

Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

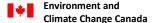
1001 Plenary - The Gulf of St. Lawrence, undergoing warming conditions and extreme events

Wednesday, June 5, 2024 11:00 (EDT)

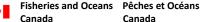
Session Chairs: John Hanesiak, Peter Jackson

11:00 Peter Galbraith The Gulf of St. Lawrence, undergoing warming conditions and extreme events

The Gulf of St. Lawrence is a semi-enclosed sea that is subject to rising temperatures. Sea surface temperatures have been increasing; the May-November averages of the last three years were the warmest of the satellite record and marine heat waves have been stronger and more frequent. In winter, the Gulf can become completely covered by sea ice and nearly half of its volume of water usually gets cooled to temperatures below -1C within the winter mixed layer. But winter air temperatures have been warming at nearly twice the rate of other seasons. In the 15-year period since 2010, 10 of the 15 weakest recorded sea ice seasons have occurred. In the historical records, the Gulf has been nearly free of sea ice during 6 winters, and 4 of them have occurred in this 15 year time span. The winter mixed layer gets capped in spring, creating a cold intermediate layer that persists until late fall that determines the bottom temperature habitat over large areas. This layer has been warming and decreasing in volume since 1990 with large inter-annual variability. On two recent occasions, post-tropical storms Dorian and Fiona have disrupted the water column and mixed heat down to 45 m. Changes deeper in the water column have been even more startling. Waters deeper than roughly 150 to 200 m are entrained inwards from the continental slope by estuarine circulation, taking several years to reach the heads of the Gulf deep channels while mixing and diffusion occurs. This layer has been warming since 2009 at 300 m depth to reach 100-year record highs, up to 7.1C in 2022.













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1002 Plenary - What does Indigenous Science and Anishinaabe mowin say about Weather?

Tuesday, June 4, 2024 11:00 (EDT)

Session Chairs: John Hanesiak, Peter Jackson

11:00 Myrle Ballard What does Indigenous Science and Anishinaabe mowin say about Weather?

Indigenous peoples knowledge and Indigenous science of the land (aki) has sustained them and enabled them to survive since time immemorial. Their knowledge of weather and environmental conditions were important. Aki has changed but their knowledge still prevails. The weather and how language plays a role are important to understand and it is this knowledge of the land and its characteristics that has sustained them.













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

1003 Plenary - Hailstorms and Tornadoes and Floods, oh my!

Monday, June 3, 2024 11:00 (EDT)

Session Chairs: John Hanesiak, Peter Jackson

11:00 Laura Twidle Hailstorms and Tornadoes and Floods, oh my!

Last year, Canadians were impacted by the most severe weather events, perhaps ever. There were 24 - what the insurance industry calls – catastrophes (CATs). A CAT is single event that results in at least \$30 million of insured loss, affects multiple policy holders, and multiple insurers. Before 2023, the greatest number of annual CATs we had ever seen in Canada was 15. The increasing frequency of CATs is strongly represented by an increasing population (or increasing "exposure") and the effects of climate change. Last year posed a new challenge to the industry, when several CATs were occurring across the country simultaneously – Nova Scotia, the Northwest Territories, southern Ontario, and British Columbia. Now more than ever before, there is a need for a whole-of-society approach to minimize the impacts from extreme weather.













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1004 Plenary - Tapping into the Explosive Growth of Artificial Intelligence to Tackle Extreme-Events in a Changing Climate

Thursday, June 6, 2024 11:00 (EDT)

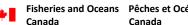
Session Chairs: John Hanesiak, Peter Jackson

11:00 David Hall Tapping into the Explosive Growth of Artificial Intelligence to Tackle Extreme-Events in a **Changing Climate**

In this talk, we'll explore the explosive growth of AI and its potential to revolutionize the prediction of extreme weather events in a changing climate. We'll showcase state-of-the-art data-driven weather and climate models, discuss their strengths, weaknesses, and the intuition behind their incredible speedups. We'll highlight NVIDIA's Earth-2 Inference Microservices (NIMs), which enable efficient AI model integration and deployment. Together, we'll delve into emerging trends in AI for weather and climate, such as generative modeling, learning from earth-observations, foundation models, adaptive learning, and AI agents. Time permitting, we'll speculate on potential impacts of AGI on society and the environment, as we consider whether we're on the cusp of this pivotal technology.













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

2010 Severe and Extreme Convective Storms: Detection, Prediction, Climatology and the Future - Part 1

Monday, June 3, 2024 12:15 (EDT)

Session Chairs: David Sills, John Hanesiak

12:15 Cameron Nixon Hodographs and Skew-Ts of Hail-Producing Storms

12:45 John Hanesiak ERA5 Alberta hail environments during the 2022-23 Northern Hail Project's Field Season

13:00 Scott Kehler Canadian Hail Data Developments at Weatherlogics

13:15 Milena Alpizar Mesoscale Convective Systems and Extreme Precipitation in Northeastern North America: identification and evaluation with the Canadian Regional Climate Model (CRCM6).

