The Connaught Summer Institute in Arctic Science presents
The 2016 Jamboree
The slides are in alphabetical order by last name beginning with speakers followed by students. Please refer to the program to find your presentation slot and be prepared to begin when the person before you finishes.

You will be given **two minutes** to introduce yourself. Please be courteous to the next speaker and wrap-up promptly when requested.

*Please excuse any formatting errors that may have occurred in compiling the slides into one presentation.*
Let’s Start!

02:00
Kimberly Strong
Dept of Physics, U Toronto
Director, School of the Environment
Remote sounding of atmospheric composition from the ground, balloons, and satellites using UV-VIS-IR spectroscopy

- PAHA Deputy PI and leader of the Composition Measurements theme
- Four instruments at PEARL
- U of T Atmospheric Observatory
- ACE and Odin satellite missions
- Laboratory spectroscopy
- Mars studies
Aubyn O’Grady
Connaught Summer Institute Coordinator
CANDAC/ PAHA Outreach Coordinator
MA Student Ontario Studies in Curriculum, Teaching and Learning + Arts Education at the Ontario Institute for Studies in Education (OISE) at U Toronto
Peter Braesicke

After my A-levels I studied meteorology at the Free University (FU) and Astronomy at the Technical University of Berlin. My diploma thesis was on planetary wave propagation in the stratosphere supervised by Karin Labitzke at FU Berlin. Afterwards I continued working on my PhD thesis in Karin's group. For my PhD thesis I investigated (transport) properties of equatorial waves in a GCM. Shortly after finishing my PhD I left Berlin for Cambridge/UK where I joined John Pyle's group at the Centre for Atmospheric Science. Here, I started work with the Unified Model (UM), including simplified and comprehensive chemistry modules, first in the framework of the Universities Atmospheric Modelling Programme (UGAMP) and later on in the framework of the National Centre for Atmospheric Science (NCAS). As a senior researcher in NCAS I contributed to the development of the UM-UKCA chemistry-climate model and applied the model to a range of science questions (e.g. composition feedback processes in the Indian summer monsoon anticyclone or polar processes and their role in climate change).

In autumn 2013 I joined the Karlsruhe Institute of Technology (KIT) as a professor for physics of the atmosphere and section head for modelling at IMK-ASF. I continue my research in composition-climate interactions (including model development) and teach courses in climatology and theoretical meteorology. In my spare time I enjoy gardening with my small family and my next attempt in building a model railway.
20 Years of ClO Measurements in the Antarctic Lower Stratosphere

- G. Nedoluha, B. Connor, et al, acp-2016-188 – discussions
- 20 years of (1996-2015) of austral springtime measurements of ClO over Antarctica from the ChLOE1 ground-based millimeter wave spectrometer at Scott Base, Antarctica; 12 years (2004-2015) of ClO measurements from MLS
- To study interannual differences, we focus on a 3-week period from August 28 to September 17 for each year, and compare the average column ClO anomalies
- Anomalies are shown to be highly correlated with the average ozone mass deficit for September and October of each year
- Anomalies in column ClO are strongly anti-correlated with 30 hPa temperature anomalies, both on a daily and an interannual timescale
- We calculate the linear dependence of the interannual variations in column ClO on interannual variations in temperature, then
- Estimate the underlying trend in the total chlorine (Cly = HCl + ClONO₂ + HOCl + 2 x Cl₂ + 2xCl₂O₂ + ClO + Cl) which provides the reservoir for the ClO
- The resultant trends for zonal MLS, Scott Base MLS (both 2004-2015), and ChLOE (1996-2015) were -0.5±0.2% yr⁻¹, -1.4±0.9% yr⁻¹, and -0.6±0.4% yr⁻¹, respectively
Chris Derksen  
Research Scientist  
Climate Research Division  
Environment and Climate Change Canada  

- Co-Investigator, NSERC Climate Change and Atmospheric Research ‘Canadian Sea Ice and Snow Evolution – CanSISE’ network  
- Responsible for development and validation of land surface freeze/thaw products for the NASA Soil Moisture Active/Passive (SMAP) mission  
- Leading projects supported by the Canadian Space Agency and European Space Agency on new satellite mission concepts for the Arctic  

Research interests:  
- Remote sensing of terrestrial snow cover and sea ice  
- Use of satellite derived datasets to identify interactions between the cryosphere and climate system
Climate modelling and causes of change in cold climates

