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NEW YORK GLACIOGRAM

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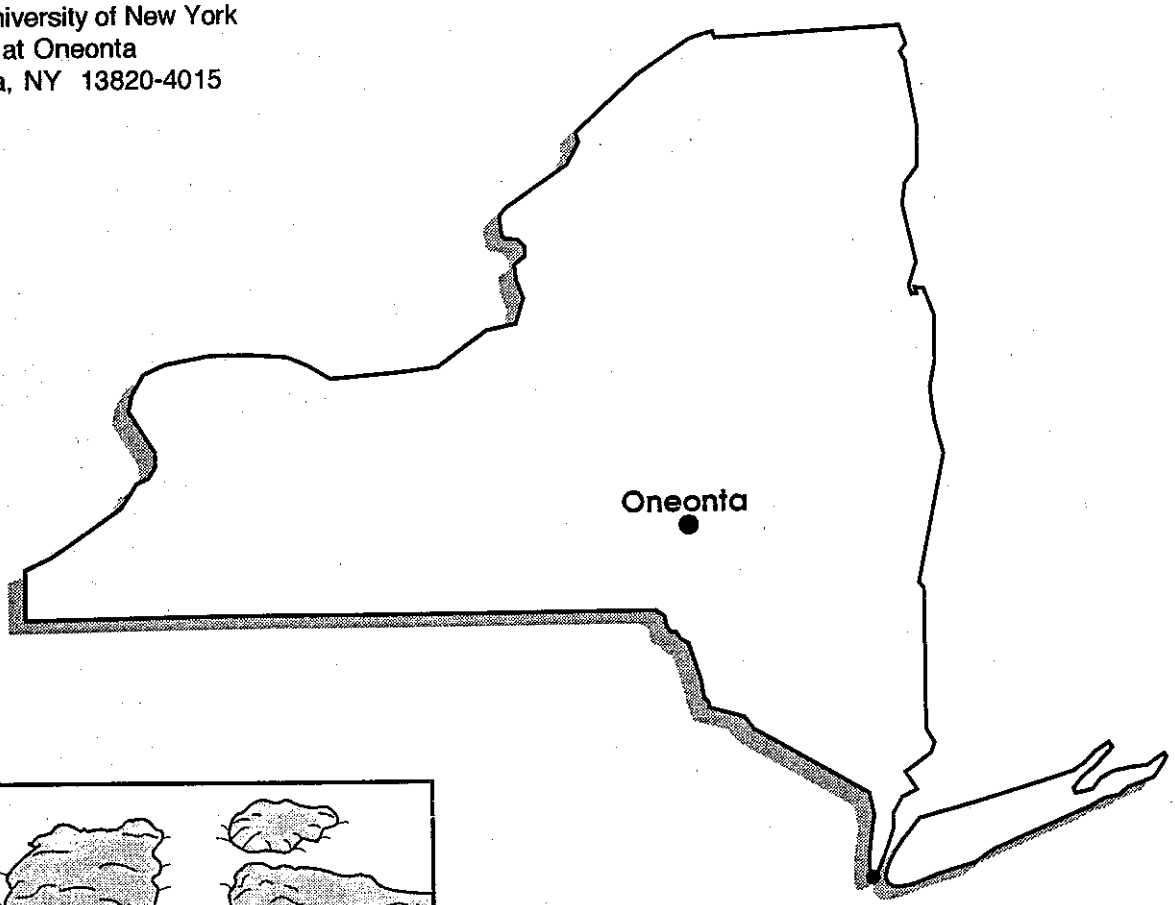

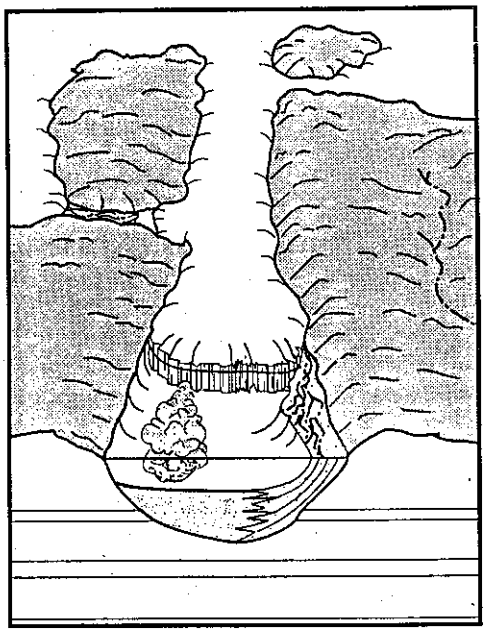

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EDITORIAL POLICY

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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Note from Parker Calkin, the previous editor

