



Photo credit: M.Sc. alumna, Selena Schut

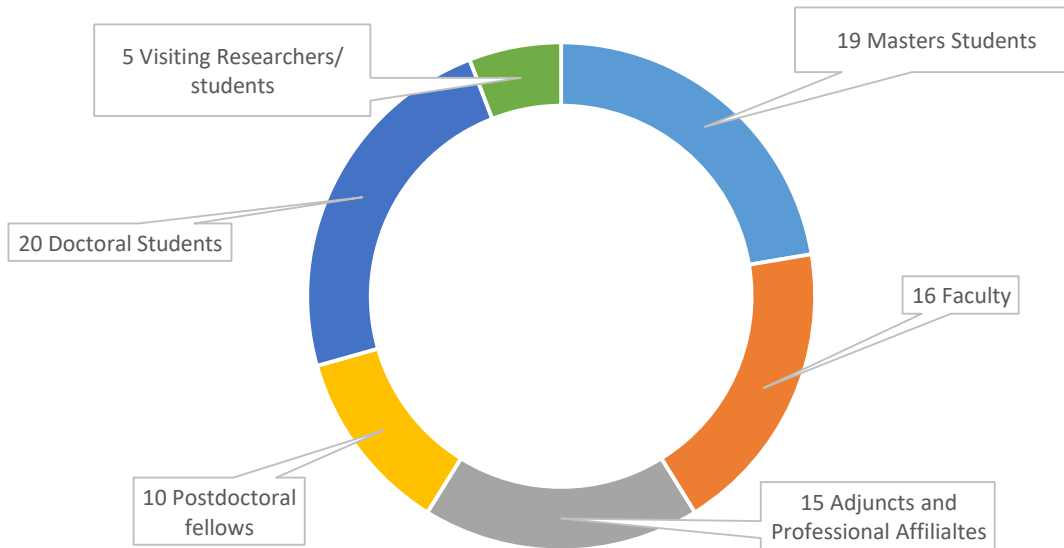
Department of  
**GEOGRAPHY & PLANNING**  
RESEARCH ACTIVITY REPORT

---

2021-2022



# THE DEPARTMENT



## RESEARCH BY THE NUMBERS, 2021-2022



**\$6.4M** in new external funding

# TOP RESEARCH NEWS

---



## DR. DIAB WINS NEW SCHOLAR RESEARCH AWARD

Assistant professor Ehab Diab was awarded the College of Arts and Science *New Scholar Research Award* in March 2022. Dr. Diab's expertise is in transportation. He conducts a wide range of transportation projects that adopt evidence-based practical approaches to influence decision-making in the public and private sectors.

Read the full press release [here](#)

## DEPARTMENT HYDROLOGISTS KEY PART OF TEAM THAT WINS \$360M USD FROM NOAA

A team of hydrologists from the USask and University of Calgary, led by Dr. Martyn Clark, comprises the Canadian contingent in an unprecedented international collaboration that aims to revolutionize flood predictions across North America. Distinguished Professor Dr. John Pomeroy is a project co-investigator. Currently \$3M has come to the Department of Geography & Planning.



Read the full press release [here](#)

## THE TEAM IS RECRUITING 30 NEW PHD AND POSTDOCTORAL FELLOW POSITIONS IN COMPUTATIONAL HYDROLOGY

Apply to study [here](#)



## **DR. POMEROY LEADS TEAM AWARDED \$15.25 M FROM CANADIAN FOUNDATION FOR INNOVATION**

Distinguished Professor Dr. John Pomeroy leads a nine university collaboration that operates 76 water observation sites, 27 deployable measurement systems, and 31 state-of-the-art university-based environmental and aquatic analysis facilities. The project is funded by CFI's Major Science Initiative program.

Read the full press release [here](#)

## ***THE KIKAWINAW ASKIY PROJECT***

Dr. Krys Chutko, Dr. Robert Patrick and the Okanese First Nation are collaborating to monitor climate variability, weather trends and extreme weather events at Okanese. Funded by Indigenous and Northern Affairs Canada, the weather stations form part of a larger project to build local adaptation to climate change and to protect sources of drinking water.



# RESEARCH FUNDING

Our research funding provides opportunities for graduate student training at both the Master's (MA, MSc) and PhD level. Our faculty and graduate students have been successful in obtaining Tri-Agency funding, with some faculty having received funding from more than one Tri-Agency. Our research is also funded by a variety of other sources, including industry, governments, not-for-profit organizations, and foundations, reflecting the breadth and interdisciplinary nature of research in the department.

## EXTERNAL FUNDING ANNOUNCEMENTS, 2021-2022

<p><i>Reconstructing weather and climate change in Okanese First Nation</i> SSHRC EXCHANGE GRANT (\$5,000) CHUTKO, K. (PI)</p>	<p><i>Cooperative institute for research to operations in hydrology to advance the predictive capabilities of the nextGen national water model</i> NOAA (\$3,000,000) CLARK, M. (PI) &amp; POMEROY, J. (CO-I)</p>	<p><i>Improving hydrological simulations in the Canadian earth system model</i> ENVIRONMENT AND CLIMATE CHANGE CANADA (\$130,000) CLARK, M. (PI)</p>
<p><i>Building a generation of cycling commuters by informational support to newcomers of Saskatoon</i> MITACS (\$10,000) DIAB, E. (PI)</p>	<p><i>Impacts of the new Reseau Express Metropolitan on mobility, health and equity: a pre-post intervention study</i> NSERC CHRP (\$17,500) DIAB, E. (CO-PI)</p>	<p><i>Integrating measures of grassland function using remote sensing</i> NSERC DISCOVERY GRANT (\$180,000) GUO, X. (PI)</p>
<p><i>Improvements to the environment footprint monitoring platform</i> MITACS (\$10,000) GUO, X. (PI)</p>	<p><i>Monitoring of shrub component to support for ecosystem management in Saskatchewan Cypress Hills Interprovincial Park</i> SASKATCHEWAN MINISTRY OF PARKS, CULTURE AND SPORT (\$6,490) GUO, X. (PI)</p>	<p><i>Collaborative development of grassland management plan for Douglas and Danielson Provincial Parks and surrounding area</i> SASKATCHEWAN MINISTRY OF PARKS, CULTURE AND SPORT (\$29,980) GUO, X. (PI)</p>
<p><i>Building Pandemic Recovery and response through access to safe drinking water at Beardy's Okemasis Cree Nation</i> NORTH AMERICAN PARTNERSHIP FOR ENVIRONMENTAL COMMUNITY ACTION (\$10,000) PATRICK, R. (CO-I)</p>	<p><i>Indigenous health action program Tla'amin Nation climate health risk assessment</i> FIRST NATIONS HEALTH AUTHORITY (BC) (\$10,000) PATRICK, R. (CO-I)</p>	<p><i>Beardy's Okemasis Cree Nation source water protection and water security plan</i> SASKATCHEWAN WATER SECURITY AGENCY. WATERSHED SERVICES PROJECT INCENTIVE FUNDING MODEL (\$5,000) PATRICK R. (CO-I)</p>
<p><i>High-resolution crop monitoring using UAV-based sensors</i> SASKATCHEWAN AGRICULTURE DEVELOPMENT FUND (\$114,999) POMEROY, J. (CO-I)</p>	<p><i>Operation of gem-mesh Yukon River Basin water forecasting system</i> GOVERNMENT OF YUKON (\$43,750) POMEROY, J. (PI)</p>	<p><i>Changing attitudes through art: The art-water-climate connection</i> SSHRC CONNECTION GRANT (\$21,723) SCHUSTER-WALLACE, C. (PI)</p>
<p><i>Impacts of beaver systems on lateral and downstream hydrological connectivity</i> NSERC DISCOVERY GRANT (\$225,000) WESTBROOK, C. (PI)</p>	<p><i>Advancing tools to determine beaver dam carrying capacity of the headwaters of the Bow River in support of habitat restoration</i> ALBERTA CONSERVATION ASSOC. (\$25,867) WESTBROOK, C. (PI)</p>	<p><i>Transdisciplinary education collaboration for transformation in sustainability (TRANSECTS)</i> SSHRC PARTNERSHIP GRANT (\$2,500,00) WALKER, R. (CO-I) &amp; PATRICK, R. (CO-I)</p>

