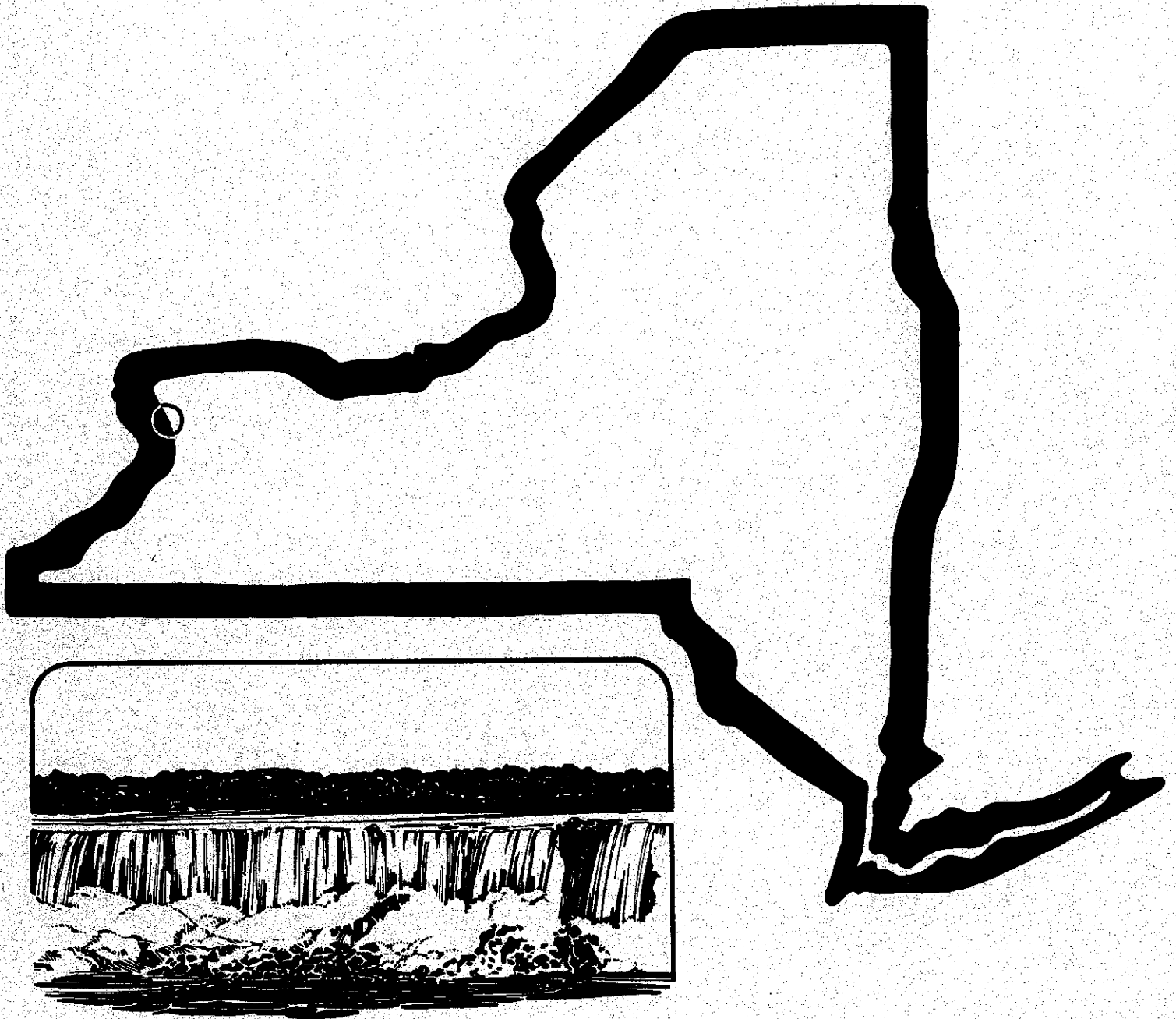


VOLUME 20, NO. 1 • MAY 1985

# NEW YORK GLACIOGRAM



DEPARTMENT OF GEOLOGICAL SCIENCES

State University of New York at Buffalo

Buffalo, New York 14226

Athol Abrahams - Geography, SUNY at Buffalo

# HILLSLOPE PROCESSES

## Sixteenth Annual Geomorphology Symposium

September 28-29, 1985

State University of New York at  
Buffalo, Amherst Campus

Organizer: Athol D. Abrahams

### PROGRAM

#### Friday Evening, September 27

7:00 to 9:30 P.M.  
Casual Reception

#### Saturday, September 28

A. Young (International Council for Research in Agroforestry, Kenya) and I. Saunders (Simon Fraser University, Canada) **Rates of Surface Processes and Denudation**

