NEWSLETTER OF THE CANADIAN GEOMORPHOLOGY RESEARCH GROUP

BULLETIN DU GROUPE CANADIEN DE RECHERCHE EN GEOMORPHOLOGIE

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PRESIDENT'S MESSAGE - MOT DU PRÉSIDENT

For an organization of only 150 members, Canadian Geomorphology Research Group can take pride in its accomplishments. CGRG is one of the most active national groups affiliated with the International Association of Geomorphology and provides a vehicle for advancing the science of geomorphology in Canada. Let me give you a brief "state of the nation" and some sense of where we're heading.

Recent CGRG activities

CGRG's first publication, a manual on geophysical techniques used in geomorphic research, has been released as a Geological Survey of Canada Open File. The report is an expanded and improved version of a manual that Bob Gilbert and his colleagues prepared for the CGRG workshop at Queen's University in 1997. CGRG members can acquire the manual at a reduced cost (for more information, see announcement in this newsletter).

CGRG sponsored a successful, two-day workshop on *Geophysical Techniques in Geomorphic Research* in Vancouver in March 1999. A brief report on the workshop, prepared by organizer Mike Roberts, is included in this newletter.

CGRG sponsored a field trip entitled *Natural History of Southern Alberta* at the 1999 meeting of the Canadian Association of Geographers (CAG), held in Lethbridge, Alberta, from June 1-5. This trip was led by Rene Barendregt, John Dormaar, Don Lemmen, and Dave Sauchyn.

CANQUA-CGRG Meeting, University of Calgary, August 23-27, 1999

CGRG will hold its 1999 Annual General Meeting at the CANQUA-CGRG conference in Calgary in August. We encourage all CGRG members to participate in the business meeting. On the agenda is the election of a new Vice President to replace Brian Luckman, incoming President.

One of the special sessions at the meeting, *Geomorphic Response to Climate Variability and Extreme Climate Events: Records, Processes and Models from the Late Quaternary to the 21st Century*, is sponsored by CGRG. This session has been organized by Steve Wolfe and Christian Bégin.

CGRG's second J.R. Mackay Award will be presented to Cheryl McKenna Neuman in Calgary. After the awards ceremony, Cheryl will give a talk on her recent research.

Other upcoming activities

CGRG is involved in GeoCanada 2000 in Calgary (May 2000), and AQQUA in Montreal (August 2000, CGRG's Annual General Meeting). Steve Evans and I are organizing a symposium on natural hazards for GeoCanada 2000, co-sponsored by CGRG, GAC, and AGU. Interested members are encouraged to contact Steve or me if they wish to participate in this symposium.

CGRG will sponsor a workshop on aeolian transport monitoring and wind tunnel simulation, to be held at Trent University in August or September 2000. The workshop, another in a successful series of CGRG workshops, will be organized by Cheryl McKenna Neuman and Bill Nickling. Look for details in future newsletters and on the CGRG website.

Let me close by thanking Past-President Chris Burn for chairing the J.R. Mackay Award committee, and Michael Bovis, Mary-Louise Byrne, Jan Aylsworth, and Serge Occhietti for serving on this committee. Thanks also to Executive members Brian Luckman, Lynda Dredge, Yves Michaud, Tracy Brennand, Dirk de Boer, and Olav Slaymaker for their unstinting service on behalf of CGRG. John Pommeroy kindly provided information on recent activities of the Hydrology Section of the Canadian Geophysical Union.

May you all have a successful summer, whether in the field or lab. I look forward to seeing you at the CANQUA-CGRG meeting in Calgary.

Mot du président

Pour une organisation qui ne comprend que 150 membres, le Groupe Canadien de Recherche en Géomorphologie peut être fier de ses réalisations. Le GCRG est un des groupes les plus actifs parmi les associations nationales affiliées à l'Association Internationale de Géomorphologie et il est un véhicule de choix pour l'avancement de la géomorphologie au Canada. Permettez-moi de faire un survol des activités en cours et de vous donner un aperçu des événements à venir.

Les récentes activités du GCRG

La première publication du GCRG, "*A manual on geophysical techniques used in geomorphic research*" a été publiée sous forme de dossier public à la Commission géologique du Canada. Le document est une version améliorée des notes de cours distribuées lors de la journée technique à l'Université Queen's en 1997. Les membres du GCRG peuvent se procurer la dernière version du manuel à prix réduit (voir l'annonce dans ce bulletin).

Le GCRG a aussi organisé, en mars dernier, un atelier de deux jours sur les techniques géophysiques en géomorphologie sur la côte ouest à Vancouver. Un bref compte rendu de l'atelier qui a été couronné d'un franc succès, a été préparé par Mike Roberts et il est présenté dans le bulletin.

De plus, le GCRG a parrainé une excursion intitulée "*Natural History of Southern Alberta*" lors du congrès de l'Association canadienne des géographes qui a eu lieu à Lethbridge du 1-5 juin 1999. L'excursion a été mené par René Barendregt, John Dormaar, Don Lemmen et David Sauchyn.

Congrès CANQUA-GCRG, Université de Calgary, 23-27 août 1999

Le GCRG tiendra son assemblée générale lors du congrès CANQUA-GCRG en août prochain à Calgary. Nous invitons tous les membres à y participer. À l'ordre du jour, il y aura, entre autres, l'élection du Vice-Président en remplacement à Brian Luckman qui devient notre nouveau Président.

Une des sessions spéciales, lors du congrès, portera *sur "La réponse géomorphologique aux variations climatiques et les événements extrêmes: données, processus et modélisation depuis l'holocène au 21^{ième} siècle*". La session est organisé par Steve Wolfe et Christian Bégin.

De plus, le prix *J. R. Mackay Award* sera remis, pour une deuxième année, à Cheryl McKenna-Neuman. Après la cérémonie, Cheryl procèdera à la présentation de ses récents travaux de recherche.

Les activités à venir

Le GCRG est impliqué dans la programmation de GéoCanada 2000 qui aura lieu à Calgary au mois de mai et du congrès quadriannuel de l'AQQUA à Montréal pendant le mois d'août où se tiendra notre assemblée générale des membres. Dans le cadre du congrès GéoCanada 2000 qui est organisé en collaboration avec l'ACG et l'UCG, Steve Evans et moi avons la responsabilité d'un symposium sur les risques naturels. Un avis est lancé aux membres qui désirent y participer de contacter Steve ou moi-même pour obtenir plus d'information.

Le GCRG désire organiser une autre journée technique sur l'activité éolienne et l'expérimentation en soufflerie. Cet atelier aurait lieu à l'Université

Trent au mois d'août ou septembre 2000 et serait organisé par Cheryl McKenna-Neuman et Bill Nickling. Les détails seront divulgués bientôt dans le bulletin et sur notre site internet.

