

# Elements



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## THE NEWSLETTER OF THE CANADIAN GEOPHYSICAL UNION

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## LE BULLETIN DE L'UNION GÉOPHYSIQUE CANADIENNE

### President's Column

In this issue, I would like to present CGU members with a brief report on the recent CGC (Canadian Geoscience Council) meetings in Calgary, which took place on May 29 and 30, 2004, and which I attended in place of CGU President Phil Marsh. These were the CGC Council of Presidents Meeting, the 112<sup>th</sup> Annual Meeting of the CGC, and the CGC Annual Business Meeting.

The focus of the Council of Presidents Meeting was on geoscience education and outreach in Canada. Various issues were discussed, such as outreach activities currently underway in CGC member organizations, future collaboration, demographic issues in geoscience, and areas of improvement in outreach activities.

Here are some key points summarizing the meetings:

- The meetings were attended by representatives of many of the member organizations of the CGC, i.e., CAG, CGS, GAC, GSC, CIM, MAC, CSPG, CSEG, CGU, PDAC, NRCAN, CANQUA.
- The CGC is aware of the concerns of the CGU (and other organizations) about the current usefulness of the CGC. The CGC is striving to become an umbrella organization which is truly representative of all the geoscience communities in Canada, and genuinely hopes that the CGU and other organizations will be supportive of this.

- The CGC is developing an outreach initiative, through CGEN (the Canadian Geoscience Education Network), and encourages each member organization to work together with the CGC/CGEN on outreach, perhaps by appointing an "Outreach and Geoscience Education Director" on the organization's executive committee. Outreach is important to the CGC because of statistics showing the gradual decline of geoscience support in Canada. Those interested should contact Allan Morgan ([avmorgan@waterloo.ca](mailto:avmorgan@waterloo.ca)). Some member organizations already do a lot of outreach (e.g., the MAC, GAC, GSC, CSPG, CSEG, CIM, PDAC).
- A presentation on the IODP (Integrated Ocean Drilling Program) was given by Kathy Gillis, Canadian IODP Science Director, University of Victoria. IODP is a multi-national program supported mainly by the US, Japan, and ECORD (a consortium of European countries). Canada's participation is currently as a part of ECORD. If funds cannot be raised in the future, Canada may have to drop out of IODP because of the high cost of membership (about a million dollars per year).

--- E.S. Krebs, for Philip Marsh

## ***The J. Tuzo Wilson Medal***

The Canadian Geophysical Union makes this award annually to recognize outstanding contributions to Canadian geophysics.

The winner of the J. Tuzo Wilson Medal for this year, 2004, is W.R. (Dick) Peltier of the University of Toronto.

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### **CGU Best Student Paper Awards for 2004**

A number of awards were presented at this year's joint AGU-CGU-SEG-EEGS meeting in Montreal in recognition of outstanding performance in scientific research and presentation by students. Each of the awards comes with a \$500 monetary prize. To be considered for an award, the student must be the first author and presenter of the paper. The winners are listed below.

All the judges of the student presentations are sincerely thanked for their efforts.

#### **Student Oral Presentation Winners :**

***CGU Best Student Paper Award (all fields of geophysics):*** K.D. Bladon, U. Alberta, for the paper

K.D. Bladon, U. Silins, and V.J. Lieffers. *Differential Atmospheric Controls on Transpiration of Boreal Trees: A Potential Factor in Pre-mature Tree Mortality in Green-Tree Retention Strategies*

Honorable mention: X. Yu [U. Western Ontario]

***Chevron Canada Outstanding Student Paper in Seismology:*** Helen Lau, Dalhousie U., for the paper

K.H. Lau, K.E. Loudon, J. Hall, S. Deemer, B.E. Tucholke, W.S. Holbrook, H. Larsen, T. Funck, J.R. Hopper. *The seismic characteristics of the ocean-continent transition across the eastern Grand Banks margin.*

Honorable mentions: K. Welford [UBC], S.E. Zaranek [Brown University]

***D.M. Gray Award for Best Student Paper in Hydrology:*** Maria Strack, McMaster U., for the paper

M. Strack and J.M. Waddington. *Ecohydrological Controls on Natural and Drained Peatland Methane Emissions: Implications for Climate Change*

***Geodesy Award for Best Student Paper in Geodetic Research & Education:*** Rodrigo Leandro, U. New Brunswick, for the paper

R. F. Leandro and M.C. Santos. *Regional computation of TEC using a neural network model.*

#### **Student Poster Presentation Winners :**

***Shell Canada Best Student Poster :*** Jennifer Turner, McGill U., for the paper

J.D. Turner, W.H. Pollard and M.A. Hoque. *Numerical Modeling of Thermal-Mechanical Niche Formation and Block Failure on Herschel Island, Yukon Territory, Canada.*

Honorable mention: K.M. Straub [M.I.T.]