L. D. Meyer (U.S. Department of Agriculture) **Erosion Processes and Sediment Properties for Agricultural Cropland**

R.P.C. Morgan, H.J. Finney (Silsoe College, U.K.), H. Lavee (Bar-Ilan University, Israel), E. Merritt, and C.A. Noble (Silsoe College, U.K.) **Plant Cover Effects on Hillslope Runoff and Erosion**

T. Dunne (University of Washington) **Sheetwash Experiments on Savanna Hillslopes**

J.S. Gardner (University of Waterloo, Canada) **Sediment Transport by Ephemeral Streams on Mountain Slopes, Canadian Rocky Mountains**

T.N. Caine (University of Colorado) **Sediment Movement and Storage on Alpine Slopes in the Colorado Rocky Mountains**

J. Dixon (University of Arkansas) **Solute Movement on Hillslopes in the Alpine Environment of the Colorado Front Range**

M.J. Kirkby (University of Leeds, U.K.) **A Two-dimensional Model For Slope and Stream Evolution**

M.G. Anderson and S. Howes (University of Bristol, U.K.) **Hillslope Hydrology Models for Forecasting in Ungauged Watersheds**

K. Beven (Institute of Hydrology, Wallingford, U.K.) **Hillslope Runoff Processes and Flood Frequency Characteristics**

#### Saturday Evening

Buffet Dinner and Social

#### Sunday, September 29

B.P. Moon (University of the Witwatersrand, South Africa) **Controls on the Form and Development of Rock Slopes in Fold Terrane**

I. Statham (Ove Arup and Partners, Cardiff, U.K.) and S.C. Francis (University of London, U.K.) **Influence of Scree Accumulation and Weathering on the Development of Steep Mountain Slopes**

T.C. Pierson (U.S. Geological Survey) **Flow Behavior of Channelized Debris Flows, Mount St. Helens, Washington**

R.M. Iverson (U.S. Geological Survey) **Dynamics of Slow Landslides: A Theory for Time-dependent Behavior**

M.J. Bovis (University of British Columbia, Canada) **The Morphology and Mechanics of Earthflow Mass Movement, with Particular Reference to Southwest British Columbia**

R.J. Chandler (Imperial College, U.K.) **Processes Leading to the Occurrence of Landslides in Clay Slopes: A Review**

W.E. Dietrich, C.J. Wilson, and S.L. Reneau (University of California, Berkeley) **Hollows, Colluvium, and Landslides in Soil-mantled landscapes**

T.H. Nilsen (U.S. Geological Survey) **Relative Slope-stability Mapping and Landuse Planning in the San Francisco Bay Region, California**

**Discussion of Direction for Future Research on Hillslope Processes** Chair: M.J. Kirkby

For information and registration forms contact Dr. Athol Abrahams.

Parker E. Calkin - Geological Sciences, SUNY at Buffalo

I apologize for getting the GLACIOGRAM out a little late. I'm getting it together in the midst of Jury duty and a murder trial this month.

Masters student Michael Jensen is doing a careful restudy of the glacial Great Lakes beaches in Chatauqua County. He's also checking for possible buried (pre-deglacial Great Lakes) wave-cut terraces and scarps such as Stan Totten has described along the northeastern Ohio shore of Lake Erie. Ph.D. student David Froehlich is investigating research possibilities in the central Adirondacks with the N.Y. State Survey.

I wanted to call your attention to various meetings and field conferences as follows:

1. First International Conference on Geomorphology - unfortunately the deadline for abstracts was 30 Sept. 1984. The conference is in Manchester, England Sept. 16 through 20th. Write Ian Douglas, School of Geography, University of Manchester, Manchester M13 9PL, England.

2. New York State Geological Association - annual meeting with field trips at Skidmore College, Saratoga Springs, N.Y. on Friday through Sunday, Sept. 27 through 29, 1985. At least three trips will be of interest to Quaternary people: a) Geologic and human history of northeastern New York State (A. Piper, leader), b) Deglaciation of the middle Mohawk and Sacandaga Valleys, or A Tale of Two Tongues (R. Dineen and E. Hanson, leaders), and c) The glacial geology and history of the northern Hudson basin (R. G. LaFleur and J. DeSimone, leaders). Contact R. H. Lindeman, Dept. of Geology, Skidmore College, Saratoga Springs, N.Y. 12866 (Tel. 518-584-5000) for details. Unfortunately this conflicts exactly with the Geomorphology Conference (see Abrahams entry, this Glaciogram).

