

# The Federated Research Data Repository

**Now Available in Full Production!**

**Lee Wilson**, Service Manager

**Kelly Stathis**, Discovery & Metadata Coordinator

**Erin Clary**, Curation Coordinator

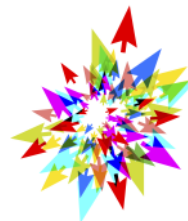
**Beth Knazook**, Preservation Coordinator

**February 3, 2021**



# FRDR: A Collaborative Effort

A collaboration among libraries, institutions, and federal organizations, involving many stakeholders across the RDM & ARC spheres



***FRDR = Federated Research Data Repository  
(DFDR en français)***

[https://www.frdr -dfdr.ca/](https://www.frdr-dfdr.ca/)

*A scalable, federated platform for digital research data management and the discovery of Canadian research data*

**Discovery  
Preservation**

**Deposit**

# Why Use FRDR?

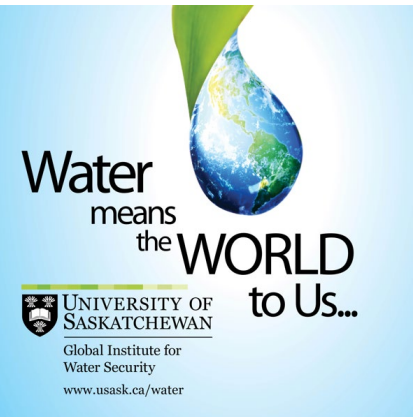
- Publish research data openly in a Canadian -owned, bilingual national repository option
- Support for medium-to-large sized datasets via Globus
- Secure repository storage, distributed geographically across multiple Compute Canada Federation hosting sites
- Data curation support provided by Portage
- You can work with multiple collaborators on a single submission
- Your data will be discoverable alongside other Canadian collections in the FRDR Discovery Portal

# FRDR Uptake in Limited Production



**Dynamic Brain Circuits in Health and Disease**

Web Archives for Longitudinal Knowledge

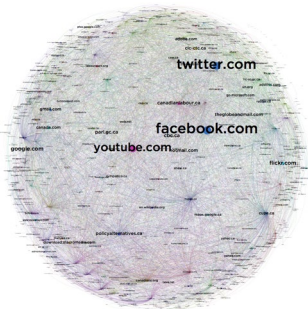


**MOUNTAIN LEGACY PROJECT**



*“Big data solutions for the marine acoustic community”*

*Dalhousie University*



*“Capturing Change in Canada’s Mountains”*

*U. Victoria*



**The Water Institute**  
*U. Of Waterloo*

*“Breaking boundaries in water research”*



**CIOOS ATLANTIC**  
REGIONAL ASSOCIATION OF THE CANADIAN INTEGRATED OCEAN OBSERVING SYSTEM

**SIOOC ATLANTIQUE**  
SYSTÈME INTÉGRÉ D'OBSERVATION DES OcéANS DU CANADA



**UNIVERSITY OF SASKATCHEWAN**



**S.D.S.**  
STONE TOOLS, DIET, AND SOCIALITY

*U. Calgary*

# FRDR Uptake in Limited Production



**Dynamic Brain Circuits in Health and Disease**



**MOUNTAIN LEGACY PROJECT**



*“Capturing Change in Canada’s Mountains”*  
U. Victoria

Web Archives for Longitudinal Knowledge

**Users: 320**

**Datasets: 152**

**Volume: 24 TB**



*“Big data solutions for the marine acoustic community”*  
Dalhousie University



REGIONAL ASSOCIATION OF THE CANADIAN INTEGRATED OCEAN OBSERVING SYSTEM

**SIOOC ATLANTIQUE**  
SYSTÈME INTÉGRÉ D'OBSERVATION DES OcéANS DU CANADA



**The Water Institute**  
U. Of Waterloo

*“Breaking boundaries in water research”*



**UNIVERSITY OF SASKATCHEWAN**



GLOBAL WATER FUTURES



**S.D.S.**  
STONE TOOLS, DIET, AND SOCIALITY

U. Calgary

# Architecture, Governance, & Support

- Dedicated storage and compute at two national CCF hosting sites (Cedar & Graham)
  - Storage geo-replicated on disk and tape across two sites
  - Archival copies maintained at a third site
- Governance provided by FRDR Steering Committee
  - Establishing a User Advisory Committee post launch
- 14 person development and operations team distributed across Canada
- Team includes 3 new Curation Officer positions added in Oct 2020

# How can I use it?

- Who can use FRDR?
  - Anyone can use FRDR to search for and download data across Canadian repositories
- Who can deposit data in FRDR?
  - Faculty members, or their designates, from Tri-Agency funding eligible Canadian institutions or organizations can deposit
- How much storage will be available to FRDR users?
  - Eligible depositors will have access to a default allocation of **1 TB** provided at no cost
  - Additional storage may be provisioned as needed, with some justification provided
  - Requests that far exceed the default allocation will need to undergo a review process



