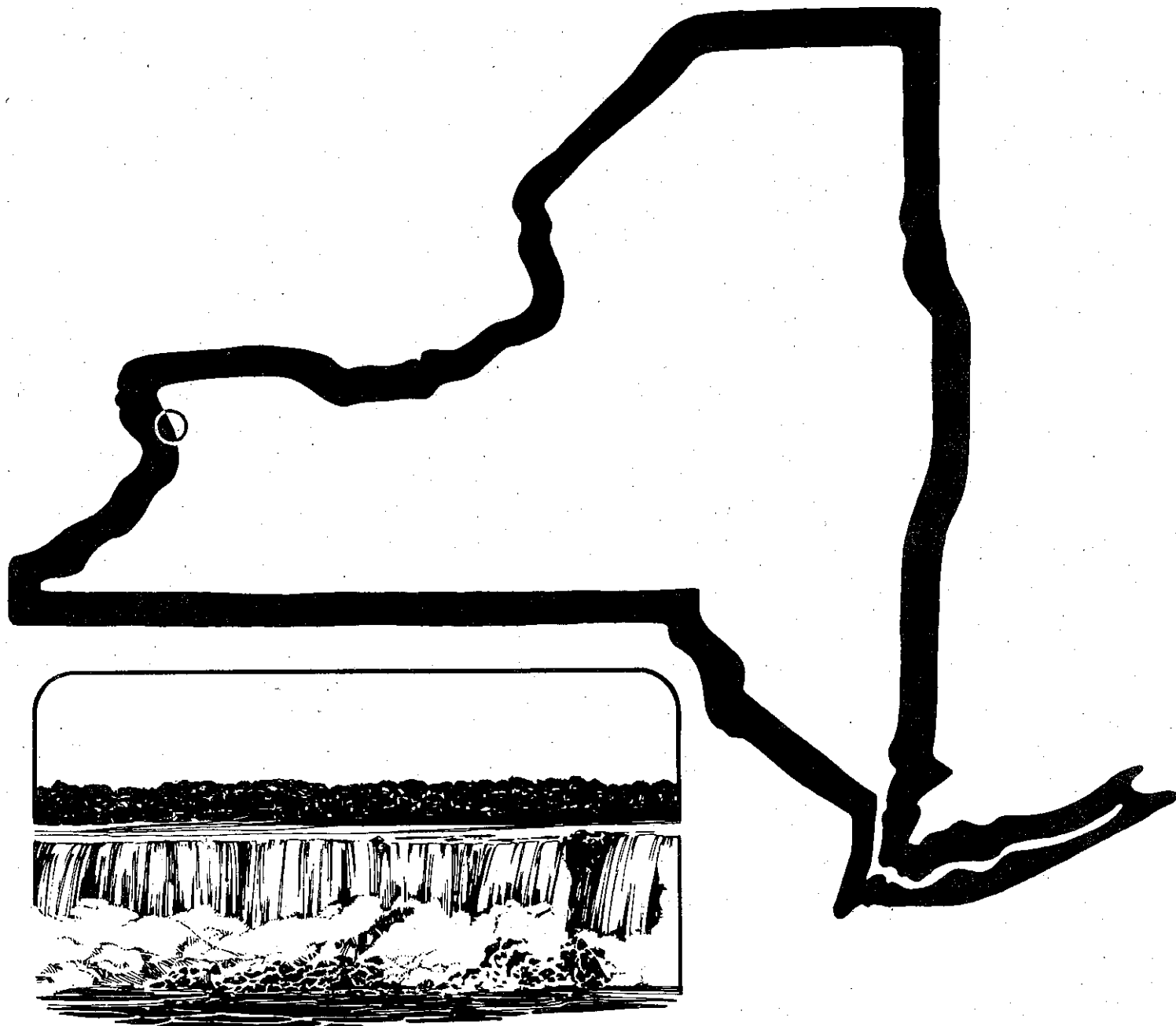


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E. F. KARROW

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 individuals 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