13:30 Melissa Cholette Simulations of storms and precipitation types – The impacts of recent innovations to the Predicted Particle Properties (P3) microphysics scheme











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2011 Severe and Extreme Convective Storms: Detection, Prediction, Climatology and the Future - Part 2

Monday, June 3, 2024 14:05 (EDT)

Session Chairs: David Sills, John Hanesiak

14:05 Connell Miller Assessment of wind speeds along the damage path of the Didsbury, Alberta EF4 tornado on July 1, 2023

14:20 Eric Van Lochem Synoptic scale patterns associated with the Didsbury AB tornado of 1 July 2023

14:35 David Sills The detection and prediction of recent 'extreme' thunderstorm events in Canada

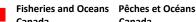
14:50 Daniel Butt Tornado Analysis using Artificial Intelligence and Treefall Patterns

15:05 Lesley Elliott Downburst Damage Assessments in Canadian Forests

15:20 Bradley Power Update on the Meteorological Service of Canada's Convective Alert Modernization project













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2020 Extreme Precipitation: Past, Present, Future

Monday, June 3, 2024 15:55 (EDT)

Session Chairs: Neil Tandon, Megan Kirchmeier-Young

15:55 Ruping Mo Pseudo Integrated Vapor Transport and Pseudo Moist Flow as Two Saturation-Adjusted Quantities for Atmospheric River Analysis

16:10 Alissa Steeves Extreme convective rainfall over central Nova Scotia July 21-22, 2023: A case study

16:25 Yeechian Low Influence of Rossby Wave and Jet Stream Patterns during Extreme Precipitation Regimes (EPRs) in eastern North America

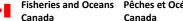
16:40 John Gyakum Cold-season subtropical air mass intrusions into eastern Canada: Dynamic and thermodynamic impacts on extreme precipitation

16:55 Thabo Mpanza Differences between convection-parameterizing and convection-resolving simulations of future changes in extreme precipitation intensity over the subtropical Atlantic.

17:10 Kenneth Kin Cheung Chow Snowfall projections developed from the novel Canadian Downscaled Climate Scenarios - Multivariate CMIP6 dataset













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2030 Advancing research on marine extremes - Part 1

Thursday, June 6, 2024 12:15 (EDT)

Session Chairs: Amber Holdsworth, Hayley Dosser

12:15 Elise Olson Site-specific Assessments of Multiple Stressor Extremes in GFDL's Earth System Model 4.1 with Comparisons to Historical Observations and Future Projections

12:45 Amber Holdsworth Clustering to characterize extreme marine conditions for the benthic region of Northeastern Pacific continental margin

13:00 Hayley Dosser Quantifying variability in the Northeast Pacific Ocean hypoxic boundary and saturation horizons from ocean glider data along Line P

13:15 Wiley Evans Ocean acidification is not a slow burn in some coastal regions: rapid modulation of corrosive conditions in the northern Strait of Georgia

13:30 Susan Allen Anomalies in the Salish Sea due to Exceptionally Low Fraser River Flow in July 2023: SalishSeaCast View











Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

2031 Advancing research on marine extremes - Part 2

Thursday, June 6, 2024 14:05 (EDT)

Session Chairs: Amber Holdsworth, Hayley Dosser

14:05 Kent Moore The impact of retreating sea ice on extremes in air-sea heat fluxes across the marginal seas of the North Atlantic Ocean and adjoining Arctic Ocean

14:20 Adrien Delespaul A new high-resolution view of the structure and evolution of Cape Farewell tip jets

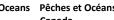
14:35 Alexandra Stephens The characterization and impact of extreme winds along Nares Strait

14:50 Li Zhai Variations of marine heatwaves and cold spells in Northwest Atlantic during 1993-2022

15:05 Nancy Soontiens The 2023 Summer Marine Heat Wave over the Newfoundland and Labrador Shelf













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2040 Weather and Climate Extremes - General - Part 1

Tuesday, June 4, 2024 12:15 (EDT)

Session Chairs: Elizaveta Malinina, Nathan Gillett

12:15 Clair Barnes Attribution of the severity of the the 2023 Canadian fire weather season

12:45 Megan Kirchmeier-Young Attribution of area burned and other characteristics of the 2023 Canadian wildfire season

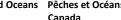
13:00 Celine Audette Canada's Extreme 2023 Wildfire Smoke season and addressing lessons learned

13:15 Dipanwita Ghosh Sarkar Atmospheric Blockings over North Atlantic, their characteristics and links with forest fire risks.

