dateable materials in New York, our discovery of 44 ka logs near the UD campus has been a real learning experience. The initial results of these studies were presented at the Middle Wisconsin symposium at last Spring's NE-GSA in Buffalo where, with co-authors Tom Lowell and two of my undergraduate students, we argues for cold (or chilly as A. Dreimanis suggested) but non-glacial conditions in southwestern Ohio.

Efforts on most of these projects will continue this spring and summer and will also include several forays into northern New York to look at limestone pavements along Lake Ontario and chase moraine segments in the Adirondacks. Informal field trips into any of these areas (Tully Valley, eastern Lake Ontario Lowland, Adirondacks) are always a possibility - I can usually be reached by phone or e-mail.

Scott Stanford - New Jersey Geological Survey

1997 Northeast Friends of the Pleistocene Reunion

Title: Pliocene and Quarternary geology of Northern New Jersey

Dates: May 30 through June 1, 1997

Place: Ledgewood, NJ

For more information contact:

Scott Stanford
New Jersey Geological Survey
CN 427
Trenton, NJ 08625

phone: 609-292-2576
fax: 609-633-1004
e-mail: scotts@njgs.dep.state.nj.us

We anticipate a limit of 100 participants.

John P. Szabo - Department of Geology, University of Akron

I will assume the chairmanship of the department in June, but am currently working with the present chair to make a smooth transition. The administration is releasing money for multi-media teaching, and we are going after our share. Several faculty are quite interested in redoing some of their service courses.

Brenda Lloyd is currently finishing her thesis on the samples from deep water wells on the London Correctional Facility in central Ohio. This is the first opportunity to analyse samples from thick valley fill in this part of Ohio. The site is located over a Teays valley, but may also have been part of a drainage system prior to the Late Wisconsinan. She thinks that she sees younger deposits filling a valley cut into the older deposits. One till unit has more calcite than dolomite in the < 0.074 mm fraction which is unusual for this part of Ohio. Some tills are slighltly weathered, but there is no indication of paleosol development. The tills are separated by fluvial or glacio-fluvial deposits which serve as aquifers for not only the prison, but also a fish hatchery and the city of London. The degree of interconnection of the aquifers is uncertain in spite of the drilling and testing of new wells every ten years. I think the prison overpumps the wells causing clogging by chemical precipitation, but what do I know?

The department is in seach of graduate students for next year. If you know someone having an interest in working on glacial geology for a M.S. degree, fill free to send them our way.

Robert M. Thorson - Dept. of Geology and Geophysics, U. Connecticut

A recent paper in the GSA Bulletin titled Earthquake Recurrence and Glacial Loading (Sept 96) speculates on the way ice sheets influence tectonism. This paper addresses fault motion across Quaternary strandlines. I wonder if any GLACIOGRAM readers have similar data sets for the Laurentide Great Lakes.

One of the interesting asides in my scholary life has been a chance to help design a glacier exhibit for the Mashantucket Pequot Tribal Museum, which is under construction on their reservation in Ledyard, CT. We are trying to similate the setting at the base of a marginal crevasse on bedrock beneath the Laurentide margin during the full glacial. Wet mud, dripping ice, glacier quakes, cold pulses of air, snow bridges, striated rock, turbulent pools, will be placed, piped, and ducted into the life-size model. Its quite fun.

My work on Pleistocene New England still involves the physical evidence for a mid-Holocene drought. I have some pretty solid data that will be published someday, and I am constantly looking for other sites with data.

Robert M. Thorson - Dept. of Geology and Geophysics, U. of Connecticut

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My work on Pleistocene New England still involves the physical evidence for a mid-Holocene drought. I have some pretty solid data that will be published someday, and I am constantly looking for other sites with data.

Richard Young - Department of Geology, SUNY College at Geneseo

Two projects are in progress in the Genesee Valley region to study the rates of postglacial deposition and floodplain changes in the Genesee Valley and associated drainages between Geneseo, NY, and Lake Ontario. Local floodplain sedimentation rates are believed to be controlled, in part, by postglacial southward tilting of the valley, as well as the relative rise in the level of the southern Lake Ontario shoreline. A series of 43 radiocarbon ages are being analyzed to provide control for the study. Preliminary results in the Irondequoit Creek basin near Lake Ontario are in agreement with rates based on the estimated rise of the Lake shoreline, but post-settlement deposition rates (due to clearing and cultivation of the basin?) appear to have doubled or tripled the pre-settlement rate of sediment accumulation beginning around 1800 AD.

Additional ages from the uppermost 25 feet of the Genesee River floodplain collected over several square miles should provide improved estimates of the rate of vertical accretion and lateral migration of the main channel during the past 8,000 to 12,000 years. The results may also provide useful information on prehistoric rates of change within the floodplain to contrast with accelerated changes that are anticipated as a result of the Akzo-Nobel salt mine collapse and valley aquifer dewatering. Large portions of the floodplain in the widest portion of the Genesee Valley have subsided from 1 to 12 feet or more during the last two years. Such elevation changes are expected to have an impact on channel stability and meander migration rates. These changes may be gradual or rapid, depending upon whether the river system has been operating close to some natural "threshold" equilibrium condition. The regulation of the river by the Mt Morris Dam since the 1950's may have already initiated subtle channel readjustments, which could be further complicated by the gradient changes caused by the mine subsidence.

For those interested in the latest developments regarding the collapsed Retsof Salt Mine, Akzo-Nobel has abandoned plans to start a new, larger mine south of Geneseo, and is in the process of selling its salt division to Cargill (established mine under Cayuga Lake). The validity of the NYSDEC permit originally issued for the proposed new "Hampton Corners" mine is currently the subject of an Article 78 challenge in court on the grounds of inadequate environmental impact studies. The regional dewatering of approximately 15 miles of the glacial fill aquifer under the valley has slowed, but significant new recharge of the deep aquifer has not been documented since the mine filled last January. Groundwater levels in the northern portion of the aquifer continue to fall slowly as the water moves southward (downgradient) to fill the empty portion of the aquifer system nearer the mine collapse. The thick lacustrine sequence in the upper glacial fill seems to be preventing significant recharge to the "confined" deeper aquifer levels, despite above normal rainfall this year.

Unfortunately, a unique opportunity to study and to better understand the dynamics of this unique and significant glacial aquifer has essentially been lost. The politics associated with the mining industry have prevented an adequate and timely scientific study of the variables needed to understand the geologic events in a detailed or meaningful way.

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