Donald H. Cadwell - N.Y.S. Geological Survey, Albany
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A great deal of my time and effort has been directed towards our Geographic Information System (GIS) and establishing databases. We now have both the 1:250,000 surficial and bedrock maps completely digitized and available either on tape or via internet. One of the results of this GIS work was the pilot study, GIS and Seismic Hazard Assessment of Columbia County, NY. This was specifically designed to evaluate the potential for significant surface strong ground motion amplification and earthquake-induced landsliding and liquefaction within mapped glacial deposits. Detailed studies have been conducted in Los Angeles, San Francisco, Portland and St. Louis, but nothing has been done previously in the glaciated northeast. Needless to say, we are beginning to get some interesting data. This summer we will be expanding our data collection to the south into Dutchess County.

Parker E. Calkin - Dept. of Geology, S.U.N.Y. at Buffalo
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Early through Middle Wisconsin Glacial Records in the Great Lakes-Eastern North America Region will be one of the symposia at the Northeastern Section GSA Meeting, 21-23 March at Buffalo in 1996 (See Dick Young's notice in this issue). In addition, Paul Karrow and I will convene a theme session - Glacial Meltwater: Subglacial, Ice Marginal and Glacial Lakes for which we will be soliciting abstracts. If you are interested in contributing a paper drop Paul or I a note, e-mail, or phone (I'm at (716) 645-6800 ex 3985). We're interested in papers on general aspects and specifics of outflow in the Great Lakes and eastern North America region.

Masters student, Eric Schultz is starting a mapping and till correlation problem in the Springville-Arcade 15' sheets area centered on the Chaffee Outwash Plain of southeastern Erie County, New York. Otherwise, lots of my scientific effort has been in projects of the Yakutat and Icy Bays on either side of the Malaspina Glacier, eastern Gulf of Alaska. Greg Wiles, Austin Post and I have a paper coming out in the next six months in Arctic and Alpine Research - Glacier Fluctuations in the Kenai Fjords, Alaska: An Evaluation of Controls on Iceberg-Calving Glaciers.

Donald R. Coates - Dept. of Geology, S.U.N.Y. at Binghamton ; Retired

This letter was recieved in answer to a request for GLACIOGRAM contributions, but wasn't intended as such. However, I thought all would be interested despite this. - ed.

This is a response to your request for information in the NEW YORK GLACIOGRAM. First of all let me give you many congratulations for keeping it going through all these years. I thoroughly enjoy receiving it and keeping posted on the whereabouts and research that is on-going for many of the old-time friends. There is also a new group coming along that is keeping the traditions going. I miss my New York studies and wish I was in a position to continue to make contributions. Since "retirement" I spend winter months in Tucson, and the remainder of the year at my Cape Cod house.

Although I am not currently doing field research, I am involved in writing articles and editing and consulting on books. One reason for selecting Arizona as part of my retirement habitat stems from my long-time association with the State. For example from 1951-54 I was Project Chief for the U. S. Geological Survey in Tucson, and I am having a "ball" revisiting many of my old haunts of those years. of course the geomorphology of the area has not changed significantly. This is in contrast to the Tucson metropolitan area. In the early 1950s the population was 150,000 and it is now 750,000! We live outside city limits and are only 3 miles from the front of the Santa Catalina Mtns. The differential in elevation of 2400 ft to the peaks more than 9100 is spectacular. The variations in cloud formations and the ever-changing systems of shadows and sunlight of the mountains keeps my aesthetic senses tuned to Mother Nature's frequencies.

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The following is a short note in answer to a request for GLACIOGRAM contributions - ed.

My work is now in Alaska (Matanuska), Wyoming (Wind Rivers), and the arid southwest (Los Alamos area on tafoni. I do intend to return to northeast geology when I have the time.