After this coming May my access to western New York Quaternary geology will be a lot less. I retire from teaching at the end of this semester and move in late May to Boulder, Colorado. My address will be:

3802 Lakebriar Drive
Boulder, CO 80304

For some few months I will be able to keep the same e-mail address (pcalkin@acsu.buffalo.edu), but will keep Editor Jay informed of any new one.

My surficial geology teaching at UB will be taken over by Marcus Bursik, an extremely capable geomorphologist whose interests at this time tend to be concentrated in the area of fluid transport and quantitative geomorphology. He has published on the glacial geology of the Sierra area of California and so his interests in western New York do include the glacial phenomena. Therefore, he will be supervising students working on surficial processes in western New York as well as other areas in North America as he has done in the past years. Bursik's e-mail address is: mib@acsu.buffalo.edu.

CONTRIBUTORS

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Welcome new subscriber to the Glaciogram: Kirsten Menking; kimenking@vassar.edu

I'm a new paleoclimatologist/geomorphologist at Vassar College and would like to be added to your mailing list for receipt of the NY Glaciogram. I am indeed interested in the Quaternary. Unfortunately, I happen to be one of those lake types. I work on paleoclimatic records in lakes. For my PhD, I worked on a core of Owens Lake in eastern California from which we extracted an 800,000 year long record of glaciation in the Sierras and of lake level highstands. Most recently I've been working on Lake Estancia in New Mexico. I look forward to starting up some projects here in New York and am slowly getting started on that.

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Parker E. Calkin, Dept. of Geology, University of Buffalo, 876 NS&M Complex, Buffalo, NY 14260; pcalkin@ascu.buffalo.edu

Two masters level students are finishing up their theses on western New York topics this very semester.

Eric Pefley - Borehole stratigraphy of the middle reach, preglacial Allegheny River trough, southwestern New York

Eric Schultz - Glacial history of the Chaffee Outwash Plain and surrounding area, Eric County, New York

Both students started several years ago. Eric Pefley suggested almost nine years ago that there might be evidence of an interglacial in the Allegheny trough; however, we can't say this with any conviction. There is certainly evidence of an interstadial precedding deposition of two till layers. Jack McAndrews has helped us get together some botanical data and maybe we can work up more detailed evidence one way or the other in the next year.

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BARE MOUNTAIN ROCK-BLOCK SLIDE

Robert H. Fakundiny
New York State Geological Survey/State Museum

I am still puzzled about the Bare Mountain rock-block slide on the west side of the Tully Valley above the Lafayette mudslide. This Spring we hope to make a detailed topographic map of the slide and possibly core a silted-in sink behind one of the main block ridges in hopes of obtaining some old pollin. Lack of access prevents any new seismic studies. Latest hypothesizing (at the annual meeting of the Northeastern Section of the Geological Society of America) includes collapse into Salina salt cavities during some kind of ancient dissolution event. Most likely sackungen features are present.

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David DeSimone, Williams College

As I gear up for getting back into research, I thought to share a small consulting case I worked on last Fall with our readers. It's proving to be a useful site to incorporate into discussions with my environmental science class.

The site is a long abandoned waste dump in North Adams, MA, known as the Brown Street Facility. Waste was removed from the site over several years but the contaminant plume remains a problem, one which expanded in scope in ways the consultants did not anticipate. The setting for this dump is on old floodplain terrace sediments of the Hoosic River. The sediments are typically variable in texture, ranging from sandy silt to silty sand and sand with some gravelly pockets. All sit atop the lacustrines deposited in Glacial Lake Bascom. All in all, a common unconfined aquifer. The Hoosic River flows westward closely past the north side of the dump and turns briefly south some distance downstream. The consultants rightly assumed that the majority of the contaminant plume would discharge readily into the Hoosic and be 'safely' diluted there. Tests of monitoring wells showed a generally decreasing concentration of contaminants; of primary concern were the levels of trichlorethylene, perchlorethylene, and several forms of dichlorethylene. However, tests of monitoring wells downstream and situated on the southern fringe of the contaminant plume began to show alarmingly high levels of these compounds and home basement air sampling revealed fluctuating but generally increasing levels of these volatile organic compounds. VOC levels surpassed state limits in several homes repeatedly over the few years the homes were tested. Previously, no air sampling had been conducted this far down the hydraulic gradient and so far off the anticipated flow path of the contaminant plume.

