



Views from the Dean's window.

Dr. Norman Halden

Late in my career I suppose it is OK to admit I periodically look out my window and reflect. What do these views have in common? They both represent places on the Earth where people live and work, and while they are very different places, they are both capable of supplying us with much needed resources, food, energy and minerals.

The dean got a brief research leave and spent a month in Nuuk Greenland last September. It was fantastic to have the chance to walk on the Mesoproterozoic gneisses of the Akia terrane and the Isua supracrustals for the first time. While it brought back fond memories of my student days learning the Rb-Sr isotope systematics of what were then amongst the oldest rocks in the world, the context of this visit was much more pragmatic. I was there to start conversations around the emerging mineral and mining industry in Greenland. With active exploration for Ni underway in a potential impact structure not unlike Sudbury, abundant critical rare earth element potential in carbonatites, and a prospective iron mine about to be built amongst many options, it was easy to see all sorts of teaching, training, and research opportunities for our faculty in the future. Why is this happening? The Greenlanders want an economy that gives them some independence from Denmark. Another critical part of the

Greenland economy, from both a subsistence and export perspective, is their fishery so it is not unanticipated that there are competing views of how these resources should be managed. Coincidentally I was there to sample fish otoliths as part of a baseline geochemical study in preparation for the building of the Isua mine.

The other view is of Manitoba, and we have exactly the same expectations and competing views here: the expectations of developing our economy, harvesting our food and mining our mineral resources. We also face the same pressures of environmental impact, competition for land use and different cultural views of our resources. In this regard Manitoba and Greenland have a great deal in common.

Access to resources is going to continue to challenge us all in to the foreseeable future, and it is easy to see when access to resources gets restricted competitive interests can hold sway, maybe it is in our common interest to think about ways we can share resources. Eleven years ago, the Clayton H. Riddell Faculty of Environment, Earth, and Resources was created to become the premiere teaching and research faculty in the broad areas of Earth, environment, sustainable development, resources and human activities. We have succeeded, in part, because we shared our knowledge and resources.



Homecoming 2014.

Luncheon Reception & Speaker Panel: Water and the Making of Modern Manitoba

Alumni are invited to join us for a luncheon reception, followed by a speaker panel: *Water and the Making of Modern Manitoba*. Tours of the Wallace Building, including the Nellie Cournoyea Arctic Research Facility, will also be offered. Reconnect with friends, classmates, and faculty from Environment and Geography, Geological Sciences, and the Natural Resources Institute.

Date: Friday, September 19th
Location: Wallace Building
Times: 1:00 p.m. Welcome and luncheon reception
 2:00 p.m. "Water and the Making of Manitoba" Speaker Panel
 3:30 - 4:30 p.m. Coffee and tours

Visit www.umanitoba.ca/environment/alumni for details.

GEOLOGICAL SCIENCES - Welcome Back! Department of Geological Sciences

Date: Friday, September 19th
Time: 3:30 p.m.
Location: Reception in the Geological Sciences Staff Lounge, 343 Wallace Building

RSVP to Steven Brown 204 474-9677 or steven.brown@umanitoba.ca

Order of Canada.

Dr. Vaclav Smil (Distinguished Professor Emeritus, Environment and Geography) was appointed to the Order of Canada in June 2013. Dr. Smil is a renowned expert on global energy issues. As Professor Emeritus in the Riddell Faculty, he provides critical insights into energy development, distribution, and usage challenges. His diverse and prolific writings are considered essential reading by policy makers, scientists, and academics in the field. He is a frequent speaker at international forums, where he emphasizes the hazards of our current levels of energy consumption and uses the lessons of

history to point a way forward. Bill Gates wrote in June 2013 that "*there is probably no other writer whose books I anticipate with more enthusiasm than Vaclav Smil. He brings remarkable insight to every topic he examines, combining his vast knowledge of science and energy, history and business to address some of the most pressing issues we face today.*"

Dr. Smil's most recent book "*Should We Eat Meat: Evolution and Consequences of Modern Carnivory*" (published in June 2013 by Wiley-Blackwell) is a broad interdisciplinary examination and critique of meat consumption by humans throughout history and around the world. "*Harvesting the Biosphere: What We Have Taken From Nature*" (published in January 2013 by MIT Press) is a detailed and comprehensive examination of humans' exploitation and transformation of the biosphere.