# GRADUATE STUDENT ACHIEVEMENTS 2021-22

---

GERVIN APATINGA	❖	Dr. Rui Feng Graduate Award
LUCAS ARMSTRONG	❖	J.H. Richards Scholarship, 2022
ALEX CEBULSKI	❖	J.H. Richards Scholarship, 2022
DAVID CASSON	❖	J.H. Richards Scholarship, 2021
AMANDA RONNQUIST	❖	Global Institute for Water Security Best Master's Thesis Award for 2022 in Water Security Research
VERONICA ROHR	❖	University of Saskatchewan Graduate Thesis Award in the area of Social Science A
NICHOLE-LYNN STOLL	❖	Don Gray Scholarship in Hydrology, Canadian Geophysical Union, 2022

## NEW IN GRADUATE EDUCATION

---

### TWO NEW ONLINE GRADUATE CERTIFICATES LAUNCHED

#### Graduate Certificate in Environmental Planning

The Graduate Certificate in Environmental Planning responds to the growing demand for professionals in environmental planning fields – from environmental consultants and Indigenous and non-Indigenous land and resource managers, to community and regional planners and decision makers. Focused on tools, concepts, and approaches for the practitioner, the certificate is designed for both career professionals and individuals wanting to complement their current skillsets or postsecondary training.

Apply [here](#)

#### Graduate Certificate in Hydrology

The Graduate Certificate in Hydrology provides students with applied skills for professional practice in physical Hydrology. Focused on concepts, tools, quantitative methods, and field skills, the certificate is designed for those currently working, or wanting to work, in both applied water resources fields and water science institutions. The certificate is valuable to individuals wanting to complement their current skillsets or postsecondary training. The courses that comprise this certificate will be given online or intensively with online options to facilitate participation of graduate students from other universities and of professionals from across Canada and around the world. This certificate can be taken as a standalone program or used to ladder into a graduate degree program.

Apply [here](#)

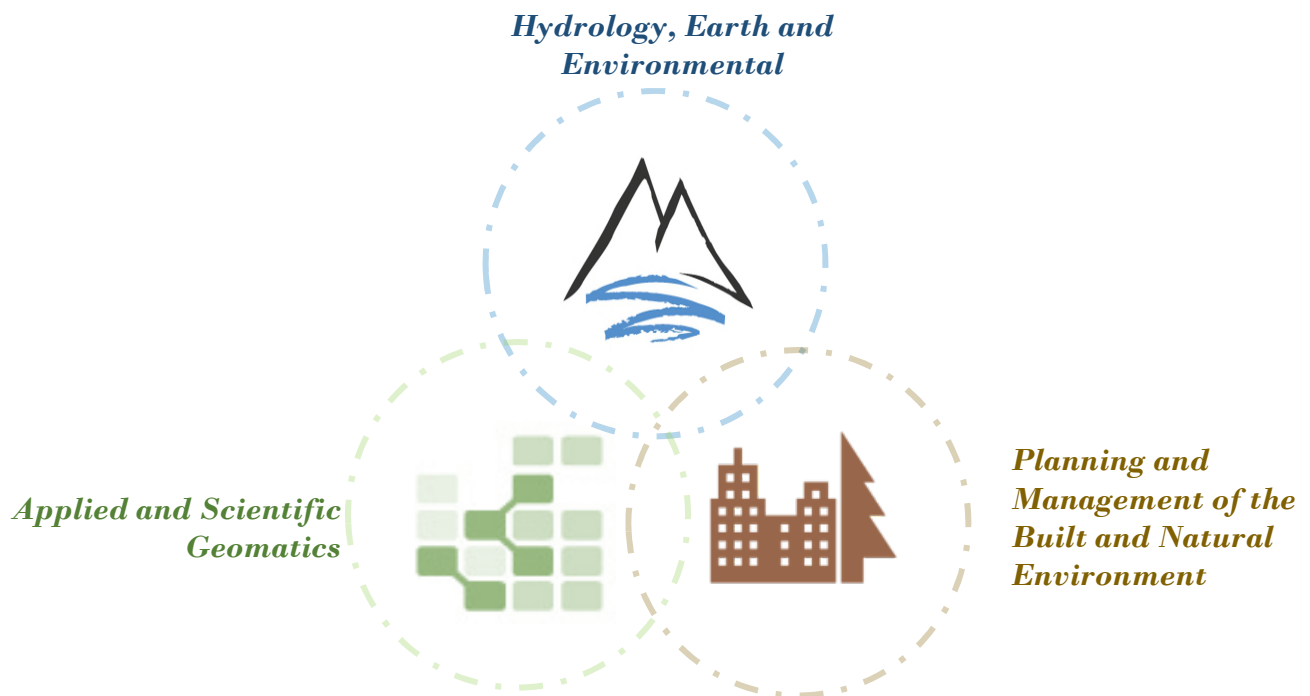
# RESEARCH MISSION AND VALUES

The Department of Geography and Planning shares the University's mission to achieve excellence in the scholarly activities of teaching, discovering, preserving, and applying knowledge. Included amongst the values we hold as important in guiding our research are: excellence in scholarship and graduate student mentoring; academic freedom and independence; interdisciplinarity, integration and collaboration.

We are committed to research with impact both within and beyond the scholarly community – research that tackles today's societal and environmental challenges, stimulates public debate on pressing environmental and community issues, and addresses challenges framed by our sense of place stretching from the local through to international scales.