***Campbell Scientific Award for Best Student Poster in Hydrology:*** Cherie Westbrook, Colorado State U., for the paper

C. J. Westbrook, D.J. Cooper, B.W. Baker and L.H. MacDonald. *Relative Importance of Beaver and Low Recurrence Interval Floods in Controlling Water Table Position in Mountain Riparian Wetlands*

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**The 2004 Joint Assembly of the American Geophysical Union, Canadian Geophysical Union, Society of Exploration Geophysicists, and the Environmental and Engineering Geophysical Society, May 17-21, 2004, Montreal**

The 2004 Annual Scientific Meeting of the CGU was held jointly with the AGU, the SEG and the EEGS, in Montreal, Canada, in the period May 17-21. The meeting was a very successful one, with nearly 3000 abstracts being submitted. Listed below are the general and specific topics covered in the various technical oral and poster sessions and sub-sessions.

***Union Lectures:***

- Remote Observation of the Earth's Surface and Atmosphere, and Earth and Planetary Environments
- Cold Regions Hydrology: Its State and Future
- Scientific Results from the Mars Exploration Rover Mission
- New Views of Mars and Its Environment
- Extreme Environments of the Precambrian Earth
- The International Polar Year 2007-2008
- Time-Variable Gravity: Observation, Modeling, and Interpretation
- Advances and Challenges in Hydrogeophysics
- Recent Changes in Canada's Arctic Glaciers
- Frontiers and Challenges in Deep Earth Dynamics
- The Importance of Water and Melt in Mantle Dynamics

***Atmospheric Sciences:***

- Magnitude and Causes of Decreasing Surface Solar Radiation
- Forcing of the High-Latitude Climate System by the Stratosphere
- Tropical Water Vapor: New Understanding and New Challenges
- Atmospheric Chemistry and Aerosol Processes in West Africa
- Bioaerosols: Measurement, Laboratory, and Modeling Studies
- Stratospheric Composition and Dynamics
- Constraining the Global Mass Distribution of Mineral Dust Aerosol
- Tropospheric Chemistry and Dynamics
- Frontiers in Atmospheric Observations and Their Impacts: AIRS, AVHRR, HIAPER
- Ice Cores: Contributions to Climate Variability and Dynamics
- Oxygen-18: Connecting Climate Models, Observations, and Paleodata

- Aerosol, Ice, and Cloud Properties and Microphysics
- Large-Scale Climate Trends and Processes
- Cyclones Associated With Tropical and Extratropical Interactions
- Extreme Weather
- General Contributions to Atmospheric Sciences

***Biogeosciences:***

- Changes in Land Use, Water Use, and Biogeochemical Cycles in Asia
- Recent Advances in Coupled Terrestrial Carbon Cycle and Climate Modeling
- Measurement and Modeling of Carbon, Water, and Energy Exchange in Northern Ecosystems
- Mercury Biogeochemistry at the Terrestrial-Aquatic Interface
- Multitemporal Remote Sensing of Vegetation
- BOREAS +10: Carbon Cycling and Storage in Canadian Boreal Forest Ecosystems
- Dissolved Organic Carbon in the Biogeochemical Functioning of Systems
- Estuarine Ecosystems and Links to Uplands Posters
- Interpreting Stable Isotope Measurements in Ocean Biogeochemistry: What Are We Learning?
- Isotopes in Biogeochemistry
- Issues of Scale in Catchment Hydrobiogeochemistry
- Mathematical Modeling of Greenhouse Gas Exchange Between Terrestrial Ecosystems and the Atmosphere
- General Biogeochemistry

***Cryosphere:***

- Modeling and Monitoring of Atmospheric Interactions With the Terrestrial Cryosphere
- Ice Sheet Sediment Transfer: Modeling and Observation
- Remote Sensing of the Cryosphere
- Cryospheric Observation, Processes, and Change
- Sea Ice and Its Interactions With the Climate System

***Education and Human Resources:***

- Innovations in Earth and Space Science Education

- Communicating the Science of Climate Change to Teachers, Students, and the General Public
- Multinational Education and Outreach Programs in the Earth and Space Sciences

#### ***Geodesy:***

- The Mechanics of Shallow Subduction Zones
- New Advances in Global Plate Kinematics and Dynamics From Space Geodesy
- Toward a Stable North America-Fixed Reference Frame
- Observations of Glacial Isostatic Adjustment and Contemporary Ice-Ocean-Mantle Mass Redistribution
- Computations in Geodesy and Geosciences
- Pleistocene Ice-Mass Change, Displacement and Gravity Change, and Their Interpretation With 3-D Earth Models
- New Sensors of Our Planet: Modern Geodesy and New Insights in Earth Science
- Heights and Geoid Modeling: North America

#### ***Geomagnetism and Paleomagnetism:***

- Satellite Magnetic Missions Since Magsat: Recent and Proposed
- Endings and Beginnings: Paleogeography, Life, and Climate of the Terminal Neoproterozoic Through Cambrian Time
- Four Decades of Paleomagnetism in Canada
- Comparing Magnetic Field Generation in the Earth and Planets
- Climatic and Anthropogenic Changes to the Environment: Contributions From Magnetism
- Long- and Short-Term Variations of Geomagnetic Field Strength
- Rock Magnetism and the 40th Anniversary of the Vine-Matthews-Morley Hypothesis
- General Contributions to Geomagnetism and Paleomagnetism