Permettez-moi de terminer en remerciant notre Président-sortant Chris Burn pour son travail de Président du comité de sélection pour le prix J. R. Mackay et Michael Bovis, Mary-Louise Byrne, Jan Aylsworth and Serge Occhietti pour leur participation comme membre du jury. Des remerciements s'adressent aussi aux membres du comité exécutif Brian Luckman, Lynda Dredge, Yves Michaud, Tracy Brennand, Dirk de Boer et Olav Slaymaker pour leurs valeureux services au près du GCRG. Et finalement, à John Pommeroy qui a fourni plusieurs informations sur les récentes activités de la section d'hydrologie de l'Union Canadienne de géophysique.

Je vous souhaite un bon été, sur le terrain ou au labo. Au plaisir de vous revoir à Calgary pour le congrès CANQUA-GCRG.

John J. Clague
President, Canadian Geomorphology Research Group
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SECRETARY-TREASURER'S REPORT

Interim report

As of the end of June, membership in CGRG stood at 163, sightly higher than last year. Most register through GAC or CAG, with AQUAA, CRGC and CANQUA contributing about a dozen each.

At present, we are running a slight pecuniary deficiency. Not all parent organizations have paid up yet, and there were net expenses related to the geophysics workshop at SFU, and subsidies to CGRG members who wished to purchase the Geophysics Manual. In fact, the subsidy is about $15 per manual, the cost of a membership. In addition, in January we were billed US$500 for IAG fees for both last year and this year. In January, we started with a running account of $2858. Since then, our revenue has been $1814, and expenses were $2894.

How to reach us

You are welcome to contact any of the executive about newsletter items at the addresses shown at the back of the newsletter, or by Email. Newsletter items should ultimately be sent to Lynda Dredge or Yves Michaud. The Email address for the Bibliography of Canadian Geomorphology is http://office.geog.uvic.ca/cgi-bin/cgrg/search.cgi, and the listserver is available at http://office.geog.uvic.ca/dept/cgrg/cangeorg.htm

Lynda Dredge

J.ROSS MACKAY AWARD

Cheryl McKenna Neuman is this year's recipient of the J.R. Mackay Award of the Canadian Geomorphology Research Group. The Mackay Award is CGRG's principal citation for excellence in geomorphic research and is awarded annually in recognition of an outstanding contribution by a young geomorphologist.

The award recognizes Dr. McKenna Neuman's paper, "Particle transport and adjustments of the boundary layer over rough surfaces with an unrestricted, upwind supply of sediment," published in *Geomorphology* in 1998 (v. 25, pp. 1-17). This paper builds on Dr. McKenna Neuman's earlier work on lag surfaces. She demonstrates how natural lag surfaces interact with aeolian sediment in transport, more specifically showing the relation between the shape and spacing of roughness elements and the onset and development of stabilization. On a more general level, the paper shows both Cheryl's solid understanding of the theory of aeolian processes and her considerable experimental skill. As one of the nominators said, "this paper is clearly written, the experiments are

beautifully designed, and the conclusions extend well beyond sediment transport by wind… I commend her for bringing understanding to the fundamental issue of transport over an armoured bed. This understanding has wide application in fluvial, eolian, coastal and glacial geomorphology." It seems appropriate that Dr. McKenna Neuman is the recipient of an award named after J. Ross Mackay, a scientist who has long blended well-designed field experiments with a strong theoretical understanding of permafrost and periglacial processes.

The J.R. Mackay Award will be presented to Dr. McKenna Neuman at the CANQUA-CGRG meeting in Calgary this August. She will give a talk on her recent research after the award ceremony. CGRG members are urged to attend the ceremony and the talk.

REPORT ON THE SFU GEOPHYSICS WORKSHOP

CGRG Workshop: GEOPHYSICAL TECHNIQUES IN GEOMORPHIC RESEARCH, Simon Fraser University - Harbour Centre. March 20 -21, 1999

This workshop was designed to provide a practical overview of ground penetrating radar (GPR) and reflection seismic as applied to near-surface imaging in the context of geomorphic problem solving. Recognizing it was impossible to cover adequately such broad topics in a two-day workshop, a case study approach was taken to the classroom presentations on the Saturday morning, with the rest of the time being spent in the field.

During the Saturday morning session the following topics were covered:
A review of seismic reflection principles and some seismic reflection examples (Andy Calvert); Seismic and GPR as regional mapping tools: examples from the Okanagan Valley and the Washington coast (Sandy Vanderburgh); Marine environment: seismic and multi-beam swath bathmetry - Fraser Delta (Dave Mosher); GPR studies of point bars and floodplains (Ted Hickin); Probing volcanic stratigraphy with radar; possibilities and practicalities (Kelly Russell); Radar facies of a glacial braidplain: Nass Valley, BC (Shirley McCuaig); The radar facies of a beach-ridge system (Simone Engels); Radar facies of alluvial fans (Csaba Ekes); Commercial applications for GPR in environmental consulting (Paul Tarrant).

On Saturday afternoon, the field site was visited, where the GPR and seismic equipment was going to be used next day, in order for the participants to gain an understanding of the geomorphic environments that were going to be geophysically imaged. The geomorphic environment selected for the workshop was an inactive part of a spit-beach system that has been prograding, for the last 2000 years, into an embayment on the Fraser delta flank of the Point Roberts - Tsawwassen Uplands. The participants, using 3 GPR units, ran GPR lines from a swale, between two beachridges, up and over a beachridge. To provide lithologic control for the GPR profiles, a 15 m core was retrieved using the SFU Mobile B-24 drill rig. Reflection seismic walk-away tests with a 24 geophone layout were run in the same area. Whereas the field trip on the Saturday was blessed by a warm, beautiful sunny day, our use of the instrumentation on the Sunday was greeted by a classic BC March day - cool and raining, but ignored by the 25 enthusiastic participants.

Thanks to: Ted Hickin, Shirley McCuaig and Kelly Russell for instructing in the use of the GPR equipment; Sensors and Software Inc. and Kelly Russell (UBC) for lending their GPR units; Sean Hodgins for providing access to his property where we probed and drilled; and to Mark Newman -Bennett and Colin Wooldridge our student drillers.

Mike Roberts

NEW CGRG PUBLICATION: HANDBOOK OF GEOPHYSICAL TECHNIQUES

CGRG's first publication, "A Handbook of Geophysical Techniques for Geomorphic and Environmental Research", is now available as Geological Survey of Canada Open File Report 3731 (125 p.). The handbook is an expanded version of a document provided to participants at a workshop at Queen's University in the fall of 1997.

The handbook comprises an introduction by the compiler, Bob Gilbert, and five chapters summarizing different geophysical techniques: (1) electromagnetic methods (Christoph Hyde and Larry Dyke); (2) land-based shallow seismic methods (Susan Pullan and James Hunter); (3) borehole geophysical logging methods (James Hunter, Marten Douma, and Ron Good); (4) ground penetrating radar (Stephen Robinson and Yves Michaud); and (5) subaquatic acoustical techniques (Robert Gilbert).