Dr. Smil is a Fellow of the Royal Society of Canada and in 2010 he was named in the magazine "*Foreign Policy*" in its list of the world's Top 100 Global Thinkers. In 2000, Dr. Smil was the first non-American awarded the American Association for the Advancement of Science Award for the Public Understanding of Science and Technology.



(Photo Credit: Vaclav Smil.)

Awards & Distinctions.

2013 Convocation Ceremonies

Each year the University of Manitoba and the Riddell Faculty recognize student excellence through medals. In addition to the May reception the Riddell Faculty also hosts a reception in October to celebrate the accomplishments of our Fall graduands. In this way we celebrate not only the students' accomplishments, but also the valuable role of friends and family in supporting students to achieve and excel. The following students received such recognition over the past year:

University of Manitoba Governor General's Gold Medal

Brent Else (Ph.D. Geography)

Riddell Faculty Gold Medal

Lauren Eggie (B. Sc. G. Sc.(Geology Honours))

Riddell Faculty Program Medals

Honours Program - **Kayla Moore** B. Env. Sc. (Honours Co-op) (October 2012)
 Major or Advanced Program - **Stacie Westervelt** B. Env. Sc. (Major) (February 2013)

Riddell Faculty Teaching Awards

Award of Excellence for Undergraduate Teaching, **Dr. Mark Hanson** (pictured right with Dr. Norman Halden, Dean)

Thesis Prizes

Matthew Asplin (Ph.D. Geography) - **Ph.D.**
Karley Campbell (M.Sc. Environment & Geography) - **Masters**
Joseph McLeod (B. Sc. G. Sc. (Geophysics Honours)) - **Undergraduate**

Graduate Initiative Prize

Asfia Kamal (Ph.D. candidate) for her work on food security in O-Pipon-Na-Piwin/South Indian Lake.

Undergraduate Initiative Prize

Natalie Baird for her work on the Environmental Art Mentorship Program conducted with the Manitoba Environmental Youth Network.

V.E. Barber Memorial Fellowships in Arctic Research Award

Matthew Asplin (Ph.D. Geography) for his research on "*Cyclone Forcing of Coupled Dynamic and Thermodynamic Processes in Arctic Sea Ice, and Across the Ocean-Sea Ice-Atmosphere Interface*".
Alexander Komarov (Ph.D. candidate) for his research on "*New methods for detecting dynamic and thermodynamic characteristics of sea ice from radar remote sensing*".

Entrance Scholarships

Five Riddell Faculty direct entry admission scholarships were awarded in 2013 to students who are admitted directly from high school and pursue studies. The recipients were:

Alessia Guzzi	Nathan Kroeger	Danica Wieler
Brittany Hill	Alexis Masse	

Five Riddell Faculty undergraduate admission scholarships were awarded in 2013. The recipients were:

Justin Budyk	Janelle Loewen	Lindsay Warelis
Julien Corriveau	Matthew Walker	

Fourteen Riddell Faculty graduate entrance scholarships were awarded in 2013. The recipients were:

Allison Birch	Gail Ferguson	Maliheh Rabie
Tonya Burgers	Kaela-Mae Hlushko	Aibek Samakov
Mahed Ul-Islam Choudhury	Joseph McLeod	Trevor Wideman
Michelle Curry	Anastasiia Morozova	David Zakharov
Lauren Eggie	Amber Penner	



(Photo Credit: Jason Jorgenson.)

Distinguished Professor, Dr. David Barber.