The Hoosic River is thoroughly flood-controlled within the city of North Adams, confined to a concrete floodway, in part, and by concrete levees in other sections. Curiously, the river channel along the length of the old dump was largely unmodified but the section of channel downstream where the river bends south has a concrete levee associated with a step/accelerator dam. Could it be that the concrete wall was slowing the discharge of the shallow aquifer and its contaminant plume, especially from the southern fringe of the plume? Seepage from the shallow aquifer is evident upstream along the Hoosic's banks but there is no seepage evident along the wall or just downstream. It caught my attention that the numerous reputable consultants involved over the years at this site had never really spent too much time on groundwater flow models and rarely included a flow net in their reports, never considering the wider impacts of the terrace and floodplain setting with both natural and engineered elements. Never, that is, until wider testing showed air contamination in people's homes. The outcome for the homeowners, who retained me to review existing data, is predictable although I cannot comment as the lawyers are still at work and I'm no longer in the loop.

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Robert M. Thorson, University of Connecticut

Having been long interested in the "deglacial eolian regimes" of the northeastern U.S. (GSA Bulletin, v. 107, p. 751-761, 1995) I thought I would solicit some help from glaciogram readers. I discovered some spectacular ventifacts from one of the small islands between the North and South Forks of Long Island, better than anything I have seen either published, or in person. I plan to write a short paper on the subject, and am now soliciting any information the readers might have (personal observations, unpublished remarks, gray literature, etc.) and be willing to share. I am not interested in mundane "polished rocks" or so-called ventifacts with alleged facets, but in authentic ones with well-defined diagnostic, fluted, interesecting facets. Please contact me at <thorson@geol.uconn.edu> or (860) 486-1396, or at the Univ. Conn. Dept of Geology and Geophysics (354 Mansfield Road, Storrs CT, 06268).

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Ernest H. Muller, Department of Earth Sciences, 204 Heroy Geology Laboratory, Syracuse University, 315 478-5827; FAX 315 443-3363; ehmuller@mailbox.syr.edu

While the midwinter ice storm lashed parts of the Northeast over the Holidays, Wanda and I were off to the southern end of Chilean Patagonia to the Milodon Cave and Paine Towers National Park, broadening our cultural experience if nothing else.

If truth is to prevail, I have been slighting New York glacial geology since the last Glaciogram and have yet to develop an aggressive plan for the summer, other than to grasp whatever attractive opportunities present themselves. ... Among those certainly will be the Northeastern Friends of the Pleistocene reunion which Les Sirkin is hosting on the eastern end of Long Island, as well as the Midwest Friends reunion in Merrill, Wisconsin a week later. If all develops as planned I will be back on the Bering Glacier foreplain with Jay Fleisher at the end of June.

Is it a false impression, or is most of the progress in New York glacial geology taking place on our beautiful lakes? I'm thinking particularly of the work by Hank Mullins and his students, by John Halfman and his colleagues at Hobart, and the contributions published in connection with the Green Lake field trip at NYSGA last fall.

Is plain old-fashioned quadrangle mapping limited to the two or three instances reported in the Glaciogram last fall? If so, could it be because New York State mapping is considered to have been completed with publication of Map and Chart Series # 40? What a sad mistake that would be!

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Dr. Julie Brigham-Grette (Univ. of Mass.) and her graduate student Tammy Rittenour are examining glacial deposits and landforms in the Connecticut River valley to determine how and when Glacial Lake Hitchcock drained. Research by Ridge and Larsen (1990) and Stone and Ashley (1992) has created controversy over the drainage of the lake. Ridge and Larsen (1990) suggest that Glacial Lake Hitchcock drained at 12.4 ka based varve correlation (p-mag. and measurement) and radiocarbon dates from organics incased within varves in southern Vermont. Stone and Ashley (1992) suggest that the lake drained much earlier (13.5 to 14 ka) based on dated wood and peat deposited within pingo scars developed on the exposed lake bottom in Connecticut.