The price is Can $21.00 (tax included) to CGRG members, a 30% discount from the price at the GSC bookstore. **CGRG members wishing to obtain a copy should send a cheque payable to CGRG,** to:

Dr. Lynda Dredge, Secretary-Treasurer, CGRG
Terrain Sciences Division
Geological Survey of Canada
601 Booth St.
Ottawa, Ontario
K1A 0E8

Those who are not members of CGRG must purchase this manual through the Geological Survey of Canada Bookstore by cheque payable to the Receiver General. The cost is $26.40, plus $5.40 shipping, plus tax. Non-menbers can place their orders by calling the toll-free bookstore number: 1-888-252-4301.

UPDATE ON PROFESSIONAL REGISTRATION

Our past president, Chris Burn, has been active in ensuring that geomorphologists are recognized as geoscientists by lisencing agencies if/when professional registration becomes necessary or desirable. Below is an update on registration, and a recent letter by Chris to the Association of Geoscientists of Ontario.

Update on Professional Licensure in Ontario

Following the debacle of 1998, registration for Professional Geoscientists is once again on the table in Ontario. The Professional Engineers of Ontario washed their hands of us, but the provincial government has actively sought other arrangements for licensure. Currently the Association of Geoscientists of Ontario spearheads the process, and in February 1999 released a Discussion document, which is available on the web from the homepage of the Association. The hope is for legislation in Fall 1999 to create an Association of Professional Geoscientists of Ontario. A two-year period would then follow to allow current geoscientists to apply and fulfill requirements for registration. This time is required to process applications from persons who might not follow the rubrics to be set up to evaluate candidates for registration in the normal course of events. The Association has striven to recognise the variety of geoscience practiced in Ontario, and proposes three categories for registration: Geology, Geophysics, Environmental Geoscience. CGRG is mostly concerned with the latter. The proposed requirements for an undergraduate degree necessary for registration in this category are listed below. Following the list is a letter written to AGO commenting on these proposals.

Half courses required:

1. *Foundation Mathematics and Sciences*-Mathematics 1 & 2; Mathematics 3 or Computing; Physics 1 or Biology 1; Physics 2 or Biology 2; 4 additional sciences or mathematics. (9 half courses)
2. *Core Geosciences*-Physical Geoscience or Physical Geography (including Earth History); Mineralogy & Petrology; Quaternary or Glacial Geology; Geomorphology; Stratigraphy & Sedimentation; Structural Geology; Hydrogeology and/or Hydrology; Field School. (8 half courses)
3. *Complementary studies*. Either Professional Practice and Law, or Technical or Business Writing. (1 half course)
4. *Electives* (15 required from:) Biogeochemistry; Advanced Biology; Advanced Chemistry; Environmental Chemistry; Climatology/Atmospheric Science; Ecology; Environmental Impact Assessment/Environmental Planning Management; Advanced Environmental Studies; Advanced Field School; Geochemistry; Advanced Geochemistry; G.I.S.; Advanced Geomorphology; Advanced

Geophysics; Advanced Glacial Geology; Contaminant Hydrogeology; Industrial Minerals and Coal; Isotope Chemistry; Marine Geology; Numerical Methods/Advanced Computing; Ore Deposits; Paleontology; Petroleum and Natural Gas; Advanced Quaternary Geology; Remote Sensing; Advanced Sedimentology; Soil Mechanics; Soil Science; Thesis/Research Project.

A letter to the Admissions standards committee of the Association of Geoscientists of Ontario

The Association of Geoscientists of Ontario
Attn: Admission Standards Committee
365 Bay Street, Suite 200
Toronto ON M5H 2V1

Dear Committee Members:

Thank you once again for all the effort you are putting in to developing a suitable licensing regime for the practice of geoscience in Ontario. Two years ago I wrote several letters to you with respect to previous proposals, and I am glad to see the progress that has been made since then. Like other members of AGO, I regret the setbacks towards licensure of 1998, but I am excited by the prospects in store. I have reviewed the current proposals, and I am convinced that the draft rubrics for training can be further improved to their benefit. I am confident that then the current draft will be viewed favorably by the vast majority of environmental geoscientists. I note that the course requirements for Geologists and Environmental Geoscientists allow people with only a cursory experience in environmental geoscience to masquarade as professional practitioners. This is a dangerous precedent to set. A geologist who has taken three half-courses in environmental geoscience (geomorphology, hydrogeology, glacial) will be able to satisfy the rubrics, and qualify for licensing as an environmental geoscientist. The rest of her/his courses might be in hard rock and deep earth issues only, and it would be inappropriate for them to claim professional expertise in earth surface processes. In order to avoid such misrepresentation, I suggest that Soil Science/Soil Mechanics be added to the list of core geoscience courses in the environmental geoscience category, and that Hydrology/Hydrogeology be converted to two distinct core requirements rather than the one alternative, as presently represented. These amendments would leave 10 core geoscience requirements for environmental geoscientists, as proposed for geophysicists. I consider knowledge of soil systems to be of far greater importance to the earth science issues we face in Ontario and to the remit of environmental geoscientists than knowledge of structural geology, but I agree with the importance of structural geology as a fundamental geoscience, and consider it necessary for training. I suggest the inclusion of both Hydrology and Hydrogeology, because, ultimately, environmental geoscience always concerns water. The treatment of water by these subdisciplines is complimentary but distinct. In particular, Hydrology courses require familiarity with atmospheric water, and this ensures a modest understanding of climate. Hydrology courses cover extreme events and changes to environmental systems which operate on timescales that are not always relevant in considerations of groundwater, and yet are of direct bearing on human use of the environment. Finally, hydrology is concerned with the surface of the earth, the students are to be licensed as professionals in the surface earth sciences, and yet only geomorphology and glacial geology addresse this area in the core requirements. I regard Hydrogeology as equally important, and so I urge adoption of both requirements as core geosciences. In closing, I reiterate my support for your efforts and thanks for the hard work you have so far completed. I hope these and other comments you receive will assist you to draft the best possible guidelines for licensure. With you, I look forward to applying to join the Association of Professional Geoscientists of Ontario in the year ahead.

Yours sincerely, C.R. Burn
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NEWS FROM BEYOND

CANADIAN GEOPHYSICAL UNION HYDROLOGY SECTION NEWS

Forest Hydrology Committee
The inaugural session of the Forest Hydrology Committee of CGU-HS, entitled "Forest Hydrology: Issues of Processes and Management Across Multiple Scales", was one of the highlighted sessions at the May 9-13, 1999 Annual CGU Meeting in Banff, Alberta. This session brought together the somewhat divergent research approaches of small-scale process studies and more empirical watershed-scale studies, with a vision to suggest methodologies and solutions for incorporating these findings at different scales into meaningful process concepts and prediction tools. Such tools may eventually be used to address practical forest hydrology issues. The Chair of the new CGU-HS, Forest Hydrology Committee is Prof. Roy C. Sidle, Forest Resources Management/Geography Departments, University of British Columbia, 2424 Main Mall — 2nd floor, Vancouver, BC V6T 1Z4. e-mail: sidle@interchg.ubc.ca.

Notice of Northern Research Basins Symposium and Workshop
The 12th Northern Research Basins Symposium and Workshop will be held in Iceland, August 23-27, 1999. The theme of the NRB meeting is High Latitude Hydrology and Global Climate. Additional information is available on the internet at: http://www.os.is/vatnam/nrb.