## RESEARCH FOCUS

Research activity in our department exemplifies the spirit of the disciplines of geography and planning and is concentrated in three overlapping domains: *Hydrology, earth and environmental systems; Applied and scientific geomatics; Planning and management of the built and natural environment*. Much of our research occurs at the boundaries of these domains, is crosscutting, and is focused on integrative approaches to addressing scholarly and societal challenges and mobilizing knowledge.





# HYDROLOGY, EARTH AND ENVIRONMENTAL SYSTEMS

Modeling and understanding hydrological, ecological, and geophysical systems and interactions with the human environment.

Our research is focused on understanding, assessing, and modeling physical environmental systems and processes and the landscapes they create, including how environmental systems are changing under natural and human-induced stress. This includes research on water supply resilience and vulnerability, marine environments, responses of river flow and glacier cover to climate change, fluvial geomorphology, erosion modeling, wetland science, and ecohydrology.

Research also occurs at topical boundaries, using applied geomatics and other tools and exploring the implications of physical environmental change for policy, planning, and management of the human environment. This includes research focused on flood risk management, environmental impact assessment, and decision support tools for wetland assessment and watershed management.

Our Department is home to the Centre for Hydrology, a Tier I Canada Research Chair in Water Resources and Climate Change and the Director and Associate Director of the CFREF-funded Global Water Futures program – the largest university-led freshwater research program in the world. The Centre for Hydrology currently manages much of its research relating to mountain hydrology and earth system prediction at the Coldwater Laboratory in Canmore, Alberta, its sensor development and drone laboratory at the Smart Water Systems Laboratory at the National Hydrology Research Centre of Environment and Climate Change Canada and its research on prairies, boreal forest and northern Canada from the Canadian Centre for Water Forecasting and Prediction at 121 Research Drive in Innovation Place.

## **Some of our current research projects include:**

- Rocky Mountain water supply resilience and vulnerability evaluation
- Expanded testing and development of the Prairie Hydrological Model in Prairie pothole watersheds
- Long-term ecology and seabed habitat mapping, Frobisher Bay, Nunavut
- Assessing community structure of marine benthos, Canadian Arctic Archipelago



- Landscape form and ecohydrological function alteration by beavers
- Assessment of PAH distributions in sediments in the oil sands monitoring area and western Lake Athabasca
- Building tools to simulate and predict hydrological processes at spatial scales from hillslopes to continents and time scales from seconds to centuries



## APPLIED AND SCIENTIFIC GEOMATICS

Advancing GIS, spatial statistics, and remote sensing, with applications to problems in the social, physical and environmental sciences.

Our research is focused on the development of remote sensing techniques for assessing forests and grasslands productivity, using GIS and spatial statistics in health research and urban geography, and developing tools to examine human mobility, navigation, and interaction in urban environments.

Research also occurs at topical boundaries, contributing the development and application of geomatics for understanding physical systems and supporting policy and planning decisions. This includes collaborative research with computer science, plant science, and other scholars, practitioners and decision makers from the social, health and natural sciences. Our work in this area includes the development of new tools and the integration of emerging technologies, such as the development of smartphone applications for indoor positioning and mobility tracking, the use of field-based sensor systems, and the integration of drones for environmental modeling.

### Key research projects include:

- Integrating measures of grassland function using Remote Sensing
- Development of monitoring methods for dead materials in Alpine pastures using Remote Sensing data in Qinghai-Tibet plateau
- Strategic Environmental Assessment application for landscape-based, temporal analysis of wetland change in urban environments
- Detecting spatial and temporal changes in land cover on Aboriginal reserves
- Visualizing & communicating urban and transposition spatiotemporal data
- Measuring the impacts of long-term public transport service disruptions and the effectiveness of mitigation strategies.

- Establishing functional relationship between public transit ridership and local and regional accessibility measures.



## PLANNING AND MANAGEMENT OF THE BUILT AND NATURAL ENVIRONMENT

Planning and design of urban and rural spaces and assessing and managing human interactions with the natural environment.

Our research is focused on the built and natural environment, including human well-being and the planning and design of urban and rural spaces. This includes research on the origins of city form, urban quality, transportation system performance, sustainable cities, municipal governance, Indigenous health, indigenous urbanism, and human behavior and navigation. Research also occurs on natural resources planning and management, including exploring human interactions with the natural environment using applied geomatics and other analytical tools. Included is research on watershed planning and management, flood risk management, environmental policy and planning, land use and transportation systems interactions, sustaining northern communities, energy policy, and environmental and social impact assessment.

Our research is supported by collaborations with a variety of external government, industry and community partnerships and on-campus partnerships, including the School of Environment and Sustainability, Johnson-Shoyama Graduate School of Public Policy, and the Saskatchewan Population Health and Evaluation Research Unit.

### **Some of our current research projects include:**

- Source water protection planning with First Nations in Saskatchewan
- Food security in regional strategic environmental assessment
- Creating demand for a downtown lifestyle in Saskatoon
- Indigenous health policy network analysis of northern Saskatchewan
- Health risks associated with private drinking water well use
- Establishing First Nation indicators of health and wellbeing
- Developing coupled system approaches to water-related health
- Women and water fetching in rural Uganda and Ghana
- Watershed and habitat protection planning with First Nations
- Climate change adaptation planning with First Nations
- Exploring the concept of '15-minute city' and its application in Canada

# FACULTY



## ALEC AITKEN, PROFESSOR, DEPARTMENT HEAD

ARCTIC MARINE BIOLOGY; QUATERNARY GEOLOGY AND GEOMORPHOLOGY;  
GEOARCHAEOLOGY OF PALEO-INDIAN SETTLEMENTS ON THE CANADIAN PRAIRIES



## ABRAHAM AKKERMAN, PROFESSOR

POPULATION AND DEMOGRAPHY; URBAN DESIGN; ORIGINS OF CITY FORM;  
PLANNING AND DEVELOPMENT; PHENOMENOLOGY OF THE BUILT ENVIRONMENT



## SCOTT BELL, PROFESSOR

GEOGRAPHIC INFORMATION SCIENCE; NAVIGATION AND WAYFINDING;  
CARTOGRAPHY; HUMAN SPATIAL COGNITION; HEALTH GEOGRAPHY



## JILL BLAKLEY, ASSOCIATE PROFESSOR & INTERIM VICE DEAN FACULTY RELATIONS (COLLEGE OF ARTS AND SCIENCE)

REGIONAL PLANNING; NATURAL RESOURCE MANAGEMENT; STRATEGIC ENVIRONMENTAL ASSESSMENT; CUMULATIVE EFFECTS ASSESSMENT; PUBLIC SPACE DESIGN AND MEASUREMENT; URBAN QUALITY



## KRYSTOPHER CHUTKO, ASSISTANT PROFESSOR

SPATIAL VARIABILITY OF HYDROMETEOROLOGY; WEATHER AND CLIMATE MONITORING IN INDIGENOUS COMMUNITIES; PEDAGOGY OF PHYSICAL GEOGRAPHY; CURRENT AND PAST VARIABILITY IN TERRESTRIAL AND AQUATIC PROCESSES



## MARTYN CLARK, PROFESSOR

DEVELOPMENT OF SPATIALLY DISTRIBUTED HYDROLOGIC MODELS; DEVELOPMENT OF METHODS FOR HYDROLOGIC DATA ASSIMILATION; DEVELOPMENT OF METHODS TO QUANTIFY HYDROLOGIC MODEL UNCERTAINTY



## EHAB DIAB, ASSISTANT PROFESSOR

LAND USE AND TRANSPORTATION PLANNING; PUBLIC TRANSIT PLANNING AND OPERATIONS; GIS APPLICATION IN PLANNING; TRAVEL BEHAVIOUR, SOCIAL EQUITY IN PLANNING.