John Fyfe
Aerosols and atmospheric chemistry

Patrick L. Hayes
Université de Montréal

Eureka, Nunavut
Bob Holmes: some recent stories

- Seeds of (R)evolution (origins of agriculture)
- Lifeless Earth: What if everything died out tomorrow?
- Less than Zero (carbon-negative biofuels)
- Splash and burn (why coffee sloshes)
- Sparks of Life (Cambrian explosion)
- Get Lucky (serendipity in science)
- Evolution of multicellularity in the lab
Deborah Kigjugalik Webster
Archaeology/Oral History
Research in Nunavut
Henry Buijs

• Beginning in Holland
  • From about 7 to 14 years
  • Spend spare time in marine engine repair shop of my father
    • Rebuilding bicycles by making my own parts
    • Learning by doing
  • 2 years technical high school
    • Learned many machine shop skills
    • Including drawing machine parts
    • Welding and blacksmith work

• Post secondary education
  • 1963 B.A.Sc. U of T Engineering Physics, optics and physics concentration
  • Learn about Michelson interferometers and their use in spectroscopy
  • 1962 Summer job with Dr. Herbert Gush
    • Complete design and building of balloon borne interferometer
    • Balloon flight campaign in Valcartier Quebec
  • 1966 MSc U of T Physics
    • Construction of high resolution FT spectrometer
  • 1970 PhD UBC Physics
    • Study of line shapes and collision narrowing effect in H2
  • 1974 U Laval, Post doc, assistant prof
    • Study of atmospheric composition related to Ozone chemistry

• A new start in Canada
  • 1954 working in Newmarket assembling farm combines
  • 1955 automotive machine shop work
    • Restoring 1938 Ford as a hobby
  • 1956-59 Draughtsman in Toronto
    • Designing steel stairs and other miscellaneous steel assemblies for buildings
  • 1959 complete grade 13
    • Apply to U of T faculty of engineering
    • Accepted in Engineering Physics

• Career
  • 1973 Formed Bomem Inc. with Garry Vail and Martin Fournier
    • Poor start, no B-plan, no business for 1 year
  • 1974 Dr. Wayne Evans at AES purchases an FT spectrometer from Bomem Inc. for Ozone chemistry balloon campaign
  • 1976-1980 rapid expansion by building custom spectrometers for remote sensing for ozone chemistry and military surveillance
  • 1980 Introduction of DA3 (later DA8) standard very high resolution FT spectrometer
  • 1986 Introduction of M100 small rugged industrial FT spectrometer
    • Widely used for laboratory, process monitoring and remote sensing
  • 1989 sold company to Hartmann & Braun, later Elsga Bailey and ABB
  • Today leading supplier of FT spectrometers for demanding high accuracy spectroscopy in industry and for remote sensing
  • Leading supplier of FT spectrometers for satellite borne missions
    • Cris on Suomi NPP, JPSS-1, 2 etc, ACE on Scisat, GOSAT-1 and -2
Peter Calamai

- Adjunct research professor in the School of Journalism and Communication, Carleton University
- Founding member Canadian Science Writers’ Association
- Founder of the Science Media Centre of Canada
- Toronto Star's national science reporter from 1998 to 2008

For a personal diary from the CCGS Amundsen in 2004, visit http://cases.quebec-ocean.ulaval.ca/trip/log_apr/calamai.asp
Ray Clement, Ph.D., F.C.I.C
The Search For Zero: How Low Can We Go and What Does It Mean?

- Ontario Ministry Environment 1982-2012
- Pioneering work in the ultra-trace determination of sources of chlorinated dioxins and related compounds in the environment
- Publications & Reports: 178
- Conferences/Workshops/Sessions Organized: >60 (~40,000 delegates)
- Presentations & Lectures: 213
- Books Edited/Published: 6
- Served on Board of Directors for CSC, ACS-Environ. Div., OSEE, ECO Canada, A&WMA-Ontario Section, STAO, YRSTF
- Prepared 90 nominations of colleagues for various awards (63 successful)
Sarah Finkelstein - Quaternary paleoecology, paleoclimatology and biogeochemistry

1. Sediment records

2. Microfossil indicators

3. Reconstructions & Syntheses

Packalen et al., 2014
Gabrielle Gascon
Physical Sciences Specialist
Meteorological Service of Canada
Prediction Services Directorate, Edmonton, Alberta

CAWS
Canadian Arctic Weather Science
Iqaluit (YFB) Meteorological Observations Site
Dorothy Gordon
Senior Human Resources Professional

Dorothy is a Certified Human Resources Professional (C.H.R.L) who possesses over 25 years of experience and is a graduate of York University.