On Tuesday May 28, 2013 at the University of Manitoba's Spring Convocation Dr. David Barber (Canada Research Chair in Arctic Systems Science), (Department of Environment and Geography) was awarded the title of Distinguished Professor. This is conferred by the University of Manitoba on academic staff members who have demonstrated outstanding distinction in research, scholarship, creative endeavours, professional service, and teaching. Up to three people may receive this honor each year, and not more than 20 professors may hold the title at one time.

After completing his Ph.D. at the University of Waterloo, Dr. David Barber returned to the University of Manitoba in 1993. He started the Centre for Earth Observation Science (CEOS) in 1994 with himself, one half-time technician, and two graduate students. In 2002, he received a Canada Research Chair in Arctic System Science. He continues as Associate Dean (Research) in the Clayton H. Riddell Faculty of Environment, Earth, and Resources. Dr. Barber has extensive experience in the examination of the Arctic marine environment as a "system," and the effect climate change has on this system. He shares his experience with his students. To date, he has supervised to completion six honours theses, 18 M.Sc. theses, 17 Ph.D. dissertations, and nine post-doctoral fellowships. He currently supervises 11 graduate students, two post-doctoral fellows, and 14 research associates. He is a member and leader of many national and international research councils, and he currently leads a polar marine science group of over 100 people. He has published over 170 articles in the peer-reviewed literature and during the latest International Polar Year (IPY) in 2007, he led the world's largest IPY project — the Circumpolar Flaw Lead system study.

Pictured Left: Dr. David Barber. Photo credit: Ian McCausland.



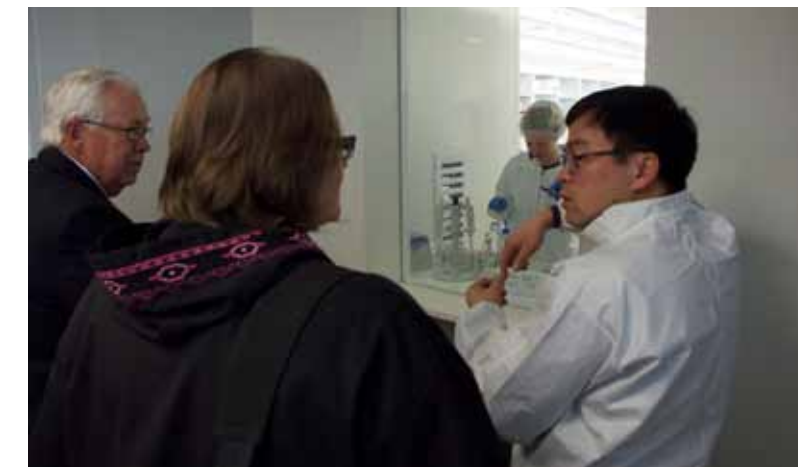
The Nellie Cournoyea Arctic Research Facility.

The Nellie Cournoyea Arctic Research Facility was officially opened in March 2013. The facility, located on the newly constructed 5th floor of the Wallace Building, occupies 60,000 square feet and entailed a budget of \$15 million. Named for Dr. Nellie Cournoyea, premier of the Northwest Territories from 1991 to 1995, its extensive facilities encompass offices, labs, theatre, and much needed space to prepare equipment for the field.



Pictured Left: The Mooring Lab is a multipurpose space that can be used to host events such as the opening. However, it is particularly important for assembling, calibrating/testing and staging of field equipment. Previously much of this work took place in corridors. Here students are assembling equipment to be shipped to the Amundsen. This year 8,600 lbs (3,900 kg) of equipment was shipped from here to the Amundsen. Photo Credit: Jason Jorgenson.

Pictured Below right: Dr. Feiyue Wang (Department of Environment and Geography and CEOS) (right) explains work going on in the Ultra-Clean Trace Element Laboratory (UCTEL) to Dr. Clayton H. Riddell (left) and Dr. Nellie Cournoyea (centre). Photo Credit: Breanne Reinfort.