Search within collection

UNIVERSITY OF  
SASKATCHEWAN

GLOBAL WATER FUTURES

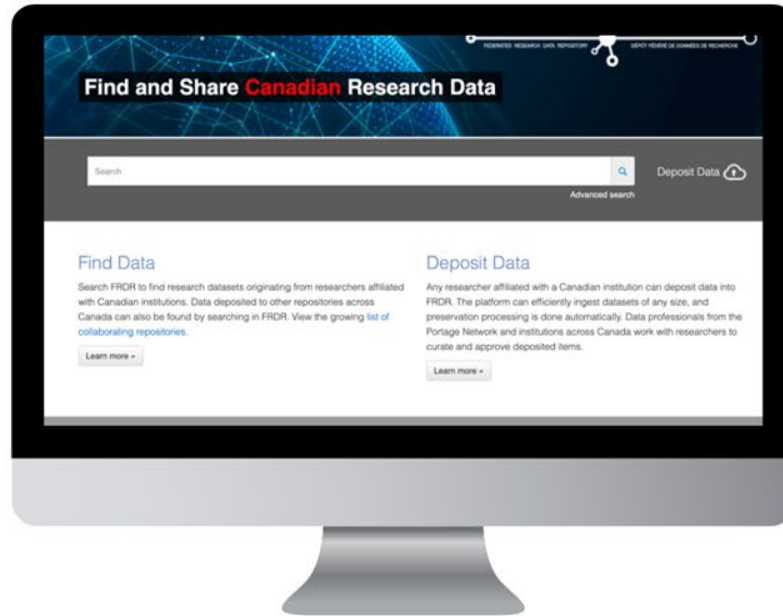
## Global Water Futures

**Global Water Futures: Solutions to Water Threats in an Era of Global Change (GWF)** is a University of Saskatchewan-led research program to deliver risk management solutions—informed by leading-edge water science and supported by innovative decision-making tools—to manage water futures in Canada and other cold regions where global warming is changing landscapes, ecosystems, and the water environment. The GWF program aims to position Canada as a global leader in water science for cold regions and will address the strategic needs of the Canadian economy in adapting to change and managing risks of uncertain water futures and extreme events.

Approved Date	Title	Author(s)
28-Oct-2020	<a href="#">Hydrometeorological observations at three boreal forest sites (aspen, jack pine, and black spruce) located in central Saskatchewan, Canada</a>	<i>Ahmed, Hafiz Faizan; Helgason, Warren; Barr, Alan G.; Black, T. Andrew</i>
13-Oct-2020	<a href="#">Warm-air entrainment and advection during alpine blowing snow events</a>	<i>Aksamit, Nikolas; Pomeroy, John</i>
8-Oct-2020	<a href="#">EMDNA: Ensemble Meteorological Dataset for North America</a>	<i>Tang, Guoqiang; Clark, Martyn P.; Papalexiou, Simon Michael; Newman, Andrew J.; Wood, Andrew W.; Brunet, Dominique; Whitfield, Paul H.</i>
23-Sep-2020	<a href="#">Atmospheric boundary layer measurements from Athabasca Glacier field campaign, June 2015</a>	<i>Conway, Jono; Helgason, Warren; Pomeroy, John; Sicart, Jean-Emmanuel; Johnson, Bruce</i>
12-Aug-2020	<a href="#">Hydrometeorological, glaciological and geospatial research data from the Peyto Glacier Research Basin in the Canadian Rockies</a>	<i>Pradhananga, Dhiraaj; Pomeroy, John; Aubry-Wake, Caroline; Munro, D. Scott; Shea, Joseph; Demuth, Michael N.; Kirat, Nammy Hang; Menounos, Brian; Mukherjee, Kriti</i>
8-Jul-2020	<a href="#">Impacts of the Husky oil spill on gut microbiota of native fish species to the North Saskatchewan River</a>	<i>DeBofsky, Abigail; Xie, Yuwei; Jardine, Tim; Jones, Paul; Giesy, John</i>
26-May-2020	<a href="#">Responses of juvenile fathead minnow (<i>Pimephales promelas</i>) gut microbiota to a chronic dietary exposure of benzo[a]pyrene</a>	<i>DeBofsky, Abigail; Xie, Yuwei; Challis, Jonathan; Brinkmann, Markus; Hecker, Markus; Giesy, John</i>

# Getting an Account

# www.frdr-dfdr.ca





Feedback

Log In ▾

Help ▾

About

EN ▾

Have an account?

» Log In

New to FRDR

» Start here

FRDR

FRDR

FEDERATED RESEARCH DATA REPOSITORY

RÉPERTOIRE FÉDÉRÉ DES DONNÉES DE RECHERCHE

ch Data

## Log in to use FRDR-DFDR Prod

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Use your existing organizational login

e.g., university, national lab, facility, project

Compute Canada

Didn't find your organization? Then use [Globus ID to sign in](#). ([What's this?](#))

