

The Polar Data Catalogue: Sharing and Archiving Canada's Polar Data

Julie Friddell

Canadian Cryospheric Information Network
University of Waterloo

www.polardata.ca

MEOPAR Data Management Workshop



Montréal

24 March 2014


History - CCIN

- * **Canadian Cryospheric Information Network**
- * **Begun in mid-1990's** as a partnership
 - * Ellsworth LeDrew/University of Waterloo
 - * Canadian Space Agency
 - * Meteorological Service of Canada/Environment Canada
 - * Natural Resources Canada
 - * Noetix Research Inc.
 - * ...
- * To provide **data management and access** for the Canadian cryospheric community, in particular, the NASA EOS CRYSYS (*Cryosphere System in Canada*) program
- * Hosted **100's of data sets, and satellite imagery**

CCIN Outreach Website



[ABOUT](#) [CANADIAN CRYOSPHERE WATCH](#) [POLAR DATA CATALOGUE](#) [RESOURCES](#) [Search](#) [Login](#)



The Canadian Cryospheric Information Network (CCIN) and the Polar Data Catalogue (PDC) have been developed over the past two decades through collaborative partnerships between the University of Waterloo and numerous government, university, and private organizations to provide the data and information management infrastructure for the Canadian cryospheric community. [Read more](#)

BULLETIN BOARD

October 2013: The [PDC Geospatial Search application](#) has been enhanced with a new GIS Viewer and new display and download options for RADARSAT imagery! Please visit the PDC Search to view and query our first dataset in this new map viewer as well as to view and download RADARSAT imagery in CEOS, geotiff, jpg, and other formats and configurations.

June 2013: We are happy to announce the availability of a new and improved [PDC Geospatial Search application](#)! The link for the PDC Search as well as the [PDC Data and Metadata Input application](#) have changed, so please update your bookmarks. Please let us know if you experience any issues with the new Search tool or have suggestions for additional improvement!

[Read past bulletin board posts](#)

POLAR NEWS **POLAR GOOGLE**

Climate change concerns loom at Arctic conference - Alaska Dispatch [↗](#)

Arctic Circle's halibut sandwich recognized by Zagat - Salt Lake Tribune [↗](#)


Photos: Arctic Circle conference in Reykjavik - Alaska Dispatch [↗](#)


Arctic icebreaker delayed as Tories prioritize supply ships - CBC.ca [↗](#)


Greenpeace protests at Arctic conference, decrying Russia's detention of activists - Alaska Dispatch [↗](#)


[more](#)

TOOLS & RESOURCES


 **Polar Data Search** [↗](#)
Data and metadata from the Arctic and Antarctic

 **PDCLite Search** [↗](#)
PDC Search for low bandwidth connections

 **PDC Data Input Portal** [↗](#)
Data and metadata repository for registered users

 **Canadian Cryosphere Watch** [↗](#)
Information on Canada's snow and ice

FUN AND GAMES


 **Kids' Section** [↗](#)
Games and learning for kids


RANDOM FAQs

Close up of snow crystal photo by Luke Copland located in your website's photo gallery

[All FAQs](#)



Tweets [Follow @polardata](#)

 **Polar Data Catalogue** 11 Oct
@polardata
The PDC Geospatial Search application has been enhanced with a new GIS Viewer and new display and download options for RADARSAT imagery!
[Expand](#)

 **Polar Data Catalogue** 7 Oct
@polardata
New Metadata available @ [polardata.ca/pdcsearch/PDCS...](#) : 'RADARSAT derived monthly ice motion e

[Tweet to @polardata](#)

POLAR DATA CATALOGUE
Metadata, Data, and Satellite Imagery from the North and South Polar Regions



[Polar Data Catalogue](#) | [Canadian Cryosphere Watch](#) | [Help](#) | [Contact Us](#)
© 2012 Canadian Cryospheric Information Network