Committee on River Ice Processes and the Environment (CRIPE)
The 1998 meeting was held at Potsdam, NY, on July 26, one day before the start of the International Ice Symposium of IAHR (July 27-31). Several initiatives are in progress on such subjects as numerical modelling of ice jams, environmental aspects of river ice, climatic effects, ice processes in tidal rivers, and support to CSCE Hydrotechnical Division to produce a monograph on river ice breakup.

Organizing work for the tenth biennial workshop is progressing well. Future possibilities for joint sessions with the Hydrology Section were discussed and tentative plans formulated.

10th WORKSHOP ON RIVER ICE: June 9 – 11, 1999, Crowne Plaza Hotel, Winnipeg, Manitoba, Canada.

The theme for the 10th workshop is: *River Ice Management With A Changing Climate: Dealing With Extreme Events*

Papers deal with a broad range of topics related to river ice engineering and science, including but not limited to physical sciences and engineering, environmental aspects of river ice, and river ice management.

For information contact:
Prof. John Doering, P.Eng., Chairperson, Technical Program Subcommittee, c/o Hydraulics Research & Testing Facility, Department of Civil Engineering University of Manitoba, Winnipeg, MB, Canada, R3T 5V6 tel: (204) 474-6942 / fax: (204) 474-7513 / email: doerin@cc.umanitoba.ca
For additional information visit the website: http://hrtf.ce.umanitoba.ca/cripe.html

Canadian Network for isotopes in precipitation (CNIP)

Canada is a longstanding participant in the IAEA/WMO Global Network for Isotopes in Precipitation (GNIP) programme, aimed at documentation and understanding of the distribution of water isotope tracers (stable ^{18}O and ^{2}H, and radioactive ^{3}H) in global precipitation. Such data and knowledge about the natural isotopic labelling that occurs as a result of phase changes in the hydrologic cycle are playing increasingly important roles in water and climate research, fostered in particular by the incorporation of isotope tracers into general circulation models (GCMs) used to investigate global climate dynamics, and the need for new tools to supplement traditional hydrometric and hydro-meteorological techniques in water resources analysis.

Composite monthly samples have been collected at Ottawa, Ontario, for more than 30 years, providing one of the longest continuous time-series records in the world of ^{18}O, ^{2}H, and ^{3}H in precipitation at one site, making Ottawa a key North American reference station [1].

Collection at Ottawa has also been joined at intervals by sampling campaigns at individual stations or over limited networks, generally for the purposes of

specific research projects. Although many of these data are also incorporated into the GNIP data base, knowledge about the distribution of water isotopes in precipitation in Canada remains patchy in both space and time, and insufficient to support the needs of current and future water and climate research.

This situation was recognized and addressed in a workshop in Winter 1997 [2], leading to a cooperative venture between university and government researchers and the Atmospheric Environment Service (AES), Canada's national meteorological agency, to work towards establishment of a dedicated Canadian Network for Isotopes in Precipitation - CNIP. The first interim phase of CNIP was initiated in Spring 1997, through the adoption of precipitation sampling at selected stations from the Canadian Air and Precipitation Monitoring Network (CAPMoN), operated by AES. These new stations, distributed across southern Canada, were chosen to supplement Ottawa and an informal network of stations in the North that had been operating for several years as a joint activity between researchers at Carleton University and University of Waterloo, in collaboration with on-site AES personnel.

CNIP (Phase I) currently comprises 17 stations collecting monthly-composite samples, providing for the first time reasonably well-distributed spatial coverage of the entire country. This interim configuration is planned to exist for several years, permitting sufficient ongoing analysis of accumulating data to discern fundamental linkages between the isotopic composition of precipitation and synoptic climatology and to aid in designing and optimizing a more permanent future network.

An important feature of CNIP is its function as an observational research network, producing data that are readily accessible and of immediate value. It also provides a framework compatible with GNIP, within which other finer-resolution networks and sampling campaigns can be nested to address particular regional and local questions. Present examples include extensive isotopic observations of precipitation, atmospheric moisture, and surface waters within the Mackenzie River Basin, as part of water balance studies within the Global Energy and Water Cycle Experiment (GEWEX-MAGS), as well as daily precipitation observations at three sites in eastern Canada aimed at capturing the isotopic expression of the 1997-98 El Niño.

At present, all analyses are being conducted by the Environmental Isotope Laboratory of the University of Waterloo, which has had a long affiliation with the GNIP programme. However, future plans call for sharing of analytical responsibility among a consortium of Canadian university and government laboratories, under the scientific direction of the CNIP sub-committee of the CGU-HS Committee on Isotopic Tracers.

[1] Rozanski, K., Araguás-Araguás, L., and Gonfiantini, R. 1993. Isotopic patterns in modern precipitation. Geophysical Monograph 78, American Geophysical Union.
[2] Workshop on Water and Climate Studies in Canada using Isotopic Tracers: Past, Present, Future. University of Waterloo, January 31-February 1, 1997.

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AMQUA NEWS

The report, "A Vision for Geomorphology and Quaternary Science Beyond 2000", is accessible on the AMQUA website . Although it was prepared for the U.S., the report is of interest to Canadian geomorphologists. You can view this report at http://vishnu.glg.nau.edu/amqua/

BOOK REVIEWS

Geomorphology: A Canadian Perspective
A.S. Trenhaile, Oxford University Press, Toronto, 1998, $37.95 Can

Over the past several decades, geomorphology has experienced remarkable growth. It has also evolved from a largely descriptive discipline, commonly a secondary element in traditional

geography programs, into a more quantitative and autonomous natural science with links to many other disciplines, including geology, oceanography, climatology, hydrology, and soil science. Understanding the processes that shape the Earth's surface is central to an education in earth science, and enrollments in university geomorphology courses have shot up as the science has matured.

Numerous books in geomorphology and related fields have appeared in recent years, the most recent being *Geomorphology: A Canadian Perspective*, written by Alan S. Trenhaile, Professor of Geography at the University of Windsor (Ontario). This text builds on its predecessor, T*he Geomorphology of Canada* (Oxford University Press, 1990), but differs from the latter in being more comprehensive. What sets this book apart from other geomorphology texts is its strong emphasis on Canadian themes and examples.

The book comprises an introduction, thirteen thematic chapters, a glossary, a list of symbols, a bibliography, and an index. The Introduction is a mini-primer in earth science and is perhaps the weakest part of the book, covering too much ground in too little space (21 pages). The Introduction is followed by a chapter on the physical background of Canada and by 11 chapters on various geomorphic processes and landforms (weathering, slope forms and processes, glaciers, glacial sediments and landforms, glaciation of Canada, periglaciation, fluvial processes, fluvial landforms, coastal processes, coastal landforms, and karst). Fundamental processes and resulting landforms are emphasized in each of these chapters. Dr. Trenhaile skillfully avoids dry recitations of stratigraphic terminology and sequences of events of only local or regional interest. The last chapter deals with humans as geomorphological agents and the role of geomorphology in environmental planning. This chapter, like the Introduction, is too short to do justice to the topic.