Continue

---

Or

---



Sign in with Google



Sign in with ORCID iD



# Institutional Login



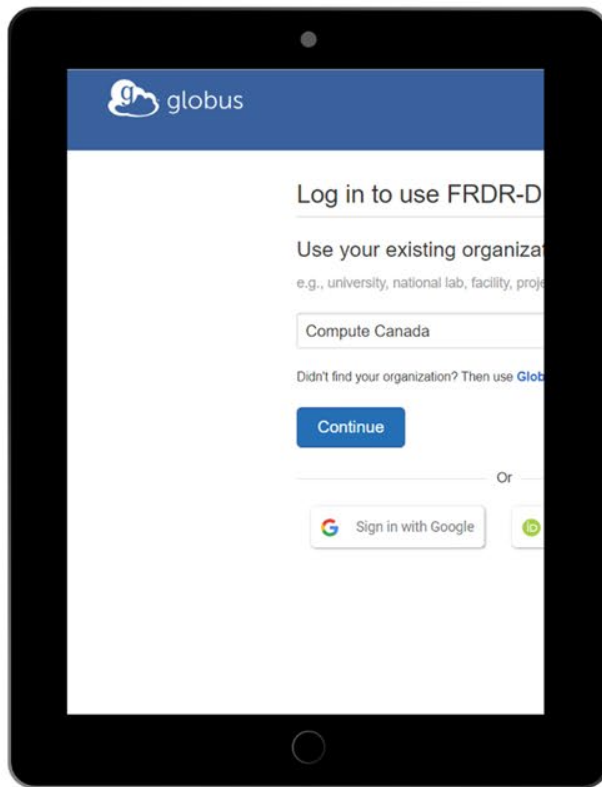
**compute** | **calcul**  
canada | canada



ORCID



globus



# Applying for Deposit

## Apply for Deposit

Anyone can use FRDR to search for and download data; however, only faculty members and their designates-such as students, research assistants, or postdocs-from eligible Canadian post-secondary institutions can deposit data in FRDR. To apply for permission to deposit, please fill out the form below:

**Preferred Language**

English



**Institution\***

Choose...



**Department**

**Institutional Email\***

lee.wilson@dal.ca

If you do not have an institutional email, please explain why below.

# Applying for Deposit

Role\*

- Faculty ?
- Government Researcher ?
- Librarian ?
- Not-for-profit Researcher ?

**Sponsored User**

- Undergraduate Student ?
  - Master's Student ?
  - Doctoral Student ?
  - Postdoctoral Fellow ?
  - External Collaborator ?
  - Support Staff ?
- Other ?

Sponsor

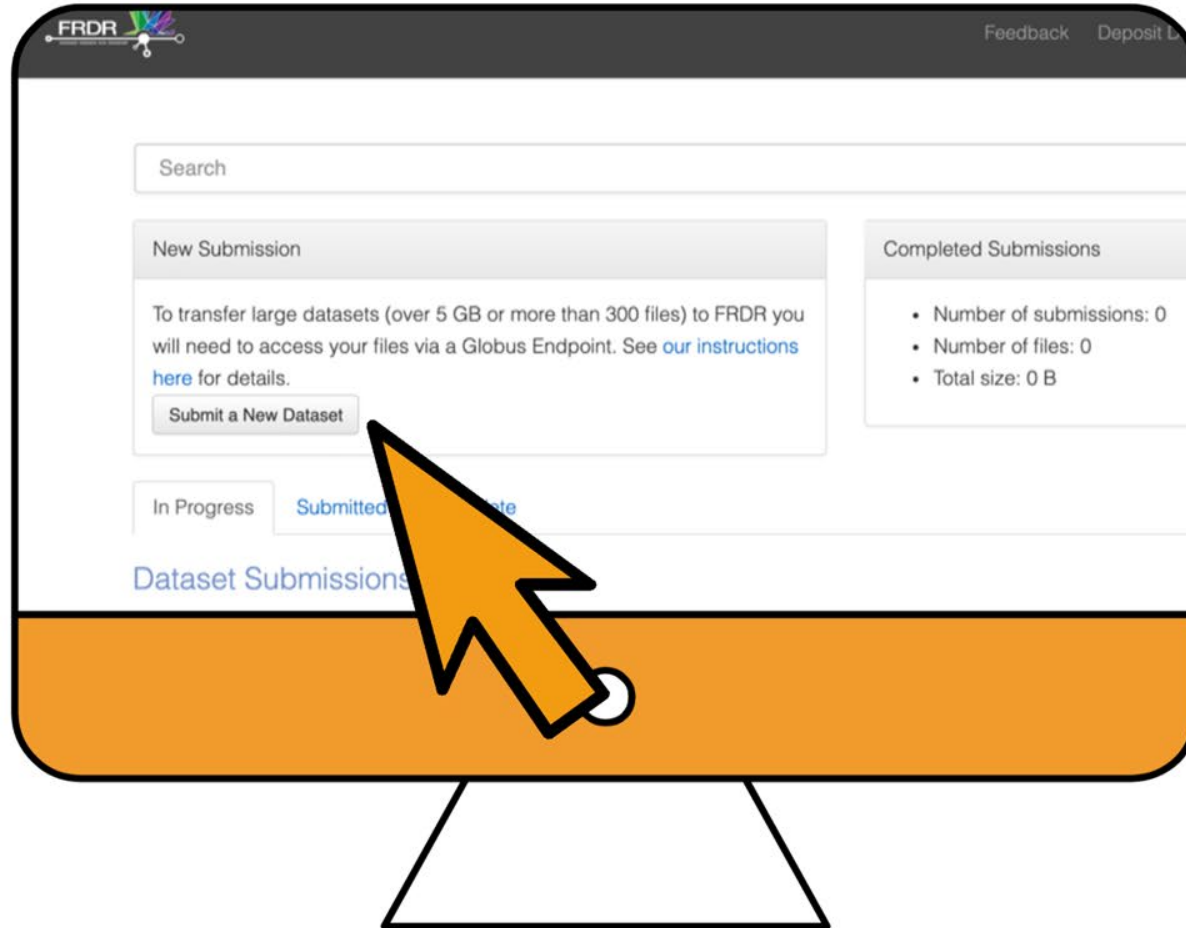
First Name\*

Last Name\*

Sponsor Email\*

Apply

# Starting a Submission





# Adding Metadata

- Metadata = descriptive information about your dataset
- Robust metadata help make your data **FAIR**: Findable, Accessible, Interoperable, and Reusable
- Three sections:
  - Required Metadata
  - Recommended Metadata
  - Geographical Metadata
- For detailed guidance, see [https://www.frdr - dfdr.ca/docs/en/describing\\_your\\_data/](https://www.frdr-dfdr.ca/docs/en/describing_your_data/)