UNIVERSITY OF WATERLOO

<http://ccin.ca>

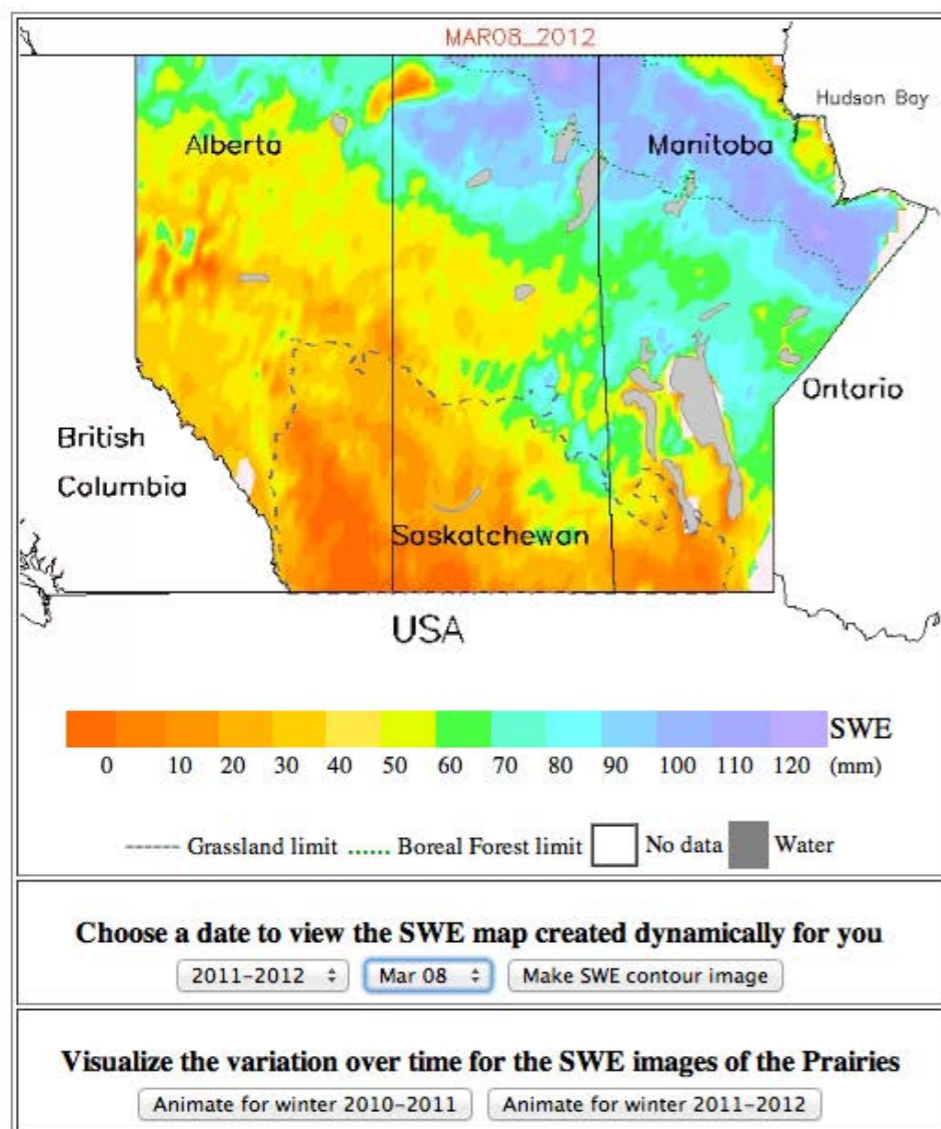
Snow data visualizations

Current Snow Cover

This page shows recent information on snow cover conditions across Canada, North America, and the globe. Click on images for additional maps.

Snow Water Equivalent for the Canadian Prairies

The interactive map below shows Snow Water Equivalent (SWE) for the Canadian Prairies. SWE represents the depth of water (in mm) that would be produced if the snow melted. The coloured contours show variations in SWE derived from passive microwave satellite data. Data are updated approximately weekly throughout the winter months.



SWE data for the Canadian Prairies courtesy of Environment Canada, C. Derksen, 2012.

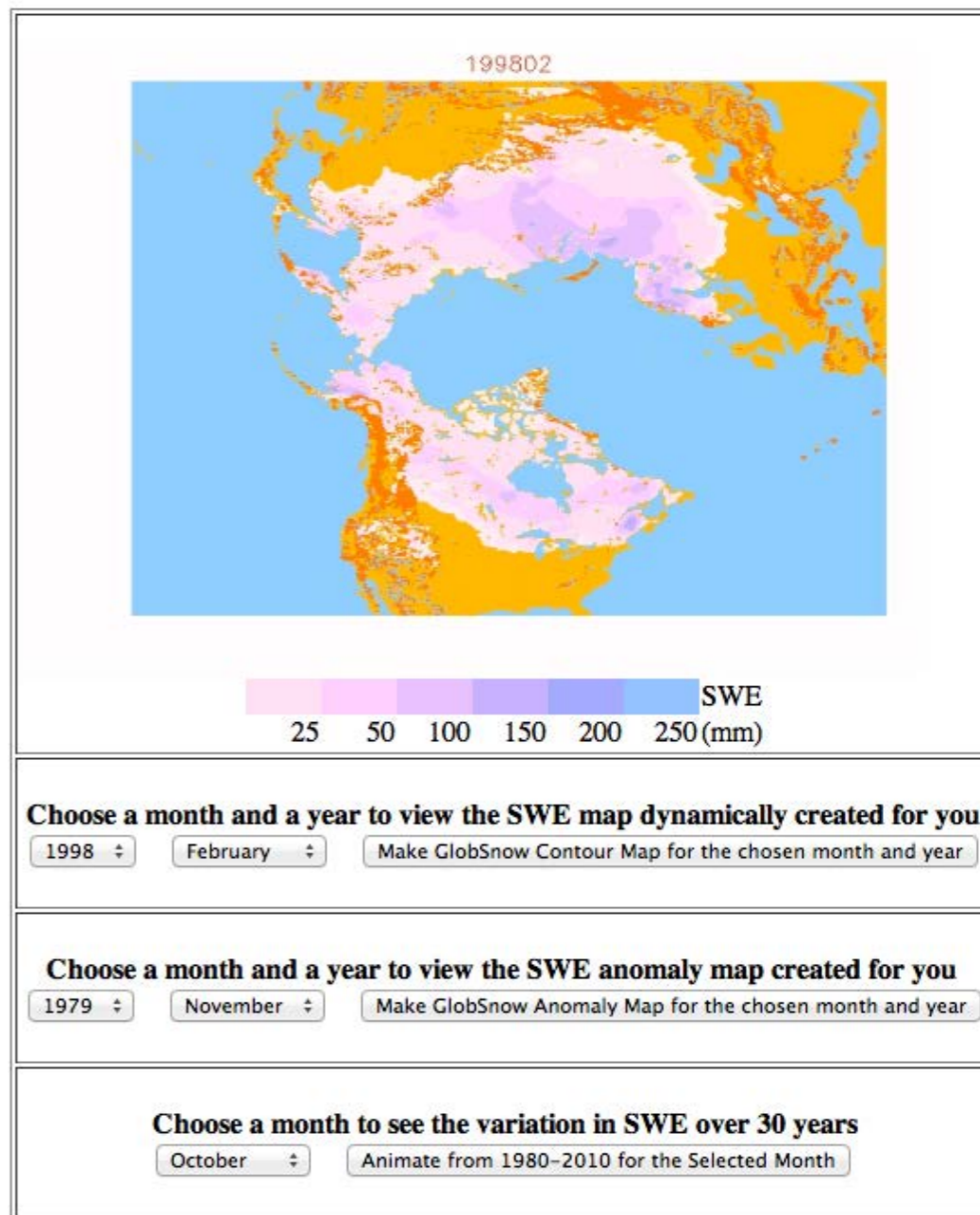


Figure 4: Interactive map of SWE for the Northern Hemisphere. The coloured contours show variations in SWE derived from passive microwave satellite data. Data are available only during the winter months, and data for some months is missing, especially early and late winter during certain years. SWE anomalies have been calculated relative to the 1979-2010 average. *Erroneous map data, such as Asia appearing covered with water, appear during some months (especially October and May), but this does not affect the SWE estimates.* Data courtesy of the European Space Agency's GlobSnow project, Finnish Meteorological Institute, current as of 24 August 2012.