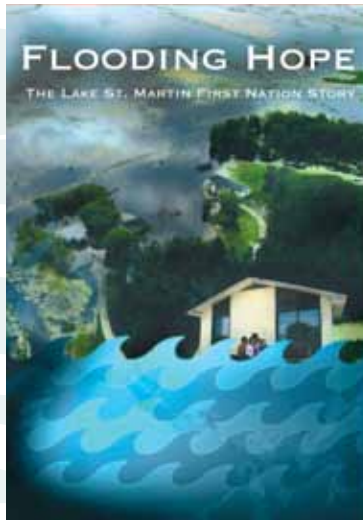


Pictured Left: The Liquid Galaxy is an immersive visualization environment that uses Google Earth to virtually navigate around the Earth. Located outside the theatre, Liquid Galaxy is shown here as David Mosscrop (Operations Manager CEOS) "flies" along the Grand Canyon. Photo Credit: Jason Jorgenson.

Flooding Hope: The Lake St. Martin Story.

The video, *Flooding Hope: The Lake St. Martin Story*, was created by Dr. Myrle Ballard, Dr. Shirley Thompson (Natural Resources Institute), and Ryan Klatt. It has been selected and shown at a number of film festivals. The video documents how an environmentally induced displacement transformed an entire First Nation's community into refugees. To protect private property in the province from the rising river waters, government officials decided to use the Fairford water control structure to lower water levels on Lake Manitoba. This diversion of water to Lake St. Martin resulted in the destruction of all infrastructure and housing at Lake St. Martin First Nation. In a state of emergency, a \$100 million dollar water channel was constructed adjacent to the

community without any consultation or an environmental assessment.



High water levels forced all members of Lake St. Martin First Nation to

undergo an emergency evacuation and then permanent displacement with the community in need of relocation. Years later, members of Lake St. Martin First Nation remain displaced with no new land base and no hope for return to their permanently flooded community as they continue to reside in urban hotels and temporary homes. The community members continue to struggle to have their basic needs met and to be heard in decision-making about their future "home" with minimal assets to draw from and many institutional and policy barriers stemming from jurisdictional issues.

Image Centre: Video cover, Flooding Hope. Photo credit: Ryan Klatt.

Aboriginal Issue Press.

Aboriginal Issues Press publishes refereed books dealing with aboriginal topics. Profits from the sale of these books are used to support the Aboriginal Issues Press scholarship at the University of Manitoba. Recent publications include the following:



Indigenous Education and International Academic Exchange

addresses challenges and achievements in education for Indigenous people within the context of international academic exchange. This comparative analysis of Indigenous education in Canada, China, and Thailand furthers our understanding of specific education needs for Indigenous people, and how those needs are being met.



Connective Pedagogy - Elder Epistemology, Oral Tradition and Community

Indigenous teaching methodology, based on the Seven Principles reflecting traditional knowledge within the holistic world-view, balanced with the pervasive Western world-view of the Academy, is explored, deliberated and echoed in *Connective Pedagogy*.

To order books from the Aboriginal Issues Press, please visit us at: <http://umanitoba.ca/faculties/environment/aip/books.html>

Roebbling Medal.



Photo Credit: Frank Hawthorne.

Dr. Frank Hawthorne (Canada Research Chair in Crystallography and Mineralogy, Department of Geological Sciences) is the 2013 winner of the Roebbling Medal, the highest award of the Mineralogical Society of America. Named for Colonel Washington A. Roebbling (1837 - 1926) the medal is the most prestigious award in mineralogy in the world. Dr. Norman Halden (Dean, Clayton H. Riddell Faculty of Environment, Earth, and Resources) notes that previous recipients of the Roebbling Medal awarded since 1937 include William Lawrence Bragg in 1948, who with his father William Henry Bragg also received the Nobel Prize for their analysis of crystal structure using x-rays, and Linus Carl Pauling in 1967 who also won the Nobel Prize for his work on chemical bonding. Dr. Hawthorne's work, using bond topology and valance matching, has provided a quantitative theoretical framework for mineral paragenesis and stability. The year 2014 has been designated as the International Year of Crystallography to mark the centenary of x-ray diffraction as well as the 400th anniversary of Kepler's observation in 1611 of the symmetrical form of ice crystals, which began the wider study of the role of symmetry in matter.