3. Spring, 1986 (mark your calendars):

Eastern Friends of the Pleistocene - Northern Maine with leaders T. Lowell and S. Kite. This is tentatively scheduled for the last week in May. Contact T. Lowell - 11 High Street, Lincoln ME 04457.

ANQUA Meeting - (1986 Biennial Conference) - University of Illinois, Urbana on 2 through 4 June.

Kernan Davis - NYS Department Environmental Conservation

Pleistocene geology continues to hold the key to Pandora's Box. In some places, awful stuff is oozing. As chemical analytical methods become more sophisticated and sensitive, more contaminated locations are discovered. Soil and groundwater sample collection is also becoming more sophisticated --- but geologists - not so.

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David J. DeSimone - New York Geological Survey  
(This note was received in January)

I've enclosed an abstract of my dissertation for the Spring issue of the Glaciogram.

Perhaps one of the most interesting results of this project is the possible tie-in with Clark and Karrow's (1984) water level transitions in the St. Lawrence lowland. The erosional and depositional evidence for three Fort Ann water levels is found along the Fort Ann outlet channels (Fort Edward, Durkestown, Winchell) which carried the outflow from Lake Fort Ann through the northern Hudson lowland. A problem was the cause or mechanism for three distinct water levels. The answer might lie in discharge from the St. Lawrence lowland around Cuvey Hill into Lake Fort Ann. This inflow would have increased outflow along the Fort Ann channels and deepened them. Lake Fort Ann stabilized at a lower level after this pulsed inflow ended. Accordingly, Clark and Karrow's Level II - Level III transition was correlated to my Fort Ann I - Fort Ann II transition and their Level III - Level IV transition was correlated to my Fort Ann II - Fort Ann III transition. Their Level IV - Champlain Sea transition resulted in abandonment of the Fort Ann channels and establishment of a Holocene drainage configuration in the northern Hudson lowland.

(This note was received in May)

I hope you received my contribution mailed several months ago which consisted of an abstract of my PhD thesis and a paragraph of discussion relating to lower water levels in the Hudson and Champlain lowlands. This field season will take me again into the SE Adirondacks and perhaps into the Vermont Valley. Starting July 1, I'll be associated with Williams College. Perhaps we'll have a chance to meet this Fall when Bob LaFleur and I lead a field trip at the NYSGA meeting.

David J. DeSimone (cont.)

I. ABSTRACT

Woodfordian ice advanced generally southward and southwestward along the structural grain of the bedrock in southern Washington County. These Taconic highlands were abraded and streamlined into a drumlinoid landscape mantled with a variably-thin till veneer pocked by numerous outcrops. Deglacial sediment largely buried a similarly-abraded and streamlined topography in the Hudson lowland. Thick till accumulated in lowland drumlin clusters and in several highland environments. A very well-compacted unoxidized gray lodgement till facies in both lowland and highland regions was composed of an unstratified silty through clayey matrix (75%) with subrounded to rounded cobble, pebble, and boulder clasts (15-30%) of predominantly local lithologies.

The general style of highland deglaciation was characterized by a thinning ice cover which exposed the till-veneered hills and active ice tongues in those valleys oriented parallel to the direction of ice flow. Topographic control determined the location of major kame moraine sediment bands along the base of northerly slopes with moderate to high relief. Shingled outwash sequences were deposited downvalley from the margins of these ice tongues and the heads of outwash shifted spasmodically northward in a manner controlled by the subglacial topography. The shift of an active ice margin to a valley heads position sometimes stranded ice downvalley but had no effect on the active retreat of an adjacent ice tongue and a continuous stagnation zone was not uniformly present along the ice front.

Twelve recessional ice fronts were reconstructed and correlated with existing data from the surrounding Hudson lowland, adjacent Adirondack foothills, Taconic highlands, and the Vermont valley. Six intervals of water level stability punctuated by intervals of lowering water level were recognized in the northern Hudson lowland. The Quaker Springs-Coveville and Coveville-Fort Ann I transitions were induced by high or hlaup discharge along the glacial Mohawk River and its outlet channels. Water level decline during the later Fort Ann phases may have been influenced by the draining of post-Iroquois lakes in the Ontario and St. Lawrence lowlands through the Covey Hill channels to the Champlain lowland.