Dorothy became head Human Resources for one of Canada’s leading mutual fund companies, where she played a significant role helping this organization build a presence in the Canadian Market.

She is currently a sought after consultant applying her expertise provincial and municipal sectors, where she has added tremendous value through the creation and implementation of best practices for her clients.
How to Identify your Superpowers within to Help you Land your Dream Job

Workshop Agenda

✧ Envisioning what your dream job looks like
✧ Resumes – Getting past the Applicant Tracking System
✧ Elevator Speech – Creating a captivating Self Narrative
✧ The importance of utilizing Networking and social media in your job search
✧ The importance of being a “giver” throughout your career
✧ How to prepare for phone screening and face to face Interviews
What to Include in your Personal Narrative

- Let your audience know what degree you are a candidate for
- Clearly state what your thesis is on
- Ensure to ask for what you want (someone to help network you into specific job/opportunity)
- Specify what makes you unique
- Give examples of work you have done
- Reiterate your intent
- Offer to open up your network to them
William (Bill) Simpson, University of Alaska Fairbanks

Research interests
Arctic Atmospheric Chemistry: aerosols, greenhouse gases, halogen chemistry, remote instrumentation
The role of the Arctic and Boreal region in the global carbon cycle

Debra Wunch, University of Toronto
Connaught Summer School, 2016
Tuesday, July 19, 2016, 3-3:45 pm
Yasmin AboEl-Fetouh

PhD Student at Centre d’Applications et de Recherches en Télédétection, Université de Sherbrooke, Sherbrooke, Canada

Director: Prof. Norm T. O’Neill

Current Research: Model evaluation of ground-based aerosol optical data over the Arctic: focus on bi-modal parameters

NETCARE
Whitney Bader Postdoc fellow at UofT
Research interests
Methane, infrared remote sensing

PhD
Increase of CH$_4$ since 2005 based on FTIR observations and GEOS-Chem tagged simulation

Master’s thesis
Extension of time series back to 1970s from grating spectra recorded at Jungfraujoch, Switzerland

Background
Bsc : chemistry
Msc : climatology
Phd : geophysics
@ULg, Belgium

Postdoc project
Increase of CH$_4$ since 2005 ?
Based on $^{13}$CH$_4$ and CH$_3$D FTIR observations
Validating satellite measurements over the Canadian high Arctic

Ralf Bauer, Postdoctoral Fellow in the group of K. A. Walker, University of Toronto

- Necessary to validate instruments throughout their lifetime (instrument aging, more sophisticated retrievals)
- Initial focus on ozone depleting substances (CFC-11, CFC-12, HCFC-22)

Source: http://www.ace.uwaterloo.ca/
Kristof Bognar

- M.Sc. student at University of Toronto, in Kim Strong's group
- Taking care of two UV-Vis spectrometers at PEARL
- DOAS and MAX-DOAS measurements
- Stratospheric ozone, NO2
- Tropospheric ozone depletion, bromine explosion events
Brendan Byrne
M.Sc (UVic)
Archean radiative forcings
Ph.D Candidate (U of T)
Carbon Cycle (measurements, Inversion Modeling, SIF)
Laurence Coursol
M.Sc. Student in Atmospheric Sciences
University of Québec at Montréal
Supervisors: Pierre Gauthier and Jean-Pierre Blanchet

- Member of the TICFIRE (Thin Ice Clouds in Far IR Experiment) satellite mission
- Using the case of FIRR (Far InfraRed Radiometer) to show the added-value of far infrared measurements by radiometers
April S Dalton
- PhD Candidate, Department of Earth Sciences, University of Toronto
- MSc Carleton University
- BSc University of Ottawa

Investigating the Missinaibi Formation, Hudson Bay Lowlands, Canada: implications for ice sheet paleogeography and paleoclimate
Joan De Vera
Ph.D. Candidate (Department of Earth Sciences, University of Toronto)
Research Interest: Biogeochemistry

B.S. and M.S. in Chemistry
(University of the Philippines)
- Heavy Metals in Philippine Herbal Products
- Surface and Groundwater Quality Monitoring

Ph.D. research projects
- Trace metal cycling in the ocean
- Fe and Pb and their isotopes in Arctic samples (aerosols, ocean water, and sea ice cores)
- Getting to know the ICPMS better (Quad and Multi-collector)
Jing Feng

