Canadian Geophysical Union-Hydrology Section (CGU-HS)

2024/2025 Report on Committees

1. Hydrology-Section Committees

Canadian Geophysical Union-Hydrology Section (CGU-HS) has seven active committees. The committees are:

Committee on Permafrost-Hydrogeology Interactions
Chairs: Chris Spence (Environment and Climate Change Canada) and Peter Morse (Natural Resources Canada)

Committee on River Ice Processes and the Environment (CRIPE)
Chair: Shawn Clark (University of Manitoba)

Northern Research Basins Committee
Chairs: Murray Richardson (Carleton University) and Laura Brown (University of Toronto)

Committee on Isotope Tracers
Chairs: April James (Nipissing University), Janie Masse-Dufresne (ÉTS) and Magali Nehemy (Trent University)

Hydroecology Committee
Chair: Daniel Peters (Environment Canada) and Wendy Monk (University of New Brunswick)

Canadian Young Hydrologic Society
Chairs: Larissa Gospodyn (University of Waterloo), and Selsey Stribling (McGill University)

Committee on Hydro-climatic Impacts and Adaptation
Chair: Rajesh Shrestha, Yonas Dibike and Daniel Peters (Environment and Climate Change Canada)

2. 2024/2025 Individual Reports per Committee

Each committee provided the documents below. Notice that the format of each report is maintained according to committee choice.

2.1 Permafrost-Hydrogeology Interactions – Report 2024/2025

The report was provided by Chris Spence (chris.spence@ec.gc.ca).

1. **Committee Description, Background and Objectives**

Permafrost – Hydrogeology Interactions committee of the Canadian Geophysical Union - Hydrology Section facilitates scientific advancement, interdisciplinary collaboration and knowledge transfer with respect to the relations between permafrost and hydrogeology in varying circumpolar landscapes, and the responses with climate change. These poorly understood relations are critical knowledge gaps, as climate change impacts on permafrost are likely to alter hydrologic cycles, groundwater flow networks, and surface water supplies in Canada's North. Communities, governments, regulators, industry, and academics are noting process changes in northern Canada. Regulators need guidance on how to scope groundwater and permafrost issues as they affect economic development, and Northern capacity is needed to address issues facing Northern communities. The knowledge must come through extended collaborations and engagement. The committee was established according to consensus at a meeting of 27 government, academic, and industry researchers and practitioners held to address these issues in Yellowknife, NT, 14 November 2016 (Morse, 2017).

Objectives:
1. Establish a collaborative research and development network to improve knowledge transfer and educational opportunities by facilitating scientific sessions and short courses in association with the Canadian Geophysical Union annual meeting and other with other scientific societies.
2. Report annually on progress to the Canadian Geophysical Union – Hydrology Section.
3. Follow-up on the conceptual framework and special issue by facilitating subsequent scientific sessions in association with the Canadian Geophysical Union annual meeting and other with other scientific societies.

2. **Committee Membership. Please list using the following format School/Institution: CRCs:#, Profs: #, PDFs: #, PhD: #, MSc #, HonBSc: #. e.g. Waterloo; CRC:1, Profs: 5, PDFs: 2, MSc: 4, HonBSc: 2, RAs: 1**

Geological Survey of Canada: Research Scientist: 1
Environment and Climate Change Canada: Research Scientist: 1
Queen's University: Professor: 2
McGill University: Professor: 1
Yukon Territorial Government: Hydrogeologist: 1
University of Saskatchewan: Research Associate: 1

3. **Committee Activities**

3a. Major areas of research
- 3ai. Permafrost control on hydrogeology;
- 3aii. Permafrost control on surface - subsurface linkages;

3aiii. Implications of climate change on permafrost extent and subsequent impacts on water resources;
3aiv. Implications for northern communities

3e. Summary of areas of challenges and achievements (progress on issues and objectives)

3ei. Members are Named Partners in the NSERC Permafrost Partnership Network for Canada (PermafrostNet) thaw was awarded 5-years of funding in 2019 and has a goal of boosting Canada's ability to adapt to permafrost thaw;
3eii. Members are involved in the secretariat of the Canadian Permafrost Association;
3eiii. Members are involved in the secretariat of the Federal Permafrost Network.
3eiv. Member are involved in discussions have begun with the Government of the Northwest Territories and Indigenous governments in the NWT on how to proceed with a broad based study on changing cold-season streamflow
3ev. A draft of the white paper synthesizing pan-Canadian perspectives on the state of knowledge of permafrost-hydrogeology interactions has been started by Members

4. Major Publications. Please list by: Peer Reviewed Journals; Invited Commentaries; Technical Reports. Indicate student authors with bolded font

12th International Conference on Permafrost Proceedings, Beddoe, R. and Karunaratne, K. (eds.), V.2, 16-20 June 2024, Whitehorse, Canada: International Permafrost Association.

5. Scientific conferences/workshops/sessions hosted by members; attended by members (in Canada, and abroad)

There is a dedicated permafrost hydrogeology session at the 2025 CGU annual general meeting.