The Hudson lobe defended a stable Lake Albany as the ice retreated from position 1 to position 5. The level of Lake Albany gradually declined as the ice retreated from position 5 through position 6 to position 7. A stable Lake Quaker Springs was established at position 7 and persisted as the ice retreated through position 12 into the Champlain valley. Melting ice and major tributaries contributed a large sediment volume to the lake basin and a characteristic lacustrine sequence was deposited. The middle rhythmite facies and upper sand facies were exposed at the surface throughout much of the lowland.

The remaining stable water levels were Lake Coveville, Fort Ann I, Fort Ann II, and Fort Ann III.

Nourishment of the Hudson lobe was progressively diminished as the Caldwell, Queensbury, and South Bay sublobes retreated. The remaining Whitehall sublobe rapidly retreated through the northern Hudson lowland and no evidence of a major readvance was observed.

A late Port Bruce through early Mackinaw age is postulated for ice retreat from southern Washington County.

From my three graduate students, Michel Lamothe has just submitted his Ph.D. thesis, entitled Lithostratigraphy and geochronology of the Quaternary deposits of the Pierreville and St. Pierre les Becquets areas, Quebec, and he will defend it this spring.

Michel Parent intends to complete his Ph.D. thesis this summer, entitled "Late Pleistocene stratigraphy and events in the Asbestos-Valcourt region, S.E. Quebec."

Brian Hart is also close to the completion of his M.Sc. thesis on the origin of a stratified diamicton unit in the Catfish Creek Drift at Bradtville.

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Bob Fickies - New York State Geological Survey

This spring I will begin work on a Statewide Landslide Inventory Map. The project is being done in conjunction with the United States Geological Survey's Ground Failure Hazards Reduction Program. The majority of landslides in New York occur within Quaternary deposits. The 1:500,000 map will identify by location, type and cause (natural vs. man-induced) landslides in both soil and bedrock. I would appreciate hearing from any Glaciogram readers concerning any new or obscure slides they may have come across in the field. This information will help make the map as complete as possible. You may write to me at:

New York State Geological Survey  
3136 CEC  
Albany, NY 12230

Nelson R. Gadd - Geological Survey of Canada

I have two principal projects that are occupying my time. First is the Symposium on Champlain Sea that will take place in Ottawa, Canada, May 19-21, 1986, under the auspices of the joint meetings of the Geological Association of Canada (GAC) and the Mineralogical Association of Canada (MAC). There will be a full day of oral presentations of 15-20 minutes, including discussion. This will be just enough to give a precis of better things to come, as there will be, also, a Special Publication of the GAC similar to the Lake Agassiz (SP 26) and Great Lakes (in press) volumes. I have taken on the roles of organizer of the Symposium and editor of the Symposium Volume. Although I now have in hand a good number of preliminary abstracts and am on the point of calling for final abstracts, persons who have not had previous knowledge of the Symposium and who may wish to submit a paper, should send me an abstract for appraisal, ASAP. They should understand that if a paper is accepted for presentation at the Symposium, the author must be prepared to submit a completed manuscript of the Special Volume paper at the time of oral presentation in May, 1986. This requirement is dictated by the intention of the GAC Publications Committee to publish the Volume in time for sale at or before INQUA 1987, also being held in Ottawa. Abstracts submitted, but not accepted for the Symposium, will be passed to GAC to be considered for the General Sessions.

Second: I am in the final throes of writing a review paper to accompany a map, compiled at 1/500,000 scale, covering surficial deposits of the Ontario-Quebec regions lying between Ottawa and Quebec City and extending south to the International Boundary. This paper discusses in particular the patterns of glaciation and deglaciation of this part of Canada and gives, I trust, an opportunity to consider new working hypotheses concerning such controversial subjects as  $^{14}\text{C}$  age discrepancies within Champlain Sea basin, and the question of Laurentide vs Appalachian Ice sheets in southern Quebec. The key would appear to be regional topographic control of ice-flow patterns during englaciation, glacial maximum, and glacial recession. Don't hold your breath for this one, as the gestation period for coloured maps at GSC is still quite long, but this, too, should be ready for INQUA 1987.