CCIN & PDC people



Daniel Dong, Web and Database Developer and Administrator



Frank Lauritzen, Database Administrator



David Friddell, Systems Administrator



Ellsworth LeDrew, CCIN/PDC Director [↗](#)



Julie Friddell, CCIN/PDC Manager



Maren Pauly, CCIN Website Developer



Kumari Gurusamy, Web Developer




Brittany Renken, Data Manager

Polar Data Catalogue

- * <http://polardata.ca>
- * Partnership between ArcticNet, CCIN, Department of Fisheries and Oceans, and Noetix Research Inc.
- * **Data archive and public access portal** for polar research data and information, primarily northern Canada but also circumpolar Arctic, Antarctic
- * **Launched 2007**, using accepted standards for sharing
- * Data and Metadata from projects on **natural environment (including ocean), social sciences, health, policy, etc.**

PDC Search



Polar Data Catalogue Geospatial Search

Home | Help Manual | PDCLite Low-bandwidth Search v. 3.1.1

Arctic | Antarctic | GIS

PDC Search | Results | Metadata | Data

Polar Data Catalogue Search

[Choose a different data collection...](#)

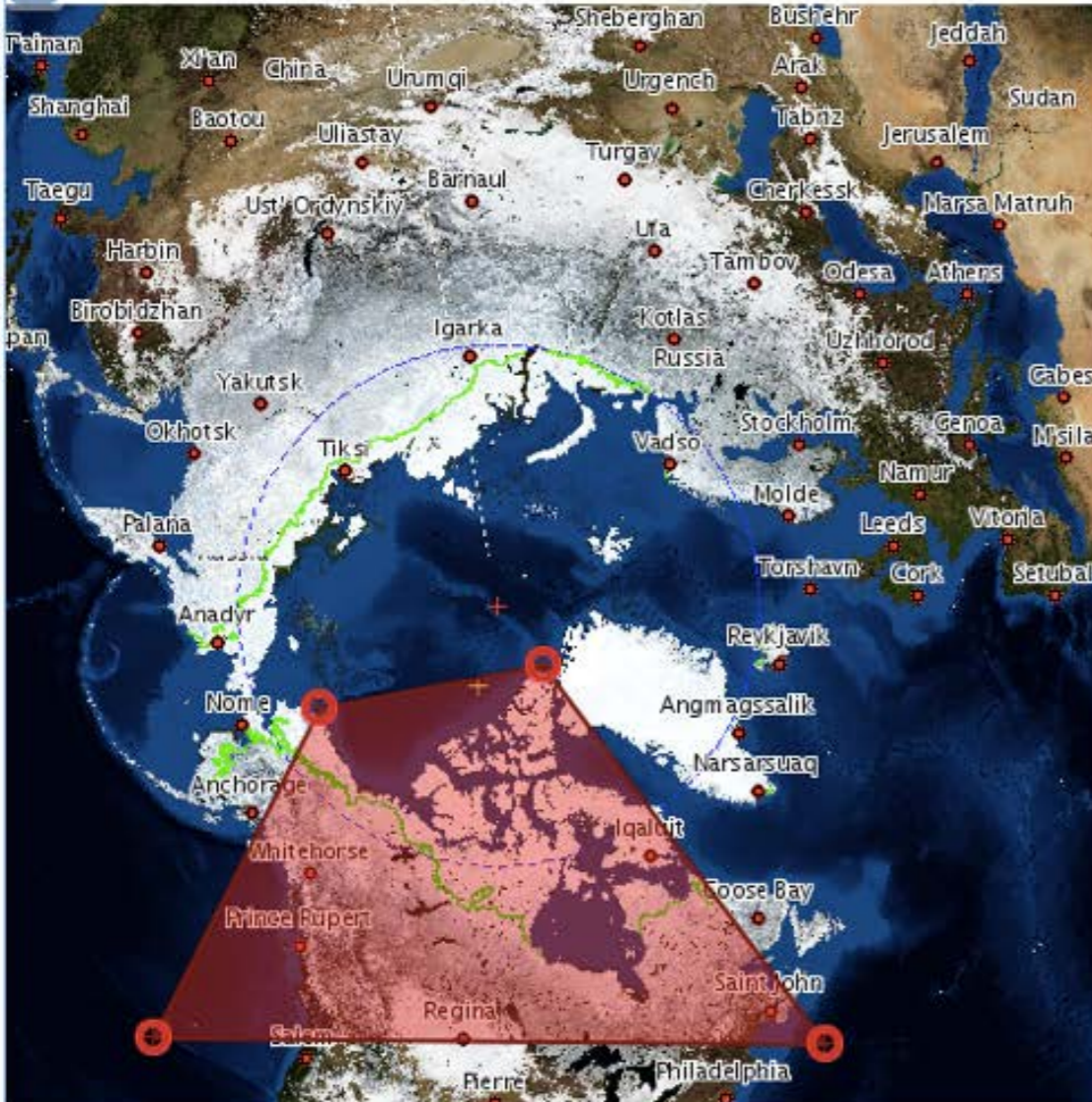
Select an area of interest and/or enter dates or keywords to filter results. Advanced search options are available for text searching.