GAC-MAC Winnipeg 2013 "At the Centre of the Continent".

The Joint Annual Meeting of the Geological Association of Canada and the Mineralogical Association of Canada returned to the Prairies on May 22 to 24, 2013. Over 740 delegates gathered in Winnipeg at the downtown Convention Centre to share their latest research findings, to discuss topical issues, and to catch up with colleagues and friends.

The diverse technical program offered four symposia and 30 special and general sessions spanning the gamut of Earth science research and teaching in Canada and internationally. Some of the highlights include the plenary addresses by Paul Hoffman (Harvard University, University of Victoria) on *The Origin of Laurentia* and by Harold Gibson (Laurentian University) on *The Science and the Discovery of Volcanogenic Massive Sulphide Deposits*. The Exhibits Hall was a popular venue in the afternoons as delegates gathered to view the poster presentations, visit the exhibit booths, and chat with colleagues and friends over a drink or two. Beyond the main meeting, the technical program included short courses on Uranium: Cradle to Grave and Petrography of Layered Mafic Intrusions, and field trips to the Rice Lake mine trend, VMS and gold deposits at Snow Lake, Bird River greenstone belt, Flin Flon mining district, Ordovician-Silurian boundary interval in the Williston Basin, and the Manitoba Legislative Building.

The Outreach Program featured the EdGEO teacher workshop and one-day field trip to southwestern Manitoba, which attracted over 40 participants. The special session on First Nations Geoscience brought together First Nations elders and professional Earth science educators and teachers to share their

perspectives on Earth science outreach and teaching programs. The well-attended Geoscience in Our Lives public presentation was given by Jim Teller (University of Manitoba) on *The Drowning and Draining of Manitoba: From Lake Agassiz to Today*.

Special events at Winnipeg 2013 featured the Prairie Roundup, where participants rode the Prairie Dog Central Railway (complete with a train hold-up) to Grosse Isle for a prairie-style BBQ, and the Wind-up event at the Forks National Historic Site, where delegates and a much-relieved Organizing Committee relaxed and dined al fresco near the confluence of the Assiniboine and Red Rivers.

Pictured below: Hold-up of the Prairie Dog Central train and capture of four "desperados" during the Prairie Roundup event. From left to right: Richard Wardle, Alan Galley, Alan Bailes, Norman Halden.



Photo Credit: Jim Teller.

Remembering Dr. Klaus Hochheim.

Dr. Klaus Hochheim, a respected climatologist and research associate with the Centre for Earth Observation Science (CEOS) at the University of Manitoba, died tragically in a helicopter accident in the Canadian Arctic. He was 55 years of age.

Dr. Hochheim was aboard a Coast Guard helicopter over the Northwest Passage flying from the Canadian Research Icebreaker *CCGS Amundsen* when it crashed in September 2013. Two Coast Guard officers Pilot Daniel Dubé and *CCGS Amundsen* commander Marc Thibault were also killed in the accident.

Dr. Hochheim received his B.A. (Hons.) from the University of Winnipeg, followed by his MA/95 and PhD/03 from the University of Manitoba. He studied sea ice climatology and microwave and optical remote sensing in extreme conditions, having been part of projects and expeditions in both the Arctic and Antarctic. He worked extensively with ArcticNet, a Network of Centres of Excellence of Canada that brings together scientists and managers in the natural, human health and social sciences with their partners from Inuit organizations, northern communities, federal and provincial agencies and the private sector.

In February 2014 the theatre in the Nellie Cournoyea Arctic Research Facility was named the Dr. Klaus Hochheim Memorial Theatre. The dedication plaque unveiled at a private event reads: "*We dedicate this theatre to the memory of Dr. Klaus Hochheim (1958-2013) who lost his life while conducting arctic climate change research on behalf of the peoples of Manitoba, Canada and the World*".

Artwork courtesy of Lauren Candlish.



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