**DIRK DEBOER, PROFESSOR, ACTING HEAD OF PSYCHOLOGY AND HEALTH STUDIES**

EROSION MODELS; METAL-SEDIMENT INTERACTIONS IN RIVERS; SEDIMENT AND WATER QUALITY



**XULIN GUO, PROFESSOR**

REMOTE SENSING; INTEGRATING MEASURES OF GRASSLAND FUNCTIONING USING REMOTE SENSING; REMOTE SENSING APPLICATIONS FOR LANDSCAPE CHANGE, PHYSICAL SYSTEMS AND IN URBAN ENVIRONMENTS



**PAUL HACKETT, ASSOCIATE PROFESSOR**

HISTORY OF ABORIGINAL HEALTH; DIFFUSION OF DIRECTLY TRANSMITTED, ACUTE INFECTIOUS DISEASES; IMPACT OF CULTURAL CHANGE ON COMMUNITY HEALTH; HISTORY OF TUBERCULOSIS AMONG FIRST NATIONS OF WESTERN CANADA



**LAWRENCE MARTZ, PROFESSOR EMERITUS**

DIGITAL TERRAIN ANALYSIS FOR HYDROLOGICAL MODELING APPLICATIONS; CARTOGRAPHY; HYDROLOGY; GEOMORPHOLOGY; DIGITAL ELEVATION MODELS



**BRAM NOBLE, PROFESSOR & VICE DEAN RESEARCH, SCHOLARLY AND ARTISTIC WORKS (COLLEGE OF ARTS AND SCIENCE)**

ENVIRONMENTAL IMPACT ASSESSMENT; RESOURCE POLICY; RESOURCE DEVELOPMENT; WATER RESOURCES MANAGEMENT ENERGY POLICY; ENVIRONMENTAL DECISION MAKING; ABORIGINAL ENGAGEMENT IN RESOURCE DEVELOPMENT



**ROBERT PATRICK, ASSOCIATE PROFESSOR**

LAND USE AND WATERSHED PLANNING; SOURCE WATER PROTECTION; WATER SECURITY; INTEGRATED WATER RESOURCES MANAGEMENT AND INDIGENOUS COMMUNITIES; LOW IMPACT DEVELOPMENT IN URBAN AREAS



**JOHN POMEROY, DISTINGUISHED PROFESSOR & TIER 1 CRC**

PHYSICAL HYDROLOGY; COLD REGIONS PROCESSES; WATERSHED MODELING; HYDROMETEOROLOGY; IMPACT OF LAND USE AND CLIMATE CHANGE ON HYDROLOGY; SNOW PROCESSES; IMPROVED PREDICTION OF FLOODS AND DROUGHTS



**CORINNE SCHUSTER-WALLACE, ASSOCIATE PROFESSOR**

COUPLED SYSTEMS APPROACHES TO HUMAN HEALTH; CLIMATE CHANGE AND WATER-RELATED DISEASES; GENDER; EQUITY; LOCAL WATER SECURITY IN RURAL COMMUNITIES; WATER AND SUSTAINABLE DEVELOPMENT



**RYAN WALKER, PROFESSOR & ASSOCIATE DEAN, POLICY AND PROGRAMMING INNOVATION (COLLEGE OF GRADUATE AND POSTDOCTORAL STUDIES)**

URBAN PLANNING AND GEOGRAPHY; INDIGENOUS URBANISM; PUBLIC SPACE DESIGN AND MEASUREMENT; AGE-FRIENDLY COMMUNITIES; MULTI-LEVEL GOVERNANCE



**CHERIE WESTBROOK, PROFESSOR**

ECOHYDROLOGY OF BEAVER-DOMINATED LANDSCAPES; WETLAND SCIENCE; GROUNDWATER-SURFACE WATER INTERACTIONS OF MOUNTAIN WETLANDS; LINKING SCIENCE TO PRACTICE

# PUBLICATIONS

2021-2022

## EDITED BOOKS & BOOK CHAPTERS IN ALPHABETICAL ORDER

1. Anjal Prakash, Cecilia, Conde, Ayansina, Ayanlade, Rachel, Bezner Kerr, Emily, Boyd, Martina, A Caretta, Susan, Clayton, Marta, G. Rivera Ferre, Laura, Ramajo Gallardo, Sharina, Abdul Halim, Nina, Lansbury, Oksana, Lipka, Ruth, Morgan, Joyashree, Roy, Diana, Reckien, E., Lisa F. Schipper, Chandni, Singh, Maria, Cristina Tirado von der Pahlen, Edmond, Totin, Kripa, Vasant, Morgan, Wairiu, Zelina, Zaiton Ibrahim. **Contributing Authors:** Seema Arora-Jonsson, Emily, Baker, Graeme, Dean, Emily, Hillenbrand, Alison, Irvine, Farjana, Islam, Katriona, McGlade, Hanson, Nyantakyi-Frimpong, Nitya, Rao, Federica, Ravera, Emilia, Reyes, Diana, Hinge Salili, **Corinne, Schuster-Wallace**, Alcade, C. Segnon, Divya, Solomon, Shreya, Some, Indrakshi, Tandon, Sumit, Vij, Katharine, Vincent, Margreet, Zwarteveen. (2022). Cross-Chapter Box GENDER: Gender., Climate, Justice and Transformative Pathways., in Chapter 18: Decision Making Options for Managing Risk., Climate, Change 2022: Impacts., Adaptation & and, Vulnerability. IPCC AR6 (pages 18-57 - 18-63). (March 2022). Water. In: Climate Change 2022: Impacts, Adaptation, and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change, H.-O. Portner, D.C. Roberts, M. Tignor, E.S. Poloczanska, K. Mintenbeck, A. Alegria, M. Craig, S. Langsdorf, S. Loschke, V. Moller, A. Okem, B. Rama (eds.): Cambridge University Press.
2. Caretta, M.A., Mukherji, A., Arfanuzzaman, M., Betts, R.A., Gelfan, A., Hirabayashi, Y., Lissner, T.K., Liu, J., Lopez, Gunn E., Morgan, R., Mwanga, S., Supratid, S. Maarten van Aalst, Gueladio, Cisse, Ayansina, Ayanlade, Lea, Berrang-Ford, Rachel, Bezner Kerr, Robbert, Biesbroek, Kathryn, Bowen, Martina, Angela Caretta, So-Min, Cheong, Winston, Chow, Mark, John Costello, Kristie, Ebi, Elisabeth, Gilmore, Bruce, Glavovic, Walter, Leal, Stefanie, Langsdorf, Elena, Lopez-Gunn, Ruth, Morgan, Aditi, Mukherji, Camille, Parmesan, Mark, Pelling, Elvira, Poloczanska, Marie-Fanny, Racault, Diana, Reckien, Jan, C. Semenza, Pramod, Kumar Singh, Stavana, E. Strutz, Maria, Cristina Tirado von der Pahlen, **Corinne, Schuster-Wallace**, Alistair, Woodward., Zinta, Zommers. Cross-Chapter Box COVID: COVID-19 in Chapter 7: Health., Wellbeing, and, the Changing Structure of Communities., Climate, Change 2022: Impacts., Adaptation, and, Vulnerability. IPCC AR6 (pages 7-32 - 7-36).
3. Craft, A., and **Blakley, J.** (Eds.) (2022). *In Our Backyard: Keeyask and the Legacy of Hydroelectric Development*. Winnipeg, MB: University of Manitoba Press.