The book is well organized, clearly written, and nicely illustrated. It contains few typographical or factual errors. Although there are no photographs, the text is complemented by 174 line drawings. Dr. Trenhaile appears to have made a conscious decision to write a book that students could afford. He has succeeded in packing an amazing amount of information into a 340-page paperback. The downside of such a short, affordable book is that topics cannot be discussed in depth – each of the chapters could easily be expanded into a separate book (most have). Having said this, some topics, especially those that the author knows best (glaciation, coastal processes and landforms), are given more thorough treatment than others. The book is largely descriptive, but quantitative aspects of mass movement, glacier and stream flow, and coastal and aeolian processes are briefly mentioned – again a more in-depth discussion is precluded by lack of space.

A few quibbles. The reference list is selective. I would have preferred more thorough referencing even if it meant eliminating the glossary which is also selective. A map showing key geographical place names (perhaps on the inside back cover, which is presently blank) would help non-Canadian readers locate themselves. Finally, the short summaries at the ends of chapters are not very informative; they either should be deleted or improved in the next edition.

These criticisms, however, are minor. Thumbs up to *Geomorphology: A Canadian Perspective.* It provides an excellent introduction to geomorphological processes and landforms. I recommend this book to geologists and geographers who wish to know more about the geomorphology of the world's second largest country, the landscape of which has been profoundly shaped by glaciation, periglaciation, and other geomorphic processes. The book will be particularly valuable to Canadian university students. At approximately U.S. $25, it's a bargain.

John J. Clague
Simon Fraser University and Geological Survey of Canada

UPCOMING MEETINGS

1999 CANQUA – CGRG JOINT MEETING
University of Calgary, Calgary, Alberta
August 20-30, 1999

The 1999 CANQUA-CGRG conference will be held at the University of Calgary during the last week of August 1999. The conference will bring together scientists, consultants, professors, teachers, students, and interested non-professionals with a common interest in better understanding Quaternary geoscience and geomorphology. Technical and poster sessions will be held on Tuesday (Aug. 24), Thursday, and Friday (Aug. 26-27). A one-day research symposium on Monday (Aug. 23) will honour Dr. Nathaniel Rutter who recently retired from the University of Alberta. Pre- and post-conference trips will take place on Aug. 20-22 and Aug. 28-30, respectively. In addition, field trips will be run during the middle of the conference on Wednesday (Aug. 25).

The conference program includes special theme sessions and general sessions. Proposed theme sessions include:

- **Geomorphic response to climate variability and extreme climatic events**. Convenors: Steve Wolfe and Christian Bégin
- **Paleolimnology of the Great Plains and Mountains**. Convenor: Dana Naldrett
- **Shallow geophysical method applications in geomorphology**. Convenors: Brian Moorman and Harry Jol
- **Subglacial processes, review of past and recent findings**. Convenors: John Clague and James Teller
- **Holocene climate and glacier fluctuations**. Convenors: Brian Luckman and Dan Smith
- **Rivers: a stream of new ideas**. Convenors: Ted Hickin and Derald Smith
- **Geo-archaeology research on coast and inland routes of earth peopling**. Convenors: Gerry Oetelaar and Daryl Fedje
- ***Geochronology methods, applications and limitations***. Convenors: Terry Swanson and Glen Berger

Proposed general sessions include:

- Stratigraphy/chronology
- Applied/economic
- Glacial/periglacial
- Fluvial/slopes
- Paleoenvironments
- Archaeology

Pre-conference field trips (provisional):

#1 - **Columbia Icefield, glacial and periglacial features**, Aug. 20-22; Derald Smith, Brian Luckman, and Dan Smith

#2 - **Canadian Plains landscape, environments, and people in the Holocene**, Aug. 20-22; Don Lemmen and Alwynne Beaudoin

#3 - **Late Wisconsinan glacial and fluvial landforms and vertebrate fossils of the Hand Hills region**, Aug. 21-22; Robert Young and Darren Sjogren

Mid-conference field trips (provisional):

#4 - **Glacial Lakes Calgary and Kananaskis**

#5 - **Tyrrell Museum and badlands**

#6 - **Head-Smashed-in-Buffalo-Jump**

#7 - **Geomorphology Hazards near Field, B.C.**

#8 - **Alpine geomorphology of Mount Rae**

Post-conference field trips (provisional):

#9 - **Quaternary stratigraphy, sedimentology and geochronology of the Foothills, Calgary to Montana**, Aug. 28-29; Ted Little and Lionel Jackson

#10 - **Fluvial sedimentary environments, upper Columbia Valley, B.C.**, Aug. 28-30; Derald Smith and David Clement

For more information, contact:

CANQUA-CGRG-99
Derald Smith
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University of Calgary
Calgary, Alberta
T2N 1N4
Phone: +1-403-220-6191
Fax: +1-403=282-6561
E-mail: dgsmit@ucalgary.ca
Website:http://www.ucalgary.ca/UofC/faculties/SS/GEOG/CANQUA/canquaindex.html

AQQUA-CGRG 2000 MONTREAL

Le prochain congrès de notre association se tiendra dans les locaux de l'Université du Québec à Montréal, du 22 au 27 août de l'an 2000. A cette occasion, les membres du Groupe canadien de

recherche en géomorphologie (GCRG/CGRG) se joindront à nous, dans le cadre de leur réunion annuelle. Les participants au congrès conjoint sont invités à dresser un bilan de la contribution québécoise et canadienne à la connaissance du Quaternaire des dernières trente années ainsi qu'à évaluer l'impact des nouvelles technologies sur la résolution des problématiques actuelles. Une session spéciale articulée autour du thème de l'Holocène ainsi que des présentations générales complètent le programme:

mardi 22 août :
Excursion pré-congrès : Le piémont laurentien, dirigée par A. Bolduc, Y. Michaud et M. Parent (CGQ). Cette excursion est aussi offerte le samedi 26 août.

mercredi 23 août :
a.m. : Les 30 ans de l'AQQUA
p.m. : Les technologies de l'An 2000
16h à 18h : Assemblée générale de l'AQQUA (Election du nouvel exécutif)

jeudi 24 août : AQQUA/GCRG
a.m. : Les Changements Globaux à l'Holocène
p.m. : Session générale : Affiches
16h à 18h: Assemblée générale du GCRG et présentation du prix J.R. Mackay.

vendredi 25 août :
a.m. : Session générale : présentations orales I
p.m. : Session générale : présentations orales II
16h: présentation du prix de l'AQQUA et de la médaille André Cailleux

samedi et dimanche 26 et 27 août :
Excursion post-congrès : Le Quaternaire de l'Estrie, région de la haute-vallée du Saint-François, dirigée par M. Lamothe (UQAM) et F. Hardy (IGS) .

Les présentations de la première journée se feront sur invitation et les autres sessions sur réception et évaluation de résumés. La première circulaire sera expédiée vers le mois d'octobre 1999. D'ici là, je vous invite à me faire parvenir vos commentaires sur la planification proposée.