# Required Metadata

- Title
- Description
  - an abstract for your dataset
- Author(s)
  - Author Affiliations
  - ORCID iD (optional)
- Contact Name
- Contact Email
- Rights
  - license—CC0, CC BY, etc.

## Required Metadata

All fields with an asterisk \* are required

**Title \***

**Description \***

**Author \***

**Author Affiliations \***   
Enter or semicolon to finish an entry and start a new one

**ORCID ID**

Please supply the name and email address of the person to contact about using this dataset. The email address will not be shown to the public, instead a form will be shown for people to fill out if they wish to contact someone about using the dataset.

**Contact Name \***

**Contact Email \***

For custom licensing options please contact FRDR Support at [curators@frdr-dfdr.ca](mailto:curators@frdr-dfdr.ca)

**Rights \***

<input checked="" type="radio"/>	Creative Commons Public Domain Dedication (CC0 1.0) <a href="https://creativecommons.org/publicdomain/zero/1.0/">https://creativecommons.org/publicdomain/zero/1.0/</a>
<input type="radio"/>	Creative Commons Attribution 4.0 International (CC BY 4.0) <a href="https://creativecommons.org/licenses/by/4.0/">https://creativecommons.org/licenses/by/4.0/</a>

# Recommended Metadata

- **Keywords**
- **Collection Period**
- **Funder**
  - **Award Number**
  - **Award Title**
- **Contributors**
  - e.g. Data Collector, Data Manager, Research Group, Supervisor
- **Related Identifier**
  - e.g. publications the dataset “is cited by”

## Recommended Metadata

Please fill further information about this submission below.

**Keywords**   
*Enter or semicolon to finish an entry and start a new one*

**Collection Period (s)** Start:  End:  Remove Entry  
+ Add More

**Funder**   
*Enter or semicolon to finish an entry and start a new one* Remove Entry

**Award Number**  Remove Entry

**Award Title**  + Add More

**Contributors** Data Collector  Remove Entry  
+ Add More

**Related Identifier** Is cited by  Remove Entry  
+ Add More

# Geographical Metadata

- **Geolocation Place**
  - place name, e.g. “Stanley Park, Vancouver, BC, Canada”
- **Geolocation Point (Lat Lon)**
- **Geolocation Box (S W N E)**

where was the data gathered?

what place is the data focused on?

### Geographical Metadata

Please fill further information about this submission below.

**Geolocation Place**   
Enter or semicolon to finish an entry and start a new one

**Geolocation Point (Lat Lon)**

**Geolocation Box (S W N E)**

# Persistent Identifiers

- Persistent Identifiers (PIDs) are ongoing, long -lasting references to specific entities —publications, datasets, people, organizations, and more
  - DOI = Digital Object Identifier
  - [ORCID](#) iD = Open Researcher and Contributor ID
- FRDR accepts **ORCID iDs** to uniquely identify dataset authors
- We encourage **DOIs** and other persistent identifiers in the “Related Identifier” field
- Upon approval of your dataset, FRDR will generate a **DOI**

# Controlled Vocabularies and Registries

FRDR plans to implement the following vocabularies and registries:

- [Canadian Research and Development Classification \(CRDC\)](#)
  - Controlled values for Field(s) of Research
  - Each field has a unique code and names in English and French
- [Research Organization Registry \(ROR\)](#)
  - Suggested values for author affiliations
  - Each research organization has a ROR ID for persistent identification
- [Crossref Funder Registry](#)
  - Suggested values for funder names
  - Each funder has an associated DOI for persistent identification

# Data Discovery

The screenshot shows the FRDR search interface. At the top, there is a search bar with the query 'frdr' and a search button. Below the search bar, there are navigation links: Feedback, Deposit Data, Account, Help, About, and EN. The main content area displays search results for 'frdr', showing 154 results found. The results are sorted by relevance and displayed in a list view. The first three results are:

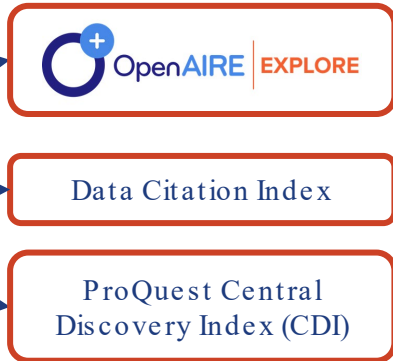
- EMDNA: Ensemble Meteorological Dataset for North America**  
FRDR  
Tang, Guoqiang; Clark, Martyn P.; Papalexiou, Simon Michael; Newman, Andrew J.; Wood, Andrew W.; Brunet, Dominique; Whitfield, Paul H. — 2020-10-08  
+ Show Details
- Initial Assessment of Bioavailable Strontium at Olduvai Gorge, Tanzania: Potential for Early Mobility Studies**  
FRDR  
Tucker, Laura; Favreau, Julien; Itambu, Makarius; Larter, Fergus; Mollel, Neduvoto; Mwambwiga, Aloyce; Patalano, Robert; Roberts, Patrick; Mercader, Julio; Soto, Maria — 2019-05-16  
+ Show Details
- Expenditures of CARL member libraries for scholarly resource subscriptions licensed through CRKN for 2017 - 2018 / Dépenses des bibliothèques membres de l'ABRC pour les abonnements aux ressources savantes sous licence du RCIDR pour l'année 2017 - 2018**  
FRDR  
Wilkinson, Sarah — 2019-10-01  
+ Show Details

The left sidebar contains filter results for Date range, Author, and Source. The Date range filter shows a bar chart for the years 2018, 2019, and 2020, with a date range of 2017 to 2020. The Author filter lists authors such as Higgs, Eric (53), Pomeroy, John (14), Favreau, Julien (7), Patalano, Robert (7), Van Cappellen, Philippe (7), Helgason, Warren (6), Itambu, Makarius (6), Mercader, Julio (6), Morrissey, Christy A. (6), and Soto, Maria (6). The Source filter lists sources such as Mountain Legacy Project (FRDR) (53), FRDR (52), Global Water Futures (FRDR) (35), Water Institute (FRDR) (10), UBC Brain Circuits (FRDR) (3), and SuperDARN (FRDR) (1).

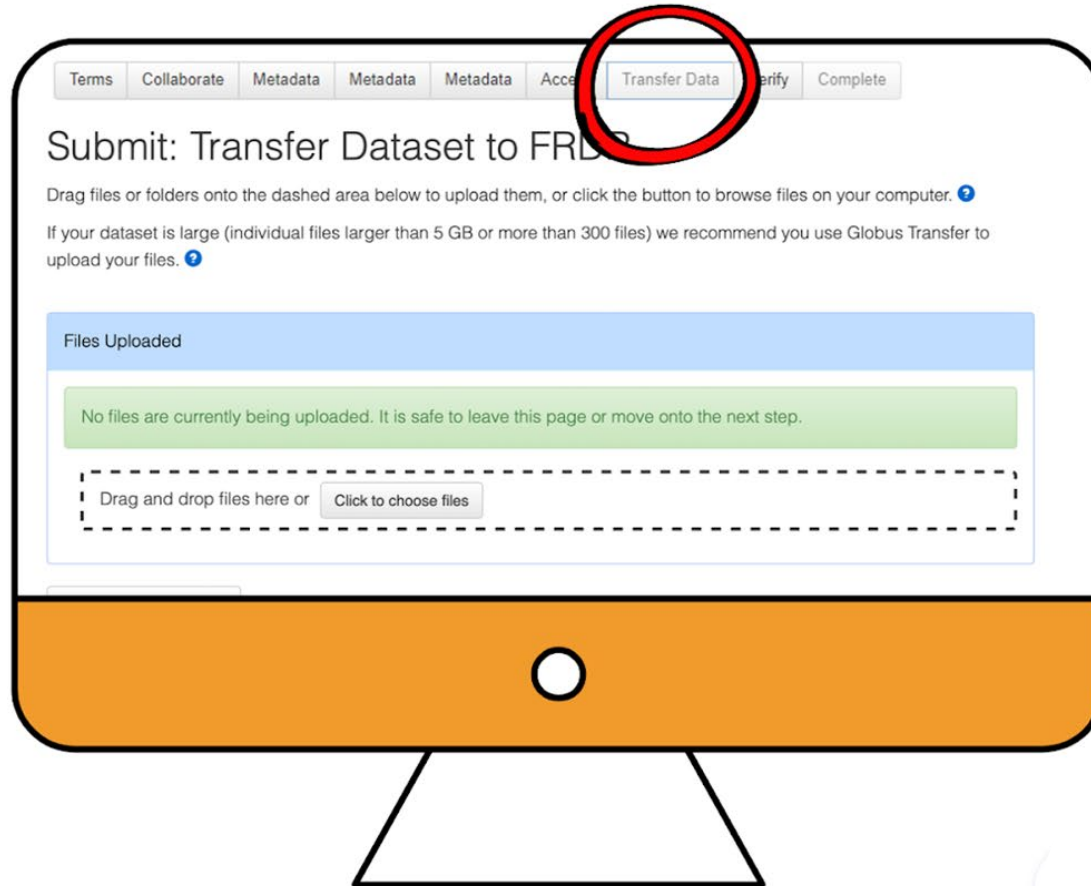
## FRDR Discovery Service

- Data deposits are searchable alongside data from over 70 Canadian repositories
- Exposed to several data aggregators via OAI-PMH feed