13:30 Daniel Guerin A brief look into the development of a wildfire simulator













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2041 Weather and Climate Extremes - General - Part 2

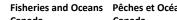
Tuesday, June 4, 2024 14:05 (EDT)

Session Chairs: Elizaveta Malinina, Nathan Gillett

- 14:05 Elizaveta Malinina The 2021 heatwave was less rare in Western Canada than previously thought
- 14:20 Nathan Gillett A rapid event attribution system for heatwaves in Canada
- 14:35 Yongxiao Liang Probability estimation for long return period hot extremes using a large ensemble of model simulations
- 14:50 Matthew Pereira-Wilson Extreme temperature events in the Pacific Northwest
- 15:05 Shauna Ndoping The Role of Near-Solstice Solar Radiation on the Pacific Northwest Heatwave of 2021
- **15:20 Stephen Sobie** Comparing Indices of Heatwave Frequency and Intensity in the Pacific Northwest













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2042 Weather and Climate Extremes - General - Part 3

Tuesday, June 4, 2024 15:55 (EDT)

Session Chairs: Elizaveta Malinina, Nathan Gillett

15:55 Sam Anderson Heatwaves, streamflow, and climate change: Where and when will the streamflow response to warm anomalies change most rapidly?

16:10 Stephen Dery Moisture Fluxes during Three Atmospheric Rivers in September and October 2021 in British Columbia's Upper Nechako Watershed

16:25 Hannah Louis Modelling in a Warming World: Marine Heatwave Drivers in James Bay, Canada

16:40 Vanessa Foord Exploring meteorological drought trends in British Columbia and potential relationships with climate variability.

16:55 Eliott Roocroft Comparison of the association between waviness metrics and extreme temperature values, and future trends of association













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2043 Weather and Climate Extremes - General - Part 4

Wednesday, June 5, 2024 14:05 (EDT)

Session Chairs: Elizaveta Malinina, Nathan Gillett

14:05 Lourdes Aquino Modulating the urban heat island by synoptic patterns and their intensification with heat waves over Mexico Basin.

14:20 Aseem Raj Sharma Efficacy of gridded datasets in representing climate extremes across British Columbia.

14:35 Victoria Slonosky Using observations and newspapers to distinguish between extreme and disruptive weather events in Southern Quebec

14:50 Renee Sieber AI for past and future glimpses into vulnerabilities and resilience related to newspaper reports of disruptive weather

15:05 Victoria Slonosky Canadian Weather of the Past: Observations and Analyses of Past Weather and Climate Extremes from Historical Weather Records

15:20 Melissa MacDonald Understanding Extreme Weather Events in the Context of Climate Change: Analysis of MSC Public Alerts Data from 2012 to Present











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3010 Climate Variability and Predictability - Part 1

Tuesday, June 4, 2024 12:15 (EDT)

Session Chairs: Hai Lin, Bin Yu

12:15 Paul Kushner Extending Multi-parameter Pattern Scaling to Interpret Polar Amplification in Earth System Models

12:30 Lei Wang Diagnosing Observed Extratropical Stationary Wave Changes in Boreal Winter

12:45 Wogu Zhong Interannual variability of the wintertime Asian-Bering-North American teleconnection linked to Eurasian snow cover and Maritime Continent sea surface temperature

13:00 Dae Il Jeong Unprecedented 2021 Heatwave over Western North America: Increasing Intensity and Frequency of Humidex and Temperature Extremes in a Warming Climate

13:15 Bin Yu Projected changes of the warm Arctic-cold North American pattern











Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

3011 Climate Variability and Predictability - Part 2

Tuesday, June 4, 2024 14:05 (EDT)

Session Chairs: Hai Lin, Bin Yu

14:05 Bill Merryfield CanSIPSv3: ECCC's next-generation seasonal to interannual prediction system

14:35 Joseph Martin Seasonal Forecast Skill of Sea Ice in version 3 of the Canadian Seasonal to Interannual Prediction System (CanSIPS)

14:50 Taylor Swift-LaPointe Investigating hybrid seasonal streamflow forecasting using dynamical seasonal forecasts and long short-term memory (LSTM) neural networks.

15:05 Juan Sebastian Fontecilla Monthly forecast system at CMC

15:20 Hai Lin Skillful long-lead seasonal predictions in the summertime Northern Hemisphere middle latitudes











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3020 Atmosphere, Ocean, and Climate Dynamics

Wednesday, June 5, 2024 14:05 (EDT)

Session Chairs: Michael Waite

14:05 Robert Fajber Tagging water in an idealized aquaplanet model: the sensitivity of long range transport to dynamics an ocean heat transport

14:20 Kwan Tsaan "Donald" Lai Backscatter in Radiative-Convective Equilibirum

14:35 Rosalie Cormier Climate Change and the Changing Dynamics of the Beaufort Gyre

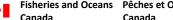
14:50 Will Perrie Is the winter Beaufort High weakening under warming climate scenarios?