M.Sc, McGill University, Canada  
Atmospheric Sciences (1st year)  
B.Sc, Nanjing University, China

Current Research:  
• Supervisor: Yi Huang  
• Atmospheric Radiation Transfer and Earth radiation spectra  
• Cloud-assisted retrieval of stratospheric water vapor from nadir view satellite measurements
Shayamila Mahagammullla Gamage
PhD (1st year)
The University of Western Ontario
Supervisor: Prof. Robert Sica
Co-supervisor: Dr. Alexander Haefele
Shannon Hicks

PhD Student in Astronomy/Planetary Sc.
University of Western Ontario

• Supervisors: Dr. Bob Sica and Dr. Alexander Haefele
• Project: Developing a Water Vapour Climatology using the RALMO lidar in Switzerland using OEM.
• CREATE TAC Chair and Social Media Coordinator
SIRAJ UL ISLAM

Post Doc Fellow @ UNBC

RESEARCH INTERESTS
- Modeling and Simulation
- Climate Change, Variability and Prediction
- Snowpacks Evaluation, Hydrology

BACKGROUND
BSC: Math and Physics
MSC: Physics
MPHIL: Computational Physics
- Monte Carlo Simulation of Magnetic Nanoparticles
PhD: Climatology, Modeling and Simulation
- Ensemble simulation and forecasting of South Asian Monsoon

PDF: Simulating Hydrological Responses in Fraser River Basin, BC, Canada using VIC Model -> Gridded Observations -> CMIP3/CMIP5 Projections
Liviu Ivanescu
PhD - Universite de Sherbrooke
- atmospheric remote sensing
- star-photometry (aerosols, clouds)
- lidar/radar synergy
- far-infrared radiometry
Background: B.Sc. in Physics, M.Sc. in Meteorology and M.Sc. in Physics

Currently: Ph.D. student in Physics at University of Western Ontario

Purple Crow Lidar

Temperature in the Middle Atmosphere
Paul Jeffery
PhD Student in Atmospheric Physics
University of Toronto
Supervisor: Dr. Kaley Walker

Education and Previous Research:
- BSc.: in Physics and Health Science, minor in Chemistry, University of Toronto Mississauga, 2015

Current Research:
- Characterization of water vapor trends in the stratosphere and mesosphere
- Fitting water vapor trends
- Automating and testing the PARIS-IR instrument
Allison Kolly

B.Sc. Honours in Mathematical Physics, University of Winnipeg, 2015

Master's student, Department of Atmospheric and Oceanic Sciences, McGill University
  - Supervisor: Dr. Yi Huang

Research:
  - Remote sensing
  - Looking at cloud radiative feedback
Kunna Li

Education
M.Sc., Physics (Atmospheric Physics), University of Toronto, Canada
  Supervisor: Dylan Jones
B.Sc., Atmospheric Science, Sun Yat-sen University, China

Current project:
Analyze 3 different datasets produced from the Canadian Middle Atmosphere Model (CMAM): a lower resolution run, a higher resolution run without QBO and a higher resolution run with QBO
To understand the impact of the increased vertical resolution and QBO on the dynamics and chemical components

(From Charles McLandress)
Li Li

- Post-doctoral Fellow
  - Supervisor: Dr. Aldona Wiacek
  - Troposphere Remote Sensing Lab (TRSL)
  - Saint Mary’s University, Halifax, NS
- Open path FTIR measurements
  - Retrieval of trace gas spectra and concentrations
  - Field campaign & indoor
- PhD at Jilin University, China
  - Development of infrared gas sensor based on tunable diode laser
Dr. Zhenhua Li
Postdoctoral Fellow           Advisor: Alan Manson
Institute of Space and Atmospheric Studies
University of Saskatchewan
Zhenhua.li@usask.ca

Research topics:
1. Polar Vortex and Persistent Cold Weather Events in Central-Eastern North America
2. Gravity waves and polar vortex in the upper atmosphere
3. Airglow layers and dynamics in the Mesopause-Lower Thermosphere
Erik Lutsch
PhD. Student, University of Toronto

Research interests:
- FTIR measurements at Eureka and Toronto
- Transport models and satellite observations
- Biomass burning emissions and transport
Sarah Murphy
Ph.D. Student - Engineering Science
Washington State University (Pullman, WA)
Advisor: Dr. Von Walden

Background:
• B.S. - Atmospheric Science
  Lyndon State College (Lyndonville, VT)
• Interned at Colorado State University
  studying remote sensing in severe weather.
• Participated in Plains Elevated Convection at
  Night field project with the Center for Severe
  Weather Research chasing nocturnal storms.
• Traveled to Summit Station, Greenland to
  assist with the ICECAPS project.

