

GWFO Workshop on Observations and Data

October 23 & 24, 2024 on Zoom



GLOBAL WATER FUTURES
OBSERVATORIES

Workshop Summary

The workshop was attended by 54 participants on day-1 and 41 participants on day-2. The purpose of this workshop was to bring together the GWFO facility leads and managers and the GWFO staff to better understand our observations and data systems. GWFO is a vast network across Canada and across nine different universities, with about 50 employees and dozens more faculty leads and others to keep the facilities operating. Since the Launch event in the spring of 2024, this was a chance to better assess where we are at, what we are doing, and to explore possibilities for improving sites and harmonizing and making more interoperable the diverse facilities that GWFO supports.

Day-1 included an overview of GWFO and its status and progress, and presentations summarizing the operations and data collection of the instrumented sites, deployable systems, and water laboratories at the partner institutions. Together, these provided a comprehensive review of all the GWFO facilities. There was a discussion period that followed, and some ideas for connecting people across the network, activities we might pursue, and opportunities for sharing expertise and knowledge were brought up:

- There are clear thematic groupings of observations that are apparent: hydrometeorology, lake ecosystems, flux towers, cryosphere, wetlands, forests, agriculture, urban areas, chemistry, and eDNA. Cross comparisons of specific measurement approaches would be worthwhile within these groupings, and it might be worthwhile to form sub-groups of the technicians and site leads to examine issues of compatibility, optimal approaches, and interoperability amongst these.
- There is tremendous innovation across the network and sharing these experiences would be useful. We can help each other in doing this and gain confidence that the approaches are better, and thereby improve the network and facility. Getting technicians into different sites beyond those they normally work at would be tremendously worthwhile.
- An NSERC CREATE proposal for GWFO was suggested, given the collaboration across the network. This is worth exploring by the SMC.
- Participants are encouraged to share any GWFO news, stories, media to Outreach Coordinator, Stacey Dumanski (stacey.dumanski@usask.ca) to put online and/or in the newsletter.
- The GWFO secretariat can support developing and promoting outreach materials for GWFO labs, facilities, or observatories. Contact Stacey Dumanski and/or Monica Morrison (Knowledge Mobilization Specialist, monica.morrison@usask.ca) to learn more.

Day-2 was focused on data management and included presentations to explain GWFO's data policy and central data management system followed by overviews of the data management, QA/QC, storage, and access at the GWFO partner institutions. The discussions raised important issues about the extent to which we can centralize data management functions, distributed data

storage and repositories, short and long-term data preservation (i.e., well beyond GWFO), standards and meta-data:

- We need to develop more efficient ways of gathering information on our data users and tracking data downloads and usage, and we need support from the data repositories to do this.
- We must be careful with external data archives and compilations (universities, NGOs, governments), which cannot ensure their long-term preservation. There are many examples of previous networks and initiatives where the websites, links, and data have become inactive or disappeared. Publishing our data with a DOI in a suitable, discipline-specific, and reliable repository is recommended.
- It was noted that it is important to standardize the way in which data is cleaned and how instrumentation is cared for across basins and universities. This needs to be well-documented. This is where technical teams (i.e. hydrometeorological) can get together and review best practices, common problems, flagging data, etc. Or with snow surveys—how are these done across sites? Across the vast GWFO domain, approaches have been developed over years, but there are still opportunities for sharing experiences.
- We should also be clear with caveats on real-time data, calibration, etc., and where we cannot standardize data and procedures.
- We can explore training courses on best practices for technical and DM teams. These could be put on by us or they could be external, and this is something for the SMC to consider.
- The DM team will continue to work on an effective data strategy for managing real time and near-real time data, getting our data out to user groups in a timely and useful manner, and ensuring the long-term preservation of data. Meanwhile, technical teams can work together in thematic areas to improve standards and best practices, and to share experience and insights.