#### ***Global Climate Change:***

- Impact of Ice Surges and Major Drainage Events on Thermohaline Circulation and Climate: Geologic Records and Numerical Simulations
- Northern Climate Properties, Trends, and Impacts of Change: Past, Present, and Future
- Continental Energy Balance, Land-Surface Processes, and Surface Temperature
- Environmental Records With Anthropogenic Impacts
- Multiangle Remote Sensing of the Terrestrial Environment

#### ***Hydrology:***

- Isotope Tracing of Water and Carbon Cycling Processes in Large River Basins

- Remote Sensing, Hydrology, and Field Experiments
- Understanding Flow and Reactive Transport Processes in Sulfide-Bearing Porous Material
- Tracers in Hydrology
- Merging Soil Physics With Geophysics and Remote Sensing: Spatial and Temporal Variations in Shallow Soil Processes and Properties
- Environmental Vadose Zone Hydrology
- Linked Biogeochemical Cycles in Forested Watersheds: Details, Dynamics, and Impacts
- Advanced Methods for Probabilistic Hydrometeorologic Forecasting
- Water Quality of Hydrologic Systems
- Groundwater Remediation in Fractured Rock Posters
- Groundwater and Climate Change
- Coupling Microbial Activity, Water Flow, and Solute Transport in the Subsurface
- Planning Continental-Scale Environmental Networks
- Remote Sensing of Precipitation
- Percolation and Related Processes in Porous Media
- Advances in Understanding the Global Water Cycle
- Comparison of Aeolian and Fluvial Dynamics and Sedimentation
- Focus on Student Contributions to Hydrology
- Estimating the Flux of Freshwater From the Pan-Arctic Landmass
- Flow, Sediment Transport, and Stream Ecology
- Advances in Small Catchment Hydrologic Measurement Methods: Successes and Failures of the Duct Tape and Silicone Caulk Brigade
- A Changing Arctic Landscape
- Water Quality and Emerging Contaminants
- Watershed Intercomparison and Classification
- Trace Metal Contamination and Remediation
- Groundwater-Surface Water Interaction: Linking Disciplines
- Canadian and U.S. Continental Scale Studies of Hydrologic Processes for GEWEX
- Trace Element Contamination and Remediation
- Advances in Hydrologic Frequency Analysis
- Surface and Subsurface Flow and Storage of Water in Cold Environments
- Hydroinformatics
- The State of Hydrological Understanding and Prediction in Basins With Poor Information: A PUB Contribution
- Coordinated Enhanced Observing Period (CEOP)
- General Contributions to Hydrology

#### ***Nonlinear Geophysics:***

- Scaling and Fractals in the Earth, Atmosphere, and Hydrosphere: Resolution Dependence and Nonlinear Variability
- Nonlinear Phenomena in Fluid Dynamics With Implications for Climate

#### ***Near-surface Geophysics:***

- Contaminants
- Climate Change and Earth's Surficial Processes
- Evaluation and Management of Water Resources
- Evaluation of Transportation, Building and Energy Infrastructure, and Related Resources
- Geophysical Implications of the Anomalous Temperature Effects on the Thermophysical and Electromagnetic Properties of Vicinal Soil Water
- General Contributions

#### ***Ocean Sciences:***

- Tsunamis and Rogue Waves
- Coastal Region Dynamics
- Extreme Waves and Dynamics of Ocean Circulation
- Scientific Results From the PIRATA Program (1997-2004)
- Rachel Carson Lecture: Beyond Correlations: the Search for Mechanisms Underlying Coupled Climate/Ecosystem Variability in the Oceans
- General Ocean Sciences

#### ***Planetary Sciences:***

- Small Bodies of the Solar System
- Magnetic Field of Planetary Lithosphere
- Emerging Views of Mars: Formation, Evolution, and Current State
- Physicochemical Properties of Planetary Cores
- Subsurface Radar Investigations of Terrestrial Martian Analogues
- General Contributions

#### ***Seismology:***

- Seismicity and Geodynamics of Eastern North America and Other Midplate Environments
- Insights Into Earthquake Nucleation and Rupture
- POLARIS: Lithospheric Structure in North America
- POLARIS: Earthquake Ground Motion and Seismotectonics
- POLARIS: Electromagnetic Methods and Results
- POLARIS and Related Studies
- Advances in Seismic Event Location and Source Characterization
- Studies from Eurasia and the Circum-Pacific
- Seismology From Crust to Core: The Science of the Global Seismographic Network
- Seismic Measurement, Modeling, and Inversion

#### ***SPA – Aeronomy:***

- Interpretation and Observation of Mesospheric Gravity Waves From Earth and Space
- Mesosphere Dynamics and Energetics
- Mesosphere-Thermosphere-Ionosphere Coupling Processes and Issues for the Earth and Planets
- Surface-Boundary-Exospheres in the Solar System
- Mars Space Weather and Upper Atmosphere Science
- The Extended Ionosphere: A Unifying Approach to Magnetosphere-Ionosphere Coupling
- Ionosphere Anomalies
- Parker Lecture: The Sun and Heliosphere as Revealed by Suprathermal Electrons
- General Circulation Models, Global Dynamics, Energetics, and Composition in Solar System Atmospheres
- New Frontiers in Equatorial Ionospheric Observations and Models
- New Frontiers in Equatorial Ionospheric Physics: Irregularities
- New Frontiers in Equatorial Ionospheric Effects
- Global Change in the Upper Atmosphere and Ionosphere
- General Aeronomy Posters