OAI-PMH  
for all datasets  
deposited in and  
harvested by  
FRDR

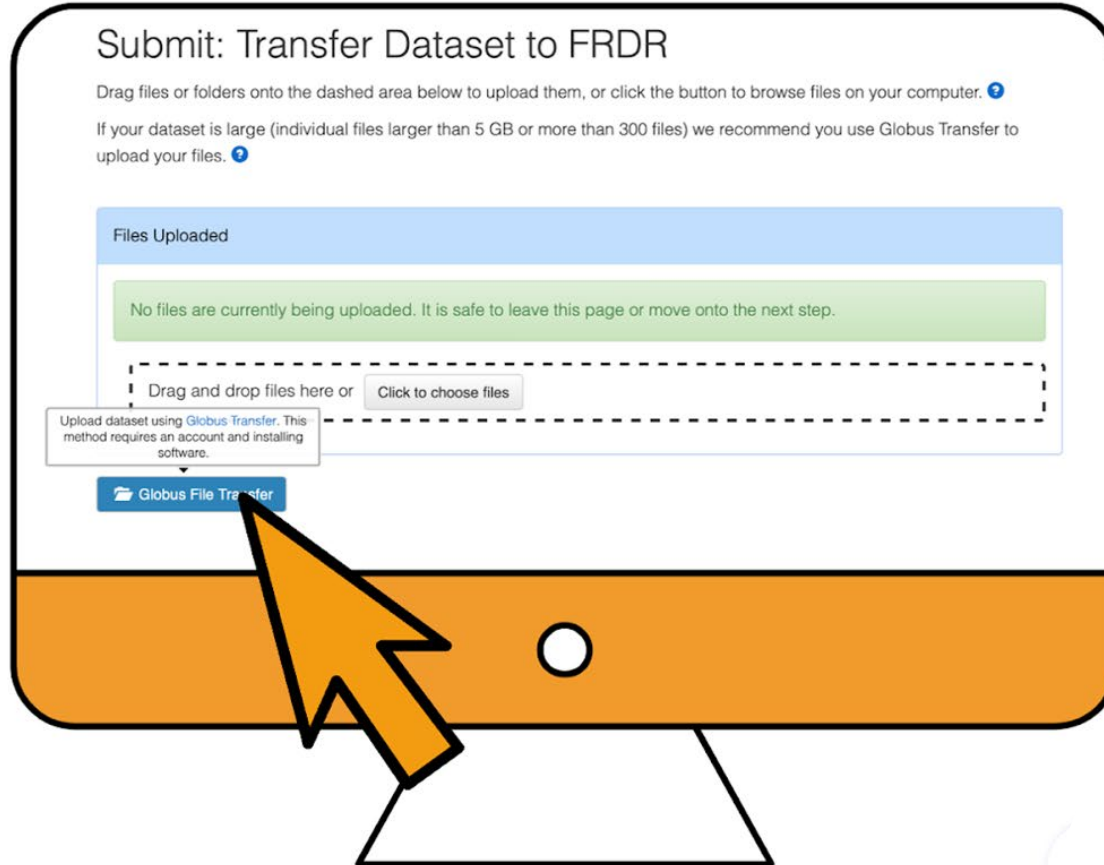


# Transferring Data





# Transferring Data: Large Submission



# Globus: File Manager

The screenshot displays the Globus File Manager interface. On the left is a dark sidebar with navigation icons and labels: FRDR, Français, FILE MANAGER, BOOKMARKS, ACTIVITY, ENDPOINTS, GROUPS, CONSOLE, and ACCOUNT. The main header area shows 'File Manager' and a 'Panels' control. Below the header, there are input fields for 'Collection' (containing 'FRDR-DFDR Demo') and 'Path' (containing '/2/unpublished/publication\_347/submitted\_data/'). A 'Start' button is visible. The main content area is split into two panes: the left pane shows a search prompt 'Search for a collection to begin' and a link 'Get started by taking a short tour.'; the right pane shows 'This folder is empty.' A vertical toolbar on the right side of the main area contains icons for file operations like copy, paste, delete, and upload.

# Globus: Collection Search

FRDR

Collection Search

Collection  Cancel

Start typing the name of a data collection or select one below

Recent Bookmarks Your Collections Shared With You More Options

FRDR-Prod-2

ecclary-laptop

Globus Connect Personal

Globus Connect Personal connects your laptop or other personal computer to Globus with a just a few clicks. With Globus Connect Personal you can share and transfer files to/from a local machine — campus server, desktop computer or laptop — even if it's behind a firewall and you don't have administrator privileges.