Members were involved in the preparation and running of the 12th International Conference on Permafrost to held in Whitehorse in 2024.

2.2 Committee on River Ice Processes and the Environment (CRIPE) – Report 2024/2025

The report was provided by Shawn Clark (shawn.clark@umanitoba.ca).

Committee on River Ice Processes and the Environment (CGU-HS)

CRIPE OBJECTIVES

The main objectives of CRIPE are:

- To identify specific high-priority river ice topics for research and development and to undertake relevant research programs;
- To facilitate information dissemination and exchange of ideas on river ice among practitioners, researchers, and resource managers at a national and international scale; and
- To encourage the incorporation of pertinent river ice lectures or courses in undergraduate and graduate studies at Canadian Colleges and Universities.

CRIPE MEMBERSHIP

CRIPE currently has 24 Canadian members from various universities, hydro-electric facilities and government organizations, as well as 4 international members and 11 affiliate members.

Members

Shawn Clark, (Chair) University of Manitoba
Martin Jasek , (Vice-Chair) BC Hydro
Jennifer Nafziger, (Secretary) U. Alberta
Nadia Kovachis, (Treasurer) Gov. of Alberta
Robyn Andrishak, (Webmaster) NHC
Karen Dow, (Awards Coordinator) UManitoba
Brian Burrell, R.V. Anderson Associates Limited
Joel Evans, BC Hydro
Karl-Erich Lindenschmidt, Univ. of Saskatchewan
Mark Loewen, University of Alberta
Joe Groeneveld, Hatch Energy
Yuntong She, University of Alberta
Benoit Turcotte, Yukon University
Jarrod Malenchak, Manitoba Hydro
Soheil Zare, Hatch
Colin Rennie, University of Ottawa
Dan Healy, Northwest Hydraulic Consultants
Tadros Ghobrial, Université Laval
Fuad Curi, KGS Group
Tadros Ghobrial, Université Laval
Vincent McFarlane, University of Alberta
Ahmad Shakibaeinia, ETS
Kevin Lees, Hatch
Lucas Wazney, KGS Group
Milan Bijeljanin, Manitoba Hydro
Michael Brayal, Government of Alberta
Stefan Emmer, Government of Alberta

International Members

Knut Alfredsen, Norwegian Univ. of Science and Tech.
Mikko Huokuna, Finnish Environment Institute
Edward Kempema, University of Wyoming
Ian Knack, Clarkson University

Affiliate Members

Spyros Beltaos, Environment Canada
Rick Carson, KGS Group
Steven Daly, retired from ERDC/CRREL
Brian Morse, Université Laval
Hung Tao Shen, Clarkson University
Paul Barrette, NRC

RECENT ACTIVITIES

June 2024 – June 2025 was one of CRIPE's 'off' years for our conference. The committee was therefore busy planning for the 2025 conference, but did not have an in-person event this year.

The CRIPE Annual General Meeting was held online on June 24th. It was a full-day meeting using the online platform Gather.town. This provided attendees with an online experience that was somewhat different than a typical Teams or Zoom meeting. There was strong participation from our committee, with 21 members in attendance. Key highlights from the meeting:

- Discussed a request from IAHR to host/facilitate the 2028 International Symposium on Ice. There was generally positive feelings about this opportunity.
- Discussed possible research collaboration with NRC Frazil Tank facility. Suggested a tour during the 2025 CRIPE Conference.
- Motion approved to provide free student registration to students for the upcoming CRIPE conference as well as a $500 travel grant.
- Agreed to re-start the Winter Hydrology and Hydrometry working group.
- CRIPE website was moved to a WordPress site. Past conference proceedings have been uploaded.
- Motion to establish a new award regarding environmental aspects of river ice, possibly named after Dr. Terry Prowse.

A mid-year CRIPE meeting was held online on December 16, 2024:

- Discussed the 2025 CRIPE Workshop in St. John's Newfoundland.
- Received updates from several working groups.
- Update on NRC Frazil Tank research.
- Discussed a discrepancy between the membership types on our terms of reference and what is on our website. Agreed to revise the TOR at the next meeting to clarify the different classes of memberships.

FUTURE ACTIVITIES

The upcoming conference will be held in St. John's Newfoundland from June 9 – 12. Recent CRIPE conferences have been 3 days in length, with an optional technical workshop on the 4th day. The upcoming event is comprised of 4 days of conference activities, including a social tour on day 2 and a tour of the NRC Frazil Tank on the afternoon of day 4. Discussion sessions will be interspersed throughout the conference. A student paper and poster competition will be held. Attendance is expected to be roughly 80 people.

The working group on ice jam inter-model comparison will continue its work. A conference paper will be presented at CRIPE, and at least one journal article is planned in the next year. Discuss/decide whether to host the 2028 IAHR International Symposium on Ice.

FINANCES

CRIPE maintains a very healthy financial situation, allowing us to support student participation in conferences. We will continue to explore new ways to use these finances to meet our mandate.