#### ***SPA – Heliospheric Physics:***

- Fresh Perspectives in Solar-Heliospheric Science
- The February 2004 Ulysses Encounter With Jupiter
- Acceleration, Release, and Propagation of Solar Energetic Ions and Electrons: When, Where, and How?
- Violent Sun-Earth Connection Events of October-November 2003: Genesis, Geospace Impact, and Ionosphere/Atmosphere
- Analysis of the 1859 Carrington Event and Other Major Superstorms
- Solar Wind Posters

#### ***SPA – Magnetospheric Physics:***

- Magnetosphere-Ionosphere Coupling in the Solar System
- Reconnection? Nightside and Dayside
- Magnetotail and Plasma Sheet
- Magnetosphere-Ionosphere Coupling at Subauroral Latitudes
- Ground-Based Arrays for the 21st Century
- Space Weather: Linking Research and User Needs
- What Controls the Degree of Conjugacy in Auroral Phenomena?
- Relativistic Electrons in the Earth's Inner Magnetosphere: Observations, Models, and Space Weather Implications

- Double Layers in Space and Astrophysical Plasmas
- Bow Shock, Foreshock, and Magnetosheath
- The Magnetospheric Interaction With the Jovian Satellites: Theory and Observation
- Comparative Magnetospheres
- Inner Magnetosphere
- Magnetopause, Mantle, and Low-Latitude Boundary Layer
- The Cusp
- Cluster Posters

***Tectonophysics:***

- Deep Structure of the Continental Lithosphere: Combining Seismic, Heat Flow, and Other Geophysical Data
- Visualizing the Evolving Fault Zone
- Assembly and Poststabilization Evolution of the Cratonic Lithosphere
- Mantle Dynamics and Surface Observables
- Crustal Structure and Tectonics: Geophysical Observations and Models
- Strain Partitioning: Theory and Measurement
- The Structure and Formation of Atlantic Rifted Margins: Observations and Numerical Models
- Mineral Physics Perspectives on the Structure, Composition, and Dynamics of Earth's Deep Interior
- Plate Reorganization Events: Observations and Models
- Structure and Dynamics of the Crust-Lithosphere-Mantle System: Observations and Models

***Volcanology, Geochemistry, Petrology:***

- Nature and Origin of Earth's Early Crust: Integration of Field Studies, Petrology, Mantle Dynamics, and Comparative Planetology

- Magma Reservoir Hydrothermal Circulation: Structure, Fluid Properties, Transport Processes, and Evolution
- Influences on Continental Rheology in Zones of Plate Convergence
- From Magma to Pyroclasts: Flow, Vesiculation, Solidification, and Fragmentation
- Ore Deposits and Metamorphism: Their Role in the Study of High-Grade Metamorphic Terranes and in the Diversification of Mineral Exploration
- Compositional Variation in Metamorphic Accessory Phases: A Multifaceted Petrogenetic Recorder
- Archean Geodynamic Processes
- Daly Lecture: Why do volcanoes (only sometimes) erupt explosively?
- Magma Mixing and Mineral Chemistry: Probing the Dynamics of Magma Chambers and Volcanic Eruptions
- The Timescale of Magmatism
- Siderophile and Chalcophile Elements: Analysis and Interpretation
- Geophysical Observations of Volcanic Processes: Linking Surface, Air, and Space-Based Measurements
- Volatiles in Magmatic Systems
- Fluid and Melt Migration in the Upper Mantle
- Anorthosites: Searching for the Root of the Problem
- General Contributions



**HYDROLOGY  
SECTION  
NEWS**

## Hydrology Section Committee Reports

Compiled by Garry Thorne, AECL Research (thorneg@aecl.ca)

### Erosion and Sedimentation Committee Report-2004

**Chair:** Peter Ashmore, Department of Geography, University of Western Ontario, London, ON, N6A 5C2  
Email: pashmore@uwo.ca

#### Members:

Dr. Dirk DeBoer, University of Saskatchewan  
M. Conly, Environment Canada (CWS), Saskatoon  
Dr. M. Church, University of British Columbia  
Dr. A. Roy, Université de Montréal

Dirk DeBoer is IAHS-International Commission on Continental Erosion Secretary and ICCE Canadian Delegate.

**Objectives:** The scientific advancement and practical application of knowledge of erosion, transport and deposition of sediment in fresh water systems - topic coverage similar to that of the IAHS Commissions on Continental Erosion some aspects of Water Quality.

- i) communication of current research via discussion, meetings, conferences and publications;
- ii) identification and promotion of high priority research topics in the Canadian context;
- iii) promotion and encouragement of the transfer of knowledge and technology in the field of interest.

#### Meetings & Activities

- Continued representation at CGU-HS meetings. 2003 meeting featured a special session on sediment transport and landscape dynamics (details below)
- 2004 CGU/AGU meeting has several special sessions related to E&S activities
- Ongoing discussion with Canadian Geomorphology Research Group on having CGRG co-sponsored sessions at CGU. Likely to be resolved at 2004 CGRG AGM

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### Canadian National Committee for the International Association of Hydrological Sciences, (CNC-IAHS) Annual Report, June 2004.

