

## **GEC3 was launched October 29, 2004**

Since then it has sponsored the following for graduate students, faculty members, the McGill community or the general public.

### **SUMMER SCHOOLS**

2005 Recent Advances in Quantitative Remote Sensing of the Environment (Royer)

2006 Environmental Statistics (Van Nguyen)

2007 Field School: Hands on the Environment (Chmura, Roy and Royer)

2008 (replaced by Climate Change Scenarios workshop, see below)

2009 (replaced by special lecture series on climate models)

2010 Planned: Carbon Cycle to Carbon Markets

### **SPECIAL LECTURE SERIES**

#### **Jan 12-28, 2009 Understanding Global Climate Models: Basics for the Non-Climate Scientist**

1. Kothavala (UQAM) Evolution of climate models and critical aspects of climate science
2. Flato (Environment Canada) State of the art in global climate modeling
3. Gachon (Environment Canada) Making it finer – adjusting the scale of climate model projections through “Downscaling”
4. Blanchet (UQAM) "Regional" Climate Models
5. Campbell (Canadian Food Inspection Agency): “Don’t confuse me with numbers: Model outputs for policy-makers”
6. Denman (Fisheries and Oceans Canada): “Climate Change: a Collision of Science, Politics, Economics and Ethics”

### **PUBLIC LECTURES, PANELS, SYMPOSIA, FILMS**

2005 (Jan) Dividing the Waters: Can We Live Sustainably and Harmoniously in a Water-Short World?

(Postel, World Watch Institute)

2005 (Oct) Near-term Pathways to a Sustainable Energy Future (David Marks), Beatty lecture

2005 Lorne Trottier Public Science Symposium: Climate Change and Energy

2005 Film Arctic Mission: Climate on the Edge

2006 How Did Humans First Alter Global Climate? (Ruddiman, mini Beatty lecture)

2006 (May 17) Climate Change the Arctic, and the Sub-arctic (with GEOTOP and Beatty Foundation)

2007 (April) Water Resources Implications of a Changing Climate: from the North American Perspective  
Down to the Great Lakes–St. Lawrence System (Mortsch, Environment Canada)

#### **2008-09 Climate Change Impacts and Adaptations Speaker Series (available as webcasts)**

1. Keller (Penn State): Abrupt Climate Change: Would We See it Coming Early Enough?
2. O'Brien (University of Oslo): The Human Dimensions of Climate Change: Is it Time to go Deeper?
3. Ebi : Healthy People 2100: Health Risks of Climate Change

4. Mansergh (Department of Sustainability and Environment Victoria, Australia): Connecting the Dots .... Adaptation to Climate Change, Biodiversity and Land Use in SE Australia
5. Held (Potsdam Institute for Climate Impact Research): Implementing Global Warming Mitigation Targets: Cost-efficient Investments and Risks

## WORKSHOPS

- 2005 Seasonal Forecasting (min workshop with Ouranos and Clivar)
- 2005 Technical Session on Climate Change & Energy (with Trottier participants)
- 2005 (March) Climate Models and Their Applications
- 2006 Numerical Modeling of Snow (with Ouranos)
- 2006 (March) Hydrological Modeling (with Ouranos)
- 2006 (May) Earth Observation of Northern Hemispheric Wetlands
- 2006 (May) Les impacts et benefices economiques de la recherche en meteorology et climatologie (ACFAS colloque with Ouranos)
- 2007 (March) Booth (Lehigh) Testate Amoebae as Proxies for Past Moisture Variability: Calibration and Application (with GEOTP)
- 2007 (June 8-9) Workshop on Trace Gas Fluxes from Canadian Forest Soils
- 2008 (May 6-8) Climate Scenarios of Extremes for Impact and Adaptation Studies
- 2009 (Jan) Determination of Peat Accumulation Records (with GEOTOP)

