

**MEMBER COUNTRY:**  
**National Report to SCAR for year:**

**CANADA**  
 2009–2010

Activity	Contact Name	Address	Telephone	Fax	Email	web site
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	C. Simon L. Ommanney	CCAR Chair, Director, Canadian Circumpolar Institute	[1](780)492-0055	[1](780)492-1153	<a href="mailto:marianne.douglas@ualberta.ca">marianne.douglas@ualberta.ca</a>	<a href="http://www.uofaweb.ualberta.ca/polar">www.uofaweb.ualberta.ca/polar</a>
<b>SCAR Delegates</b> 1) Delegate 2) Alternate Delegate	Steven Bigras	Executive Director, Canadian Polar Commission	[1](613)943-8605	[1](613)943-8607	<a href="mailto:mail@polarcom.gc.ca">mail@polarcom.gc.ca</a>	<a href="http://www.polarcom.gc.ca">www.polarcom.gc.ca</a>
	C. Simon L. Ommanney	CCAR Secretary, 56 Spinney Road	[1](902)643-2527		<a href="mailto:simon.ommanney@ns.sympatico.ca">simon.ommanney@ns.sympatico.ca</a>	
<b>Standing Scientific Groups</b>  <b>Life Sciences</b> 1) Chief Officer 2) Member 3) 4)	Dr Kathleen Conlan	Canadian Museum of Nature, Life Sciences	[1](613)364-4063	[1](613)364-4027	<a href="mailto:kconlan@mus-nature.ca">kconlan@mus-nature.ca</a>	<a href="http://www.nature.ca">www.nature.ca</a>
	Prof. Marianne S.V. Douglas	Director, Canadian Circumpolar Institute	[1](780)492-0055	[1](780)492-1153	<a href="mailto:marianne.douglas@ualberta.ca">marianne.douglas@ualberta.ca</a>	<a href="http://www.uofaweb.ualberta.ca/polar">www.uofaweb.ualberta.ca/polar</a>
<b>Geosciences</b> 1) Member 2) Member 3) Member 4)	Prof. Wayne H. Pollard	Department of Geography, McGill University	[1](514)398-4454	[1](514)398-7437	<a href="mailto:wayne.pollard@mcgill.ca">wayne.pollard@mcgill.ca</a>	<a href="http://www.geog.mcgill.ca/mag2/pollard.htm">www.geog.mcgill.ca/mag2/pollard.htm</a>
	Dr Peter L. Pulsifer	Geomatics and Cartographic Research Institute	[1](613)620-7195	[1](613)249-7067	<a href="mailto:pulsifer@nsidc.org">pulsifer@nsidc.org</a>	
<b>Physical Sciences</b> 1) 2) 3) 4)	Dr Thomas S. James	Geological Survey of Canada, Natural Resources Canada	[1](250)363-6403	[1](250)363-6565	<a href="mailto:tjames@nrcan.gc.ca">tjames@nrcan.gc.ca</a>	<a href="http://www.pgc.nrcan.gc.ca/geodyn/people/tj_hor">www.pgc.nrcan.gc.ca/geodyn/people/tj_hor</a>

Activity	Contact Name	Address	Telephone	Fax	Email	web site
<b>Scientific Research Program</b>						
<b>ACE</b>						
1) 2) 3) 4)						
<b>AGCS</b>						
1) 2) 3) 4)						
<b>EBA</b>						
1) <b>Ex Officio</b> 2) 3) 4)	Dr Kathleen Conlan	Canadian Museum of Nature, Life S	[1](613)364-4063	[1](613)364-4027	<a href="mailto:kconlan@mus-nature.ca">kconlan@mus-nature.ca</a>	<a href="http://www.nature.ca">www.nature.ca</a>
<b>ICESTAR</b>						
1) 2) 3) 4)						
<b>SALE</b>						
1) 2) 3) 4)						
<b>AAA (2010-)</b>						
1) 2) 3) 4)						