Install Globus Connect Personal

FILE MANAGER

BOOKMARKS

ACTIVITY

ENDPOINTS

GROUPS

CONSOLE

ACCOUNT

LOGOUT

HELP

# Globus: Selecting Files

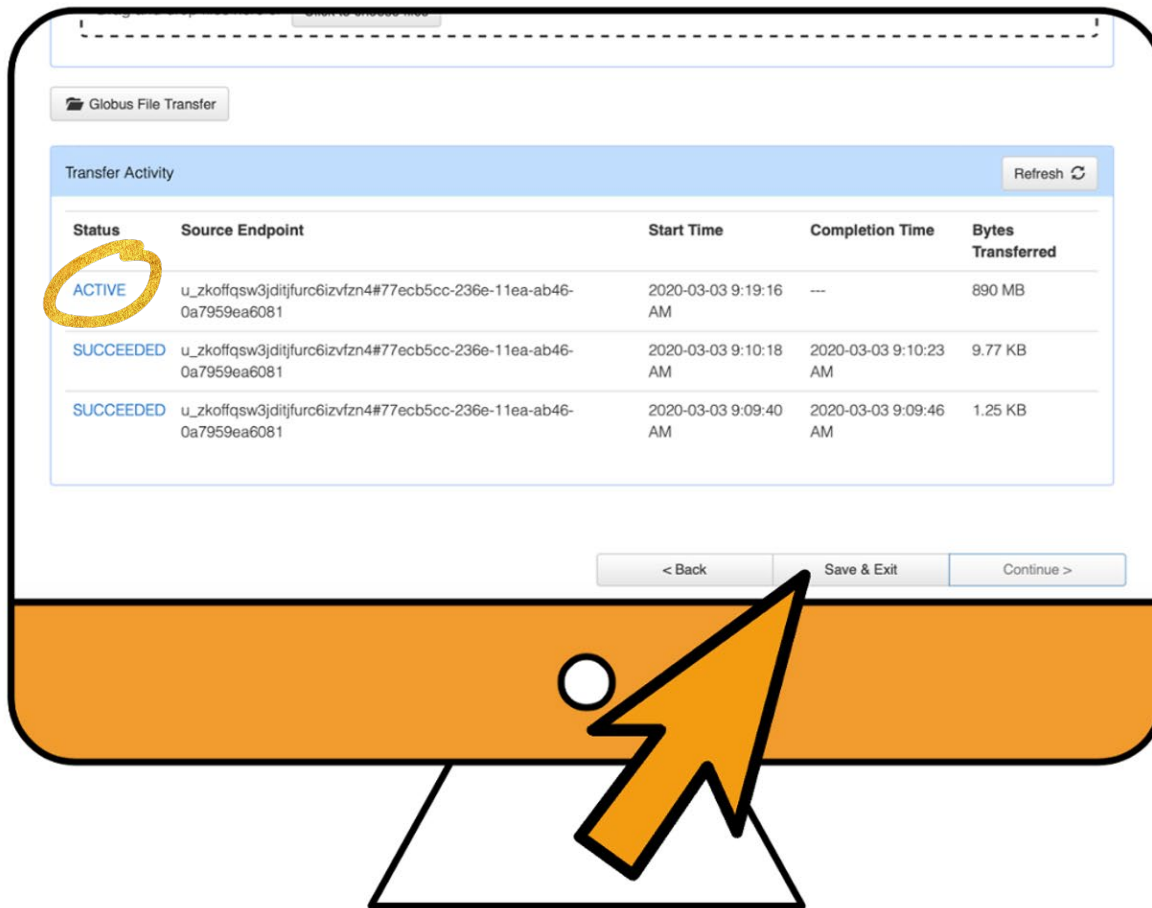
The screenshot displays the Globus File Manager interface. At the top, the title bar reads "File Manager" with a folder icon on the left and "Panels" with window control icons on the right. Below the title bar, there are two search bars: "Collection" with the value "ecclary-laptop" and "FRDR-Demo", and "Path" with the values "/~/Desktop/Test-files/" and "/2/unpublished/publication\_148/submitted\_data/".

The main content area is split into two panes. The left pane shows a list of files and folders. The right pane is currently empty, displaying the text "this folder is empty." A context menu is open over the selected file "test-file-1.rtf", listing actions such as Share, Transfer or Sync to..., New Folder, Rename, Delete Selected, Download, Open, Upload, and Get Link.

At the bottom of the interface, there are three buttons: "Start" (dark blue), "Transfer & Sync Options" (light gray with a dropdown arrow), and "Start" (light blue).

Item	Created	Size
directory-with-more-data-files	03/03/2020 08:35am	-
README.txt	11/25/2019 10:06am	8 B
test-data.tar.gz	11/25/2019 11:22am	914 B
test-directory.zip	11/26/2019 08:38am	2.36 MB
test-file-1.rtf	03/08/2019 11:21am	359 B
test-file-2.odt	03/08/2019 11:23am	8.73 KB

# Transferring Data: Transfer in Process



# Accessing Submission in Progress

- Click “Edit” next to an existing submission to modify it, or when you are ready to finalize and submit
- Your DOI is available, but please note:
  - It will not be registered or functional until your data are reviewed and published online
  - If you need to share your DOI sooner, our curation team can spot check files to let you know if we foresee any issue that might prevent publication

In Progress (6)

Submitted (29)

Complete (4)

## Dataset Submissions in Progress

Dataset Title	Owner	Collaborators	Last Modified	
Test deposit: demonstrate data upload process <a href="#">10.20383/demo.406</a>	Me	 No Collaborators	2021-01-24 07:36 PM	 

# Finalizing and Submitting

## Submit: Verify Dataset

Verify that the metadata and file(s) for your dataset are correct and complete. No further changes can be made after you finalize your submission. The "Edit" buttons let you jump to a previous step.

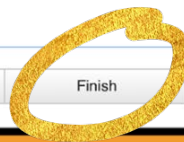
Click on "Finalize Dataset Submission" when you are all done.