David J. DeSimone - Dept. of Geology, Williams College
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I have some Quaternary news to share with all of you. This past field season allowed me to work in the Absaroka-Beartooth Wilderness atop the Beartooth Plateau and in the Clark's Fork Yellowstone drainage basin. I was there with Eric Leonard (CC) and Bob Carson (Whitman) and ten students funded again by the Keck Foundation. We had the chance to spend some time with Ken Pierce (USGS) and learn from his extensive research into the glacial history of the Greater Yellowstone ecosystem. Afternoon thunderstorms enabled us to witness geology in action - debris torrents along the creeks draining the Absaroka volcanics.

More pertinent to New York geology, I'd like to express some views on Hudson Lowland glacial history. Stanford and Harper (1991) have proposed that Lake Hudson and Lake Albany were coeval and controlled by the Hell's Gate spillway. They may well be seeing the maximum northward extent of Lake Hudson but this is NOT Lake Albany. Lake Hudson is pre-Erie while Lake Albany is post-Erie in age. We're mixing apples and oranges here.

Connally and Sirkin (1986) depict several deltas which define a water plane between the Shenandoah moraine and the Rhinebeck-Hyde Park region. This is NOT Lake Albany either. This is another pre-Erie lake which I'd informally designate Lake Newburgh and was probably dammed by the Shenandoah moraine. Note our water planes figure in the FOP92 volume.

Lake Albany is a POST-Erie lake phase in the Hudson Valley. It was initiated when the ice retreated from the Port Bruce maximum along the Rosendale-Red Hook moraine.

How far did the ice retreat during the Erie Interstade in the Hudson Valley? The available subsurface data from tributaries to the Hudson indicate that the Kinderhook Valley was freely drained but not the tributaries to the north such as the Hoosic and Batten Kill. Thus, I suggest that the Hudson-Champlain ice retreated to about the latitude of southern Rensselaer County and that this is adequate to enable free drainage of the Mohawk Valley and middle to lower Hudson Valley, consistent with available data for the western Mohawk and lower Hudson region.

I'm hoping to get this into a fleshed out form and collaborate with Gary Wall (RPI) on a manuscript over the early summer. I'd welcome any opinions from all of you.

Lastly, this field season will get me back to eastern New York glacial work both on my own and via another Keck project to take place during late July and August. This will be a structural geomorphology project directed by Paul Karabinos here at Williams with me as one of the faculty participants. I'm sure some glacial processes will find their way into a couple of student projects!

P. Jay Fleisher - Dept. of Earth Sciences, S.U.N.Y. College at Oneonta
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Our 1994 summer field work at Bering Glacier saw the gradual slowing of surge activity recognized in late winter-early spring, continue to decline in June and eventually cease in late July in conjunction with a jokulhluap outburst. Once again our findings came from the joint efforts of BERG charter members Don Cadwell and Ernie Muller, plus Palmer Bailey (CRREL), Chuck Rosenfeld (Oregon State), Tony Thatcher a MS student of ChuckUs and two undergraduates from SUNY-Oneonta (Mike Puglisi and Jason Pelton).

Surface measurements at the ice-front along the eastern sector of the Bering Piedmont Lobe were made on 1-4 day intervals at 6 survey stations throughout June, then revisited again in late July. Rates of advance varied significantly from station-to-station and with time between 0.20 - 2.97 m/day, which was down from early winter rates that reached 7.4 m/day. Follow-up measurements in October, 1994, placed the ice-front at a maximum position of advance marked by 1-3 m push moraines. Retreat from the July positions measured 13-30 m in just 90 days. Subsequent observations in early January, 1995, revealed no recognizable ice-front changes.

Proglacial, ice-contact lake water contained suspended sediment loads ranging between 20-25 g/L, up 10 times that of pre-surge conditions and shifts in thermal balance suggests surge-related changes in subglacial discharge points.

Our team plans to return again in June, 1995, to map the effects of jokulhlaup erosion and deposition, and to monitor post-surge ice-front and lake changes.

Jane Forsyth - Dept. of Geology, Bowling Green State University ; Retired

The following is an excerpt from a letter answering a request for GLACIOGRAM contributions. - ed.