2.3 Committee Northern Research Basins Committee – Report 2024/2025

Report was provided by Laura Brown (lc.brown@utoronto.ca).

Committee Description, Background and Objectives

In 1975, the International Hydrological Program (IHP) National Committees of Canada, Denmark/Greenland, Finland, Norway, Sweden, the United States of America, and the Union of Soviet Socialist Republics (USSR) established the IHP Working Group on Northern Research Basins, now called the "NRB Working Group". In 1992, Iceland joined the group and Russia took over the responsibilities of the former USSR.

The overall objective of the NRB Working Group is to encourage research in hydrological basins in cold regions where snow, ice and frozen ground have a dominant role in the hydrological cycle. Over the years, the objectives of the NRB Working Group have evolved to include the following:

Gain a better understanding of hydrological processes, particularly those in which snow, ice, and frozen ground have a major influence on the hydrological regime, and to determine the relative importance of each component of the water balance.

Provide data for the development and testing of transposable models which may be applied to regional, national, and international water and land resource programmes

Relate hydrological processes to the chemical and biological evolution of northern basins.

Assess and predict the effect of human activities on the hydrological regime in northern environments.

Encourage the exchange of personnel (technicians, scientists, research officers, students, and others) among participating countries.

Provide information for improving and standardising measurement techniques and network design in northern regions.

Encourage exchange of information on a regular basis, and set up task forces to promote research initiatives on topics of special interest to northern research basins.

Committee Membership:

Members comprises 8 circumpolar nations each of which are represented by a delegation of researchers which meet every two years at a symposium hosted by one of the member nations.

Committee Activities

Highlights:

- The NRB Symposium and Workshop is hosted in Norway this year in August, there is still time to join the Canadian delegation if anyone is interested: https://www.northernresearchbasins.com/nrb2025-anniversary-workshop-and-symposia

- The committee would like to encourage more Canadian delegates to attend and to represent some of the outstanding cold regions hydrology research we see at CGU.
- Daniel Peters will move into the position of Deputy Canadian Delegate and the committee is still seeking a second member to move into the Deputy position next year as Laura Brown needs to step down soon.
- These meetings are an excellent opportunity for international networking and sharing of scientific knowledge on cold region hydrology.
- Canadian website is here (and needs to be updated): https://nrbcanada.ca/
- Main NRB website is now here: https://www.northernresearchbasins.com/home

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NRB Canadian Chief and Deputy Delegate Roles

Laura Brown will move into the position of Chief Canadian Delegate and we are seeking a new Deputy to fill her position. We will use this year's CGU meeting in Ottawa to help fill this position.

Please see in the Supplementary Information (below) the NRB23 Program "Northern Hydrology in Transition" in this document.

2.4 Committee on Isotope Tracers – Report 2024/2025

Report was provided by Magali Nehemy (mnehemy@trentu.ca).

1. Committee Description, Background and Objectives

The Committee on Isotope Tracers of the Canadian Geophysical Union - Hydrology Section advances scientific understanding, facilitates interdisciplinary collaboration, and promotes knowledge exchange regarding the application of isotope tracers in hydrological research across Canada. Isotope tracers serve as powerful tools for understanding water sources, flowpaths, residence times, and biogeochemical processes within hydrological systems. These techniques are essential for addressing critical questions in water resource management, climate change impacts, and ecosystem function. However, the isotope hydrology community in Canada has faced challenges in maintaining coordinated networks and knowledge-sharing platforms.

The committee was previously placed "on hold" during 2023-2024, but a new committee was successfully re-established during the Canadian Geophysical Union annual meeting. The committee is co-chaired by April James (Nipissing University), Janie Masse-Dufresne (ÉTS), and Magali Nehemy (Trent University). The committee's primary objectives include re-establishing an active network of researchers who use isotopes as tracers in hydrology across Canada and providing accessible platforms for scientific discussions on the topic through workshops, conference sessions, and other collaborative activities. By fostering connections among academics, government scientists, consultants, and students working with isotope tracers, the committee aims to strengthen Canada's capacity in isotope hydrology, enhance the application of these techniques to pressing water resource challenges, and increase networking among isotope hydrologists in Canada.

2. Committee Activities

Committee members organized sessions at international and conferences in Canada related to isotope tracing including the "Stable Isotopes to Study Water and Nutrient Dynamics in the Soil-Plant-Atmosphere Continuum" at the EGU-2025 annual meeting and "Advances in Ecohydrology" at the CGU-2025 annual meeting. Additional sessions by members where proposed at CGU, but were combined with General Hydrology.

Committee members led the Isotope Tracers in Catchment Hydrology graduate course and international workshop at Trent University, which included one week of hands-on learning activities on isotope sampling techniques. This initiative provided valuable training opportunities for students and early-career researchers, strengthening capacity in isotope hydrology across Canada and internationally.