4. Prakash, A., Conde, C., Ayanlade, A., Bezner Kerr, R., Boyd, E., Caretta, M.A., Clayton, S., Rivera Ferre, M.G., Ramajo Gallardo, L., Abdul Halim, S., Lansbury, N., Lipka, O., Morgan, R., Roy, J., Reckien, D., Schipper, E.L.F., Singh, C., von der Pahlen, M.C.T., Totin, E., Vasant, K., Wairiu, M., Zaiton Ibrahim, Z., Arora-Jonsson, S., Baker, E., Dean, G., Hillenbrand, E., Irvine, A., Islam, F., McGlade, K., Nyantakyi-Frimpong, H., Rao, N., Ravera, F., Reyes, E., Hinge Salili, D., **Schuster-Wallace, C.**, Segnon, A.C., Solomon, D., Some, S., Tandon, I., Vij, S., Vincent, K., Zwarteveen, M. (2022). Cross-Chapter Box GENDER: Gender, Climate, Justice and Transformative Pathways, in, Chapter 18: Decision Making Options for Managing Risk, In Climate Change 2022: Impacts, Adaptation and Vulnerability. IPCC AR6 (pages 18-57 - 18-63). (March 2022).
5. Phillips I, Jardine T, Lindenschmidt K-E, **Westbrook C, Pomeroy J.** 2022. In press. Chapter 19 – Nelson and Churchill River basins. In: Rivers of North America, 2nd edition. Delong M, Jardine T, Benke A, Cushing C (eds.). Elsevier, Amsterdam.
6. **Pomeroy J.W., Whitfield P.H., Spence C.** (eds.) (2023), Putting Prediction in Ungauged Basins into Practice (p. 375). Cambridge, Ont.: Canadian Water Resources Association and International Association of Hydrological Sciences.
7. van Aalst, M., Cisse, G., Ayanlade, A., Berrang-Ford, L., Bezner Kerr, R., Biesbroek, R., Bowen, K., Caretta, M.A., Cheong, S-M., Chow, W., Costello, M.J., Ebi, K., Gilmore, E., Glavovic, B., Leal, W., Langsdorf, S., Lopez-Gunn, E., Morgan, R., Mukherji, A., Parmesan, C., Pelling, M., Poloczanska, E., Racault, M-F., Reckien, D., Semenza, J.C., Kumar Singh, P., Strutz, S.E., Tirado von der Pahlen, M.C., **Schuster-Wallace, C.**, Woodward, A., Zommers, Z. (2022). Cross-Chapter Box COVID: COVID-19 in Chapter 7: Health, Wellbeing, and the Changing Structure of Communities; Climate Change 2022: Impacts, Adaptation, and Vulnerability. IPCC AR6 (pages 7-32 - 7-36). (March 2022).
8. **Walker R., Nejad S.** 2022. Urban planning, Indigenous peoples, and Settler states. In: Bain A., Peake L. (eds), Urbanization in a global context, 2<sup>nd</sup> edition, Oxford University Press, Toronto.

## JOURNAL PUBLICATIONS IN ALPHABETICAL ORDER

1. **Apatinga, G.A., Schuster-Wallace, C.J.** & Dickson-Anderson, S.E. (2022). A conceptual framework for gender and climate mainstreaming to mitigate water inaccessibility in rural sub-Saharan Africa. WIREs Water.
2. Arnold L, Hanna K, **Noble BF**, Gergel S, Nikolakis W. (2022). Assessing the Cumulative Social

3. **Aubry-Wake, C., Bertoncini, A., Pomeroy, J.W.** (2022) Fire and Ice: The Impact of Wildfire-Affected Albedo and Irradiance on Glacier Melt, *Earth's Future*, 10(4): e2022EF002685, DOI: 10.1029/2022EF002685
4. Baulch, H., Whitfield, C., Wolfe, J., Basu, N., Bedard-Haughn, A., Belcher, K., Clark, R., Ferguson, G., Hayashi, M., Ireson, A., Lloyd-Smith, P., Loring, P., **Pomeroy, J.W., Shook, K.** and **Spence, C.** (2021) Synthesis of science: findings on Canadian Prairie wetland drainage, *Canadian Water Resources Journal*, 46(4): 229-241, DOI: 10.1080/07011784.2021.1973911
5. **Bertoncini, A., Aubry-Wake, C., Pomeroy, J.W.** (2022). Large-area high spatial resolution albedo retrievals from remote sensing for use in assessing the impact of wildfire soot deposition on high mountain snow and ice melt, *Remote Sensing of Environment*, 278: 113101, DOI: 10.1016/j.rse.2022.113101
6. Bunn, P.T.W., Wood, A.W., Newman, A.J., Chang, H.I., Castro, C.L., **Clark, M.P.** & Arnold, J.R. (2022). Improving station-based ensemble surface meteorological analyses using numerical weather prediction: A case study of the Oroville Dam crisis precipitation event. *Journal of Hydrometeorology*
7. **Clark, M.P.**, Vogel, R.M., Lamontagne, J.R., Mizukami, N., Knoben, W.J.M., Tang, G., Gharari, S., Freer, J.E., **Whitfield, P.H., Shook, K.R.** & Papalexiou, S.M. (2021). The Abuse of Popular Performance Metrics in Hydrologic Modeling. *Water Resources Research*, 57(9)
8. **Costa, D., Pomeroy, J.W.**, Brown, T., Baulch, H., Elliott, J. and Macrae, M. (2021) Advances in the simulation of nutrient dynamics in cold climate agricultural basins: Developing new nitrogen and phosphorus modules for the Cold Regions Hydrological Modelling Platform, *Journal of Hydrology*, 603: 126901, DOI: 10.1016/j.jhydrol.2021.126901.
9. **Diab, E.**, Srikukenthiran, S., Miller, E., Habib, K (2021). Effects of system configurations of automated fare collection on transit trip origin–destination estimation in Greater Toronto and Hamilton Area. *Public Transport: Planning and Operations*. <https://doi.org/10.1007/s12469-021-00283-z>
10. Diaz, F., Abbassi, J., Fuller, D. & **Diab, E.** (2021). Canadian transit agencies response to COVID-19: understanding strategies, information accessibility and the use of social media. *Transportation Research Interdisciplinary Perspectives (TRIP)*. <https://doi.org/10.1016/j.trip.2021.100465>
11. **Dutta N, Noble BF, Poelzer G, Hanna K.** (2021). From project impacts to strategic decisions: recurring issues and concerns in wind energy environmental assessment. *Environmental Management* <https://doi.org/10.1007/s00267-021-01518-2>
12. Firth, Caislin L., Yan Kestens, Meghan Winters, Kevin Stanley, **Scott Bell**, Benoit Thierry, Kole Phillips, Zoé Poirier-Stephens, and Daniel Fuller. "Using combined Global Position System