15:05 Victorien De Meyer Analyzing North American Cyclones in Climate Models Through an Eulerian Approach

15:20 Yoandy Alonso Historical and Future Projections of the North American Jet Stream in Regional Climate Models













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3040 Climate - Community, Service and Education

Tuesday, June 4, 2024 15:55 (EDT)

Session Chairs: Siraj ul Islam

15:55 G.S. Strong The Climate Crisis – A Way Forward

16:10 Emma Poirier Bridging the gap between climate science and adaptation practitioners

16:25 Charles Paterson A brief history of surface observations in Canada since 1871 and their Usage













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4010 Coastal Oceanography and Inland Waters - Part 1

Monday, June 3, 2024 12:15 (EDT)

Session Chairs: Shiliang Shan, Guoqi Han

12:15 Jody Klymak Ventilation of fjords by down-fjord winds

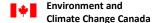
12:30 Benjamin O'Connor Influence of wind-driven processes on seasonal and subseasonal variability patterns in the near-shore and shelf-break regions of Queen Charlotte Sound, British Columbia, Canada

12:45 Susan Allen Controls on Exchange through a Tidal Mixing Hotspot at an Estuary Constriction

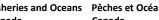
13:00 Jamie Daniel Rip Current Observations on the West Coast of Vancouver Island

13:15 Camryn Stang Estuarine exchange and tidally mixed flows through inter-connected pathways in the Salish Sea

13:30 Guogi Han Extreme sea levels on the Canadian Pacific coast in the 21st century













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

4011 Coastal Oceanography and Inland Waters - Part 2

Monday, June 3, 2024 14:05 (EDT)

Session Chairs: Guogi Han, Shiliang Shan

14:05 Kyoko Ohashi Quantifying hydrodynamic connectivity among existing and proposed Marine Protected Areas on the Scotian Shelf using the Lagrangian particle-tracking method

14:20 Qiantong Pei Storm-Induced Hydrodynamic Changes and Wave-Current Interaction over the Southeastern Canadian Shelf during Hurricane Fiona

14:35 Rick Danielson A hydrologic model calibration and simulation of eastern Canadian freshwater discharge

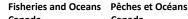
14:50 Maëla Le Ménec Estimating uncertainties of predicted surface drifter trajectories in the Estuary and Gulf of St. Lawrence in Québec

15:05 David Greenberg Models for aquaculture in Nova Scotia and SW New Brunswick

15:20 Jing Tao Interannual Variations of Upwelling along Coast of Nova Scotia













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

4012 Coastal Oceanography and Inland Waters - Part 3

Monday, June 3, 2024 15:55 (EDT)

Session Chairs: Guogi Han, Shiliang Shan

15:55 Kent Moore Evolving relationship of Nares Strait ice arches on sea ice along the Strait and the North Water, the Arctic's most productive polynya

16:10 Spenser Ross An Examination of the Wrangel Island Sea Ice Thickness Dipole

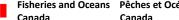
16:25 Kevin Joshy Wind-Driven Transient Polynyas along Kennedy Channel

16:40 Claire Parrott Tidewater Glacier Influence on the Marine Environment in the Canadian Arctic Archipelago

16:55 Sarwesh Mali Tidal-induced Extreme Bottom Current Resuspension in the Halifax Harbour













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4030 Ocean - Theoretical to applied science

Wednesday, June 5, 2024 14:05 (EDT)

Session Chairs: Juliana Marson

14:05 Will Perrie Modelling Wave-Ice Interactions in Three-Dimensions in the Marginal Ice Zone of the **Beaufort Sea**

14:20 C. Harold Ritchie An overview of CONCEPTS Coupled Environmental Prediction Systems and their applications

14:35 Charlie Hebert-Pinard Impact of Assimilation of Absolute Dynamic Topography on Arctic Ocean Circulation

14:50 Luiz Henrique da Silva Modeling the Baffin Bay Seasonal Freshwater Content and Budget

15:05 Madhurima Chakraborty Modeling Iceberg Severity on the East Canadian Coast

15:20 Andrew Hamilton Bring out your data! A new hydrographic data compilation for the Canadian Arctic and surrounding seas









58th Congress/58e congrès Extreme Events in a Changing Climate

Événements extrêmes dans un climat changeant

5010 Atmosphere - Theoretical to applied science - Part 1

Thursday, June 6, 2024 12:15 (EDT)

Session Chairs: Kyle Ziolkowski

12:15 Annie Duhamel Étude qualitative de la réponse d'un modèle de qualité de l'air dans un contexte de réduction linéaire de la pollution anthropogénique canadienne

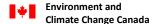
12:30 Lawson Gillespie Comparing measured and inventoried methane emissions estimates from waste facilities in Southwestern Ontario

12:45 Sandrine Trotechaud Air quality modeling study assessing the impact of NOx Tier III regulations on coastal emissions in Canada