Additionally, committee members have initiated discussions with researchers across Canada and the USA on how to organize and build a unified effort to make isotope data in Canada available through a centralized platform. This initiative addresses a critical need for accessible, standardized isotope datasets that would support research, water resource management, and collaborative studies across the country. Those are ongoing discussions.

The committee is also welcoming new members from diverse career stages.

2.5 Hydroecology Committee – Report 2024/2025

The report was provided by Daniel Peters (daniel.peters@ec.gc.ca).

Chairs:

Daniel Peters (Environment and Climate Change Canada, University of Victoria) and Wendy Monk (Environment and Climate Change Canada, University of New Brunswick).

Background:

Established in May 2015 to support and facilitate information exchange, as well as work towards bridging multidisciplinary research carried out by aquatic ecologists and hydrologists within Canada and internationally.

Objective:

To promote and advance the understanding of linkages between hydrology and ecology in wetland, lake and river systems across Canada.

Activities:

The Hydroecology committee continued to be active in the promotion and advancement of understanding the linkages between aquatic ecology, water quality and hydrology.

Providing expertise to the development of an environmental flows framework for the Peace-Athabasca Delta (Alberta) and the Wolastoq/Saint John River (New Brunswick)

Conduct research activities that support the National Freshwater Science Agenda - a plan to focus freshwater science in Canada and lay the groundwork for future collaborative science and knowledge mobilization
https://www.canada.ca/en/environment-climate-change/services/water-overview/protecting-freshwater/national-freshwater-science-agenda.html

Conduct research activities that support the newly formed Canada Water Agency – CWA works with provinces, territories, Indigenous peoples, local authorities, scientists and others to find the best ways to keep our water safe, clean and well-managed for future generations.
https://www.canada.ca/en/canada-water-agency.html

Select Recent Publications:

Aslami F, C Hopkinson, L Chasmer, C Mahoney, DL Peters. 2025. Using Bi-Temporal Lidar to Evaluate Canopy Structure and Ecotone Influence on Landsat Vegetation Index Trends within a Boreal Wetland Complex. Submitted to March 13 2025 to Applied Sciences 15(9): 4653, Application of Remote Sensing in Environmental Monitoring, https://doi.org/10.3390/app15094653

Arthington AH, D Tickner, ME McClain, MC Acreman, EP Anderson, SBabu, CWS Dickens, AC Horne, N Kaushal, WA Monk, GC O'Brien, JD Olden, JJ Opperman, AG Owusu, NL Poff, BD Richter, SA Salinas-Rodríguez, BS Mbale, RE Tharme, and SM Yarnell. 2024. Accelerating environmental flow implementation to bend the curve of global freshwater biodiversity loss. Environmental Reviews. 32(3): 387-413.

Dibike YB, JBroadbent, J Musetta-Lambert, T Reid, J Spoelstra, WA Monk, EM Nicholls, RR Shrestha, S Beltaos, DL Peters, C Zeng, B Bonsal, and C Spence. 2025. Toward a Canadian national river water quality modeling system: state of science and future prospects. Environmental Reviews. 33: 1-26.

Millar W, WA Monk and M Gray. 2023. Effects of winter water quality conditions on Atlantic Salmon embryo mortality and deformity rates in the Serpentine River (New Brunswick, Canada). Canadian Water Resources Journal / Revue Canadienne Des Ressources Hydriques, 49(3), 269–281.

McKenzie M, A Brooks, M Callisto, AL Collins, JM Durkota, RG Death, JI Jones, , MS Linares, CD Matthaei, WA Monk, JF Murphy, A Wagenhoff, M Wilkes, PJ Wood, and KL Mathers. 2023. Freshwater invertebrate responses to fine sediment stress: A multi-continent perspective. Global Change Biology, 30, e17084

Potter C, K Green, DL Peters, KO Nieman. 2024. Investigating Hydrological Recovery in Regenerating Coniferous Stands in Snow-Dominated Watersheds Using SLAM-Enabled Mobile Terrestrial LiDAR. Submitted to Hydrological Processes, DOI: 10.1002/hyp.15247

Riddell D, M Dabboor, P Matte, DL Peters, T Ghobrial, A Pierre. 2024. Observations of River Ice Breakup Using GNSS-IR, SAR and Machine Learning. IEEE Transactions on Geoscience and Remote Sensing, 62: 1-13, https://doi.org/10.1109/TGRS.2024.3380554

Rideout NK, A Niloofar, DR Lapen, M Hajibabaei, GW Mitchell, WA Monk, M Warren, S Wilson, MT Wright, and DJ Baird. 2025. Quality versus quantity: response of riparian bird communities to aquatic insect emergence in agro-ecosystems. Frontiers in Sustainable Food Systems. 8.

2.6 Canadian Young Hydrologic Society – Report 2024/2025

The report was provided by Rachel Lackey (rachel.lackey@mail.mcgill.ca).

1. Committee Description, Background and Objectives

The Canadian Young Hydrologic Society (CYHS), founded in 2015, aims to engage early career researchers by organizing workshops and activities to stimulate meaningful interaction and exchange between research groups across Canada. It is the Canadian branch of the wider Young Hydrologic Society (YHS), an international initiative that facilitates the interaction of young hydrologists within the hydrological community. These activities include pop-up sessions at large national conferences, seminars, workshops, and social nights.