In September 1997, a drill rig was used to retrieve two varve cores from the western side of the University of Massachusetts campus. The first core was 110 ft long (33.5 m), the second core (25 ft) overlapped with the upper portion of the first. The varve sequence changed from thin to thicker varves with depth. Coring was halted at 110 feet when bedrock was hit. These varves are being measured and correlated with the New England varve chronology.

A second set of cores will be taken near the Massachusetts-Vermont border this summer (1998). UMass biologist Ed Klekowski has observed huge exposures of varves while diving in the Connecticut River in this area. These cores will be correlated with the campus cores and linked into the New England varve chronology. Abrupt changes in varve thickness (possibly reflecting lake lowering) from both core sites will be noted and compared to field evidence in the area.

Terraces in the Massachusetts and Connecticut portion of the lake basin are being mapped to determine how the lake drained. These terraces represent drainage stages of Glacial Lake Hitchcock and the subsequent down cutting of the ancient Connecticut River. The terraces are plotted on a longitudinal profile to help with correlation. It is assumed that the terraces should reveal if the lake drained sequentially as a series of smaller isolated lakes or if it drained rapidly as one lake.

The terrace surfaces are being dated by archeological techniques in conjunction with Dena Dincuaze (UMass Anthropology). The abundant archeological sites within the valley are being used to obtain a minimum age estimates of the terraces. Additional age control will come from dating sand dunes found on terraces and deltas using Optical Luminescence (OSL). This luminescence dating will be conducted by Steve Forman (Univ. of Illinois, Chicago).

In conjunction with our work at UMass, Al Werner (Mount Holyoke College) and his student Laura Levy have been working with Timothy Jull (Univ. of Arizona) on radiocarbon dating the carbonate concretions within the varves. They have obtained

interesting results. The dates become successively younger towards the outside of the concretions. The centers of the concretions have variable dates, sometimes approximately the correct age, other times too old or young.

Overall, a lot of new and interesting research has recently been started on Glacial Lake Hitchcock. For her Masters thesis, Tammy Rittenour is mapping and correlating terraces throughout Massachusetts and Connecticut. Her research should bring insight into how and when Glacial Lake Hitchcock drained =F1 an unsettled issue brought to light by the contradicting drainage dates of Ridge and Larsen (1990) and Stone and Ashley (1992).

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Paul Karrow, Department of Earth Sciences, University of Waterloo, 200 University Avenue West, Waterloo, Ontario, Canada N2L 3G1; phone 519-885-1211; FAX 519-746-7484

I have just returned from three months away on sabbatical leave far from New York - one month in Arizona logging core from Willcox Playa, and 7 weeks in Victoria, B. C. continuing work on three projects begun in 1992 on my last sabbatical. Partly as a result of this absence, the status of several projects has changed little since my fall 1997 report. On my way, I collected fossils in southern California and Washington.

However, I am now back at picking fossils from samples from Fernbank, NY collected in 1998. Of the 19 sample levels, five have been completed and picked plants, bones, and molluscs conveyed to Jock McAndrews, Kevin Syemour, and Barry Miller respectively. Gremlins continue to thrive in the computer age and I erroneously said in the fall report that Alan Morgan was doing Fernbank insects and permafrost. Well, so he is for the Woodbridge site. Insects have been picked from Fernbank samples but not passed over to him yet. As Fernbank is an interglacial site some readers may have been puzzled about permafrost there; they can relax, as no evidence has been found at Fernbank.

As no papers were completed before I left, that is a continued high priority for the near future. I plan to take up shoreline surveys at Iron Bridge and North Bay very soon because of the early spring. Other short field projects may materialize near Toronto and Port Elgin. Only Remi Farvacque completed his M.Sc. in the fall and four others are writing. This summer will be the main push on work at Fort Erie for Steve Douglas, who is doing urban geology there in support of archeological work at the international bridge. This site will be one of three along the Niagara Escarpment featured in a GSA geoarcheology field trip based on Toronto in October. For the same meeting there will also be a Toronto Quaternary trip and maybe others.

As for meetings, during my absence I missed attending the GSA section meeting in Columbus (concurrent with Portland, Maine - how did that ever happen?). That was too early for the usual NC field trips wasn't it? Anyway perhaps we'll meet at GSA in Toronto.