Activity	Contact Name	Address	Telephone	Fax	Email	web site
<b>ACTION GROUPS</b>						
1) Antarctic Fuel Spills (AGAFS)	Dr Kathleen Conlan	Canadian Museum of Nature, Life S	[1](613)364-4063	[1](613)364-4027	<a href="mailto:kconlan@mus-nature.ca">kconlan@mus-nature.ca</a>	<a href="http://www.nature.ca">www.nature.ca</a>
2) WCRP/SCAR IPAB Co-ordinator	Dr Christian Haas	Department Earth and Atmospheric	[1](780)492-8171	[1](780)492-2030	<a href="mailto:chaas@ualberta.ca">chaas@ualberta.ca</a>	<a href="http://easweb.eas.ualberta.ca/index.php?p">http://easweb.eas.ualberta.ca/index.php?p</a>
3) SERCE PPG	Dr Thomas S. James	Geological Survey of Canada, Natu	[1](250)363-6403	[1](250)363-6565	<a href="mailto:tjames@nrcan.gc.ca">tjames@nrcan.gc.ca</a>	<a href="http://www.pgc.nrcan.gc.ca/geodyn/people/tj_hor">www.pgc.nrcan.gc.ca/geodyn/people/tj_hor</a>
4) SALE Code of Conduct, Chair	Prof. Warwick F. Vincent	Département de biologie, Université	[1](418)656-2131x5	[1](418)656-2043	<a href="mailto:warwick.vincent@bio.ulaval.ca">warwick.vincent@bio.ulaval.ca</a>	<a href="http://www.cen.ulaval.ca/wvincent.html">www.cen.ulaval.ca/wvincent.html</a>
5) IPICS Steering Committee	Dr David A. Fisher	National Glaciology Program, Geol	[1](613)996-7623	[1](613)996-5448	<a href="mailto:david.fisher@nrcan-rncan.gc.ca">david.fisher@nrcan-rncan.gc.ca</a>	<a href="http://gsc.nrcan.gc.ca/glaciology/national/c">http://gsc.nrcan.gc.ca/glaciology/national/c</a>
<b>EXPERT GROUPS</b>						
1) GIANT	Dr Thomas S. James	Geological Survey of Canada, Natu	[1](250)363-6403	[1](250)363-6565	<a href="mailto:tjames@nrcan.gc.ca">tjames@nrcan.gc.ca</a>	<a href="http://www.pgc.nrcan.gc.ca/geodyn/people/tj_hor">www.pgc.nrcan.gc.ca/geodyn/people/tj_hor</a>
2) ANTPAS Steering Committee	Dr Charles T. Tarnocai	Research Branch (ECORC), Agricu	[1](613)759-1857	[1](613)759-1926	<a href="mailto:tarnocai@agr.gc.ca">tarnocai@agr.gc.ca</a>	<a href="http://www4.agr.gc.ca/AAFC-AAC/display-a">http://www4.agr.gc.ca/AAFC-AAC/display-a</a>
3) PPE	Prof. Wayne H. Pollard	Department of Geography, McGill U	[1](514)398-4454	[1](514)398-7437	<a href="mailto:wayne.pollard@mcgill.ca">wayne.pollard@mcgill.ca</a>	<a href="http://www.geog.mcgill.ca/mag2/pollard.htm">www.geog.mcgill.ca/mag2/pollard.htm</a>
4) PPE	Prof. Kevin J. Hall	Geography Program, University of N	[1](250)960-5864	[1](250)960-6533	<a href="mailto:hall@unbc.ca">hall@unbc.ca</a>	<a href="http://www.unbc.ca/geography/faculty/hall/">http://www.unbc.ca/geography/faculty/hall/</a>
5) ADMAP	Dr Jacob Verhoef	Director, UNCLOS Program, Geolog	[1](902)426-3448	[1](902)426-1466	<a href="mailto:jacob.verhoef@nrcan-rncan.gc.ca">jacob.verhoef@nrcan-rncan.gc.ca</a>	
6) Human Biology and Medicine	Dr Dave R. Williams	McMaster Centre for Medical Robot	[1](905)522-1155x3	[1](905)521-6197	<a href="mailto:willd@mcmaster.ca">willd@mcmaster.ca</a>	
<b>SCADM</b>						
1) Member	Dr Peter L. Pulsifer	Geomatics and Cartographic Resea	[1](613)620-7195	[1](613)249-7067	<a href="mailto:pulsifer@nsidc.org">pulsifer@nsidc.org</a>	
2)						
<b>SC-AGI</b>						
1) Member	Dr Peter L. Pulsifer	Geomatics and Cartographic Resea	[1](613)620-7195	[1](613)249-7067	<a href="mailto:pulsifer@nsidc.org">pulsifer@nsidc.org</a>	
2) Member	C. Simon L. Ommanney	CCAR Secretary, 56 Spinney Road,	[1](902)643-2527		<a href="mailto:simon.ommanney@ns.sympatic">simon.ommanney@ns.sympatic</a>	
<b>NATIONAL ANTARCTIC DATA CENTRE</b>						
No centre yet established						
<b>SCAR DATABASE</b>						
Canada not responsible for an Antarctic database						