2024-2025 was the tenth year of the Canadian Young Hydrologic Society (CYHS) being in operation. CYHS focused on three events: the annual social media symposium, the hybrid Annual CGU Student Conference, and an in-person workshop at the national CGU Conference.

CYHS will close the year comprised of 8 members, taking on the roles below:

Position	Name	Institution
Chair/Co-chair	Larissa Gospodyn, *PhD Candidate* Selsey Stribling, *PhD Candidate*	University of Waterloo McGill University
Treasurer	Julia Gillette, *Masters Student*	Dalhousie University
Communications: Internal	Lanthika Dhanapala, *Masters Student*	Memorial University of Newfoundland
Communications: Social Media	Joseph Tuffner, *Masters Student*	University of Calgary
Communications: Graphics	Amanda Harrison, *Masters Student*	McMaster University
CGU-HS Rep	Rachel Lackey, *PhD Candidate*	McGill University
International YHS Rep	Samuel Poirier, *Masters Student*	Queen's University

2. Committee Membership. Please list using the following format School/Institution: CRCs:#, Profs: #, PDFs: #, PhD: #, MSc #, HonBSc: #. e.g. Waterloo;

CYHS does not have an annual membership, but we noted registered conference attendees (in-person and online, combined) at the CGU Student Conference, as this was the largest event hosted solely by CYHS.

April 5, 2025:

Brandon University	6
Dalhousie University	2
McGill University	3
McMaster University	4

Memorial University of Newfoundland	1
Queen's University	2
University of Calgary	1
University of Guelph	1
University of Saskatchewan	3
University of Toronto	3
University of Waterloo	22
Wilfrid Laurier University	1
Non-academic affiliation (Government)	1
TOTAL:	51
+ registered, unable to attend	5

3. Committee Activities

3a. Major areas of research
[blank]

3b. Science-industry collaborations
[blank]

3c. Training and networking initiatives geared towards young and emerging scientists
The CYHS social media accounts are used as the primary platform to facilitate the distribution of information, news, resources, and support relevant to early career hydrologists, but has seen a decline in engagement on the Twitter platform since it was rebranded to X. The CHYS X account currently has 891 followers (a net decrease of 6 followers from May 2024). CYHS has shifted focus on social media efforts to Instagram and LinkedIn, but will continue to post less frequently on X as there is still some reach on the platform, evidenced by continued post interactions (reposts and likes).

The CYHS LinkedIn page was created in March of 2024 to supplement the X page. Engagement on the new platform was slow until October 2024, but has grown from 6 to 96 since that time. The highest engagement occurred in January 2025 with 3,525 total impressions, mainly with Fieldwork Friday posts, the most popular of which received 2,457 impressions, 55 reactions, 1 comment and 1 repost.

The CYHS Instagram page was created in September 2024 to further supplement the X and LinkedIn. Progress on this platform has been slower than LinkedIn and has only accrued 51 followers, but reached an average of 240 accounts on each of the latest 3 posts (about the Student Conference). Similar to the LinkedIn page, the Instagram account received most engagement on the Fieldwork Friday series of posts.

Each year, the CYHS hosts a social media symposium (i.e the Twitter Symposium); however, with the current environment on X, CYHS modified the event this year to include different social media channels. Therefore, the CYHS 2025 symposium was a virtual event hosted on our LinkedIn and Instagram platforms during the first week of February. For the symposium, early career researchers were encouraged to share lessons learned during their academic careers on LinkedIn, or amusing photos of field/lab work on Instagram. Unfortunately, this event received no engagement. It is

thought that many people were unwilling to use their personal accounts on each of these platforms for posting content for the symposium. As a result, the Symposium needs to be reconsidered for future years, highlighting a gap in networking opportunities that CYHS aims to fill in future years.

This platform transition has highlighted that original content drives the most engagement and growth and we are still working to gain the same momentum that had been built through Twitter. Reposting content from similar organizations can strengthen networks, which may increase chances of our content being reshared. Creating regular, original content suited to each of our platforms should be prioritized in the next year. A CHYS Bluesky account has also been recently created, although we have not implemented focus on this account but will be testing it in the next coming year.

3d. Regional, national and international advisory efforts
[blank]

3e. Summary of areas of challenges and achievements (progress on issues and objectives)

Communication remains the biggest challenge for CYHS.

Focus 1: Increase engagement

In past years, CYHS membership has primarily originated from students whose supervisors are a part of CGU's community, which limits networking and recruitment between student groups. With implementation of new social media platforms, we hope we may reach a broader network. While current membership on CYHS exists from Alberta to the East Coast, recruitment and active participation from students and young professionals from BC remains a challenge.