Speaking of INQUA '87, the Friends of the Glaciogram should be planning ahead for this event. For most, it is a short drive to Ottawa. Many local and regional field trips are planned. The first circular for INQUA will be in the hands of many of you by now. You should know that in addition to the rather expensive exotic trips to far-flung parts of Canada, there are several less expensive trips in eastern Canada included among the 23 choices announced. Not announced in the first circular are the plans to run as many as six or seven one-day field excursions within a radius of, say, 100 km of Ottawa. These should be quite inexpensive and should include sufficient local colour and cultural features of the nation's capital to cater to a very broad interest group.



Richard Goldthwait - Anna Maria, Florida

Still working on Teays Valley papers and enjoy reviewing a few papers on New York state. Spent three months revising the early glaciomorphologic classification of glacial deposits for Commission 2 of INQUA. Input from literature and workers all around the Earth. Let me know if you would like to critique a copy. I present it to various groups (such as NC-GSA - De Kalb this Spring) before 3rd revision and semifinal copy early in 1986.

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Paul Karrow - Earth Sciences, University of Waterloo

Theses by Coakley on Erie basin spits (Ph.D.) and Finamore on the Fenelon Falls outlet of Lake Algonquin (M.Sc.) are now finished. M.Sc. theses by Leslie Kerr-Lawson on Toronto interglacial molluscs and plants, and by Andis Zilans on the Mackinac Basin of Lake Huron, are in advanced writing stages. Peter Barnett is also writing his Ph.D. thesis on Erie shorecliff stratigraphy.

Don Pair will return for more field work in Ogdensburg (NY) area where he is tracing the marine limit for his M.Sc. thesis. Work thus far agrees with the extrapolations toward the Lake Ontario basin by Peter Clark.

Linda Ross is continuing work on her project on the subsurface stratigraphy of the Kitchener-Waterloo area using drilling and down-hole geophysics.

Andy Bajc will return to northern Ontario to map the Marathon area for the Ontario Geological Survey and will continue his related study of postglacial fossiliferous sediments for his M.Sc. Radiocarbon dating shows Superior lake stages Minong, Nipissing, and Algoma are represented.

My own work has been mainly on paper - several ms. were partly - written this winter. I returned to Florida in March to revisit vertebrate and mollusc sites and attended the south-central Friends trip on Louisiana loess as well as the south-central G.S.A. in Fayetteville, Arkansas. I will return to mapping the Brampton area (Halton Till plain west of Toronto) for six weeks this spring, followed by more paper work.

We are fortunate to have two new Quaternary workers joining us this spring. Dr. I. Kazmarska, from Poland, has come to work on diatoms with H. C. Duthie of our Biology Department and Peter Fritz and me in Earth Sciences. Projects range from acid rain to interstadial and postglacial sites. Also, Dr. Barry Warner comes back to us as a University Research Fellow in Earth Sciences. He will work on peat development and fossil pollen and plant macrofossil assemblages in interstadial and postglacial sites.

Ernest H. Muller - Geology, Syracuse University

The term just ending has held little time for forward movement on any of the several projects in hand. I look forward to a couple of months this summer in which to make progress on some of them. If all goes well, I hope to be in Finland for a field conference of the INQUA Commission on Genesis and Lithology of Quaternary Deposits in August.

A contribution (with Dave Franzi and Jack Ridge) on the stratigraphy of the western Mohawk Valley continues toward publication in the symposium volume which Don Cadwell is editing. A review (with Vic Prest) of the glacial lake history in the Ontario Basin makes similar progress toward publication in a GAC Symposium Volume which Paul Karrow and Parker Calkin are editing. A draft map of the Quaternary Geology of the Finger Lakes Sheet (1:250,000) is up for review and field check by the New York State Geological Survey this summer.

In 1965, with Minze Stuiver and Dave Rhoades, I collected material at the National Lead Company's Sanford Pit near Newcomb in the Adirondacks. Wood fragments were dated at greater than 55,000 years. Material was submitted for pollen analysis but was not studied. A couple of years ago I recovered the samples and sent them to Les Sirkin. His initial examination suggests an interglacial environment at the time this material accumulated.

On an NYSGA field trip last fall, Ridge and Franzi showed trace fossils in lake sediments at Trails End on the south shore of Hinckley Reservoir. Vic Schmidt pointed out that the sinuous trails have been attributed in the literature -- in Sweden, the Connecticut Valley and Cayuga Trough -- to larvae of a midge, Chironomus motilator.

Pursuing the subject further, however, Jack Ridge finds the traces probably belong to a nematode worm. The matter is of interest because, in the Newport beds, this trace fossil has been found on bedding surfaces within 2-3 varves above diamicton deposited from the receding ice shelf.