## **A BRIEF SUMMARY OF SCIENTIFIC HIGHLIGHTS:**

Canadian research in the Antarctic continues to be strongly influenced by the ability of individual scientists to develop partnerships within the scientific programs of other Antarctic nations. The assistance of these national programs is greatly appreciated. Canadian work fits within the broad categories of the three Standing Scientific Committees, but is not necessarily specific to any group or project. As reflected in the attached bibliography, many Canada-based scientists have been active in the analysis of Antarctic data and publication of results, but have not necessarily reported on their current work.

### **LIFE SCIENCES**

Dr Kathy Conlan, Chief Officer of the SSG-LS (kconlan@mus-nature.ca), was on the International Organizing Committee of the X SCAR Biology Symposium in Sapporo, Japan in 2009. She attended the SCAR Strategic Planning Meeting in Cambridge in 2010 and a meeting to develop new Scientific Research Programs for the SSG-LS.

Dr Allyson Hindle (a.hindle@fisheries.ubc.ca) has been investigating the impacts of aging and senescence on the physiology and ecology of Weddell seals in the McMurdo area. It has been demonstrated that the morphology of swimming muscle displays senescent changes throughout adult life, and some of the biochemical pathways which might support this remodelling were examined. Basic health and body-condition indices appear to be sex-specific. Physiological (ECG) and behavioural telemetry (dive depths, times, schedules) from free-ranging females were also collected to consider any age-effects on these parameters.

During a recent visit to Antarctic Special Protected Area No.151 (ASP-151) on King George Island, Piotr Angiel (pangiel@uwo.ca), with scientists from the Department of Antarctic Biology of the Polish Academy of Science, was monitoring penguin and sea-mammal colonies.

Dr Henry Reiswig (hreisw@uvic.ca), in a collaboration with the Senckenberg Museum, Frankfurt, Germany, on Hexactinellida obtained during the 2005 ANDEEP III Expedition to the Weddell Sea, has described 12 species, two of which were new to science, new distributions of others, and extended the descriptions of two species known previously only from their original reports.

Jonathan Klassen (jlk3@ualberta.ca) has identified several bacterial strains, previously isolated from Victoria Upper Glacier, as five novel species of Hymenobacter. They are notable for their pink-red colouration, due to the presence of structurally novel carotenoid pigments, and have yielded insights into the nature of microbial carotenoid evolution.

Dr Steven D. Siciliano (steven.siciliano@usask.ca) and Alexis Harvey-Schafer are examining the influence of liquid-water content on nutrient bioavailability, mineralization, and nitrification in petroleum-hydrocarbon-contaminated soil from Casey Station, East Antarctica.

Dr Warwick F. Vincent (warwick.vincent@bio.ulaval.ca) chaired the SCAR Action Group established to develop a 'Code of Conduct' for Antarctic subglacial lake exploration and research. The revised "Environmental Code Of Conduct for the Exploration and Research of Subglacial Aquatic Environments" report was presented to SCAR in April 2010.

### **PHYSICAL SCIENCES**

Dr Matt Dobbs (mdobbs@physics.mcgill.ca), and his team from McGill University, in collaboration with some eight institutions in the United States, continues his work using the South Pole Telescope looking, amongst other things at the cosmic microwave background.

Dr Wayne Hocking (whocking@uwo.ca), in cooperation with Colorado Research Associates and support from the Instituto Nacional de Pesquisas Espaciais, installed a Skymet radar at the Comandante Ferraz Base on King George Island.

Sander Geophysics Limited (SGL: Stefan Elieff, selieff@sgl.com), a Canadian-based airborne geophysical survey company with worldwide operations, participated in NASA's 2009 IceBridge campaign in Antarctica. Working in partnership with the Lamont-Doherty Earth Observatory of Columbia University in New York, an SGL AIRGrav airborne gravity meter was installed and operated on-board the NASA DC-8. The DC-8 surveyed key areas of Antarctica using a wide range of instruments, including the gravimeter, while operating out of Punta Arenas, Chile, in October and November 2009. The campaign consisted of 21 flights totalling 155,305 km and 227 hours. The mission is a multi-year campaign designed to monitor the health of sea ice and ice sheets in the polar regions.