While CYHS has had a steady following on the X platform (from it's success when the platform was Twitter), destabilization of the platform as a whole has meant a major shift in the way CYHS is able to communicate to the public. LinkedIn and Instagram have been promising in their ability to communicate with young professionals, and CYHS hopes to continue their use in the upcoming year with the knowledge gained this year from the platforms. Additionally, CYHS has re-established roles within its committee, highlighting both an Outreach role and External YHS Rep; these two roles will help facilitate collaboration with other young professional groups and networking opportunities at other events (ex: UBC West Conference).

Focus 2: Grow CYHS as an early career network

The spatial segregation of Canada causes a huge disconnect between groups and resources across the country. National-scale networking opportunities are often limited to conferences, which can be both intimidating and inaccessible for students as students may not have access to funding resources to attend the national conference, or they may be in the field during the conference. CYHS continues to aim to establish itself as an active, early-career network for hydrologists. In 2025, CYHS hosted the annual CGU Student Conference for the third consecutive year and intends to host again in 2026 with the goal of better bridging some of the geographical disconnect. Each of the three years, CYHS has observed attendance from students in 5+ provinces and hopes to better connect with Western Canada.

In the past, CYHS has increased networking opportunities by collaborating with other water groups (ex: CYHS engaged heavily with the GWF-YP organization until 2022). In 2025-26, CYHS will be collaborating with the WEST Conference in BC. While the nature of this collaboration is not yet determined, the goal of this collaboration is to enhance opportunities for West Coast and students from the rest of Canada to interact and we are optimistic about the ability to increase our reach and provide opportunities for a wider range of networking.

4. Major Publications. Please list by: Peer Reviewed Journals; Invited Commentaries; Technical Reports. Indicate student authors with bolded font.
[Blank]

5. Scientific conferences/workshops/sessions hosted by members; attended by members (in Canada, and abroad).

A list of workshops and events organized by CYHS, or in partnership with, is provided:

2025 Organized Workshops and Events*:*

(1) CGU Student Conference hosted by CYHS (April 5)
- Awarded 5 prizes: Best oral presentation, best poster, best undergrad presentation, honorable mention and best graphics

(2) Graphics that Speak: Mastering the Art of Clear and Engaging Visuals. Workshop at CGU 2025 Annual Meeting, Ottawa, Ontario. (May 27)

See section 9.1 for events from past years.

6. Awards received by members
[Blank]

7. Other major achievements (Complete and ongoing scientific projects; Institutional relations/cooperation)
[blank]

8. Budget/Finances

The current balance of the CYHS account as of *1 May, 2025* is **$3988.93.**

2024 Expenses and Income (Lists transactions that occurred after May 1st, 2024 for the previous year's activities):
- The balance on May 1st, 2024 was $4,771.79
- On May 10, 2024 $600 was withdrawn for student awards, followed by $320.99 for food and supplies for the CGU Student Conference. The account balance following the 2024 student conference was $3,850.80.

2025 Expenses and Income:
Income:

- CYHS collected $210 ($10/person) from in-person registration fees to cover the cost of supplies and lunch
- Received $750 from CGU-HS to cover the cost of student awards and supplies

Expenses:

- On April 5th, 2025 a total of $650 was withdrawn for student awards ($150 for Best oral presentation, $150 for best undergraduate presentation, $150 for best poster presentation, $100 for an honourable mention, and $100 for best graphic)
- A total of $181.87 was withdrawn to cover supplies and lunch expenses
    - A donation of coffee from a community shop and funding from the University of Waterloo's Graduate Student Endowment Fund resulted in a funding surplus generated by the event

Anticipated:

- On May 27th, the CYHS anticipates to incur a $40 expense for the 2025 CGU-CMOS conference workshop

Anticipated total account balance will be **$3,948.93.**

9. Additional information the committee would like on file.

9.1. Scientific conferences/workshops/sessions from previous years

2024:

1. CGU Student Conference, Hamilton, Ontario (McMaster University), April 26.
    a. Awarded prizes for best and runner up poster, best and runner up oral presentation, best short talk and best undergraduate presentation (6 ECR's awarded)
2. Words that Flow: A Writing Workshop for Early Career Success. Workshop at CGU 2024 Annual Meeting, Ottawa, Ontario, May 29 (attendance: 39 ECRs).
3. CYHS Twitter Symposium
    a. Award for Most Liked and Retweets Twitter Post (3 ECR's awarded)

2023:

1. CGU Student Conference, Waterloo, Ontario (University of Waterloo), April 1.
    a. Awarded eight prizes for best and runner up: poster, oral presentation, and short talk. One overall honorable mention award given. (9 ECR's awarded).
2. Career Paths after Graduation. Panel Talk at CGU 2023 Annual Meeting, Banff, Alberta.
3. CY-Hike-S Social at CGU 2023, CGU 2023 Annual Meeting, Banff Alberta
4. CYHS Twitter Symposium, Award for Most Liked and Retweets Twitter Post (4 ECR's awarded)

2022:

1. CGU Student Conference , Grand prize (x1) (1 ECR's awarded)
2. From failure to progress: lessons learned in hydrology, CGU virtual meeting
3. Hands on hydrology: Exploring methods and techniques, CGU virtual meeting
4. CYHS Twitter Symposium, Award for Most Liked and Retweeted Post (4 ECR's awarded)

2021:

1. CGU Student Conference, Grand prize (x2), Honorable mentions (x6) (8 ECR's awarded)
2. CYHS Twitter Symposium, Award for Most Liked and Retweets Twitter Post (4 ECR's awarded)

2020 (cancelled):

1. From failure to progress: lessons learned in hydrology, CGU meeting in Banff
2. Applied data management best practices for young hydrologists, CGU meeting in Banff
3. Python Hydrological Modeling Workshop, CGU meeting in Banff, on Thursday 7th May.