Your invitation to contribute to the next New York Glaciogram has just come again, and again I have no research to report. I am afraid, in retirement, I stay so busy with off-campus lectures, non-university conferences, and personal (casual) travel (to New Zealand, Norway, Spitzbergen, Switzerland, Alaska, etc.) that incomplete research tends to remain incomplete. Maybe some day in the future I'll finish some work and report it to the Glaciogram, though my research deals mainly with Ohio, and some relates more to plant-substrate relations than to glacial geology per se.

Stephen R. Hicock - Dept. of Geology, University of Western Ontario, London
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Aleksis Dreimanis is working, together with Martin Rappol from The Netherlands, on subglacial intrusive clastic sheets (mainly dikes) up to 16 m long in Catfish Creek Drift along the north shore of Lake Erie. Since last summer he has also been participating in two projects with Latvian geologists. One project with Vitalys Zelcs concerns drumlin fields in Latvia. The drumlins consist mainly of glaciotectonically deformed gravels and rafts of soft sandstone bedrock. The second project is on marine interglacial sediments in western Latvia that are also partly glaciotectonically deformed. By comparison, the role of glaciotectonic deformations in subglacial sedimentation will be investigated by Aleksis in southern Ontario this summer.

Steve Hicock and graduate students continue their work on Pleistocene interactions of Cordilleran and adjacent ice sheets in western Canada.

Alan V. Morgan - Earth Sciences, University of Waterloo
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To all friends and colleagues out there! I am still alive, but since my return from secondment to the GSC, I have not really been very active in Quaternary affairs. I'm hoping to turn this around, but major commitments to the GAC and MAC for last year's meeting at Waterloo, to the University in getting two "Distance Education" courses on stream and an on-again off-again "love affair" with CD-ROM and WWW activity has kept the time that I can devote to the Quaternary to a bare minimum.

However, things are looking up. I am trying to get several papers on fossil insect assemblages wrapped up this year (the nearest to New York will be sites at Woodbridge, Ontario, and at Cincinnati). I will also be spending some time this summer with John Greenhouse, our departmental geophysicist, on the detection of sub-surface materials (ice-wedge polygons and mastodon/mammoth remains:- we hope) in southwestern Ontario.

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The arrival of your request for Glaciogram news coincides with summery weather (high temperatures near 70°F, much above normal) to underline the approach of spring and stimulate thoughts of the summer field season. Several forays are planned.

First will be continued shoreline surveys on and near Manitoulin. We continue to use plane table and alidade as I enjoy rather than try to avoid field time, and also I like to see the spacial relationship unfolding on the board as we work. Coming ever closer is the promise of GPS and each year lately I have wondered if this is the year to make a change in methodology. I inquire at intervals and so far positional accuracy is fine but elevational accuracy is not (at least not within reach cost-wise). I'm sure GPS has been a marvelous step forward for navigation on water, but in Lake Algonquin the water is long gone. Still, an interim step might be to rent GPS for a day or two to establish some scattered bench marks at sites to which it is at present impractical to survey. As usual the survey work will be in late April which deletes attendance at NC-GSA.

I will not be attending Friends trips because I plan to go to the GAC meeting in Victoria about May 17. I will stay some extra days for field work connected with sabbatical projects from winter '92. Work on one of these took some lab time this winter recovering fossils from a marine-freshwater-terrestrial sequence exposed in several excavations in central Victoria - a little urban geology. This work is a joint project with Richard Hebda, Royal British Columbia Museum. We are recovering pollen, seeds, molluscs, ostracodes, diatoms, mites, and fish bones.

I hope to visit notable fossil sites near Leamington (south-east of Windsor and near Lake Erie). These sites were studied by Tom Morris, Ontario Geological Survey, in the course of mapping Essex County, and a paper appeared about a year ago in Canadian Journal of Earth Sciences reporting plants, vertebrates and ¹⁴C dates relating to Lake Arkona.