In case there is no note from Jack Ridge in the Glaciogram this time, it is because he a) co-led the Friends meeting in New Jersey the first weekend in May, b) is getting married in mid-May, and c) is concentrating on completing his dissertation on paleomagnetism and stratigraphy of the West Canada Creek Valley. Jack has accepted an appointment at Tufts University beginning in September, 1985.

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Henry Mullins - Geology, Syracuse University

We are continuing analysis of high-resolution seismic reflection profiles collected from Otisco and Seneca Lakes. This summer, no field work is planned. However, I hope to generate two proposals: (1) to acquire a digital seismic reflection system for Syracuse (single or small multi channel); and, (2) to drill a hole through the sediment section in Seneca Lake.

Gerald W. Olson - Agronomy, Cornell University

Enclosed is an abstract for an Urban Natural Resources Workshop at the American Museum of Natural History and Central Park in New York City. The workshop is for more than a hundred park rangers, who in turn will be teaching thousands of people about soils and geology in the future.

Abstract for Urban Natural Resources Workshop, 20-21 May 1985, American Museum of Natural History and Central Park in New York City

### SOILS IN OUR ENVIRONMENT

Gerald W. Olson, Cornell University  
Dept. of Agronomy (Soils), 153 Emerson Hall  
Ithaca NY 14853

This soils presentation and soils tours in Central Park will concentrate on the characteristics, classification, and interpretation of soil map units and their properties. Soils are the basic and most important resources of any civilization. Even where skyscrapers are built on bedrock, soils provide the base for streets and roads, utility lines, sidewalks, grass, trees, and shrubs, and they provide support in the outlying areas of cities, where food and fiber, forests, airports, waste disposals, and so on, are located. In Central Park, soils provide nutrition, support, and water for plants. Differences in the park's soils such as slope, texture, drainage, pH, organic matter, chemical and mineralogical composition, rockiness, and erosion determine landscape variations. Soils provide support for buildings, monuments, roads, sidewalks, and other structures within the park. The materials provided will give a background and references for park rangers to adapt soil information to their own programs of teaching and training.

### REFERENCES

#### Soils Tour

Weber, J., G. W. Olson, and S. H. Lopez. 1984. Tour of soils of Central Park in New York City. Miscellaneous Bulletin 132, Cooperative Extension, Cornell University, Ithaca NY. 12 pages including 4-page foldout soils map at 1" = 400' scale. Available from Central Park Conservancy, The Arsenal, 830 Fifth Ave. NY NY.

#### Textbook

Olson, G. W. 1981. Soils and the environment: A guide to soil surveys and their applications. A Dowden and Culver Book. Chapman and Hall (NY, London). Available in bookstores and from Methuen, 733 Third Ave., New York NY 10017; \$29.50 hardcover, \$17.95 paperback. 178 pages.

#### Field Guide

Olson, G. W. 1984. Field guide to soils and the environment: Applications of soil surveys. A Dowden and Culver Book. Chapman and Hall (NY, London). Available in bookstores and from Methuen, 733 Third Ave., New York NY 10017; \$49.95 hardcover, \$21.00 paperback. 219 pages.

Robert M. Thorson - Geology, University of Connecticut

I have spent most of the year simply trying to get organized and functional after my move from Alaska last August. The personal and professional adaptations to a completely new environment can be overwhelming at times. Nevertheless, I am enjoying my new role at the University of Connecticut and have already found many interesting aspects of New England Quaternary geology to work on in the future.

My accomplishments this year consist largely of attempting to finish prior research and publication commitments in the western United States. The long-distance short-notice move has certainly taken a toll on my productivity. Hopefully, by next year I will be able to send something regionally relevant to the GLACIOGRAM. I also expect to participate in the regional GSA and Friends of the Pleistocene meetings next year, and look forward to meeting (again or anew) many of my colleagues in the northeast.

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Mike Wilson - Geology, SUNY College at Fredonia

I began teaching at Fredonia in Spring, 1984. Tom Jordon is beginning thesis work on buried bedrock morphology in the escarpment at the north end of Cassadaga trough (Jamestown aquifer). Much of my current research involves hydrogeology of southwestern New York, and remote sensing in a variety of locations.

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Richard A. Young - Geology, SUNY College at Geneseo

I hope to be assisting in the field checking of the Finger Lakes sheet of the NY "glacial map" this summer. Final arrangements are being worked out in Albany. Hope this indicates that publication is approaching. Anyone having suggestions on places to be looked at carefully feel free to drop me suggestions.

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