2019:

1. "Opportunities and Challenges in Canadian hydrology: a early-career perspective" workshop at IUGG-CGU 2020. 32 participants.
    - Invited speakers: Professor Nigel Roulet, Prof. Jan Adamwoski and Prof. April James.
2. Joint WCRP-AGU workshop, Water Cycle in a 1.5° Warmer World: Interdisciplinary Approaches, AGU Fall Meeting, Dec. 7, 2019. Co-organized by APECS, YESS and YHS/CYHS
3. McMaster Water Week, CYHS: McMaster Water Week Most Innovative Poster Award (1 ECR Awarded)
4. CYHS Twitter Symposium, Award for Most Liked and Retweets Twitter Post (4 ECR's awarded)

2018:

1. "Careers in hydrology: Options and insights" workshop and panel discussion, CGU, Niagara Falls, On
    - Invited Speakers: Simon Gautrey, Dr. Christa Kelleher, Dr. Joseph Shea & Dr. Chris Spence (attendance: 45 ECRs). A social event was held in the evening after the workshop in Niagara Falls where we had 100 attendees.
2. "Tips and tricks for publishing in hydrology" workshop.
    - Invited Speakers: Dr. Laura Lautz & Dr. Mike Waddington (attendance: 47 ECRs)
3. Inaugural GWF Young Professionals workshop and social events (GWF Annual Science Meeting in collaboration with GWF YP group)
    - Invited Speaker: Dr. Jeff McDonnell '
4. Professional Development Workshop: The Art of Scientific Investigation' (attendance: ~80 ECRs).
    - Invited Speaker: Dr. John Pomeroy 'Role of YPs Within Larger GWF Context' (attendance: 90 ECRs)
5. Water Week Poster Session and award for "Most Innovative Research" awarded to Anjali Narayanan (Undergraduate student)
6. Joint YESS-YHS Early Career Researcher (ECR) Workshop. "Towards Regional Information to Improve Our Understanding on Weather, Water, and Climate Extreme Events" at the 2018 GEWEX Open Science Conference, 3-5 May, 2018.

2017:

1. "Progression of a scientific career in academia" seminar, CGU, Vancouver, BC

- Invited Workshop Speakers: Dr. Nora Casson, Dr. Andrew Ireson, Nicola Jones, Dr. Barret Kurylyk, Dr. Jeff McKenzie & Dr. Ming-ko (Hok) Woo (attendance: 65 ECRs).
- A social event was held in the evening after the workshop on the UBC campus where we had 100 attendees.

2016:

1. "Challenges and opportunities in Canadian hydrology" workshop, CGU Fredericton, NB
    - Invited Workshop Speakers: Dr. Genevieve Ali, Dr. Sean Carey, Dr. Merrin Macrae, Dr. Phil Marsh, Dr. Claire Oswald & Dr. Howard Wheater (attendance: 50 ECRs)
    - Social event held after the workshop at a local pub where 75 ECRs attended.

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2.7 Committee on Hydro-climatic Impacts and Adaptation – Report 2024/2025

Report was provided by Rajesh Shrestha (rajesh.shrestha@ec.gc.ca).

Chairs:
Rajesh Shrestha, Yonas Dibike, Daniel Peters (Environment and Climate Change Canada, University of Victoria).

Background:
Established in May 2016 to provide a platform for researchers engaged in hydro-climatic, hydrologic and hydro-ecological impacts and adaptation, and promote the development of new methods and tools to address the challenges.

Objective:
To advance the development of methods and tools for better understanding of the hydrologic and aquatic ecosystem impacts of climate variability and change, and developing adaptation measures to mitigate the potential impacts.

Committee Memberships:
Government Scientists: 3, Profs. 1, PDFs: 1, Grad student 1.

Committee Activities:
The **Hydro-climatic Impacts and Adaptation** committee is active in the advancement of knowledge on the implications of climate variability/change on planning, allocation and operations of water resources, and adaptation/mitigation measures that address the potential impacts. Engagement of multidisciplinary scientists included organizing special sessions conferences, special issues for journals, and giving invited webinar presentations.

Training/Supervisions:
Trained (1 Raj + 1 Yonas +1 Daniel) students interns from University of Victoria, Waterloo and Sherbrooke.
Supervised 2 (Raj & Daniel) graduate student, University of Victoria.