Ashley Dubnick (adubnick@ualberta.ca) joined an Antarctic New Zealand field program in the McMurdo Dry Valleys in January 2010. Her research is aimed at exploring the biogeochemistry and organic matter characteristics of snow, meltwater, and glacier, basal, and moraine ice in the Garwood Valley.

Piotr Angiel (pangiel@uwo.ca) is involved with both the ACE and CLICOPEN programs.

As part of the class activities for the Canadian IPY University Antarctic Expedition run in February 2009, a new mass balance monitoring stake and automatic temperature sensor were installed by Dr Luke Copland (luke.copland@uottawa.ca) on a small low-elevation ice cap in the Wauwerman Islands. This station was downloaded during a later cruise in December 2010 and revealed surprisingly warm winter conditions, with temperatures rarely below -10°C. The station will be measured and downloaded again during the next Students on Ice University expedition in February 2011.

Dr Eric Galbraith (eric.galbraith@mcgill.ca), with Sam Jaccard of ETH Zürich, is studying the role of Southern Ocean circulation in glacial-interglacial cycles, using traces of marine plankton in Atlantic sediments to investigate how ocean circulation around Antarctica changed in concert with global climate. There are strong links between these records and similar archives from the far north Pacific, highlighting the interconnectedness of the global ocean, and Antarctica's pivotal role in controlling atmospheric carbon dioxide concentrations.

In November 2009, Dr Christian Haas (chaas@ualberta.ca) and sea-ice researchers from the University of Alberta were invited by Gateway Antarctica, Christchurch, and the University of Otago, Dunedin, to perform helicopter-borne measurements of shelf ice, sea ice, and platelet ice thickness in the McMurdo Sound region, Antarctica. The airborne surveys using electromagnetic induction sounding were accompanied by extensive ground-truthing on the ice. The project resulted in the first ice-shelf thickness data close to the ice edge, where traditional ground-penetrating radar measurements cannot be performed due to the presence of a brine layer, showing that the thickness of the sea ice and the underlying platelet layer can be measured.

As co-ordinator of the SCAR/WCRP International Programme for Antarctic Buoys (IPAB), Dr Christian Haas (chaas@ualberta.ca) is helping maintain a network of drifting buoys in the Southern Ocean to provide meteorological and oceanographic data for real-time operational requirements and research purposes (www.ipab.aq).

### **GEOSCIENCES**

Dr Thomas James (tjames@nrcan.gc.ca) and Karen Simon (University of Victoria) have evaluated the effects of ocean loading on models of glacial isostatic adjustment in Antarctica. The results will be used in the analysis of remote observations of Antarctic ice sheet change.

**OTHER**

Dr Warwick F. Vincent ([warwick.vincent@bio.ulaval.ca](mailto:warwick.vincent@bio.ulaval.ca)) chairs the Canadian Interagency Polar Data Management Committee that oversees the Polar Data Catalogue ([www.polardata.ca](http://www.polardata.ca)), a data centre that describes and provides access to diverse Arctic and Antarctic datasets. The Polar Data Catalogue has been developed by the Canadian Network of Centres of Excellence program ArcticNet ([www.arcticnet.ulaval.ca](http://www.arcticnet.ulaval.ca)) in partnership with the Canadian Cryospheric Information Network (CCIN: [www.ccin.ca](http://www.ccin.ca)).

The new contact point for the ATCM, CEP and Antarctic permitting is Paul Mudroch, Marine Pollution Prevention Section, Environmental Stewardship Branch, Environment Canada, 16th Floor, 351 St. Joseph Blvd., Gatineau, Quebec K1A 0H3 (Tel: [1](819)953-0663; Fax: [1](819)953-0913; E-mail: [paul.mudroch@ec.gc.ca](mailto:paul.mudroch@ec.gc.ca); URL: [www.voyage.gc.ca/countries\\_pays/report\\_rapport-eng.asp?id=9000](http://www.voyage.gc.ca/countries_pays/report_rapport-eng.asp?id=9000))

Proposals for new Antarctic names should be sent to Antarctic Working Group, Geographical Names Board of Canada, 634 – 615 Booth Street, Ottawa, Ontario K1A 0E9 (Tel: [1](613)992-3892; Fax: [1](613)943-8282; E-mail: [geonames@NRCan.gc.ca](mailto:geonames@NRCan.gc.ca); URL: [http://geonames.nrcan.gc.ca/pdf/antarcticguidelines\\_e.pdf](http://geonames.nrcan.gc.ca/pdf/antarcticguidelines_e.pdf))