Identifier
10.80217/demo.318

Required Metadata	Edit
Title	Test Deposit to Demonstrate File Identification

Access	Edit
The dataset will be searchable	

< Back	Save & Exit	Finish
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# FRDR Curation Process





# Dataset publication

Newfoundland and Labrador climate index

Contact Dataset Administrator

**Description:** The Newfoundland and Labrador (NL) climate index aims to describe the environmental conditions on the NL shelf and in the Northwest Atlantic as a whole. It consists of annual normalized anomalies of 10 subindices with equal contribution: Winter North Atlantic Oscillation, air temperature, sea ice, icebergs, sea surface temperature, vertically-averaged temperature and salinity at Station~27, cold intermediate layer (CIL) core temperature at Station~27, CIL area on 3 hydrographic sections and bottom temperature on the NL shelf. This index runs from 1951 to 2019 and will be updated annually. Data associated with Cyr, F. & Galbraith, P.S., A climate index for the Newfoundland and Labrador shelf, Earth System Science Data [submitted]

**Authors:** Cyr, Frédéric; Fisheries and Oceans Canada; Memorial University of Newfoundland; <https://orcid.org/0000-0002-1581-7502>  
Galbraith, Peter S.; Fisheries and Oceans Canada; <https://orcid.org/0000-0002-5587-6881>

**Keywords:** Newfoundland and Labrador  
Climate  
Physical Oceanography  
Ocean  
Atmosphere  
Environmental index  
Ecosystem studies

**Date:** 16-Nov-2020

**Publisher:** Federated Research Data Repository / dépôt fédéré de données de recherche

**URI:** <https://doi.org/10.20383/101.0301>

## Files in Dataset - Total Size - 28.42 KB

 frdr-checksums-and-filetypes.md	1.18 KB
 LICENSE.txt	13 KB
 NL_climate_index_all_fields_natural_signs.csv	3.79 KB
 NL_climate_index_all_fields.csv	3.75 KB
 NL_climate_index.csv	0.72 KB
 README.txt	5.98 KB

Download Dataset



# Preservation Activities

Keeping data accessible over time



## Archival Information Package (AIP)

Context metadata  
Preservation metadata  
Fixity information  
Original files  
Preservation copies



**Appraise:** Review and designate datasets for long-term preservation



**Monitor:** Perform fixity checks to verify the authenticity and integrity of the data



**Migrate:** Update file formats to guard against obsolescence

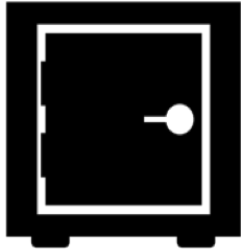
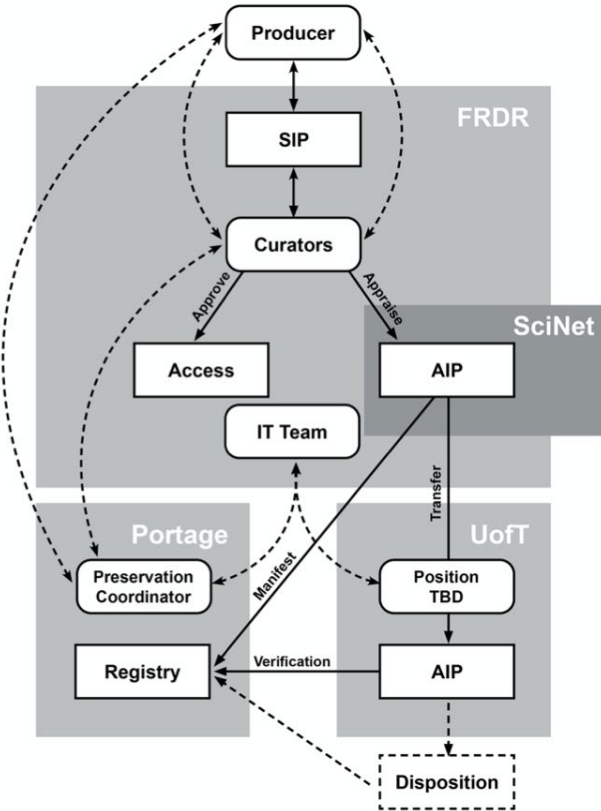


**Replicate:** Keep more than one copy of the data in different geographic locations



**Continuation of care:** Preserve the files within a network of preservation partners

# FRDR Preservation Pipeline Project



**Data is monitored**



**Data is  
geographically  
distributed**

# Tips for Researchers Preparing Datasets for Preservation



Use file naming conventions that make it clear which files have been updated, when, and by whom



Designate people to manage workflows



Keep more than one copy of your files, preferably in different geographic locations



Use open file formats that are easily shared and preserved



Use repositories that offer commitments to long-term preservation

# Want to learn more?

- **FRDR informational and training videos** are now available on CARL's YouTube Channel:
  - <https://youtube.com/playlist?list=PLX9EpizS4A0suoSV2N0nn9parl96xHPkz>
- **Additional training materials** are available on Portage's Zenodo:
  - <https://zenodo.org/communities/portage-network/?page=1&size=20>
- **Documentation** is available on the FRDR website:
  - <https://www.frdr-dfdr.ca/docs/en/about/>

# Thanks! Questions?



Lee Wilson , Service Manager  
Kelly Stathis , Metadata & Discovery Coordinator  
Erin Clary , Curation Coordinator  
Beth Knazook , Preservation Coordinator

[support@frdr -dfdr.ca](mailto:support@frdr-dfdr.ca)



Innovation, Science and  
Economic Development Canada  
Innovation, Sciences et  
Développement économique Canada

**NDRIO** | **NOIRN**  
New Digital  
Research Infrastructure  
Organization | Nouvelle organisation  
d'infrastructure de  
recherche numérique