



Environment  
Canada

Environnement  
Canada

Canada



# Meteorological Service of Canada OGC Implementation Update



Data  
Management  
Initiative

*WORKING TOGETHER TO BUILD  
THE FOUNDATION FOR SCIENCE,  
PRODUCTS AND SERVICES*

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5<sup>th</sup> Workshop on the use of GIS/OGC  
standards in meteorology  
Offenbach, Germany  
29 October 2014

# Overview

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- Data Quality Dashboard
- GeoMet WMS
- WIS DCPC update
- WOUDC Renewal (WMO GAW)

# Overview

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- testing of standards and open source software in meeting MSC requirements
  - real time
  - high volumes
  - effective and efficient data access
  - variety of clients and partners
  - extensible systems
  - highly reliable / recoverable systems
  - high volumes of storage
  - traceable data
  - usability and interoperability.

# Data Quality Dashboard

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- Display in a user-friendly map-based interface the state of weather monitoring networks under the responsibility of MSC
- Enable the 24/7 National Data Quality Assurance Desk (aka National Monitoring Desk) operators to monitor weather monitoring networks for warnings and outages
- Support weather monitoring networks managers and field inspectors teams across the country to easily access information on warnings and outages

# Data Quality Dashboard

Header: Summary Reporting | Metrics Reporting | Documentation

## Data Quality Dashboard

**Filter Sets**

- All Obs including problems
- Obs with problems only
- All Obs (all flags-no filter)

**Qa Flags (based on Filter Set)**

- Suppressed
- Missing
- Error
- Doubtful
- Suspect/Warning
- Inconsistency
- Accepted/Passed
- Qa test(s) not performed

**Supporting Overlays**

- NWP Models
- RDPS Rain (QPF)
- RDPS Freezing Rain
- RDPS Snow (QPF)
- RDPA 24h Quantity of Precip.
- RDPS Cloud Cover
- RDPS Air Temperature

**Observation Window (MSC Surface Weather, QUALICUM BE...)**

View Element: snw\_dpth

Export: Select Format

Date: 2014-02-03 16:00:00 UTC  
Value: -0.29  
Qa: Error

Show Entries: 100 Search All:

Observation Date	Element Value	Element Qa	Data Payload
2014/02/05 16:00:00 UTC	-0.36	E	

Scale = 1: 14M

**Monitoring Table (Hide)**

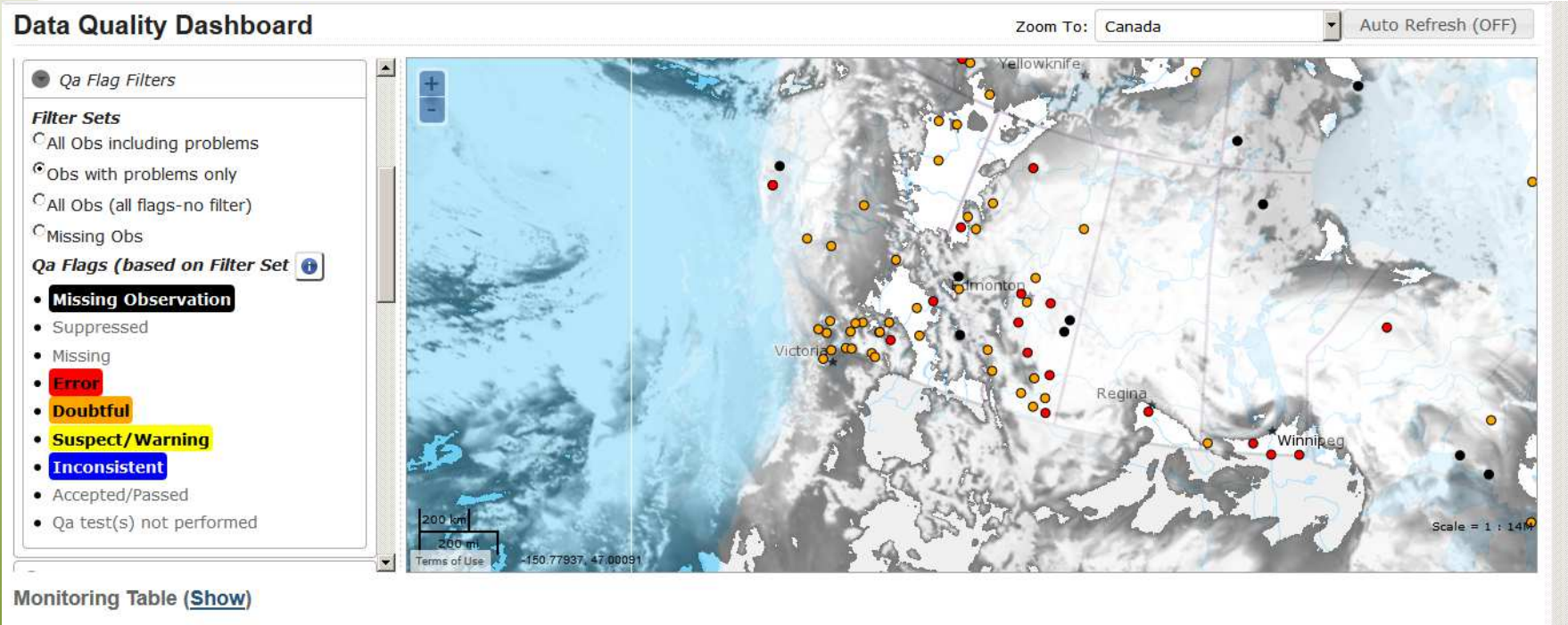
Show Entries: 100 Search All:

Station ID	Station Name	Network	Qa Flag (Problem Summary)	Qa Flag (Default Summary)	Last Message	Actions
1022795	FANNY ISLAND	MSC Surface Weather	A	R	2014/02/05 16:00:00 UTC	[Icons]
1025369	Nanaimo	NavCan Aviation - Staffed	E	M	2014/02/05 3:00:00 UTC	[Icons]
1026271	Port Hardy	NavCan Aviation - Staffed	D	M	2014/02/05 0:25:00 UTC	[Icons]
1026562	QUALICUM BEACH AIRPORT	MSC Surface Weather	E	M	2014/02/05 16:00:00 UTC	[Icons]

Showing 1 to 100 of 1,096 entries

Footer: Version: 0.11.1-dev (r1837)

# Data Quality Dashboard





# Data Quality Dashboard

**Qa Flags Summary by Station**

Show Entries:  Search All:

MSC Station ID	Station Name	Network	Station Pressure	Mean Sea-Level Pressure	Relative Humidity	Dewpoint Temperature	Air Temperature	Average Wind Speed	All Other Elements
2303094	<a href="#">Kugaaruk Climate</a>	MSC Surface Weather	145		145		145	145	870 4 4636
2403945	<a href="#">WAGER BAY</a>	MSC Surface Weather	163		6 157		163	163	163 638 541 87 3177

Showing 1 to 2 of 2 entries ◀ Previous Next ▶

**Qa Flags Summary by Element**

Search All:

Core Element	Suppressed	Missing	Error	Doubtful	Suspect/Warning	Inconsistent	Accepted/Passed
Air Temperature	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	0 (0.00%)	308 (100.00%)
All Other Elements	1033 (10.21%)	638 (6.31%)	541 (5.35%)	91 (0.90%)	0 (0.00%)	0 (0.00%)	7813 (77.23%)