Michel Lamothe
lamothe.michel@uqam.ca
Département des sciences de la Terre, UQAM

CALENDAR

1999

July

July 17-21, **IAG Regional Conference on Geomorphology**, Rio de Janeiro, Brazil. Information: IAG 99 – Regional Conference on Geomorphology, Departamento de Geografia, UFRJ, Ilha do Fundo, Rio de Janeiro, CEP 21941-590, Brazil, fax +55-21-598320; e-mail iag99@igeo.ufrj.br, website http://www.ufrj.br/eventos/iag99.

July 19-30, **International Union of Geodesy and Geophysics** and **International Association of Hydrological Sciences**, Birmingham, England. Information: IUGG99, School of Earth Sciences, University of Birmingham, Edgbaston, Birmingham B15 2TT, UK, fax +44-121-414-4924, e-mail IUGG99@bham.ac.uk, website http://www.bham.ac.uk/IUGG99.

July 28-August 2, **4th Annual Conference of the International Geological Correlation Programme Project No. 396: Continental Shelves in the Quaternary**, Cape Town, South Africa. Information: Mike Meadows, Department of Environmental and Geographical Science, University of Cape Town, Rondebosch 7701, South Africa, tel. +27-21-650-2873, fax +27-21-650-3791; e-mail meadows@enviro.uct.ac.za.

August

August 3-11, **XV INQUA Congress: The Environmental Background to Hominid Evolution in Africa**, Durban, South Africa. Information: Dr. D. Margaret Avery, INQUA XV CONGRESS, P.O. Box 61, Cape Town 8000, South Africa, tel.+27-21-243-330, fax +27-21-246-716, e-mail mavery@samuseum.ac.za, website http://inqua.geoscience.org.za.

August 6-19, **Cold Regions Engineering: Putting Research into Practice**, Lincoln, New Hampshire, U.S.A. Information: Jon E. Zufelt, USACRREL, 72 Lyme Road, Hanover, New Hampshire 03755-1290, tel. +1-603-646-4275, fax +1-603-646-4477, e-mail jzufelt@crrel.usace.army.mil, website http://www.asce.org/conferences/cold99.index.html.

August 9-12, **9th International Conference on Soil Dynamics and Earthquake Engineering (SDEE '99)**, Bergen, Norway. Information: K. Atakan, SDEE '99 LOC, Institute of Solid Earth Physics, University of Bergen, Allegaten 41, 5007 Bergen, Norway, tel. +47-55-583420, fax +47-55-589669, e-mail sdee99@ifjf.uib.no, website www.ifjf.uib.no/sdee99.html.

August 17-21, **Japan-Korea/Korea-Japan Geomorphological Conference**, Chonju City, Korea. Information: Choi Seong-Gil, Department of Geography Education, College of Education, Chengdu National University, Chengdu 314-701, Korea, e-mail hak119@knu.kongju.ac.kr.

August 20-24, **Nordic Field Symposium: Limits and Changes in Permafrost and Periglacial Environments**, Kevo Subarctic Research Station, Finland. Information: Martti Eerola, FINRA, P.O. Box 157, 00521 Helsinki, Finland, tel. +358-9-1918674, fax +358-9-1918670, e-mail martti.eerola@tieh.fi.

August 22-27, **Remote Sensing and GIS for Monitoring Soils and Geomorphic Processes to Assist Integrated Development of Mountainous Land**, Kathmandu, Nepal. Information: Mr.Dhruba P. Shrestha, ITC, P.O. Box 6, 7500 AA Enschede, Netherlands; +31 0 53 487 42 64, fax +31 0 53 487 43 99; dhruba@itc.nl or Mr. Pramod Pradhan, ICIMOD, P.O. Box 3226, Kathmandu, Nepal, tel. +977-1-525316, fax +977-1-524509/536747, e-mail pramod@icimod.org.np, website http://www.itcc.nl/~shrestha/RS_symp.

August 23-27, **CANQUA 99**, Calgary, Alberta, Canada. Information: Derald Smith, Department of Geography, University of Calgary, Calgary, Alberta T2N 1N4, tel. +1-403-220-6191, fax +1-403-282-6561, e-mail dgsmit@acs.ucalgary.ca.

September

September 1-4, **Environmental Geochemical Baseline Mapping in Europe, 2nd International Symposium**, Vilnius, Lithuania. Information: Dr. Virgilija Gregorauskiene, Geological Survey of Lithuania, S. Konarskio 35, 2600 Vilnius, Lithuania. Tel. +370-67-239055, e-mail virgilija.gregorauskiene@lgt.lt.

September 2-9, **BSRG/BGRG Joint Field Meeting, 3rd International Earth Science Field Conference**, Almeria Province, Spain. Information: Anne Mather, Department of Geographical Sciences, University of Plymouth, Drakes Circus, Plymouth, PL4 8AA, tel. +44-1752-233113, fax +44-1752-233117, e-mail amather@kplymouth.ac.uk, http://www.science.plym.ac.uk/DEPARTMENTS/GEOGRAPHY/urra99/urra99.htm.

September 5-17, **9th International Conference and Field Workshop on Landslides**, Isle of Wight, Dorset, South Wales, Bristol, U.K. Information: R.G.Thomas, 6 The Esplanade, Plymouth PL1 2PJ, UK., tel. +44-1752-674291, fax +44-1752-233117, e-mail rgthomas@eurobell.co.uk.

September 6-10, **29th Congress, International Association of Hydrologists, "Hydrology and Land Use Management"**, Bratislava, Slovakia. Information: Marian Fendek, Geological Survey of Slovak Republic, Mlynska dolina 1, 817 04 Bratislava, Slovakia, tel. +421-7-3705355, fax +421-7-371940, e-mail IAHCONG@GSSR.SK

September 6-10, **International Conference on Luminescence and Electron Spin Resonance Dating**, Rome, Italy. Information: Organizing Secretariat, e-mail b.fersini@flashnet.it, website http://www.mater.unimi.it/LED99/.

September 8-10, **2nd International Symposium on Non-CO2 Greenhouse Gases (NCGG-2): Scientific Understanding, Control, and Implementation**, Noordwijkerhout, Netherlands. Information: J. van Ham, VVM-CLAN, PO Box 6013, NL-2600 JA Delft, Netherlands, tel. +31-15-

269-6877, fax +31-15-261-3186, e-mail j.vanham@plant.nl, website www.milieuonline.nl.vvm.

September 12-16, **Mining and the Environment II**, Sudbury, Ontario, Canada. Information: Sudbury '99, Centre in Mining and Mineral Exploration Research (CIMMER), Laurentian University, Ramsey Lake Road, Sudbury, Ontario, P3E 2C2, tel. +1-705-673-6572, fax +1-705-673-6508, e-mail cmosher@nickel.laurentian.ca.