Area of Interest (Click on the map to make a 4-cornered box or enter coordinates)

Latitude	Longitude	
71.4827293855	-159.93687608	Update Points
83.2551314601	-63.034977053	Apply Changes
39.3149032455	-63.297145120	Delete Last
38.7969559561	-138.50779938	Clear All

Start Date: Month Day Year
End Date: Month Day Year
Word or Phrase:
 View downloadable datasets only
 View GIS datasets only
Advanced Search: Number of Search Options: 1
 Research Program
Search Clear

Quick Search
CCIN Reference No. Search



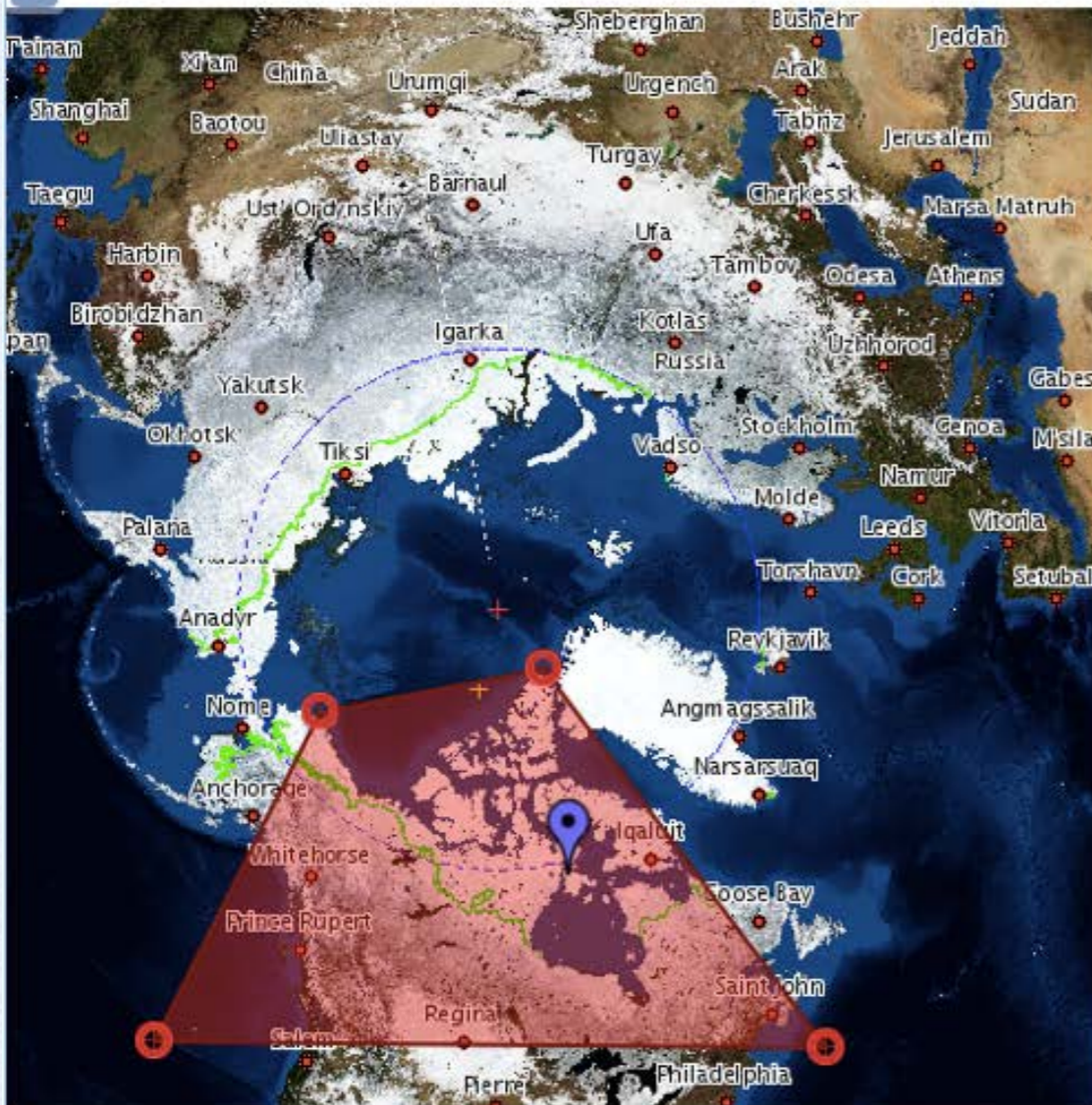
Map courtesy of the NSIDC

PDC Search



Arctic Antarctic GIS

PDC Search Results Metadata Data



Map courtesy of the NSIDC

Metadata search results

Hide All

View GIS data

Title	Start Date	Show/Hide	Download
Arctic-SOLAS 2008 atmospheric DM...	2008-09-04	Show	DATA
Arthropod monitoring on Akimiski I...	2008-06-03	Show	DATA
Glaciodyn (Canada) IPY Project: W...	2008-06-01	Show	DATA
Paleoclimate data from Melville Peni...	2008-06-01	Hide	DATA
Title Paleoclimate data from Melville Peninsula CCIN Ref No 10903 Time Period 2008-06-01 to 2011-07-31 Location[N,S,W,E] 68.55, 68.55, -83.28, -83.28			
Arthropod monitoring in the Hudson...	2008-05-27	Show	DATA
Monitoring food web dynamics on A...	2008-05-26	Show	DATA
Avian predator monitoring on Akimi...	2008-05-25	Show	DATA
Diatom data from north Baffin Island	2008-01-01	Show	DATA
Particle-associated microbial comm...	2007-11-09	Show	DATA
Arctic-SOLAS 2007 atmospheric DM...	2007-09-27	Show	DATA
CANDAC/PEARL DataSet - OPAL 35 ...	2007-09-15	Show	DATA
Ground penetrating radar data for i...	2007-08-14	Show	DATA
Ice core data from ice patches in th...	2007-08-14	Show	DATA
Fox population monitoring in the Hu...	2007-08-10	Show	DATA
Plant primary production on Hersch...	2007-08-01	Show	DATA