- and accelerometer data points to examine how built environments and gentrification are associated with physical activity in four Canadian cities." *International Journal of Behavioral Nutrition and Physical Activity* 19, no. 1 (2022): 1-12
13. **Frank, T.**, Smith, A., Houston, B., Yang, X. & **Guo, X.** (2022). Estimating biophysical parameters of native grasslands using spectral data derived from close range hyperspectral and satellite data. *Canadian Journal of Remote Sensing*, 2022: 1-16
  14. **Frank, T.**, Smith, A., Houston, B., Lindsay, E. & **Guo, X.** (2022). Differentiation of six grassland/forage types in three Canadian ecoregions based on spectral characteristics. *Remote Sensing*, 2022(14): 1-15
  15. Fuller, Daniel, **Scott Bell**, Caislin L. Firth, Nazeem Muhajarine, Trisalyn Nelson, Kevin Stanley, Meredith Sones et al. "Wave 1 results of the INTerventions, Research, and Action in Cities Team (INTERACT) cohort study: Examining spatio-temporal measures for urban environments and health." *Health & Place* (2021): 102646
  16. Gharari, S., Vandekelen, I., Tefs, A., Mizukami, N., Stadnyk, T.A., Lawrence, D. & **Clark, M.P.** (2022). A Flexible Multi-Scale Framework to Simulate Lakes and Reservoirs in Earth System Models. *Earth and Space Science Open Archive*
  17. **He, Z.**, **Pomeroy, J W.**, **Fang, X.**, Peterson A. (2021) Sensitivity analysis of hydrological processes to perturbed climate in a southern boreal forest basin, *Journal of Hydrology*, 601: 126706, DOI: 10.1016/j.jhydrol.2021.126706
  18. Hathaway JM, Petrone RM, **Westbrook CJ**, Rooney RC, Langs LE. 2022. Using stable water isotopes to analyze spatiotemporal variability and hydrometeorological forcing in mountain valley wetlands. *Water* 14: 1815. <https://doi.org/10.3390/w14111815>
  19. Hobbi, S., Papalexiou, S.M., Rajulapati, C.R., Nerantzaki, S., Markonis, Y., Tang, G. & **Clark, M.P.** (2022). Detailed Investigation of Discrepancies in Koppen-Geiger Climate Classification Using Seven Global Gridded Products. *Journal of Hydrology*, 128121
  20. Rokaya, P., Lindenschmidt, K.E., Pietroniro, P. & **Clark, M.P.** (2022). Modelling of ice jam floods under past and future climates: A review. *Journal of Hydrology* X, 15(100120): doi: 10.1016/j.hydroa.2022.100120
  21. Hu B, Gong Y, Chung CY, **Noble B**, Poelzer G. (2021) Price-maker bidding and offering strategies for networked microgrids in day-ahead electricity markets. *IEEE Transactions on Smart Grid* doi: 10.1109/TSG.2021.3109111
  22. **Krogh, S.A.** and **Pomeroy, J W.** (2021) Simulating site-scale permafrost hydrology: Sensitivity to modelling decisions and air temperature, *Journal of Hydrology*, 602: 126771, DOI: 10.1016/j.jhydrol.2021.126771.
  23. **Leonhardt R**, **Noble BF**, Poelzer G, Belcher K, Fitzpatrick P, Holdmann G. (2022). Advancing local energy transitions: A global review of government instruments supporting community

- energy. Energy Research and Social Sciences. <https://doi.org/10.1016/j.erss.2021.102350>
24. Menghwani V, Walker C, Kalke T, **Noble BF**, Poelzer G. (2022). Harvesting local energy: A case study of community-led bioenergy development from Galena, Alaska Energies. Invited, special issue on Bio-energy. 15(13), 4655; <https://doi.org/10.3390/en15134655>
  25. Nath, B.D., **Schuster-Wallace, C.J.** & Dickson-Anderson, S.E. (2022). Headwater-to consumer Drinking Water Security Assessment Framework and Associated Indicators for Small Communities in High-income Countries. Water Resources Management, 36(3): 50-834
  26. **Munir T, Westbrook CJ.** 2022. Comparison of soil nutrient supply patterns among full and drained beaver ponds and undisturbed peat in a Rocky Mountain fen. Wetlands 42: article 25. <https://doi.org/10.1007/s13157-022-01546-6>.
  27. Newman, A.J., Stone, A.G., Saharia, M., Holman, K.D., Addor, N. & **Clark., M.P.** (2021). Identifying sensitivities in flood frequency analyses using a stochastic hydrologic modeling system. 25(10): 5603-5621, doi: 10.5194/hess-25-5603-2021
  28. **Nwanakezie K, Noble BF**, Poelzer G. (2022). Strategic environmental assessment for energy transitions: a case study of renewable energy development in Saskatchewan, Canada. Environmental Impact Assessment Review. <https://doi.org/10.1016/j.eiar.2021.106688>
  29. **Nwanekezie K, Noble BF**, Poelzer G. (2021). Transitions-based strategic environmental assessment. Environmental Impact Assessment Review <https://doi.org/10.1016/j.eiar.2021.106643>
  30. Papalexioiu, S.M., Rajulapati, C.R., Andreadis, K.M., Fofoula-Georgiou, E., **Clark, M.P.** & Trenberth, K.E. (2021). Probabilistic Evaluation of Drought in CMIP6 Simulations. Earth's Future, 9(10)
  31. **Patrick, R.** and **Warrick Baijius** 2021. A Parallel Approach to Water Stewardship Planning: Making Space for Traditional Knowledge and Western-Science. Canadian Planning and Policy 2021. pp. 1-16. DOI: <https://10.24908/cpp-apc.v2021i01.13176>
  32. Pelling, M., Kerr, R.B., Biesbroek, R., Caretta, M.A., Cisse, G., Costello, M.J., Ebi, K.L., Gunn, E.L., Parmesan, **C., Schuster-Wallace, C.J.**, Tirado, M.C., van, Aalst M. & Woodward, A. (2021). Synergies Between COVID-19 and Climate Change Impacts and Responses. Journal of Extreme Events, 8(3): 2131002
  33. Persaud ,B.D., Dukacz, K.A., Saha, G.C., Peterson, A., Moradi, L., O'Hearn, S., Clary, E., Mai, J., Steeleworthy, M., Venkiteswaran, J.J., Kheyrollah-Pour, H., Wolfe, B.B., Carey, S.K., **Pomeroy, J.W., DeBeer, C.M.**, Waddington, J.M., Van Cappellen, P. and Lin, J. (2021) Ten best practices to strengthen stewardship and sharing of water science data in Canada, Hydrological Processes, 35(11): e14385, DOI: 10.1002/hyp.14385
  34. **Pradhananga, D.** and **Pomeroy, J.W.** (2022) Diagnosing changes in glacier hydrology from physical principles using a hydrological model with snow redistribution, sublimation,