## SEMINARS

### 2005-06

1. Li (Univ New Hampshire) Modeling Greenhouse Gas Emissions from Soils
2. Kothavala (NCAR) Late Glacial Maximum and Holocene Climates Simulated by the NCAR Global Climate Model (CCSM-3)
3. Hall (Univ Joseph Fourier) The African Wave
4. Follow (MIT) Plankton, Competition and Models of Ocean Biogeochemical Cycles
5. Bowman (SUNY, Stony Brook) The Day before the Day After Tomorrow: Storm Surge Barriers to Protect New York City Against Rising Sea Level
6. Liu (Univ Wisconsin – Madison) Towards the Understanding of Pacific Decadal Variability
7. Moore (Dalhousie) The Marine Source of Atmospheric Halogens and the Puzzle of Methyl Halide Production
8. Schmittner (Oregon State): Millennial-scale change in glacial ocean oxygen concentration
9. Turner (Oregon State) Monitoring Terrestrial Carbon Fluxes at Regional to Global Scales with Remote Sensing and Modeling
10. Tziperman (Harvard): Pacing Glacial Cycles
11. Marinov (Harvard) Why the Antarctic Determines Atmospheric pCO<sub>2</sub> and the Subantarctic Global Biological Export Production

12. Peterson (Washington State): High-Accuracy Quantum Chemistry: from Heavy Main Group Elements to Transition Metals

#### **2006-07**

1. Booth (Lehigh) Testate Amoebae as Proxies for Past Moisture Variability: Calibration and Application (with GEOTOP)
2. Foley (Univ. Wisconsin- Madison) and a Changing Biosphere
3. Bertram (UBC) Laboratory Studies of Ice Formation
4. Jones (U. Toronto) Analysis of the Impact of Biomass Burning on Tropospheric O<sub>3</sub> Through Assimilation of Observations from the TES, SCIAMACHY, and MOPITT Instruments
5. Hyde (U. Toronto) Past Glaciations as a Constraint on Phanerozoic CO<sub>2</sub> Levels
6. Lepparanta (U. Helsinki) The Ice Season in Baltic Sea and the Changing Climate

#### **2007-08**

1. Beniston (U. Geneva) Climate Variability, Persistence and Extremes: Examples Focusing on the Alpine Region
2. Serreze (U. Colorado- Boulder) Moving Toward a Seasonally Ice-Free Arctic Ocean
3. Patoux (U. Washington) A Satellite View of Southern Ocean Cyclone Tracks and Fluxes
4. Arneeth (Lund U) CO<sub>2</sub> Inhibition of Terrestrial Isoprene Production Stabilizes Tropospheric Oxidation Capacity
5. Otto-Bliesner (National Centre for Atmospheric Research, Boulder) Polar Warmth and Sea-level Rise: A Paleoclimatic Perspective
6. Mirza (Env. Canada Adaptation and Impacts Research Division) IPCC AR4: Climate Change Water, Food Security and Adaptation
7. DeFries (U. Maryland) Carbon Emissions from Tropical Deforestation: Science Meets Policy

#### **2008-09**

1. Newton (Lamont Doherty Earth Observatory, Columbia) Deconstructing Water in the Canadian Basin: Not as Easy as it Looks
2. Mätzler (University of Bern): Passive-Microwave Research Related to the Hydrologic Cycle
3. Berger (Université catholique de Louvain): "Marine Isotope Stage (MIS)-13 climate, a response to the astronomical, greenhouse gas and ice sheet forcings"
4. Kurz (Canadian Forest Service): Can Canada's Forest Sector Contribute to Climate Mitigation Strategies?"
5. Mauquoy (University of Aberdeen): High-Resolution Peat Bog Records of Late-Holocene Climate Change and Carbon Accumulation (with GEOTOP)