Probably the latest trip will be to visit two graduate students in northern Ontario. Andy Stuart will complete field work for his M.Sc. on raised Superior basin shorelines and Paleo-Indian records of the Sibley Peninsula (near Thunder Bay). Roger Paulen will map an area north of Timmins which will involve him in the Cochrane advance and Lake Barlow-Ojibway history. Nearer at hand, there may be several field excursions with Astride Silis in connection with her M.Sc. on ostracodes in Lake Algonquin sediments. This last is an outgrowth of a study of a Lake Algonquin fossil site near Georgian Bay on which a paper has been accepted by the Journal of Paleolimnology, co-authored with Thane Anderson (GSC), Denis Delorme (CCIW), and Barry Miller (Kent).

Other manuscripts are in preparation. Nearly completed is one on the Mill Creek sub-till site in Michigan (NCGSA, 1991) with Kevin Sevmour (ROM), Barry Miller, and Jane Mirecki, which yielded vertebrates, plants, molluscs, and ostracodes and conflicting dates from ¹⁴C, TL and amino acids.

With Alan Morgan (UW), Jock McAndrews (ROM), Barry Miller, Owen White, and Kevin Seymour a paper reporting over 30 years of work on the Woodbridge sub-till organics site is underway. This important site has yielded vertebrates, molluscs, ostracodes, diatoms, and insects, and spans deposits from Illinoian to latest Wisconsinan. Another paper underway with Jock will report the plant fossils of the Don and Scarborough formations at the Don Brickyard.

Another task given attention this winter has been the editing with Owen White of a GAC volume on urban geology. Authors have recently committed themselves to a paper on Sudbury, besides the 19 others underway. This is likely to be a 1996 publication.

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(1) My work with Bob La Fleur on the Comstock Site (Washington County, New York; see November 1994 issue of the "New York Glaciogram") continues. As suspected the age of wood from positions along the exposure is Holocene. The stratigraphy records episodes of cut and fill and slack-water ponding in ancient terraces above the Champlain Canal. The dates fall into three groups: 3500 yBP, 2800 yBP, and 230 yBP. Large-volume samples of fragmented (and transported) plant material were collected at three stratigraphically separated points. These materials include seeds and fruits of trees and shrubs and some aquatics. Moss fossils are also present. The Holocene record of mosses is sparse, other than that for wetland species. Although samples for pollen analysis were collected, we will concentrate on the plant macrofossil remains, emphasizing seeds and fruits, wood, and probably charcoal as three separate data sets, which when compared may provide biogeographic,

paleoecological, and environmental information otherwise not available from the small lake and pond sediments that have been the principal focus and preferred study sites of palynologists since the 1940s. Harry Alden (USDA Forest Products Laboratory, Madison, Wisconsin) is working with me on wood from the Comstock beds. More on this as our studies continue.

(2) Last summer, drag-line deepening of a spring-fed holding pond in the grounds of the National Biological Service's fish nutrition laboratory in Cortland, New York, exposed a large deposit of moss peat (principally of *Calliergon trifarium*), which in the contemporary flora of New York is known only from the Byron-Bergen Swamp, Genesee County, New York, 150 km northwest. A piece of willow wood from the top of the marl is 10,230 +/- 60 yBP, indicating that the sediments below, which were probed to a depth of 4.2 m, are late Pleistocene. The fossil mosses are associated with cones of tamarack (*Larix laricina*) and white spruce (*Picea glauca*). I will undertake pollen analysis of sediment from the same depth as the dated wood sample and anticipate that the assemblage will be dominated by spruce. The site is south of the Valley Heads moraine. It may prove to be chronologically and stratigraphically similar to Calkin and McAndrews' Nichols Brook locality in southeastern Erie County, New York (see *Geol. Soc. Amer. Bull.* 91: 295-306. 1980).

(3) A focus of this year's annual meeting of the Northeastern Section of the Geological Society of America was the late-Pleistocene history of glacial Lake Hitchcock in the light of new information. I've added to what is known about the late-Pleistocene plant record in the Connecticut River Valley, with new research at Ridge and Larsen's Canoe Brook varve outcrop (near Dummerston, Vermont) and at Janet Stone's Matianuck Avenue site (north of Hartford, Connecticut), expecting that this work may apply to the record of glacial lakes in Hudson River Valley. Unfortunately, organics dispersed in deltas or varves of the Hudson Valley lakes seem rare, or perhaps not yet recognized. This is a call to action.