PDC Search



Polar Data Catalogue Geospatial Search

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v. 3.1.1

Arctic

Antarctic

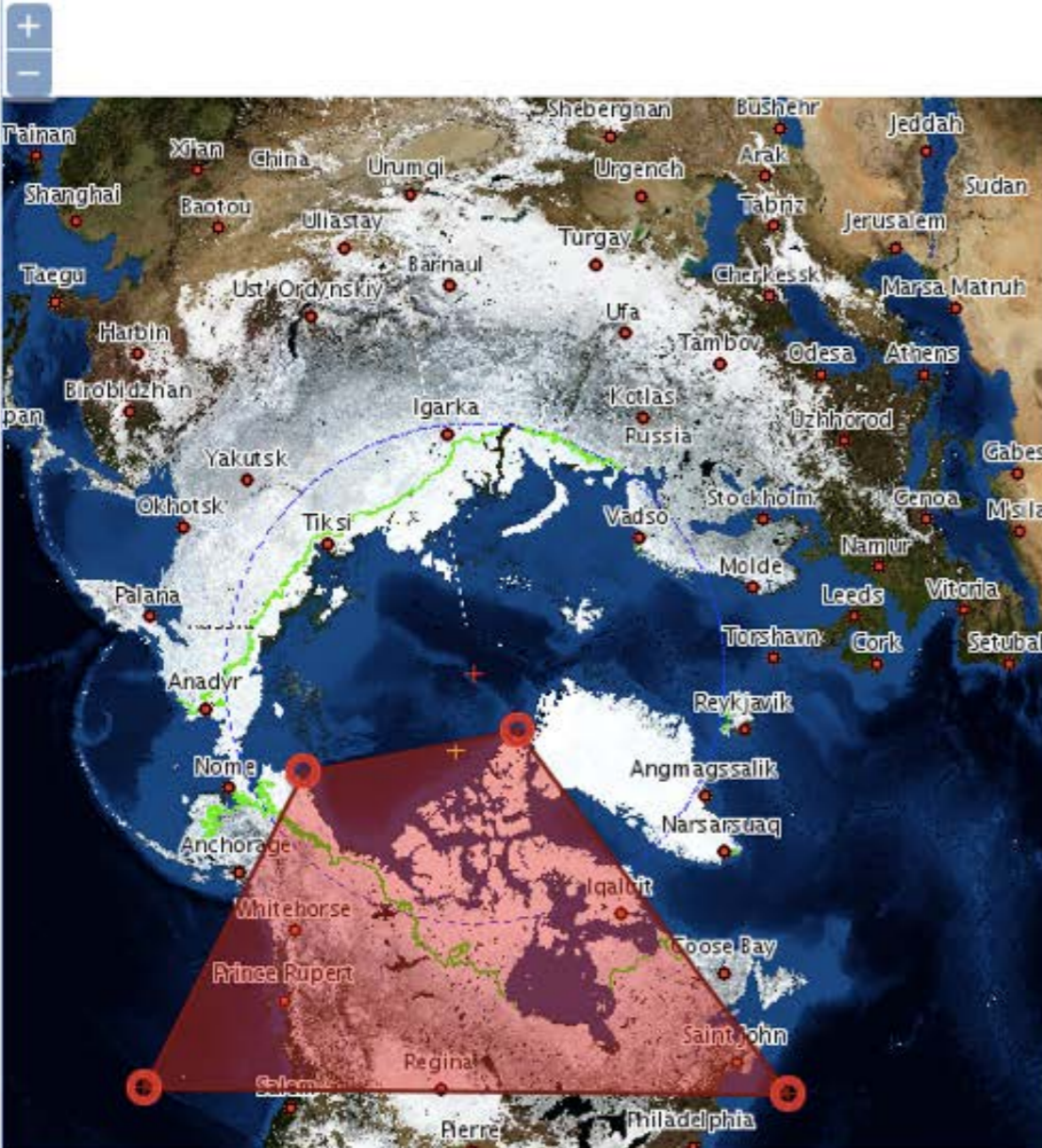
GIS

PDC Search

Results

Metadata

Data



Map courtesy of the NSIDC

Metadata Record



Citation Information

Title	Interviews with elders of the Lutsel K'e Dene First Nation on Pikes Portage, the trail to the barren lands, 2010.
CCIN Reference Number	11462
Responsible Parties	Brenda Parlee, Department of Resource Economics and Environmental Sociology, University of Alberta, Originator Cindy Dickson, Council of Yukon First Nations, Principal Investigator Florence Catholique, Lutsel K'e Dene First Nation, Collaborator
Research Program(s)	IPY-Arctic Culture and Caribou
Citation	Parlee, Brenda, and Florence Catholique, 2012, Interviews with elders of the Lutsel K'e Dene First Nation on Pikes Portage, the trail to the barren lands, 2010. Canadian Cryospheric Information Network/International Polar Year Data Assembly Centre Network. http://dx.doi.org/10.5443/11462
Publication Date	11 Oct 2012
Link to Data	brenda.parlee@ualberta.ca
Description	
Purpose	The area has tremendous historic significance and continues to be an important cultural landscape. The work builds on research carried out under the West Kitikmeot Slave Study Society and the Ni Hat Ni program funded by the Cumulative Impact Monitoring Program (INAC). It provides a Denesoline perspective on the history of "Pikes Portage".