#### Organisation and Changes in Membership in 2003-2004

In 2004 the Senior Canadian National Representative to IAHS resigned and **John Pomeroy**, Dept. of Geography, University of Saskatchewan was appointed by a unanimous vote of the Canadian National Committee for IAHS. His term of Office will terminate at

the 7<sup>th</sup> IAHS Scientific Assembly to be held in Foz de Iguassu, Brazil, April 24-30, 2005.

In the same year, Pomeroy's move to the senior representative position left an opening for Junior Canadian National Representative, and **Dan Moore**, University of British Columbia, was appointed by CNC-IAHS to the position. His term of Office will terminate at the 7<sup>th</sup> IAHS Scientific Assembly to be held in Foz de Iguassu, Brazil, April 24-30, 2005.

A decision of CNC-IAHS permits the eligibility of both these representatives for the term beyond 2005, in consideration that they have filled these roles near the end of the existing terms.

*Current Membership of CNC-IAHS is thus:*

**John Pomeroy**, Senior Canadian National Representative and Chair

**Dan Moore**, Junior Canadian National Representative and Secretary

**Spyros Beltaos**, President, CGU-HS

**Lawrence Martz**, Vice-President, CGU-HS

**Allyn Clarke**, President, CMOS

**Al Pietroniro**, Delegated by the President, CWRA.

**Steve Holysh**, President, CNC-IAH

**Bill Quinton**, Member-at-Large, CNC-IAHS.

In late May, 2004, the President of CNC-IAH asked that Dr. Garth van der Kamp represent CNC-IAH on the CNC-IAHS, welcome Garth!

In addition it is worth noting the following persons, who although not members of CNC-IAHS are the Canadian National Representatives to IAHS Commissions.

**Don Burns**, International Commission on Surface Water

**Jim Hendry**, International Commission on Groundwater

**Miriam Diamond**, International Commission on Water Quality

**Dirk de Boer**, International Commission on Continental Erosion

**Wayne Rouse**, International Commission on Atmosphere-Soil-Vegetation Relationships

**Al Pietroniro**, International Commission on Remote Sensing

**Mike Demuth**, International Commission on Snow and Ice

**Slobodan Simonovic**, International Commission on Water Resources Systems.

### **Changes to the Terms of Reference of CNC-IAHS**

The CNC-IAHS has dealt with replacements of representatives through procedures that are not specified in its terms of reference. To clarify procedures in the future, the Terms of Reference are requested to be amended by CGU-HS at the CGU meeting, Montreal to establish the following as the procedure for mid-term replacement,

"Should either one or both the junior or senior representative resign and leave the post during the term of office, then CNC-IAHS will appoint replacements to the end of the current term. The Member at Large will compile a list of candidates for these positions and they will be decided upon by a simple vote of the CNC-IAHS"

### **Activities, June 2003 to May 2004**

*The contribution of CNC-IAHS to the CNC-IUGG Report to the XXII IUGG General Assembly in Sapporo, Japan, June/July 2003 and Special Issue of Hydrological Processes on the Progress in Canadian Hydrology 1999-2003.*

During the period of October 2002 to January 2003, certain members of the Canadian hydrological community were solicited by CNC-IAHS to prepare a series of papers as a contribution of the CNC-IAHS to the CNC-IUGG Report. Eight papers on progress in Canadian hydrology, 1999-2003 were written and submitted to IAHS in Sapporo, July 2003 as part of the report Quadrennial Report from Canada to the International Association of Hydrological Sciences, 2003, compiled by John Pomeroy and published and printed by the University of Wales. The Quadrennial Report can be found at the following website: <http://www.fes.uwaterloo.ca/u/jsprice/CGU-HS/National/>. The same eight papers were also submitted for review and publication as an insert in the CGU-HS HP Special Issue for 2003. The Guest Editorial Board for this issue was **Spyros Beltaos, Lawrence Martz, Dan Moore and John Pomeroy**. The special issue should be published in 2004. The papers are:

- 1) Advances in Canadian Forest Hydrology. Principal Author, **Jim Buttle**.
- 2) Advances in Canadian Wetland Hydrology and Biochemistry. Principal Author, **Jonathan Price**.
- 3) Snow, Frozen Soils and Permafrost Hydrology in Canada. Principal Authors, **Hok Woo/Phil Marsh**.
- 4) Advances in River Ice Hydrology. Principal Authors, **Brian Morse/Faye Hicks**.
- 5) Progress in Glacier Hydrology. Principal Author, **Scott Munro**.
- 6) A review of Canadian Remote Sensing Applications in Hydrology. Principal Author, **Al Pietroniro**.
- 7) Recent Canadian Research on Contemporary Processes of River Erosion and Sedimentation. Principal Author, **Dirk deBoer**.
- 8) Progress in Isotope Hydrology, Author, **John Gibson**.

*Elections for IAHS Officers and IAHS Commission Officers at Sapporo in July.*

Congratulations to the Canadian candidates elected to IAHS office in at the IUGG in Sapporo, Japan, July 2003.