## 2009-10

1. Green and Galiana (McGill): An Analysis of a Technology-led Climate Policy as a Response to Climate Change
2. Seok-Woo Son (McGill): The Ozone Hole and Southern Hemisphere Climate Change: Climate Impact of the Montreal Protocol
3. Eppinga (Utrecht): Amazing Pattern: Spatial Self-organization of Peatlands, and its Effects on Carbon Dynamics
4. Galbraith (McGill): Wagging the Greenhouse Dog? Past Climate Changes, Ocean Biogeochemistry, and Atmospheric Feedbacks
5. Nyboer (Simon Fraser) Lessons from Canada's Failed Climate Policies
6. Sushama (UQAM): Land surface processes and land-climate interactions in climate models
7. Lightfoot (GEC3): Fueling Our Adaptations to Climate Change
8. Ford (McGill) Can We Adapt to Climate Change in the Canadian Arctic?

### **Data Access Integration data portal (DAI)**

GEC3 co-directs the Data Access Integration data portal (DAI) which provides climate related data and output of global and our own regional climate model in manageable formats, as requested by GEC3 members, grad students and our supporting partners (Environmental Canada and the Drought Research Initiative). Environment Canada contributes to the support of a post-doc and professional staff, now based at McGill. Responses from users tell us that the service DAI provides not only reduces research costs and time, but that research projects would not have been conducted without DAI support. In 2010 GEC3 received a grant from CFCAS to expand the availability of DAI to a broader community.

Table 1. GEC3 awards for student (M.Sc., Ph.D., & PDF) and research support, by competition date and Institution. Concordia membership began in 2007. Student stipends were \$3k until the fall 07 competition when the value was increased to \$4k. Awards were split between students in some cases. Prior to April 06 only travel awards were available.

	McGill		Sherbrooke		UQAM		U de M		Concordia		INRS		Total	
	#	k \$	#	k \$	#	k \$	#	k \$	#	k \$	#	k \$	#	k \$
Jan-10 Stipends	4	16	2	8			1	4					7	28
Network	3	7			1	3							4	9
Travel	5	4	1	1					1	1			7	5
Lab grant													0	
Sep -09 Stipends	5	20			1	4			1	4			7	28
Network	1	3							1	3			2	5
Travel					1	1	1	1					2	2
Lab grant									1	5			1	5
Feb-09 Stipends	4	16	1	4	1	4							6	24
Network	1	3			1	3							2	5
Travel	5	5	1	1	1	1			1	1			8	8
Lab grant													0	0
Sep-08 Stipends	9	36	1	4	1	4			1	4			12	48
Network	1	3											1	3
Travel	4	4					1	1					5	5
Lab grants	2	10											2	10
Feb-09 Stipends	4	16					1	4			1	4	5	24
Network	1	2											1	2
Travel	6	6	1	1			1	1					8	8
Lab grants							1	5					1	5
Nov-07 Stipends	12	44	2	8	3	8							17	60
Network	3	8											3	8
Travel	4	3			1	1							5	4
Lab grants	2	10											2	10
Feb-07 Stipends	7	21	4	12									11	33
Network	3	8											3	8
Travel	7	4											7	4
Lab grants	1	5											1	5
Sep-06 Stipends	10	24					1	3					11	27
Network	2	5											2	5
Travel	2	1					1	1					3	2
Lab grants	2	10											2	10
Apr-06 Travel	5	4	1	1									6	5
Jan-06 Travel	8	5			2	1							10	6
<b>TOTAL</b>	<b>123</b>	<b>299</b>	<b>14</b>	<b>40</b>	<b>13</b>	<b>29</b>	<b>8</b>	<b>20</b>	<b>6</b>	<b>18</b>	<b>1</b>	<b>4</b>	<b>409</b>	

Table 2. Distribution of GEC3 awards since 2006 with respect to member and affiliation.

awards	McGill		Sherbrooke		UQAM		Montreal		Concordia		INRS		Laval		Total
	#	k \$	#	k \$	#	k \$	#	k \$	#	k \$	#	k \$	#	k \$	k \$
Total	123	300	14	40	13	29	8	20	6	18	1	4	0	0	410
avg/member	5.1	12	3.5	10	2.2	5	2.7	7	6	18	1	4			