September 13-17, **2nd BGS Environmental Engineering Conference: Ground Contamination: Pollution Management and Remediation**, London, U.K. Information: Cherrie Summers, Conference Secretariat, Cardiff School of Engineering, P.O. Box 917, Newport Road, Cardiff CF2 1XH, U.K., tel./fax +44-0-1222-874421, e-mail SummersC@Cardiff.ac.uk.

September 13-17, **4th International Conference on Modelling of Global Climate Change and Variability**, Hamburg, Germany. Information: L. Dumenil, Conference Coordinator, Max-Planck-Institut fur Meteorologie, Bundesstrasse 55, D-20146 Hamburg, Germany, tel. +49-40-41173-310, fax +49-40-41173-366, e-mail mpl-conference@dkrz.de.

September 20-28, **IGU Commission on Land Degradation and Desertification International** Meeting: Agriculture, Land Degradation and Desertification**, Perth, Australia. Information: A.Conacher, Department of Geography, University of Western Australia, Nedlands, WA 6907,**
Australia, tel. +61-0-8-9380-2705, fax +61-0-8-9380-1054; e-mail ajconach@sunny.gis.uwa.edu.au.

September 22-26, **Archaeometry Meeting**, Villa Real, Portugal. Information: ADECAP, 3 Congreso de Arqueologia Peninsular, R. Anibal Cunha, 39, 3, sala 7, P-4050 Porto, Portugal.

September 28-30, **International Symposium on Engineering Geology, Hydrogeology and Natural Disasters, with Emphasis on Asia**, Kathmandu, Nepal. Information: Dr. B.N. Upreti, P.O. Box 231, Kathmandu, Nepal, tel. 977-1-416386, fax 977-1-416870, e-mail ngs@wlink.com.np.

October

October 24-28, **Geological Society of America Annual Meeting**, Denver, Colorado, U.S.A. Information: Becky Martin, GSA Meetings Dept., P.O. Box 9140, Boulder, Colorado 80301-9140, tel. +1-303-447-2020, ext. 164, fax +1-303-447-1133, e-mail meetings@geosociety.org, website http://www.geosociety.org/meetings/index.htm.

October 30 – November 4, **Soil Science Society of America Annual Meeting**, Salt Lake City, Utah, U.S.A. Information: SSSA, 677 South Segoe Rd., Madison, Wisconsin 53711, tel. +1-608-273-8090, fax +1-608-273-2021, e-mail rbarnes@agronomy.org.

November

November 7-10**, 4th USA/CIS Joint Conference on Enviromental Hydrology and Hydrogeology,** San Francisco, California, U.S.A. Information: American Institute of Hydrology,
2499 Rice Street, Suite 135, St. Paul, Minnesota 55113-3724, tel. +1-651-484-8169, fax +1-651-484-8357, e-mail aihydro@aol.com, website **http://www.aihydro.org**.

November 8-11, **ISA-SHIKOKU '99, International Symposium on Slope Stability Engineering: Geotechnical and Geoenvironmental Aspects**, Matsuyama, Shikoku, Japan. Information: Prof. Takua Yamgami, Department of Civil Engineering, University of Tokushima, 2-1, Minami-josanjima-cho, Tokushima 770, Japan, tel. +81-886-567345, fax +81-886-567319, e-mail takou@ce.tokushima-u.ac.jp, website http://www.ce.tokushima-u.ac.jp/www/jiban/is-99/indexj.html.

November 10-15, **International Symposium of Sedimentological and Dynamic Processes in Estuaries and on Coasts**, Shanghai, China. Information: Jiangjian Lu, SKLEC, East China Normal University, No. 3663 R (N) Zhongshan, 200062, Shanghai, P.R. China, tel./fax +86-21-62546441, e-mail office@sklec.ecnu.edu.cn.

November 21-24, **4th Australian Regolith Conference**, Adelaide, Australia. First announcement and call for papers: http://leme.anu.edu.au/conference/regolith99.html.

November 24-26, **GEOTROP-99, 3rd International Conference on Environmental Chemistry and Geochemistry in the Tropics**, Hong Kong.

Information: Hong Kong Institute for Natural Resources and Waste Management, Hong Kong Baptist University, Kowloon Tong, Hong Kong, tel. +852-23397054, fax +852-23361400, e-mail geotrop@hkbu.edu.hk

December

December 13-17, **AGU Fall Meeting**, San Francisco, California, U.S.A. Information: AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009, tel. +1-202-462-6900, fax +1-202-328-0566, e-mail meetinginfo@kosmos.agu.org, website www.agu.org/meetings.

2000

February

February 17-22, **2000 Annual Meeting of the American Association for the Advancement of Science (AAAS)**, Washington, D.C., U.S.A. Information: Program Committee, AAAS, 1200 New York Avenue, NW, Washington, DC 20005, tel. +1-202-326-6450, fax +1-202-289-4021.

March

March 27-31, **Commission of the Holocene: Environmental Changes in Holocene Sequences – Methods, Processes, and Correlation**, Seville. Information: Dominik Faust, tel. Xx49-(0)8421-93/1391, e-mail dominik.faust@ku-eichstaett.de.

April

April 12-16, **2nd International Symposium on Tillage Translocation & Tillage Erosion**, Leuven, Belgium. Information: David A. Lobb, Land Resources Branch, Department of Agriculture and Rural Development, P.O. Box 6000, Fredericton, New Brunswick E3B 5H1, tel. +1-506-453-2109, fax +1-506-457-7267, e-mail dlobb@gov.nb.ca.

April 24-28, **5th International Conference on Environmental Geochemistry**, Cape Town, South Africa. Information: Department of Geological Sciences, University of Capetown, Private Bag, Rondebosch, 7701 South Africa, fax. +27-21-650-3783, e-mail 5iseg@geoglogy.uct.ac.za.

May-June

May 29 – June 2, **GeoCanada 2000**, Calgary, Alberta, Canada. Information: Grant Mossop, Geological Survey of Canada, 3303 – 33rd St. N.W., Calgary, Alberta T2L 2A7, tel. +1-403-292-7049, fax +1-403-292-5377, e-mail mossop@gsc.nrcan.gc.ca.

May 28 – June 2, **Offshore and Polar Engineering ISOPE-2000, International Conference and Exhibition**, Seattle, Washington, U.S.A. Information: Jin S. Chung, ISOPE, P.O. Box 1107, Golden, CO 80402-1107, tel. +1-303-273-3673, fax +1-303-402-3760.

May 30 – June 3, **AGU Spring Meeting**, Washington, D.C., U.S.A. Information: AGU Meetings Department, 2000 Florida Avenue, NW, Washington, DC 20009, tel. +1-202-462-6900, fax +1-202-328-0566, e-mail meetinginfo@kosmos.agu.org, website www.agu.org/meetings.

June

June 18-24, **International Glaciological Society: Sea Ice and Its Interactions with the Ocean, Atmosphere, and Biosphere**, Fairbanks, Alaska, U.S.A. Information: M. Jeffries, Geophysical Institute, University of Alaska, 903 Koyukuk Dr., P.O. Box 757320, Fiarbanks, Alaska 99775-7320, tel. +1-907-474-5257, fax +1-907-474-7290, e-mail martin.jeffries@gi.alaska.edu, website http:///www.gi.alaska.edu/.