William D. Sevon, Pennsylvania Geological Survey, Harrisburg, PA 17105-8453; sevon.william@a1.dcnr.state.pa.us

It has been some time since I responded to the Glaciogram. My work no longer involves glacial sediments for the most part. All of the mapping that I did in the northern part of Pennsylvania is now available as open file reports (contact the PA Geological Survey, not me personally). Also available in open file format is the mapping of surficial materials in the Piedmont of York, Lancaster, and Chester Counties. The surficial sediments in the Piedmont are very interesting and, although not direct glacial deposits, many of them owe their origin to Pleistocene periglacial climates. References are given below.

At present I am working on a landform map for Pennsylvania. Abstract titles for related poster sessions given at GSA meetings in Salt Lake City and Portland are given below. The map is based on interpretation of topography using county-size, 1:50,000-scale, 20-foot contour-interval topographic maps. The map is being digitized and part of the GIS layering will be metric contours with a selected interval that emphasizes most of the topography at a 1:500,000 scale. The final map, currently about one quarter complete, will have, probably, 150-200 landform units. The map will provide the user with a useful guide to the topography of the state and its relationship to the underlying bedrock or surficial geology. The map should be finished in 1998 and hopefully, although plans are inexact at present, will be available free of charge on the internet.

Sevon, W. D., 1995, Surficial geology and geomorphology of Warren County, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open File Report 95-03, 1 map, 1:50,000 scale, 10 page text.

Sevon, W. D., 1996, Surficial geology of the Airville, Conestoga, Gap, Glen Rock, Holtwood, Kirkwood, Quarryville, Red Lion, Safe Harbor, Stewartstown, Wakefield, and York quadrangles and the Pennsylvania part of the Conowingo Dam, Delta, Fawn Grove, New Freedom, Norrisville, and Rising Sun quadrangles in York, Lancaster, and Chester Counties, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open File Reports 96-01 to 96-18; 18 geologic maps, 7.5-minute scale, and 22 page text.

Sevon, W. D. and Braun, D. D., 1997, Surficial geology of the Towanda and Wellsboro quadrangles, Pennsylvania: Pennsylvania Geological Survey, 4th ser., Open File Report 97-02 and 97-03, 2 maps: 1:100,000 scale, and 25 page text.

Sevon, W. D., 1997, Geologically correct topography of Pennsylvania: Geological Society of America Abstracts with Programs, v. 29, no. 6, p. A-37-38.

Sevon, W. D., 1998, Landform map of Pennsylvania: Geological Society of America Abstracts with Programs, v. 30, no. 1, p. 73.

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I want to say hello to all the Quaternarians in New York State. Last year, I came into the opportunity to transplant myself from south Louisiana where I worked as a Quaternary geologist since the late 1970's. In the Fall 1997, I accepted a position on the faculty at SUNY College at Brockport. I am presently working to develop a program in surficial geology, geomorphology, and environmental geology with an emphasis on western New York. So far, I have barely scratched the surface (literally). But thanks to the Research Foundation of SUNY Brockport, the NY State Museum, and the USGS, our department now has the resources to initiate renewed geological mapping in the region. Our first project is to map the surficial geology of the Hamlin, NY 7.5-minute quadrangle. Hamlin is in Monroe County, to the west of Rochester and contains landform elements related to ancestoral Lake Iroquois in the Lake Ontario lowlands. I hope to be able to provide follow up reports on this and other mapping activities as I develop data in collaboration with my students.

I wish to extend a warm hello to interested colleagues in the region. As time goes forward, I hope for a chance to get to know more about activities in the region. For those interested in our program at SUNY Brockport, please contact us or visit when time allows. I am always interested in learning from all of you with experience in the region.