PDC Search



Polar Data Catalogue Geospatial Search

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v. 3.1.1

Arctic

Antarctic

GIS

PDC Search

Results

Metadata

Data

CASES 0406-Beaufort Sea CTD data

CCIN Reference #526

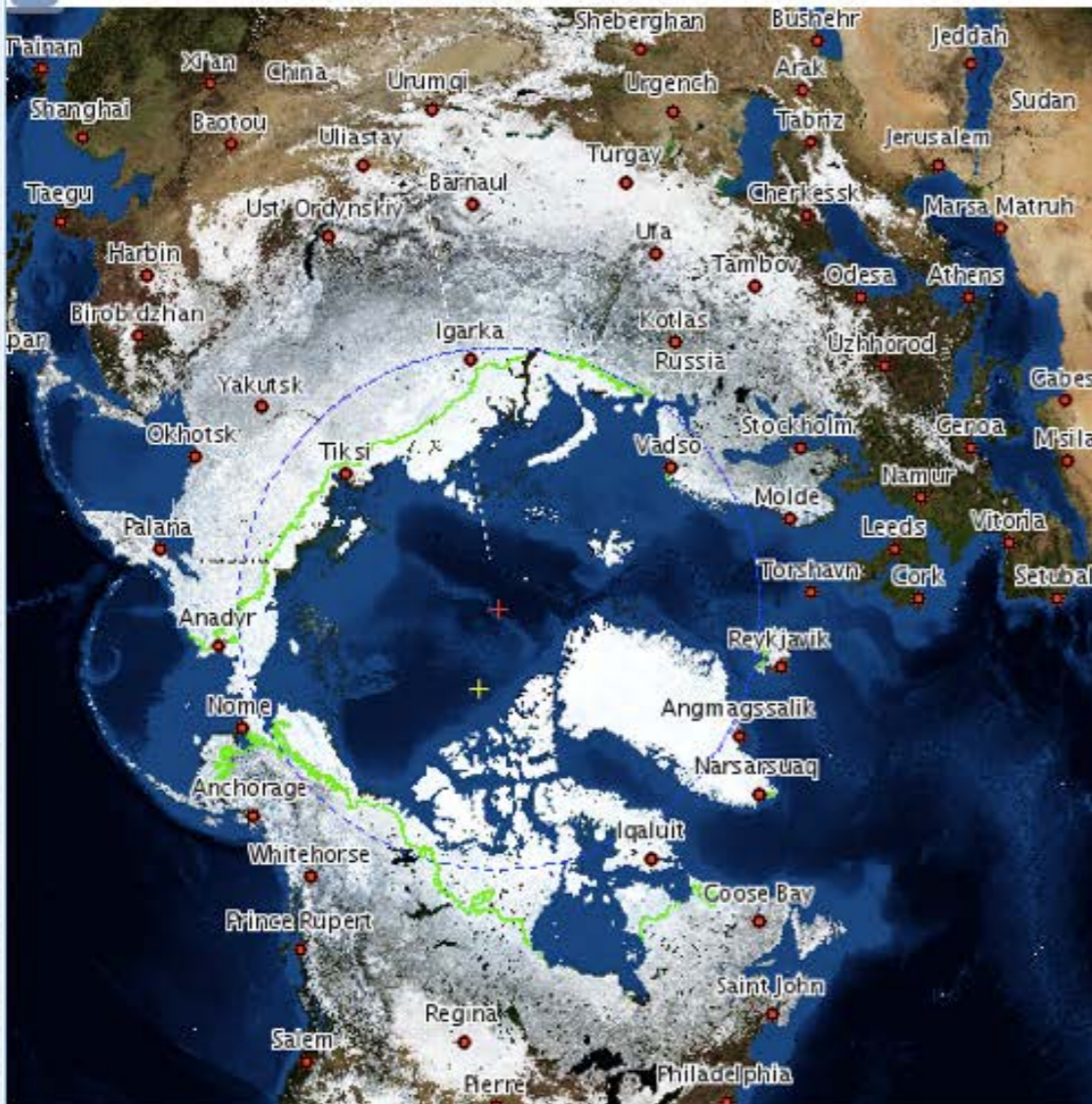
NOTE:

Select any file name to download. Click on folder icon or directory names below to expand or collapse the file list.

FILES

Expand All | Collapse All

- 📁 /526/
 - 📄 CCIN526_20110705_CASES 0406_CTD_Beaufort_04_07_2011 .zip
 - 📁 /CCIN526_20110705_CASES 0406_CTD_Beaufort_04_07_2011 .zip/
 - 📁 /CCIN526_CASES 0406_CTD_Beaufort_04_07_2011 /
 - 📄 0406_001.int
 - 📄 0406_002.int
 - 📄 0406_003.int
 - 📄 0406_004.int
 - 📄 0406_005.int
 - 📄 0406_006.int
 - 📄 0406_007.int
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 - 📄 0406_016.int
 - 📄 0406_017.int
 - 📄 0406_018.int



Map courtesy of the NSIDC

Polar Data Catalogue

- * **Metadata** initially, **Data** since 2011
 - * 1,613 Metadata records, 142 Datasets (>140K files), more on the way
- * **Data file formats** - strongly encourage non-proprietary formats
 - * .csv, .xls, .txt
 - * .pdf, .doc
 - * .jpg, .mov, .png, .tif, .gif
 - * .shp, .mdb
 - * .hdf
 - * Specialized formats from climate modelling, GPR, old datasets...

Polar Data Catalogue

- * **Ocean-related data types**
 - * Amundsen data - many datasets
 - * Moorings, CTD, eddy covariance, sonar, bottom profiling, radiation, CO₂, weather, etc.
 - * Sea ice thickness, motion, modelling
 - * Satellite imagery
 - * Water quality
 - * Ecological datasets - benthic habitat, biomass, contaminants, isotopes
 - * Coming soon: Canadian Ice Service ice charts

PDC GIS Viewer

POLAR DATA CATALOGUE

Polar Data Catalogue Geospatial Search Home | Help Manual | PDC Lite Low-bandwidth Search v. 3.1.1

Arctic | Antarctic | **GIS**

[Go Back to Results](#)