**De Boer**, Secretary, ICCE

**Pietroniro**, President-Elect, ICRS.

**Barker**, Vice-President, ICGW

**Gibson**, President, ICT.

Canada occupied a very active role in IAHS with participation in most symposia, convenors of 4 symposia and workshops and Canadians were active in the formulation of the new IAHS Decade on Prediction in Ungauged Basins, PUB.

### *Other CNC-IAHS activities*

At the IUGG in Sapporo, Japan, July 2003 a meeting was held to discuss the future of ICASVR (International Commission on Atmosphere-Soil-Vegetation Relationships) which had become moribund. It was decided to continue the commission under a new name - International Commission on the Coupled Land - Atmosphere System (ICCLAS) - and to propose a symposium for the Brazil meeting in 2005. Canada supported this revival of a Commission for such an important subject.

CNC-IAHS deliberated on various decisions for Canada relating to the International Hydrology Prize. Canada has been active in the IAHS PUB Decade, organizing a meeting in Yellowknife, NWT in March (Chris Spence, Al Pietroniro, John Pomeroy) which considered cold regions aspects of PUB and organising a PUB session at CGU/AGU Montreal (Pomeroy).

The PUB website is

<http://cee.uiuc.edu/research/pub/default.asp>

CNC-IAHS is encouraging Canadians to submit abstracts and papers to the 7<sup>th</sup> IAHS Scientific Assembly to be held in Foz de Iguassu, Brazil, April 24-30, 2005, abstracts for symposia are due at the end of May, 2004.

See the IAHS website:

<http://www.cig.ensmp.fr/~iahs/>

-- John Pomeroy (for the CNC-IAHS), June, 2004

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### **Northern Research Basins**

**Committee Chair:** Dr. Philip Marsh, (Chief Delegate), NWRI, 11 Innovation Blvd. Saskatoon, SK S7N 3H5, [philip.marsh@ec.gc.ca](mailto:philip.marsh@ec.gc.ca)



**Deputy-Chief Delegate:** Dave Milburn, DIAND, Yellowknife

**Past Chief Delegate:** Garry Thorne, AECL Research, Pinawa, Manitoba

### **Mandate and Objectives**

The role of the NRB working group is to encourage research and exchange ideas and information on northern research basins, in which snow, ice and frozen ground have a major influence on the hydrological regime. The NRB Working Group normally meets every two years with the meeting consisting of two parts; a symposium at which formal papers are presented; and, a workshop at which special hydrological research topics or issues of international interest are considered and task force reports presented. As part of the International Hydrological Program, the Northern Research Basins Working Group has held regular meetings since 1975 and full membership is currently open to all countries with land territories lying north of the Arctic Circle. In 1998, the Canadian NRB working group became a sub-committee of the Canadian Geophysical Union-Hydrology Section.

As outlined in the NRB Mandate and the Canadian NRB Terms of Reference the Canadian participation in the NRB is limited to 10 delegates appointed by the Canadian Chief Delegate to represent Canadian interest in the hydrology of northern areas. The Canadian Chief Delegate at the 12th and 13th meetings was Garry Thorne. Philip Marsh has since been appointed as the Chief Delegate and David Milburn as the Deputy Chief Delegate for the next 2 meetings (the 14th and 15th NRB Workshops).

### **Progress on Issues and Objectives**

The CGU-HS Northern Research Basins Committee participated in the 14th NRB Symposium and Workshop held in Kangerlussuaq/Sdr. Stromfjord, Greenland from August 25 to 29, 2003. There were 39 attendees, including 10 Canadians, at the 14th meeting, representing seven of the eight member countries which include Canada, Denmark/Greenland, Finland, Iceland, Norway, Russia, Sweden and the USA. The 26 papers in the proceedings, and 33 presented at the meeting, covered a wide range of topics, with the major emphasis on snow, ice and permafrost. Many of the papers also addressed the symposium theme of "The role of high latitudes in global water balance and element budgets". Reports were received from the an NRB Task Force led by Doug Kane of USA, which is focused on comparison of basin water balance from a range of circumpolar environments. The proceedings of the meeting have been published, and papers have been submitted for consideration for publication in a special issue of the journal, Nordic Hydrology.

### **Other NRB business and issues:**

- a) The NRB working group will be constructing and maintaining a Canadian Northern Research Basins website (expected to be [www.canadianNRB.com](http://www.canadianNRB.com)). Work has begun on acquiring background information.
- b) Once completed this web page will be linked to the CGU-HS web site, that will provide current Canadian and other information regarding NRB activities.
- c) The collection of NRB Proceedings, and special Journal issues, has been updated to include all proceedings. This collection is housed in the library at the National Hydrology Research Centre in Saskatoon.

### **Future events**

Planning has started for the 15th International Northern Research Basins Working Group Meeting. This meeting will be held in Sweden, during August 2005. More details are available at [http://aqua.tvrl.lth.se/NRB\\_2005.html](http://aqua.tvrl.lth.se/NRB_2005.html). As in past years, each NRB country is limited to a maximum of 10 delegates. Canadian Delegates will be by invitation of the Canadian NRB Committee, and approved by the CGU-HS Executive. Other Canadians may apply to the conference organizers, and will be accepted depending on space, with preference provided the official Canadian Delegates.