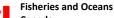
13:00 Darby Bates Investigating Urban Air Quality Using Surface NO2 Derived from Column Measurements

13:15 Paul Bovis On the evaluation of the performance of a new automated atmospheric transport and dispersion modelling system for wildfire smoke across Canada and northern USA: initial results of PM2.5 concentration forecast verification

13:30 Gianina Giacosa Aerosols contribution to fog life cycle during the FATIMA fog study in the Northwest Atlantic Ocean













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

5011 Atmosphere - Theoretical to applied science - Part 2

Thursday, June 6, 2024 14:05 (EDT)

Session Chairs: Kyle Ziolkowski

14:05 Cynthia Whaley Global modelling of lightning and wildfires in a changing climate

14:20 Gabor Fricska Cloud-Ground Lightning Trends in Canada: A Look at 26 Years of Data from the **Canadian Lightning Detection Network**

14:35 Yucheng Zi Roles of Planetary Waves during Fast and Slow Sudden Stratospheric Warming Events

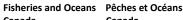
14:50 Frédéric Fabry Weather driven complementarity between daily energy demand at one location and renewable supply at another: Adding the time dimension

15:05 Maxim Couillard Why is there less convection in elevated areas?

15:20 Amber Ross Performance assessment of the Low Porosity Double Fence wind shield configuration for improving solid precipitation measurement













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5012 Atmosphere - Theoretical to applied science - Part 3

Thursday, June 6, 2024 15:55 (EDT)

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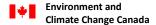
15:55 Sébastien Chouinard Review of recent progress and future outlook for the NWEP systems at CCMEP

16:10 Emily McCullough Automatic detection of layers within Arctic mixed-phase clouds

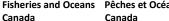
16:25 Yann Blanchard Radiation closure experiment and retrieval of ice cloud properties from groundbased, end-to-end simulator and numerical weather model perspectives

16:40 Peter Taylor A note on saturation transitions between water vapor and cloud droplets

16:55 Joelle Dionne A Spring and Summer of Fogs in Urban Halifax













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5020 Atmosphere - Community, Service and Education

Wednesday, June 5, 2024 14:05 (EDT)

Session Chairs: Serge Desjardins

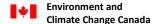
14:05 Gordon Burr The case of DRAW (Data Rescue: Archives and Weather): How a weather data rescue project became a participatory science archives by engaging student communities

14:20 Robyn Dyck MSC/COMET Applied Numerical Weather Prediction (NWP) Course: investing in the meteorologists of today, preparing for the impact and probability based forecasting of the future.

14:35 Qian Li The new Canadian Weather Radar Network – from Project to Operations

14:50 Chris Fogarty The Canadian Hurricane Centre - Forecast Product Improvements

15:05 weiging Zhang A record-breaking wildfire smoke event over Southern Ontario from 2023 June 6 to June 7













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6010 Satellite Earth Observation: A unique view of our planet and a critical need for Canada - Part 1

Monday, June 3, 2024 12:15 (EDT)

Session Chairs: Kaley Walker, Alec Casey

12:15 C. Thomas McElroy The Atmospheric Chemistry Experiment MAESTRO spectrophotometer on CSA's SCISAT satellite in its 21st year

12:30 Paul Jeffery Validation of the version 4 MAESTRO ozone and NO2 measurements

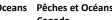
12:45 Kaley Walker The Canadian Atmospheric Chemistry Experiment: 20 years of Validation and Science Results

13:00 Jiansheng Zou Time series analyses for the ACE-FTS and MIPAS CFC-11, CFC-12 data products

13:15 Doug Degenstein OSIRIS - Another Year of Data













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6011 Satellite Earth Observation: A unique view of our planet and a critical need for Canada - Part 2

Monday, June 3, 2024 14:05 (EDT)

Session Chairs: Kaley Walker, Alec Casey

14:05 Kyle Ziolkowski The use of Satellite Imagery for Operational Forecasters: Observations and Future Needs

14:20 Zhipeng Qu Pre-launch broadband radiative closure assessment for the EarthCARE mission

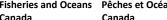
14:35 Jean-Pierre Blanchet Progresses towards the Canadian HAWC/AVENIR Mission on NASA **Atmosphere Observing System**

14:50 Landon Rieger Suborbital testing of the HAWC limb imaging instruments on the NASA ER-2 airplane

15:05 Emily Tracey Comparison Between Ground-based Lidar Measurements from MPLCAN and Simulated Retrievals from the Aerosol Limb Imager













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6012 Satellite Earth Observation: A unique view of our planet and a critical need for Canada - Part 3

Monday, June 3, 2024 15:55 (EDT)

Session Chairs: Kaley Walker, Alec Casey

15:55 Ray Nassar Detection of methane emissions from permafrost peatlands with TROPOMI XCH4 observations