I would welcome the opportunity to work with anyone on the botanical content of glacial Lake Albany sediment or of the lakes preceding or following it. James Eights (*Trans. Albany Inst.* 2: 335-353. 1852) mentioned the discovery of plant fossils he identified as partridge-berry (*Mitchella repens*), an herb of temperate deciduous forests, in a sand layer near the top of a section of varves probably located near Albany. From what we now know of the paleobotanical record of Lake Hitchcock time, it is likely that Eights' plant was in fact one of the dwarf arctic or arctic-alpine willows, perhaps *Salix herbacea*. His report, however, gives me hope that other sites with plant remains may exist in the valley. Let's go for the gold!

Ernest H. Muller - Dept. of Geology, Syracuse University
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Two sessions at the NE GSA meetings in Cromwell, CT, last month, were particularly relevant to correlation of New England and New York glacial chronologies. Varve chronology received its strongest acceptance in 60 years, thanks to Verosub's (UC-Davis) and Ridge's (Tufts) paleomagnetic corroboration of Antevs' work. Declination curves for Hudson Valley lake sediments remain the missing link needed for correlation with the Lake Hitchcock data.

On the other hand, work in progress by Neal O'Brien (SUNY - Potsdam) finds flocculate structure in clay as well as silt laminae of varve couplets deposited in the Genesee and upper Hudson valleys, implying rapid settling of "winter" clay.

Also at NE GSA, of interest to New York glacial geology is Tom Davis's (Bentley College) radiocarbon dated pollen profile for Readway Pond near Star Lake in the NW Adirondacks.

New York Quaternary Geology at Syracuse is alive and well, not only as reflected by Hank Mullins work on Finger Lakes acoustic stratigraphy, but now also in the presence of Geoffrey Seltzer, newly appointed to the SU faculty last fall.

My primary focus, since mid-November when Wanda and I came back to Syracuse after two months of wandering, has been on the recent, now decreasing activity of Bering Glacier.

Late last July, and again in September, dramatic meltwater discharge from the east margin of Bering Glacier's piedmont lobe heralded a cessation of the glacier's surging advance. The outburst displayed power enough to delight John Shaw (Alberta), though on a less Noachian scale!

With Jay Fleisher (SUNY - Oneonta) and BERG associates, I continue in joint efforts to document these changes. Two papers appearing early this year are:

Muller, E.H. and Fleisher, P.J., 1995. Surging History and Potential for Renewed Retreat: Bering Glacier, Alaska. *Arctic and Alpine Research*, Vol. 27 (1): 81-90.

Fleisher P.J., Muller, E.H., Cadwell, D.H., Rosenfeld, C.L., Bailey, P.K., Pelton, J.M., Puglisi, M.A. In press. The Surging Advance of Bering Glacier. *Journal of Glaciology*.

The report by Jay at the San Francisco AGU meetings last December is in preparation for Bruce Molnia (USGS) and Craig Lingle's (UA-Fairbanks) projected symposium volume.

Our study of stratigraphic relationships in glacial drift on the eastern perimeter of the piedmont lobe is complemented by pollen work by Cal Heusser (reported in his paper in the W.O.Field volume of *Physical Geography*, due this year) and Dorothy Peteet (NASA - Goddard), and by tree ring studies reported last November (Lamont-Doherty) at GSA in Seattle.