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### **Glaciers and Environment Committee**

**Chair:** Prof. D. Scott Munro,  
Department of Geography, University of Toronto at Mississauga, Mississauga, ON, L5L 1C6 CANADA,  
[smunro@eratos.erin.utoronto.ca](mailto:smunro@eratos.erin.utoronto.ca)

**Vice-Chair:** Michael N. Demuth, P. Eng., Geological Survey of Canada;

### **Advisory Members:**

Prof. Martin J. Sharp, University of Alberta  
Dr. Roy M. Koerner, Geological Survey of Canada  
Jeffrey Schmok, Golder Associates Ltd.

### **Mandate and Objectives**

- A. Assist the CGU and its executive in promoting glaciological research that is relevant to hydrological and environmental problems.
- B. Provide CGU members with information about glaciological research activity, as well as identify opportunities for collaboration among individuals and groups.
- C. Provide CGU members with information about the scope and extent of glaciological data, and promote efforts to improve accessibility to such data.

- D. Influence research development by establishing lines of communication with other working groups in snow and ice, such as the Cryospheric System (CRYSYS) to monitor global change in Canada and identify personnel training opportunities.
- E. Identify and promote opportunities for educating other members of the scientific community and the general public about glaciers and their role in the environment.

**Meetings and Activities**

- a. Michael Demuth and Roy Koerner continue to build the National Glaciology Program (NGP) in the Geological Survey of Canada (GSC), supported by Natural Resources Canada, Environment Canada and University partners, consolidating research in Arctic and Western Canada.
- b. A book entitled *Peyto Glacier: One Century of Science*, M.N. Demuth, D.S. Munro and G.J. Young (eds.), is in the final stages of copy editing.
- c. Michael Demuth, continues as Canadian Correspondent to the International Glaciological Society, and Canadian National Representative to the International Commission on Snow and Ice.
- d. Scott Munro has recently completed *A revised Canadian perspective: progress in glacier hydrology*, a sequel to an earlier review which appeared in *Hydrological Processes* 14: 1627-1640.
- e. Scott Munro recently attended the Automatic Weather Station (AWS) Workshop, Pontresina, Switzerland, March 2004, to describe the Western Canada glaciers AWS effort to the international glaciology community and to gain insights on improving the Canadian effort.

**Progress on Issues and Objectives**

The NGP work, in partnership with others, is central to the first objective of this committee where progress occurs through continued development of the AWS program at the Peyto, the Place and, most recently, the Ram River Glaciers. Toward the second objective, *Peyto Glacier: One Century of Science* describes the research context for the CGU and others, while *A revised Canadian perspective: progress in glacier hydrology* reports Canadian research achievements to the world glaciological community. Improvements to the NGP program require new sites in Yukon and British Columbia, and better data management, key points in addressing our third objective. The NGP consolidation effort is essential to our fourth objective: linking research among universities and agencies (e.g.: Mike Demuth, NGP; Scott Munro, University of Toronto; Dan Moore, University of British Columbia). Our fifth objective, public education on glaciology, continues in the Canadian Geographic feature *Mysteries in the Ice* and in the recent appearance of Mike Demuth on the CBC program, *Country Canada*, January 2003.

**Future Meetings and Activities**

As committee chair, I note progress toward an effective, collaborative Canadian glacier network, a need identified in the GSC Workshop, Ottawa, January 2000. I have also addressed a need to better relate us to the Cryospheric System (CRYSYS) to monitor global change in Canada, reporting to the annual CRYSYS meeting in Montreal, March 2003, most recently to the world community at the AWS Workshop in Pontresina, an event which we should consider hosting in Canada in the near future.

**Other Business**

The glacier inventory is a continuing matter of concern, particularly as it relates to water resources in Western Canada; as is continued development of research infrastructure and new personnel, finding additional research positions rather than merely replacing or terminating existing ice science positions. These are key to stronger NGP, CRYSYS and CGU-HS inputs to global change science.

**Remote Sensing in Northern Hydrology**

**Chair:** Dr. Claude Duguay, Dept. of Geology and Geophysics, Natural Sciences Facility University of Alaska, 900 Yukon Drive, Fairbanks, Alaska, P.O. Box 755780. Email: [claudeduguay@gi.alaska.edu](mailto:claudeduguay@gi.alaska.edu)

The AGU monograph entitled “Remote Sensing in Northern Hydrology” is nearing completion. Most camera-ready copies of chapters have been received and the plan is for the monograph to go to press in early fall 2004. The monograph covers the most recent advances in remote sensing of snow cover, glaciers and ice sheets, lake and river ice, seasonally frozen ground and permafrost, surface water and soil moisture, and evaporation/evapotranspiration. Editors are Dr. Claude Duguay and Dr. Alain Pietroniro.

**Web page**

Dr. Claude Duguay is working on the web page which members will be able to access starting September 1, 2004.

**CGU-HS Wetlands Committee Report, 2004**

**Chair:** Jonathan Price

This year various members of the committee met informally at two venues: the CGU-HS Student Conference at University of Toronto, where there was a good showing of wetland papers, and again at the annual meeting.