firnification and energy balance ablation algorithms, *Journal of Hydrology*, 608: 127545, DOI: 10.1016/j.jhydrol.2022.127545

35. **Pradhananga, D.** and **Pomeroy, J.W.** (2022) Recent hydrological response of glaciers in the Canadian Rockies to changing climate and glacier configuration, *Hydrology and Earth System Sciences*, 26(10): 2605-2616, DOI: 10.5194/hess-26-2605-2022
36. Rajulapati, C.R., Gaddam, R.K., Nerantzaki, S.D., Papalexiou, S.M., Cannon, A.J. & **Clark, M.P.** (2022). Exacerbated heat in large Canadian cities. *Urban Climate*, 42(101097), doi: 10.1016/j.uclim.2022.101097
37. Rajulapati, C.R., Papalexiou, S.M, **Clark, M.P.** and **Pomeroy, J.W.** (2021) The Perils of Regridding: Examples Using a Global Precipitation Dataset, *Journal of Applied Meteorology and Climatology*, 60(11): 1561-1573, DOI: 10.1175/JAMC-D-20-0259.1
38. **Rasouli, K., Pomeroy, J.W.** and **Whitfield, P.H.** (2022) The sensitivity of snow hydrology to changes in air temperature and precipitation in three North American headwater basins, *Journal of Hydrology*, 606: 127460, DOI: 10.1016/j.jhydrol.2022.127460
39. **Rohr, V., Blakley, J.,** and Loring, P. (2022). Food security evaluation: An exploration of Canadian offshore petroleum SEA practice. *Journal of Environmental Assessment Policy and Management*, 2250016.
40. **Rohr, V., Blakley, J.,** and Loring, P. (2021). A framework to evaluate food security in regional strategic environmental assessment. *Environmental Impact Assessment Review*, 91:106674.
41. **Schuster-Wallace, C.J.,** Dickson-Anderson, S.E., Papalexiou, S.M. & El, Ganzouri A. (2022). Design and Application of the Tank Simulation Model (TSM): Assessing the Ability of Rainwater Harvesting to Meet Domestic Water Demand. *Journal of Environmental Informatics*
42. **Shook, K.,** Spiteri, R J., **Pomeroy, J W.,** Liu, T. and Sharomi, O. (2021) WDPM: the Wetland DEM Ponding Model, *Journal of Open Source Software*, 6(64): 2276, DOI: 10.21105/JOSS.02276
43. Singh, S., Javanmard, R., Lee, J., Kim, J. & **Diab, E.** (2022). Evaluating the accessibility benefits of the new BRT system during the COVID-19 pandemic in Winnipeg, Canada. *Journal of Urban Mobility*. <https://doi.org/10.1016/j.urbmob.2022.100016>
44. **Soubry, I. & Guo, X.** (2022). Quantifying Woody Plant Encroachment in Grasslands: A Review on Remote Sensing Approaches. *Canadian Journal of Remote Sensing*
45. **Soubry, I.,** Doan, T., Chu, T. & **Guo, X.** (2021). A systematic review on the integration of remote sensing and GIS to forest and grassland ecosystem health attributes, indicators, and measures. *Remote Sensing*, 2021(13): 1-30
46. **Spence, C.,** He, Z., **Shook, K.R.,** Mekonnen, B.A., **Pomeroy, J.W.,** Whitfield, C.J., Wolfe, J.D. (2022) Assessing hydrological sensitivity of grassland basins in the Canadian Prairies to

climate using a basin classification-based virtual modelling approach, *Hydrology and Earth System Sciences*, 26(7): 1801-1819, DOI: 10.5194/hess-26-1801-2022

47. Tandon, I., **Schuster-Wallace, C.J.**, Caretta, M.A., Vij, S. & Irvine, A. (2022). Urban water insecurity and its gendered impacts: on the gaps in climate change adaptation and Sustainable Development Goals. *Climate and Development*: 1-12
48. **Thiessen B, Noble BF**, Hanna K. (2021). Enabling conditions and challenges to environmental assessment as a tool for knowledge brokerage: Lessons from Nunavut. *Polar Geography*. <http://dx.doi.org/10.1080/1088937X.2022.2032859>
49. VanBeusekom, A., Hay, L.E., Bennett, A.R., Choi, Y.D., **Clark, M.P.**, Goodall, J.L., Li, Z., Maghami, I., Nijssen, B. & Wood, A.W. (2021). Hydrologic Model Sensitivity to Temporal Aggregation of Meteorological Forcing Data: a Case Study for the Contiguous USA. *Journal of Hydrometeorology*
50. Vanderkelen, I., Gharari, S., Mizukami, N., **Clark, M.P.**, Lawrence, D.M., Swenson, S., Pokhrel, Y., Hanasaki, N., van Griensven A. & Thiery, W. (2022). Evaluating a reservoir parametrisation in the vector-based global routing model mizuRoute (v2.0.1) for Earth System Model coupling. *Geoscientific Model Development*, 15(10): 4163-4192, doi: 10.5194/gmd-15-4163-2022
51. **Westbrook, CJ, England K.** 2022. Relative effectiveness of four different guards in preventing beaver cutting of urban trees. *Environmental Management* 70: 97-104 <https://doi.org/10.1007/s00267-022-01658-z>
52. **Westbrook CJ, Waldner Z**, Dzus E, Dzus C, **Stoll N-L.** 2022. Beavers in the boreal: a lodge census of Besnard Lake. *Blue Jay* 80(2): 6-12.
53. Wheeler, H.S., **Pomeroy, J.W.**, Pietroniro, A., Davison, B., Elshamy, M., Yassin, F., Rokaya, P., Fayad, A., Tesemma, Z., Princz, D., Loukili, Y., DeBeer, C.M., Ireson, A.M., Razavi, S., Lindenschmidt, K-E., Elshorbagy, A., MacDonald, M., Abdelhamed, M., Haghnegahdar, A., and Bahrami, A. (2022) Advances in modelling large river basins in cold regions with Modélisation Environnementale Communautaire-Surface and Hydrology (MESH), the Canadian hydrological land surface scheme, *Hydrological Processes*, 36(4): e14557, DOI: 10.1002/hyp.14557
54. Wilson, N.J., Montoya, T., Lambrinidou, Y., Harris, L.M., Pauli, B.J., McGregor, D., **Patrick, R.J.**, Gonzalez, S., Pierce, G., Wutich, A., 2022. From “trust” to “trustworthiness”: Retheorizing dynamics of trust, distrust, and water security in North America. *Environment and Planning E: Nature and Space* 25148486221101460. <https://doi.org/10.1177/25148486221101459>
55. Wong, J.S., Yassin, F., Famiglietti, J.S. and **Pomeroy, J.W.** (2021) A streamflow-oriented ranking-based methodological framework to combine multiple precipitation datasets across large river basins, *Journal of Hydrology*, 603: 127174, DOI: 10.1016/j.jhydrol.2021.127174