The 58th Field Conference
of the Northeastern Friends of the Pleistocene
 is to be hosted in Portland, Maine by
Tom Davis, John Gosse, Robert Johnston, Robert Newton
and Woody Thompson
 May 12-14
 Portland, Maine
 Contact Woodrow Thompson, Maine Geol. Survey,
 Phone (207) 774-5861

John P. Szabo - Dept. of Geology, University of Akron
 Akron, OH, 44325-4101

As the department has grown smaller, I have resisted attempts to become a neofacist administrator, but it is becoming more difficult. Current research efforts include working on papers on the pre-Wisconsinan tills of the Allegheny Plateau and on the lithofacies of the Ashtabula Till. Additionally, we continue to work on the pre-Wisconsinan stratigraphy east of Columbus, Ohio, in Licking County and southeast of Columbus in Fairfield County. We are analyzing samples taken for a regional study of the effects of a large egg-farming conglomerate on ground water near Croton, Ohio. My M.S. student, Tom Hite, is near completion of his thesis on the Pleistocene stratigraphy of the Fairfield County landfill where the Illinoian and Wisconsinan boundaries are coincidental. Tom has split the stratigraphy into three lithosequences. The upper is probably Wisconsinan, and we are awaiting a ^{14}C date. The second sequence may be Illinoian and contains some wood and relatively high carbonates similar to other deep borings in adjacent areas. The oldest lithosequence may be Illinoian or older and contains a very strong local bedrock component. Much of the lower part may be reworked colluvium. Another student, Shafiul Chowdhury, is completing his thesis on a DRASTIC study of part of Wayne County southwest of Akron. It is a good synthesis on the effects of Pleistocene stratigraphy on the pollution potential of bedrock aquifers.

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In conjunction with Parker Calkin I am organizing a Symposium for the Buffalo meeting of the Northeastern Section of GSA next year (1996) on the topic "Early to Middle Wisconsin Glacial Records in the Great Lakes - Eastern North America Region" . We are looking for any input from those doing current work on deposits from this time period or those who might wish to summarize or update past results from key areas. Information on either stadial or interstadial events and time constraints would be welcome. We are especially interested in emerging evidence for Middle Wisconsin events in the 30,000 to 50,000 BP range. Please respond via e-mail with suggestions, titles, or ideas for speakers to <young@uno.cc.geneseo.edu> or write c/o Dept Geological Sciences, SUNY, Geneseo, NY 14454 (tel. 716-245-5296; fax 716-245-5288).

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V. K. Prest - Geological Survey of Canada, Ottawa

In the company of I Kettles and L. Maurice, I spent three autumn days in the eastern part of the Glacial Lake Iroquois basin examining surficial deposits and looking for evidence of shorelines. New high-level shorelines, probably indicative of both main Iroquois and Frontenac, were identified north of the Norwood—Marmora—Madoc area. These, along with other evidence, may serve to strengthen our concept of the isobase trend and amount of isostatic rebound. Low-level lake shorelines in the eastern part of the basin are limited and sporadic.

My earlier observation in the Iroquois basin suggest that the eastern termini of the Oak Ridges and Dummer moraines are due to minor readvances of the major eastern, or St. Lawrence valley, ice mass, following local retreat of the northern or upland ice. Colouring (my specialty) of the published preliminary surficial maps lends support to this concept. Hopefully, work to substantiate these claims will continue this summer.

Douglas Grant and Vic Prest - Geological Survey of Canada, Ottawa
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The above field work discovered a peculiar bench etched into a smooth, steep face of Precambrian marble on Canoe Lake, near Westport. The bench floor, about 70 cm wide and ≈ 20 cm above water level*, was formed by the coalescence of subhorizontal, flat-floored runnels about 10–15 cm wide which headed in a series of scallops or small alcoves. Karst literature contains no reference to benches composed of such hybrid forms, although the runnels resemble rinnenkarren (which are normally not horizontal) and the alcoves resemble trittkarren or heelprints (which normally occur scattered on a surface). In addition, a nearby small domed outcrop, whose top reached to the trittkarren level, was pocked with bowl karren that decreased in diameter regularly downwards from 20 cm to zero at 2 cm below water level. From this, we infer that the features indicate solution processes that are closely adjusted to a special set of conditions existing at and just below water line. Further work is aimed at elucidating the determining factors. *The lake is a hydro reservoir and is dammed to ≈ 2 m above bench level; we found it exposed by a late-summer low stand and covered by 1 m of ice during a subsequent winter visit.



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