The main activity and function of the Wetlands Committee this past year was preparing the “Advances in Canadian Wetland Hydrology, 1999-2003”, report first for the IUGG, and then as a paper submitted (now accepted) by Hydrological Processes. Members were contacted and requested to forward their publication list for this period, and where possible, the papers themselves. There was a moderately good response, which greatly assisted the authors prepare their manuscript. The draft version was

(is) posted at <http://www.fes.uwaterloo.ca/u/jsprice/CGU-HS/Advances.doc>, and members were invited to read and comment.

Finally, the website (<http://www.fes.uwaterloo.ca/u/jsprice/CGU-HS/Wetland%20Committee3.htm>) was maintained and updated to provide information especially regarding job vacancies by various members.

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## Questionnaire Response

A questionnaire for CGU members was included in the January 2004 issue of ELEMENTS. The questionnaire asked the following two questions:

1. Do you think that future issues of the CGU Newsletter ELEMENTS should be published on the CGU web site only (no paper issues produced and mailed out), or should ELEMENTS continue to be published both in printed form and on the CGU web site?
2. Do you have any suggestions for ways in which ELEMENTS could be improved?

### **Question 1 :**

The total number of responses was 33. Of these, 20 were in favour of publication on the CGU web site only, and 13 were in favour of publication both in printed form and on the web site.

Of those favouring publication on the web site only, reasons given were that it saves trees, paper, and money (which could be used for other purposes), and that other organizations do this. Web-site only with email notification should be enough.

Of those favouring publication both in printed form and on the web site, reasons given were that some members do not often check web sites – the issues of ELEMENTS are more likely to be read if they are mailed out in printed form.

As there appear to be enough CGU members who still wish to receive hard copies of ELEMENTS, the CGU Executive has decided that, for the time being, hard copies will continue to be printed and mailed to members.

### **Question 2 :**

The main suggestion made for improving ELEMENTS was to include articles about significant research advances, reviews of a field of geophysics, policy questions and implications, profiles of scientists, and general interest articles, i.e., that ELEMENTS should be more like EOS, which is published by the AGU. *(Editor's Reply: This would certainly enhance and improve ELEMENTS. The CGU Executive is currently looking into the feasibility of implementing some of these suggestions. Turning ELEMENTS into a publication like EOS would not be currently feasible because of the expenses involved, but improvements on a smaller scale may be possible).*

## Journal of Maps

**Journal of Maps:** a new multi-disciplinary, international journal.

Website: <http://www.journalofmaps.com>

Launch: 4th May 2004

Mike J Smith, Editor-in-Chief

We are pleased to announce a "call for papers" for the newly created Journal of Maps (JoM). The establishment of JoM has come out of the realisation that academic map publication is in gradual decline. JoM will provide a channel for researchers to publish map based material not normally accepted by traditional journals that can then be referred to and viewed by others.

JoM has been established as a UK charity, aiming to publish original, bespoke, maps from any discipline. The editorial panel has been specifically put together to provide a broad range of knowledge, expertise and experience. As a journal, we suspect that initial emphasis will be upon traditional geo-subjects, however other subject areas will be strongly encouraged to submit original work.

JoM is an entirely electronic, online journal. All published material will be given away freely and therefore JoM has opted to follow a reverse publishing model. The author will pay a nominal fee to cover the review and

distribution process. The journal's website (<http://www.journalofmaps.com>) will provide a fully searchable front-end to JoM's published materials. We accept that not everyone will want to view maps electronically and therefore all materials will be of press publishable quality.

In order to use the online facilities of JoM, a user needs to register. Basic registration allows access to published materials; personal details need to be provided in order to submit a map for publication. The principal author will need to supply a press-quality map and a short article ready for review. The article should describe the data presented in the map and any pertinent techniques used during the collection/mapping process. We will not accept long articles incorporating data analysis and interpretation, as these would be better published in traditional subject-based journals. The principal author should also supply the details of two people who may act as external referees; these persons should not have recently published with the author(s) or work at the same institution. When submitted, an article will be reviewed by two members of the editorial panel, in addition to the two external referees.

Dr. Mike J. Smith, Editor-in-Chief

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### For information on the CGU, such as

- **Goals, Activities, Bylaws, History, etc., of the CGU**
- **Membership Benefits**
- **Links to the Websites of the Hydrology and Geodesy Sections of the CGU**
- **Links to other geophysics-related websites**
- **The CGU Newsletter ELEMENTS in PDF format**
- **Information about various scientific meetings**
- **Other information related to geophysics**

*Consult the CGU website : <http://www.cgu-ugc.ca/>*

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**CGU WEB SITE ADDRESS : <http://www.cgu-ugc.ca>**

***Editor's Note:*** ELEMENTS, the newsletter for the Canadian Geophysical Union, is published and distributed to all CGU members twice each year; one Summer issue and one Winter issue. We welcome submissions from members regarding meeting announcements or summaries, awards, division news, etc. Advertisements for employment opportunities in geophysics will be included for a nominal charge (contact the Editor). Notices of post-doctoral fellowship positions available will be included free of charge.

General submissions should be sent to the Editor:

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Electronic submission is encouraged.