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Mike Lewis, Geological Survey of Canada (Atlantic), 1 Challenger Drive (P.O. Box 1006), Dartmouth N.S. B2Y 4A2, Canada; mlewis@agc.bio.ns.ca

This year I resume working up an extensive data set of seismic reflection profiles, cores and submersible observations from lakes Ontario and Erie. An outstanding feature of the seismostratigraphy is a prominent regional unconformity marked by a notable absence of subglacial sediments. In the eastern sectors of both lakes, glaciolacustrine sediment reflectors sit directly on bedrock in many places, whereas in western Lake Ontario, only the youngest part of the glacial sequence overlies the unconformity. One wonders why the bulk of the Late Wisconsinan glacial sequence is missing. A small part of this work will be presented at the GAC meeting in Quebec City May 18-20: "Marine geoscience in large lakes, clarifying the roles of glacial and tectonic processes in lakes Ontario and Erie" co-authored with Larry Mayer, Kevin Coflin, Gordon Cameron and Brian Todd. We hope to expand this topic at the GSA meeting later in Toronto, October 26-29.

Pierre Gareau and I are experimenting with a digital elevation model (DEM) of the topography and regional bathymetry of the Great Lakes region. Using the evidence of uptilted shorelines, an empirical regional model for glacio-isostatic crustal recovery has been developed. We are applying this information to the DEM to calculate and portray regional paleogeographic maps of the former Great Lakes at various times during and following the retreat of the Laurentide Ice Sheet. A poster on this and similar work for eastern Canada will be presented by Pierre and I called "Digital paleo-elevation modelling for reconstruction of Late Wisconsinan and Holocene paleogeography of the Atlantic Canada and Great Lakes regions" co-authored with J. Shaw, T. Quinlan, A. Sherin and R. Macnab. We plan further development for presentation at the GSA Toronto meeting, in which we hope to quantitatively estimate the areas, volumes and other morphometric attributes of the paleo-Great Lakes.

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New York State-based Bering Glacier Research

For our 11th consecutive field season at the Bering Glacier, the New York State-based research team (BERG) will consist of ten members in 1998. Thanks to funding from the National Geographic Society last year, Dorothy Peteet (Lamont Doherty Earth Observatory), Ernie Muller (Syracuse University, emeritus), and I worked on gathering information from which we hope to determine the extent of Late Wisconsinan ice on the coastal foreland. We are using a combination of AMS bog bottom dates, mainly from foreland uplands, and newly-discovered glacial deposits in cols and on coastal reaches to address the contention that the Bering/Steller piedmont lobe was anomalously limited in size when all other glaciers in the region spread far beyond their current limits. The combination of papers we gave in Salt Lake City at GSA summarized our new findings and contained information that we intend to build upon this summer when we will turn our attention to glacial geomorphology and the detailed analysis of drift microstructure. Matt Lachniet (Syracuse University) will do the sample collecting and analysis from which we will look for clues of overriding. Ernie, Brian Tormey (Penn State), and I will continue to look for new Holocene exposures on the eastern sector to refine the stratigraphic picture there as it relates to surge cyclicity.

Brian and Don Cadwell (NYS Geol. Survey) have a GPS mapping project lined up that we hope will result in a fairly detailed map of surge-related changes to the islands and lake basins along the eastern ice margin. With assistance from Palmer Bailey (CRREL, retired), two SUNY-Oneonta undergraduates (Scott Wickham and Mark Mucci) have projects that will relate subglacial vent activity to changes in discharge and turbidity on a daily to weekly basis, then relate this to rates of sedimentation.

New to the group in 1998 is Lew Hunter (CRREL) and Michelle Koppes, a graduate student of Bernard Hallet (University of Washington). They will continue the annual bathymetric mapping of Tsivat and Tsiu Lake basins that BERG started in 1991, as was reported at NEGSA, Portland, by Jason Dell (1997 SUNY-Oneonta student). In addition, Lew will be looking at the grounded ice front for evidence of surge-related and post-surge processes. This is part of an analysis of sediment budget for the entire Bering Piedmont Lobes.

Closer to home, I have just begun to look at the regional distribution of lake deposits within the eastern Susquehanna drainage basin. Using Allan Randall's published water well data and maps of glacial landforms, we have known for some time that terrace gravels interfinger with thick silt deposits that lie beneath the floodplain throughout the eastern Susquehanna basin. Published interpretations attribute these to accumulation in Late Pleistocene ice-contact, proglacial lakes at the margins of valley ice tongues fed by the retreating Laurentide Ice Sheet (see cover sketch). Using the Bering Glacier paradigm, and a ten year data base that includes rates of sedimentation, it should be possible to develop a clearer picture of conditions in the Susquehanna that relate to aquifer occurrence and the time-frame involved.

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