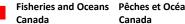
16:10 Paul Jeffery Extreme carbon monoxide emission events observed by MOPITT

16:25 Ray Nassar Arctic Observing Mission (AOM): An update on progress and partnerships

16:40 Jean-Philippe MacLean The GHGSat constellation: Land and offshore methane detection and quantification













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

6013 Satellite Earth Observation: A unique view of our planet and a critical need for Canada - Part 4

Tuesday, June 4, 2024 12:15 (EDT)

Session Chairs: Kaley Walker, Alec Casey

12:15 Alex Cabaj Using RADARSAT observations to investigate Arctic lake ice phenology

12:30 Shaheen Ghayourmanesh Application of daily VIIRS clear-sky composites for monitoring seasonal cycle of freshwater ice over Canada

12:45 Alexander Trishchenko Summer Snowfall Amounts and Minimum Snow/Ice Variations in Canadian **Arctic**

13:00 Gregory Smith Assimilation of synthetic SWOT Observations for the Canadian East Coast using the Regional Ice Ocean Prediction System

13:15 Richard Lawford Farth Observations and Water-Food connections in the Red River Basin













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

6030 Advances and Applications of Artificial Intelligence (AI) in Meteorology - Part 1

Thursday, June 6, 2024 12:15 (EDT)

Session Chairs: Miguel Tremblay, Ann Dacres

12:15 Christopher Subich The state of the art in Al weather forecasting and ECCC's research plans

12:45 Ervig Lapalme NWP Al-based models verifications against observations

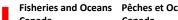
13:00 Syed Zahid Husain Leveraging Data-Driven Weather Emulators to Guide Physics-Based NWP Models: A Fusion of Forecasting Paradigms

13:15 Christian Saad On the development of artificial intelligence downscaling applications for mediumrange forecasts of weather elements at CCMEP

13:30 Reinel Sospedra-Alfonso Deep learning-based bias adjustment of Arctic sea ice forecasts from version 3 of the Canadian Seasonal to Interannual Prediction System (CanSIPSv3)













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6031 Advances and Applications of Artificial Intelligence (AI) in Meteorology - Part 2

Thursday, June 6, 2024 14:05 (EDT)

Session Chairs: Miguel Tremblay, Ann Dacres

14:05 Christopher Subich Why are Al forecasting models so fast?

14:20 Dominique Brunet Towards state-of-the-art nowcasting with a foundational AI model: an ECCC-IBM collaboration

14:35 Vikram Khade Investigation of a Deep Learning based simulator to increase the ensemble size in an EnKF with the recentering technique: experiments with the Lorenz 1996 model

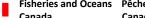
14:50 Jill Psotka Extending the skillful range of hub-height wind forecasts using self-organizing maps

15:05 Jonathan Gadoury Using Machine Learning to model severe weather risk in insurance

15:20 Renee Sieber Analyzing Public Engagement with Official Weather Alerts in Northern Climates to Develop New Computational Approaches to Improving Communication













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6040 Leveraging Artificial Intelligence for Enhanced High-Resolution Regional Climate Modeling of Extreme Events under Climate Change

Thursday, June 6, 2024 15:55 (EDT)

Session Chairs: Yanping Li

15:55 Qingyun Duan Calibration of Parameters of Distributed Land Surface Models Using a Deeping **Learning Technique**

16:25 Kiri Daust Practical Applications of Deep-Learning Based Climate Downscaling

16:40 Dangiong Dai Detecting Canadian wetland surface water extent: integrating deep learning, remote sensing techniques and high-resolution land surface model

16:55 Nicolaas Annau ClimatExML: Designing Al Software for the Computational Demands of High-**Resolution Climate Models**

17:10 Zhenhua Li Bias-Correction of Convection-Permitting Climate Simulations Using Machine-Learning and Multivariate Quantile Mapping











58th Congress/58e congrès Extreme Events in a Changing Climate

Événements extrêmes dans un climat changeant

7010 Towards development of Canada's Digital Twin of the Ocean: Observations, Modelling, Forecasting, Analyses and Applications

Tuesday, June 4, 2024 15:55 (EDT)

Session Chairs: Youyu Lu, Nancy Soontiens

15:55 Youyu Lu Multi-scale variations of ocean temperature off the coast of Nova Scotia and their potential relevance ecosystem and fishery

16:10 Michael Casey Cold temperature spikes in near-bottom water off Halifax during late fall to early spring

16:25 Kamel Chikhar Importance of ocean observations in ECCC's Global Ocean Analysis GIOPS: The **SynObs Project**

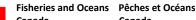
16:40 Vanessa Sutton-Pande Enhancing End-User Engagement in Ocean Observation and Ocean Forecasting Systems: Development of a Visualization and Access Application

16:55 Jonathan Kellogg CIOOS: Developing a strong foundation for Canada's digital ocean