Base Layer

- Base map

Overlays

- Roads
- Rail
- Protected Areas
- Oil and Gas
- seaIceThickness2012

seaIceThickness2012						
fid	GPSseconds	Latitude	Longitude	Distance_M	Thickness	Height_Met
seaIceThickness2012.1	68426.7	70.2654628	-132.4537251	0.0	0.0	24.958
seaIceThickness2012.2	68426.8	70.2655143	-132.453695	5.828	0.0	25.164
seaIceThickness2012.3	68426.9	70.2655657	-132.453665	11.649	0.0	25.169
seaIceThickness2012.4	68427.0	70.265617	-132.453635	17.463	0.0	25.125
seaIceThickness2012.5	68427.1	70.2656683	-132.4536051	23.269	0.0	25.202
seaIceThickness2012.6	68427.2	70.2657195	-132.4535753	29.068	0.0	25.265
seaIceThickness2012.7	68427.3	70.2657706	-132.4535455	34.861	0.0	25.271
seaIceThickness2012.8	68427.4	70.2658217	-132.4535157	40.649	0.0	25.258
seaIceThickness2012.9	68427.5	70.2658728	-132.453486	46.433	0.0	25.267
seaIceThickness2012.10	68427.6	70.2659238	-132.4534562	52.214	0.0	25.269

Polar Data Catalogue

- * **Metadata and Data contributors**

- * ArcticNet

- * Canada's International Polar Year (IPY)

- * AANDC

- * Northern Contaminants Program, Beaufort Regional Environmental Assessment, Nunavut General Monitoring Plan, Canadian High Arctic Research Station, Adaptation Program for Aboriginals and Northerners

- * Circumpolar Biodiversity Monitoring Program

- * Environment Canada

- * ADAPT, CEN, Nasivvik, TAKUVIK

- * CASES, Québec Océan

PDC Search - RADARSAT

POLAR DATA CATALOGUE

Polar Data Catalogue Geospatial Search Home | Logout | Help Manual | PDCLite Low-bandwidth Search v. 3.1.1

Arctic Antarctic GIS

RADARSAT Results Metadata Data

Use navigation tools to zoom to your area of interest and click the "clip and download" button to process your image.
74.8176 , -130.6998

66.0266 , -116.4693

Please wait for image to finish loading in browser before proceeding to the download page.

What Format do you want to download?

High Quality Format	<input type="radio"/> CEOS (Original)	<input checked="" type="radio"/> geotiff			
Low Quality Format	<input type="radio"/> tiff(8bit)	<input type="radio"/> jpg	<input type="radio"/> pdf	<input type="radio"/> png	<input type="radio"/> gif

Clip image to the zoom area

Download individual image(s)

Mosaic selected images and download as single jpg file

PDC/CCIN Data Users

- * **Researchers, students**, mostly in Canada
 - * Ex., cryospheric and remote sensing communities using RADARSAT
- * **Public**
 - * Engineer needing lake ice data for designing hovercraft
 - * Anders Morley - skiing across Canada!
- * **Prairie water managers**
 - * Ducks Unlimited
- * **Interoperability partners** who harvest our metadata
- * Other stakeholders
 - * **Northern research institutes**, etc. in future
 - * ...

Advisors

- * **Polar Data Management Committee**
 - * Guidance and direction
- * **Scientific Advisory Council** for CCIN site, Canada's node of the Global Cryosphere Watch (WMO)
- * **Northern Canadians** who need data
- * **Scientists, colleagues, and partners** who use and help guide development of the PDC and CCIN tools
- * **Polar data managers** around the world who work to improve data management policy and practice

Best Practices

BEST PRACTICES FOR SHARING
AND ARCHIVING DATASETS



README

Appendix D - README file template

This page may be saved as an TEXT file named "README_{Metadata/Dataset title}_{Today's date}.txt" and submitted along with the dataset files. The outline below should be completed with information relevant to the submitted dataset:

Mandatory information:

1. File names, directory structure (for complex datasets), and brief description of each file or file type:
2. Definitions of acronyms, site abbreviations, or other project-specific designations used in the data file names or documentation files, if applicable:
3. Definitions of special codes, variable classes, GIS coverage attributes, etc. used in the data files themselves, including codes for missing data values, if applicable:
4. Description of the parameters/variables (column headings in the data files) and units of measure for each parameter/variable:
5. Uncertainty, precision, and accuracy of measurements, if known:
6. Environmental conditions, if appropriate (e.g., cloud cover, atmospheric influences, etc.):
7. Method(s) for processing data, if data other than raw data are being contributed:
8. Standards or calibrations that were used:
9. Specialized software (including version number) used to prepare and/or needed to read the dataset, if applicable:
10. Quality assurance and quality control that have been applied, if applicable:
11. Known problems that limit the data's use or other caveats (e.g., uncertainty, sampling problems, blanks, QC samples):
12. Date dataset was last modified:
13. Related or ancillary datasets outside of this dataset, if applicable:

Optional information:

14. Methodology for sample treatment and/or analysis, if applicable:
15. Example records for each data file (or file type):
16. Files names of other documentation that are being submitted along with the data and that would be helpful to a secondary data user, such as pertinent field notes or other companion files, publications, etc.:

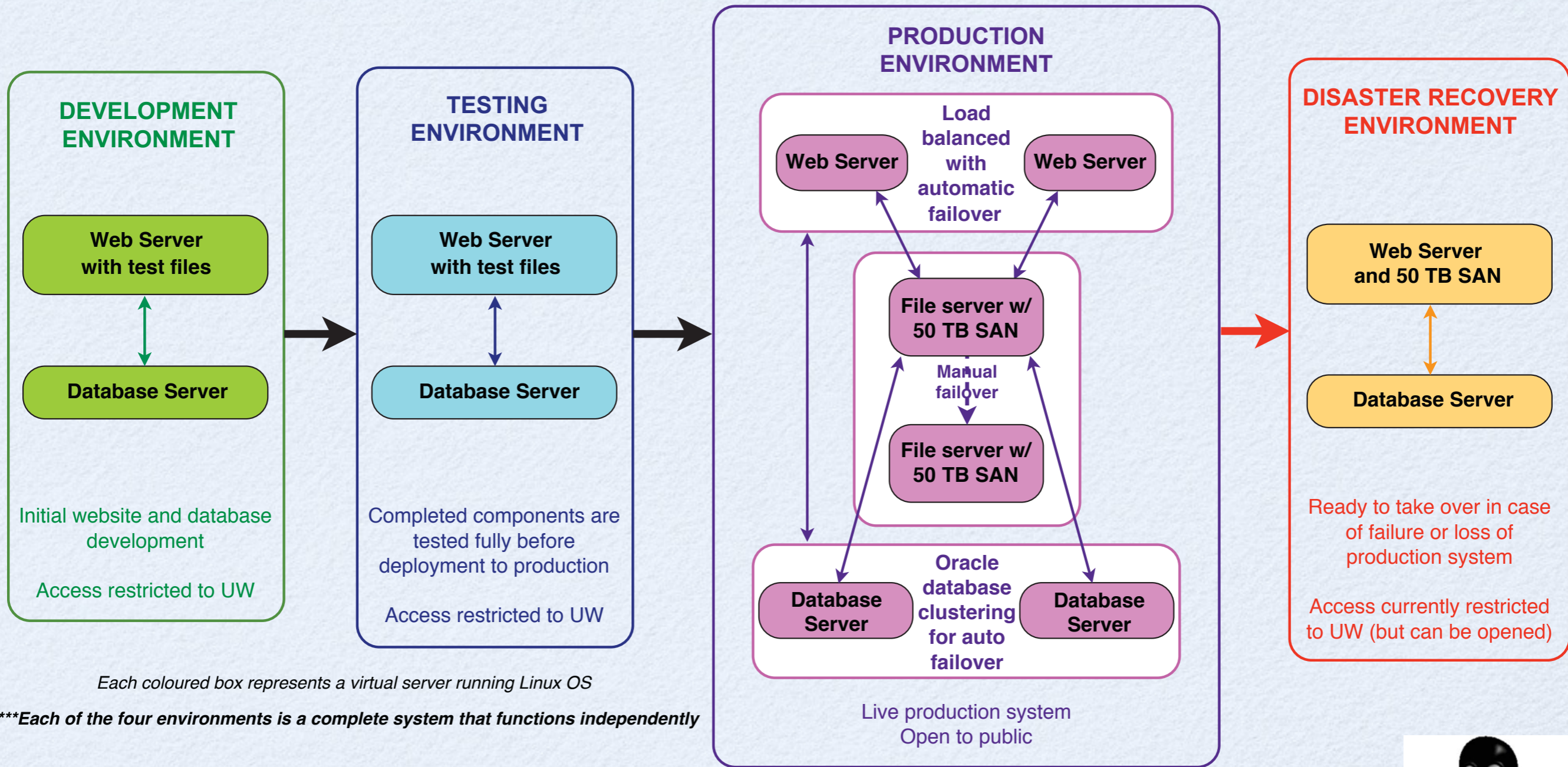
Data Management Process

- * **PDC Data Manager** in contact with researchers from partner programs to assist in creation and submission of metadata records and data files
- * PDC metadata and data file **Review and Approval process**
- * **Incentives and requirements** for researchers for proper data management
 - * DOIs, funding, national policies, citation

IPY Data Management

- * IPY Data Assembly Centre Network → **Canadian Polar Data Network (CPDN)**
 - * Scholars Portal/Ontario Consortium of University Libraries
 - * DFO
 - * CCIN
 - * CISTI/NRC Canada
 - * Univ. of Alberta Libraries
- * Cloud archive, security/privacy for sensitive datasets, provenance and forward format flexibility for long-term access, DOIs for datasets provided by DataCite through CISTI

Hardware/Infrastructure



Redundancy, security, offsite backups,...

(<http://ccin.ca/home/about>)



Interoperability

*Alaska Ocean
Observing System*

Circumpolar Biodiversity Monitoring Program

*University of
Alberta*

Norwegian Meteorological Institute

*Yukon Research
Centre*

GEO/GEOSS

PDC/CCIN

*National Institute of
Polar Research*

*US National
Snow and Ice
Data Center*

Scholars Portal/OCUL/U. of Toronto

Inuit Qaujisarvingat

Dept. Fisheries and Oceans Canada

*Also Sweden, Finland, UK, NWT
CIMP/Discovery Portal,...*

*Australian Antarctic
Data Centre*

OAI-PMH, WMS, and CWS for PDC Metadata records
Direct server links for metadata, database, CPDN datasets
WFS for selected Geospatial datasets

Sharing Metadata and Data

CCIN Interoperable Web Services

October 2013

1. OAI – PMH (Open Archives Initiative Protocol for Metadata Harvesting)

Our OAI-PMH service currently offers the PDC Metadata XML files in the FGDC-STD-001-1998 format. In the future, we plan to also provide metadata in the North American Profile (NAP) of ISO-19115.

a. OAI-PMH link for harvesting CCIN's metadata (currently 1,527 records) into a remote server:

- <http://www.polardata.ca/oai/provider>

The above link will not work in a browser. It must be accessed via an interoperable OAI-PMH tool such as jOAI (further information on OAI-PMH software can be found at <http://www.openarchives.org/pmh/tools/tools.php>) or by other harvesting software such as GeoNetwork.

2. GeoServer

CCIN utilizes GeoServer for interoperability purposes, to dynamically share geospatial data. All spatial data are shared using open standards from the Open Geospatial Consortium (OGC). The WMS and WFS links below are used for Map Services and are not viewable in a web browser.

a. Selected geospatial datasets from the Polar Data Catalogue are converted into shapefiles (from their original formats) and made available via WFS in GeoServer:

WFS link (this can be opened in GIS software to see the layers that are available):

- http://polardata.ca/geoserver/pdc_gis/wfs?

Future Goals

- * Ingest metadata and datasets, especially IPY and Amundsen
- * **Increase interoperability** services, partnerships, and network
- * Apply for membership in the World Data System
- * **Convert PDC metadata to ISO standard** (in addition to FGDC) for increased international compatibility
- * Assign DOIs for incoming data
- * Build data visualization tools
- * Enhance satellite image catalogue and links to other satellite image portals
- * **PDC cost model**

Thank you!



www.polardata.ca

Photo by Luke Copland