June 26-30, **Weathering 2000**, British Geomorphological Research Group. Information: W. Brian Whalley, e-mail bwhalley@qub.ac.uk, website http://boris.qub.ca.uk/bgrg/diary/weathering2k.html.

July

July 16-22, **19th Congress, International Society for Photogrammetry and Remote Sensing: Geo-Information for All**, Amsterdam. Information: Prof. K.J. Beek, P.O. Box 6, 7500 AA Enschede, The Netherlands, tel. +31-53-4874214, tax +31-53-4874200, e-mail beek@itc.nl.

August

July 31 – August 4, **Joint World Congress on Groundwater**, Forteleza, Brazil. Information: ABAS, Ceara Chapter, Avienda Santos, Dumont, 7700 Papicu, Tortaleza, CEP 60, 150-163, Brazil, tel. +55-85-2651288, fax. +55-85-2652212

August 6-17, **31st International Geological Congress: Geology and Sustainable Development, Challenges for the Third Millenium**, Rio de Janeiro, Brazil. Information: Secretariat Bureau, 31st International Geological Congress, Av. Pasteur, 404, Anexo 31 IGC, Urca, Rio de Janeiro, RJ, CEP 22.290-240, Brazil, tel. +55-21-295-5847, fax +55-21-295-8094, e-mail 31igc@31igc.org.br, website www.31igc.org.

August 14-18, **29th International Geographical Congress**, Seoul, South Korea.

August 22-27, **AQQUA 2000 in Montréal**, Information: Michel Lamothe, Département des sciences de la Terre, UQAM, lamothe.michel@uqam.ca

September

September 17-27, **Karst 2000**, Marmaris, Turkey.

October

October 23-27, **30th Congress, International Association of Hydrologists**, Cape Town, South Africa. Information: website http://dec01.ngu.no/iah/

November

November 13-16, **Geological Society of America Annual Meeting**, Reno, Nevada, U.S.A. Information: GSA Meetings, Box 9140, Boulder, Colorado 80301-9140, tel. +1-303-447-2020, fax +1-303-447-1133, e-mail meetings@geosociety.org, website http://www.geosociety.org/meetings/index.htm.

2001

August

August 23-28, **5th International Conference on Geomorphology**, Tokyo, Japan. Information: Prof. K. Kashiwaya, Department of Earth Sciences, Kanazawa University, Kanazawa, 920-1192 Japan, e-mail kashi@kenroku.kanazawa-u.ac.jp.

August 27-31, **3rd International Conference on Cryogenic Soils**, Copenhagen, Denmark. Information: Dr. Bjarne Holm Jakobsen, Institute of Geography, University of Copenhagen, Oster Volgade 10, 1350 Copenhagen K, Denmark, tel. +45-35322500, fax +45-35322501, e-mail bhj@geogr.ku.dk.

FALL 1999 FRIENDS OF THE PLEISTOCENE FIELD TRIPS (see AMQUA website for up-to-date information on Friends trips: http://vishnu.glg.nau.edu/amqua/)

Pacific Northwest Cell, September 18-19 (tentative dates), Lower Columbia River. Information: Alex Bourdeau, U.S. Fish and Wildlife Service, 20555 SW Gerda Lane, Sherwood, OR 97140, tel. +1-503-625-4377, fax +1-503-625-4887, e-mail alex_bourdeau@fws.gov.

Rocky Mountain Cell, *September 10-12, Quternary and Environmental Geology of the Southwest San Juan Mountains, Colorado. Information: Mary L. Gillam, 115 Meadow Road East, Durango, CO 81301, tel. +1-970-259-0966, e-mail gillam@rmii.com*

Southeast Cell, Octobert 8-10, Soils and Quaternary Geology of the Big Sandy Valley, West Virginia and Kentucky. Information: David Cremeens, GAI Consultants, 570 Beatty Rd., Monroeville, PA 15146, tel. +1-4120856-6400, local 3234, e-mail dlcremeens@aol.com or env_engineering@gaiconsultants.com.

CONTRIBUTIONS TO FUTURE CGRG NEWSLETTERS

The CGRG newsletter is published twice annually. As with all such newsletters, its success is directly dependent on the contributions that we receive. CGRG welcomes contributions to future newsletters from any of our members. These should be of interest to the Canadian geomorphology community and could include discussions, commentaries, reviews of regional or national meetings and field trips, summaries of issues pertinent to geomorphology, and announcements of future meetings and workshops. Please forward your contributions to either: ldredge@nrcan.gc.ca, or ymichaud@nrcan.gc.ca

CGRG was established in 1993 at the International Association of Geomorphology Congress in Hamilton, Ontario. It provides a strong voice for geomorphology in Canada. Its objectives are to advance the science of geomorphology in Canada by 1) organizing and sponsoring technical sessions, workshops, and field trips, 2) publishing newsletters twice a year, 3) operating a listserver (CANGEORG) which maintains a comprehensive bibliography of Canadian geomorphological, Quaternary, and environmental geoscience publications, 4) supporting publication of technical reports and field guides, 5) presenting the J. Ross Mackay Award in recognition of a significant achievement by a young geomorphologist in Canada, and 6) cooperating with related earth science associations within Canada (GAC, AQQUA, CAG, CANQUA). We encourage all earth scientists with an interest in geomorphology to join CGRG

CANADIAN GEOMORPHOLOGY RESEARCH GROUP

Registration Form

1999

Name: _____

Address: _____

_____

_____Postal Code:_____

Phone numbers: (Home)_____ (office)_____

(FAX)_____

e-mail address:_____

Institution:_____

Annual dues: $15

New member_____; membership renewal_____ *Please check one*

Please make cheque or money order to the Canadian Geomorphology Research Group

(Photocopy application form as necessary)

Send completed form and cheque to: Lynda Dredge, Secretary-Treasurer CGRG, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, K1A 0E8

CGRG EXECUTIVE 1998

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Dr. Yves Michaud, Newsletter Editor
AQQUA representative
Geological Survey of Canada
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phone (604) 822-3246
fax (604) 822-6150
E-mail: olav@geog.ubc.ca

CANADIAN GEOMORPHOLOGY RESEARCH GROUP

Registration Form

1999

Name: _____

Address: _____

_____

_____Postal Code:_____

Phone numbers: (Home)_____ (office)_____

(FAX)_____

e-mail address:_____

Institution:_____

Annual dues: $15

New member_____; membership renewal_____ *Please check one*

Please make cheque or money order to the Canadian Geomorphology Research Group

(Photocopy application form as necessary)

Send completed form and cheque to: Lynda Dredge, Secretary-Treasurer CGRG, Geological Survey of Canada, 601 Booth Street, Ottawa, Ontario, K1A 0E8

Receipt required_____:

Canadian Geomorphology Research group (CGRG) acknowledges payment of 1998 annual fees ($15.00) from:

Name: _____

CGRG representative: _____