17:10 Youyu Lu Discussion on ideas and collaborations toward development of Canada's Digital Twins of the Ocean: Observations, Modelling, Forecasting, Analyses and Applications













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

7020 Developing Ocean Modelling Capacity in Canada - Part 1

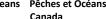
Tuesday, June 4, 2024 12:15 (EDT)

Session Chairs: Paul Myers, Susan Allen

- 12:15 Martin Taillefer Military Oceanography A Collaborative Way Forward
- 12:30 Frederic Dupont Updating to NEMO4 and CICE6 in CONCEPTS prediction systems
- 12:45 Dorina Surcel Colan Updates of GIOPS and RIOPS operational systems at ECCC
- 13:00 Susan Allen Investigation of the Addition of Alkalinity to an Outfall Plume in the Strait of Georgia
- 13:15 Cassidy Donaldson Evaluations of a 3D numerical model of the Salish Sea in small river plume regions
- 13:30 Tahya Weiss-Gibbons Sensitivity of Arctic Ocean Model Simulations to River Runoff and Temperature Forcing From Hydrological Models













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

7021 Developing Ocean Modelling Capacity in Canada - Part 2

Tuesday, June 4, 2024 14:05 (EDT)

Session Chairs: Susan Allen, Paul Myers

14:05 Zhenxia Long Impacts of Arctic anticyclones on the freshwater content in the Beaufort Sea

14:20 Ana Belen HERAS DURAN Year-round perspective on marine physical dynamics and sea ice in Jones Sound, Nunavut, based on observations and model.

14:35 Sarah MacDermid Canada's Three Oceans multi-decade ocean – sea-ice hindcast: A Hudson's Bay sea-ice study.

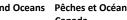
14:50 Pouneh Hoshyar Exploring Western Labrador Sea Dynamics for Ocean and Climate Implications

15:05 Paul Myers Freshwater exchange from the Labrador Current into the sub-polar North Atlantic

15:20 K. Andrew Peterson Quantification of Constrained Scales with an Ensemble Analysis













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

7030 Collaborative Earth System Modelling in Canada - Part 1

Monday, June 3, 2024 12:15 (EDT)

Session Chairs: Clint Seinen, Paul Kushner

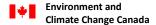
12:15 Ivy Tan A New Estimate of the Climate Sensitivity in CMIP Earth System Models

12:30 Carsten Abraham The Canadian Atmospheric Model version 5.2

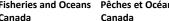
12:45 Vivek Arora The new CanESM6 land surface component for CMIP7 simulations

13:00 Neil Swart Developing CanESM6 and preparing for Canada's CMIP7 contribution

13:15 Paul Kushner The Collaborative Platform for CanESM (CP4C) – Progress in 2023-2024













58th Congress/58e congrès Extreme Events in a Changing Climate

Événements extrêmes dans un climat changeant

7031 Collaborative Earth System Modelling in Canada - Part 2

Monday, June 3, 2024 14:05 (EDT)

Session Chairs: Paul Kushner, Clint Seinen

14:05 Christian Seiler Constraining Carbon Cycle Simulations Using Global Earth Observations and **Machine Learning**

14:20 Claude-Michel Nzotungicimpaye Upgrading the representation of soil carbon processes in the UVic **ESCM**

14:35 Pierre Etienne Banville Examining the climate system drivers of the local and non-local biogeophysical effects of afforestation

14:50 Tom Markland Investigating scenario dependence of the biophysical impacts of reforestation

15:05 Nathan Gillett Accounting for carbon cycle feedbacks when attributing global warming to emissions











Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

7032 Collaborative Earth System Modelling in Canada - Part 3

Monday, June 3, 2024 15:55 (EDT)

Session Chairs: Paul Kushner, Clint Seinen

15:55 Jake Eager-Nash Millennial timescale climate change in the Canadian Earth System Model

16:25 Noah Stanton How does tropospheric VOC chemistry affect climate? Investigations using the Community Earth System Model Version 2

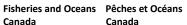
16:40 Erica Rosenblum Most CMIP6 models do not capture the signature of Pacific Water in the Canadian Basin

16:55 Sylvie Leroyer Towards Modernization of Surface and Atmospheric Components of the Short-Range **ECCC's Numerical Weather Prediction System**

17:10 Jason Milbrandt Representation of Clouds and Precipitation in NWP, RCMs, and GCMs – Thoughts on the Future of Cloud Microphysics Parameterization in Atmospheric Models in Canada (and Beyond)













58th Congress/58e congrès Extreme Events in a Changing Climate

Événements extrêmes dans un climat changeant

7040 Simulation of weather and climate extremes using regional climate models

Thursday, June 6, 2024 12:15 (EDT)

Session Chairs: Dominique Paquin, Alejandro Di Luca

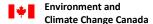
12:15 Yanping Li High-Resolution Regional Climate Modeling and Projection over Western Canada using a Weather Research Forecasting Model with a Pseudo-Global Warming Approach