56. Xu, D., Liu, Y., Xu, W. & **Guo, X.** (2022). The impact of dead vegetation in grasslands on the spectral parameters in the yellow-edge, red-edge and NIR shoulder wavelength regions. *Remote Sensing*, 2022(14): 1-17
57. Xu, D., Harder, J., Xu, W. & **Guo, X.** (2021). Evaluating the impact of grazing cessation and reintroduction in mixed prairie using raster time series analysis of Landsat data. *Remote Sensing*, 2021(13): 1-21
58. Yu, X. & **Guo, X.** (2021). Extracting Fractional Vegetation Cover from Digital Photographs: A Comparison of In Situ, Sample Point, and Image Classification Methods. *Sensors*, 2021(21:7310): 1-15

## OTHER SCHOLARLY PUBLICATIONS (TECHNICAL REPORTS, CONFERENCE PROCEEDINGS, REVIEWS) IN ALPHABETICAL ORDER

1. **Chutko, K.J.**, E. Deeb (Eds.). 2021. Proceedings of the 77th Annual Eastern Snow Conference – Virtual Meeting.
2. Croal, P., Chetkiewicz, C., **Blakley, J.**, and Noble, B. Getting it right in the Ring of Fire: Making the case for a regional assessment (RA) to the mining industry in the Ontario Ring of Fire. Position paper, Wildlife Conservation Society (WCS) Canada.
3. de, Laat S., Wahoush, O., Jaber, R., Khater, W., Musoni, E., Abu, Siam I. & **Schuster-Wallace, C.J.** the Humanitarian Health Ethics Research Group. (January 2022). A case analysis of partnered research on palliative care for refugees in Jordan and Rwanda. Other Publication
4. Hagen, Z, **Walker, R** (2021) Creating Demand for a Downtown Lifestyle in Saskatoon, Final Report (Saskatoon, University of Saskatchewan), 56 pp.
5. Javanmard, R., Lee, J., Kim, J., Liu, L. & **Diab, E.** (2022). The impacts of the modifiable spatial unit problem (MSUP) on social equity analysis of public transit reliability. Canadian Association of Geographers (CAG) 2022: 72nd Annual Meeting & Conference
6. Mohammed, A., Noureldin, M., El-Geneidy, A. & **Diab, E.** (2022). Transport systems' transitional periods and long-term disruptions: a systematic review of the grey literature. Paper presented at the 101st Annual Meeting of the Transportation Research Board, Washington, D.C., USA
7. Mohammed, A., Noureldin, M., Grisé, E., El-Geneidy, A. & **Diab, E.** (2021). Public transport systems transitional periods and long-term disruptions, and the use of mitigations strategies: A systematic review of the academic and grey literature. Ottawa, Ontario, Canada: Social Sciences and Humanities Research Council and Infrastructure Canada

8. **Patrick, R.** 2021. Expert Services: Okanagan Indian Band v Attorney General of Canada (FC No. T-1328-19, Vancouver Registry). Report prepared for JFK Law Offices, Vancouver, BC. October 18, 2021
9. **Pomeroy, J.** (June 2022). History of Canadian Hydrology and Relation to Operational Water Resources Management (Magazine Article). Canadian Water Resources Association (CWRA) Water News Vol. 41(3). Print and Social Media
10. **Pomeroy, J.** and Sandford, R. (March 2022). COMMENTARY: Groundwater – making the invisible visible (Newspaper Article). Rocky Mountain Outlook. Print and Social Media
11. **Pomeroy, J.** (November 2021). After a year of disasters, it’s urgent that we address Canada’s climate-caused water crisis (Newspaper Article). The Globe and Mail. Print and Social Media
12. **Pomeroy, J.** (September 2021). After last summer, how come politicians are not talking about the climate and water crisis? (Newspaper Article). In Hill Times. Print and Social Media
13. **Pomeroy, J.W.**, Ivanov, G. & Davies, T.D. (November 2021) Cold Regions Warming – A Transitions Exhibition: Global Water Futures [Artistic Exhibition]. Cryosphere Pavilion COP26 United Nations (UN) Climate Change Conference, Glasgow, United Kingdom
14. Sandford, R.J.W. & **Schuster-Wallace, C.J.** (May 2022). The Canada Water Agency: Creating the Conditions FINALLY For 21st Century Water Policy in Canada? Forum on Water (FLOW) Magazine. Other Publication
15. **Schuster-Wallace, C.J.** & Sandford, R.W. (September 2021). Making the Promised Canada Water Agency a reality, available from: <https://policyoptions.irpp.org/magazines/septembe-2021/making-the-promised-canada-water-agency-a-reality/>
16. Singh, B. and **Pomeroy, J.** (April 2022). Opinion: Time running out to secure Saskatchewan’s water prosperity (Newspaper Article). Saskatoon StarPhoenix. Print and Social Media



Photo credit: Dr. Ehab Diab

## Department of Geography & Planning University of Saskatchewan

117 Science Place  
Saskatoon, Saskatchewan, Canada, S7N 5C8

Tel. +1 306.966.5654

[www.artsandscience.usask.ca/geography](http://www.artsandscience.usask.ca/geography)

Let's stay connected!



Join our Instagram community using the above QR code to stay updated on hydrology happenings and opportunities.