Journal Publications

Arora, V.K., A. Lima, R.R. Shrestha. 2025. The effect of climate change on the simulated streamflow of six Canadian rivers based on the CanRCM4 regional climate model, Hydrology and Earth Systems Sciences 29, 291–312, doi.org/10.5194/hess-29-291-2025.

Danielescu, S., A. Cannon, R. Shrestha, R. Kroebel, I. Agomoh, J. Nyiraneza. 2025. Impact of past and future climate change on crop yield, nitrate leaching and nitrous oxide emissions associated with potato cropping in temperate climate, Journal of Agriculture and Food Research 25, 101919, https://doi.org/10.1016/j.jafr.2025.101919.

Dibike, Y., J. Broadbent, J. Musetta-Lambert, T. Reid, J. Spoelstra, W. Monk, E. Nicols, R.R. Shrestha, S. Beltaos, D. Peters, C. Zeng, B. Bonsal, C. Spence, 2025. Towards a Canadian National River Water Quality-Modelling System: State of Science and Future Prospects. 2024, Environmental Reviews 33: 1–26, doi.org/10.1139/er-2023-0094.

Peters DL, A James. 2024. Introduction to the Special Issue on the 75th anniversary of the Canadian Water Resources Association. Canadian Water Resources Research, 48: 345-347 https://doi.org/10.1080/07011784.2023.2290965

Potter C, K Green, DL Peters, KO Nieman. 2024. Investigating Hydrological Recovery in Regenerating Coniferous Stands in Snow-Dominated Watersheds Using SLAM-Enabled Mobile Terrestrial LiDAR. Submitted to Hydrological Processes, DOI: 10.1002/hyp.152473.

Rahimi Movaghar, M., M.R. Najafi, R.R. Shrestha, Y. Liu. 2025. Successive warm-wet and warm-dry events in the Great Lakes Basin: future projections using CMIP6 models, Climate Dynamics 63:80, doi.org/10.1007/s00382-024-07565-9.

Riddell D, M Dabboor, P Matte, DL Peters, T Ghobrial, A Pierre. 2024. Observations of River Ice Breakup Using GNSS-IR, SAR and Machine Learning. IEEE Transactions on Geoscience and Remote Sensing, 62: 1-13, https://doi.org/10.1109/TGRS.2024.3380554

Shrestha, R.R., J. Pesklevits. B.R. Bonsal, R. Brannen, T. Guo., S. Hoffmann. 2024. Rising summer river water temperature across Canada: spatial patterns and hydroclimatic controls, Environmental Research Letters 19(4): 044058, doi.org/10.1088/1748-9326/ad365f.

Conference contributions

Arora, V.K., A. R. Lima, R.R. Shrestha. 2024. The effect of climate change on the simulated streamflow of six Canadian rivers based on the CanRCM4 regional climate model, CMOS annual conference 2024.

Danielescu, S., A. Cannon, R. Shrestha, R. Kroebel, I. Agomoh, J. Nyiraneza. 2025. Impacts of climate change on potato yield, nitrous oxide emissions and nitrate leaching. Case study: Prince Edward Island, CWRA National Conference 2025, Penticton BC.

Dibike, Y., Y. Liu, R.R. Shrestha, 2025. Projected impacts of climate change on river flow and nutrient loading in the Assiniboine River Basin, CGU-CMOS annual conference 2025.

Lima, A., R.R. Shrestha, A. Lute. 2025. Evaluating the pySnowClim model for high-resolution snowpack simulations in Western Canada, CGU-CMOS annual conference 2025.

Liu, Y., P. Daggupati, S. Tanguturi, R.R. Shrestha, Y. Dibike. 2025. Assessment of flood risk in the RedAssiniboine Rivers in Southern Manitoba of Canada under climate change conditions, 10th International Conference on Flood Management (ICFM10), London, Ontario.

Troy, T., R.R. Shrestha, Yiin, H, 2024. Understanding the 2021 British Columbia Floods, H22I-09, AGU Fall meeting, 2024.

Reports:

Bonsal B, DL Peters, Y Dibike, R Shrestha, C Spence, D Yang. Climate Change Impacts – Hydro-Climatic Extremes (floods and droughts). in ECCC. 2024. Synthesis of freshwater Science in Canada: An overview toward informing discussion on prioritization of freshwater science activities, ISBN: 978-0-660-68759-9, published online March 2024

Spence C, B Bonsal, DL Peters, Y Dibike, R Shrestha, D Yang. Water Balance, Availability, and Sustainability. In ECCC. 2024. Synthesis of freshwater Science in Canada: An overview toward informing discussion on prioritization of freshwater science activities, ISBN: 978-0-660-68759-9, published online March 2024

Taherparvar, M., Shakibaeinia, A. and Dibike, Y.B., 2024. Sediment and chemical transport modeling of a hypothetical tailings dam breach spill in the lower Athabasca River. In River Flow 2022 (pp. 915919). CRC Press.