12:45 Kim Lahaie Comparing the simulation of hourly precipitation using 2.5 and 12-km versions of the Canadian Regional Climate Model

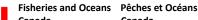
13:00 Timothy C. Y. Chui A Dynamically Downscaled Convection-Permitting Reanalysis and Pseudo-Global Warming Dataset for British Columbia

13:15 Olivier Asselin Blue in Green: Forestation Mitigates European Heat Extremes by Turning Blue Water Green

13:30 Aranildo Lima The effect of climate change on the simulated streamflow of six Canadian rivers based on the CanRCM4 regional climate model













Extreme Events in a Changing Climate Événements extrêmes dans un climat changeant

8010 Changing Arctic: Science and Policy Studies

Tuesday, June 4, 2024 15:55 (EDT)

Session Chairs: Matthew Asplin

15:55 Konrad Gajewski Impacts of climate variability on terrestrial and freshwater systems in the Arctic: lessons from the past

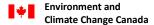
16:10 David Fissel Analysis of Thirty Years of Sea-ice Velocities in the Canadian Beaufort Sea using Upward Looking Sonar Instruments, 1990 to 2020

16:25 Romina Piunno Modulation of Convective Overturning in the Labrador Sea by Large-Scale Modes of Atmospheric Variability

16:40 May Wang Establishing a new community-based sea ice monitoring site in coastal Nunatsiavut (Kaipokok Bay)

16:55 Matthew Asplin Insights on the 2022-23 Ice Season Using Ice Profiling Sonar in the Coastal Waters of Nunatsiavut, Newfoundland and Labrador, Canada

17:10 Emma Harrison The Nunatsiavut Sea Ice Observers Program: Community-based monitoring of environmental change and social impacts in Nunatsiavut, northern Labrador











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8020 Multidisciplinary - Theoretical to applied science - Part 1

Thursday, June 6, 2024 14:05 (EDT)

Session Chairs: Rick Danielson

14:05 Vanessa Foord Using weather and microclimate measurements to assess wildfire risk in different forest stand types.

14:20 Victor Manuel Peñaranda-Vélez The Topographic Random Cascade Approach for Downscaling and Extreme Event Modeling of Coarse-Scale Precipitation Products over Complex Terrain Regions. Study case: the metropolitan area of Mexico City.

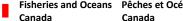
14:35 Raiesh Shrestha Future changes in consecutive ice-influenced and open-water streamflow extremes in a subarctic river basin

14:50 Alex Cabaj Modelling Northern Hemisphere lake ice phenology using the Canadian Lake Ice Model

15:05 Alex Cabaj Assessing the impact of differing snow inputs to reanalysis-based snow-on-sea-ice reconstructions













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8021 Multidisciplinary - Theoretical to applied science - Part 2

Thursday, June 6, 2024 15:55 (EDT)

Session Chairs: Rick Danielson

15:55 Gérard Croteau A look back at a 41 year career at MSC.

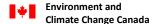
16:10 Benoit Archambault Highlights of the Next Innovation Cycle at the Meteorological Service of Canada: Innovation Cycle 4

16:25 Kai Wong Automatic weather station temperature measurement uncertainties using thermistor probes

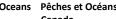
16:40 Philippe Barnéoud Characterizing large-scale migrations of a boreal forest pest using a combination of moths trapping and atmospheric transport and dispersion modelling

16:55 SUKANYA GHOSH Urban and Non-Urban Environmental Components and their impacts on Vector-Borne and Human Infectious Disease risks via effects on local Climate in Canada

17:10 Rick Danielson A study of dependence among environmental measures













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8030 Multidisciplinary- Community, Service and Education

Tuesday, June 4, 2024 14:05 (EDT)

Session Chairs: Vanessa Foord

14:05 Paige Aldridge WMO Initiative on the Environmental Sustainability of Observing Systems and Methods: Advancing Ideas Through International Engagement

14:20 Rabah Hachelaf Recent Advancements in Canadian Operational Radar Production and Services Post CWRRP (Canadian Weather Radar Replacement Program)

14:35 Laura Lam Validation of actual reported cases of drifting vessels

14:50 Charles Lin Consumers and citizens making impact on Canada's Net Zero challenge

15:05 Stephanie Arnold Expanding Horizons and Expectations: Lessons from innovations in adaptation

15:20 Serge Desjardins THE RIPPLE EFFECT CAUSED BY THE ESTABLISHMENT OF A PERMANENT CELL WITHIN THE CONGRESS SCIENTIFIC PROGRAM COMMITTEE / L'EFFET DE VAGUE PROVOQUÉ PAR LA MISE EN PLACE D'UNE CELLULE PERMANENTE AU SEIN DU COMITÉ DU PROGRAMME SCIENTIFIQUE DU **CONGRÈS**