N-ICE2015 (Norwegian Young Sea Ice Cruise)
A Norwegian ice breaker was frozen into newly
formed ice in the Arctic Ocean. From February to
March 2015 the ship drifted with the ice flows and
measured atmospheric and oceanic variables.

My Focus:
• Surface energy balance
• Cloud radiative forcing
• Will run the Polar Weather Research and
  Forecasting Model for the N-ICE domain to
determine methods to improve the model.

Photo by: Von Walden
Part of the TICFIRE satellite project  
(Thin Ice Cloud Far-InfraRed Experiment)

2016 Eureka Campaign with the FIRR  
(Far-InfraRed Radiometer)

- Developing a new remote sensing method by using the Far-Infrared to detect and differentiate thin ice clouds in the Arctic
- Using the Far-Infrared to detect trace amount of water vapour in a very cold atmosphere
- Test the new technologies for the satellite mission
Keyvan Ranjbar
Phd Student, Université de Sherbrooke, Sherbrooke, Canada
Director: Prof. Norm T. O’Neill
Current Research: Identification and characterization of natural aerosol over the Arctic
Ellen Stephanie Reyes, MSc

**Education**

- Chemical Laboratory Technology Advanced Diploma, Seneca College of Applied Arts and Technology, Graduate December 2007
- Bachelor of Applied Science in Public Health, Ryerson University, Graduated June 2013
  
  Thesis: Human Exposure to Soil Contaminants in Subarctic Ontario, Canada. Supervisor: Dr. Eric Liberda
- Master of Science in Health Studies (Specialization: Environmental Toxicology and Risk Assessment), University of Waterloo, Defended February 2016
  
  Thesis: Assessing Mercury Risks for the Optimization of Nutrient Benefits from Wild-harvested Fish Consumption in the Northwest Territories, Canada. Supervisor: Dr. Brian Laird

**Research Areas**

- Human health risk assessment and communication
- Nutrient-toxicant interactions
- Environmental epidemiology
- Deterministic and probabilistic modelling to maximize nutrient intake and minimize contaminant risks
Sébastien Roche
BSc. & MSc. Physics (Lyon 1, France)
Ph.D. student at UoT

Research:
- Comparison between TCCON and EC-CAS
- CO2 profile retrievals for TCCON
- NIR measurements with the Bruker 125HR at PEARL

Canadian Arctic ACE/OSIRIS Validation Campaign
2015 & 2016

Photo credit: Dan Weaver
Rodrigue Sandrin

- MSc Atmospheric Physics, University of Lyon
- Master’s research at University of Toronto
  Supervisor: Pr. Kimberly Strong

Trend analysis FTIR data
KANUPRIA SETH

• BSc. Specialist in Biomedical Physics and minor in Statistics, University of Toronto

• CGCS Summer intern at Physics dept., University of Toronto
  Supervisor: Prof. Kimberly Strong

• Performing TAO FTIR DA8 measurements
• Organisation and analysis of TAO weather station data
Keegan Smith
M.Sc. Geography, Carleton University

- Apex River Watershed, Iqaluit, NU, partnered with NRI
- Snow accumulation and terrain analysis for management
- Micrometeorology, energy-balance, contaminants
Chris Vail

Background
• BSc. in Physics from UNB in 2012
• BCS in Hardware Systems from UNB in 2012
• Finishing MSc in Physics at UNB

• Masters work involves detecting small scale gravity waves, determining their parameters and developing a climatology of the parameters.

Supervisor: Prof. William Ward

Gravity Waves above UNB Fredericton Campus
Jeff van Kerkhove (vǎn-kǔrk-hōhv)

• 1st year PhD student, UWO (Bob Sica)
• Lidar crony- trying to understand and improve water vapor retrievals
Charlie White

Background
- Physics MSc student at the University of Toronto
- BASc in Engineering Physics from U of T

Research Interests
- Extreme meteorological events (surface level temperature and ozone)
  - When and where do they occur?
  - What modes of the global circulation precede extreme events?
Xiaoyi Zhao
Ph.D. Candidate at Univ. of Toronto
UV-visible DOAS/MAX-DOAS measurements
That’s Everyone!