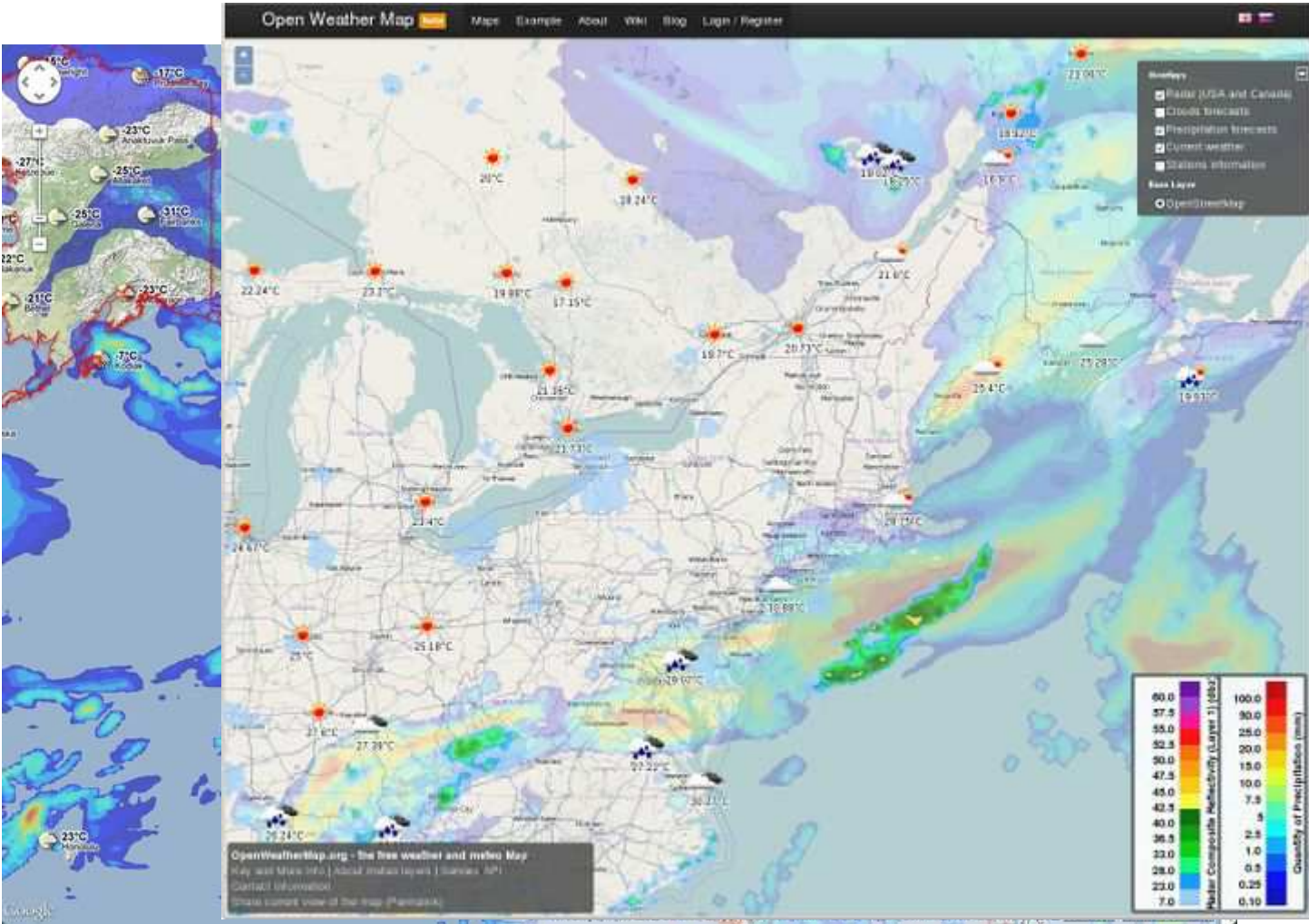
# GeoMet

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- Public NWP and Radar WMS
- Radar, NWP models, and more
- Endpoint: [http://geo.weather.gc.ca/geomet/\[?lang=E|F\]](http://geo.weather.gc.ca/geomet/[?lang=E|F])
- Docs: <http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=C0D9B3D8-1>
  
- Launched July 2013
- 100K maps per weekday



# GeoMet



# WIS DCPC update

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- Certified May 2013
- Upgraded to WMO Core Metadata Profile 1.3 as part of GISC testing w/ NOAA (fall 2013)
  - Some GISCs only support 1.2, some only 1.3, some both
    - Differences are not minor
  - Temporal dates as YYYY indexing issue in OpenWIS (SOLR)
    - Since fixed
- Test Suite created and published to GitHub
  - <https://github.com/OGCMetOceanDWG/wmo-cmp-ts>
  - Comments, bugs and contributions/help welcome!

# WOUDC Renewal (WMO GAW)

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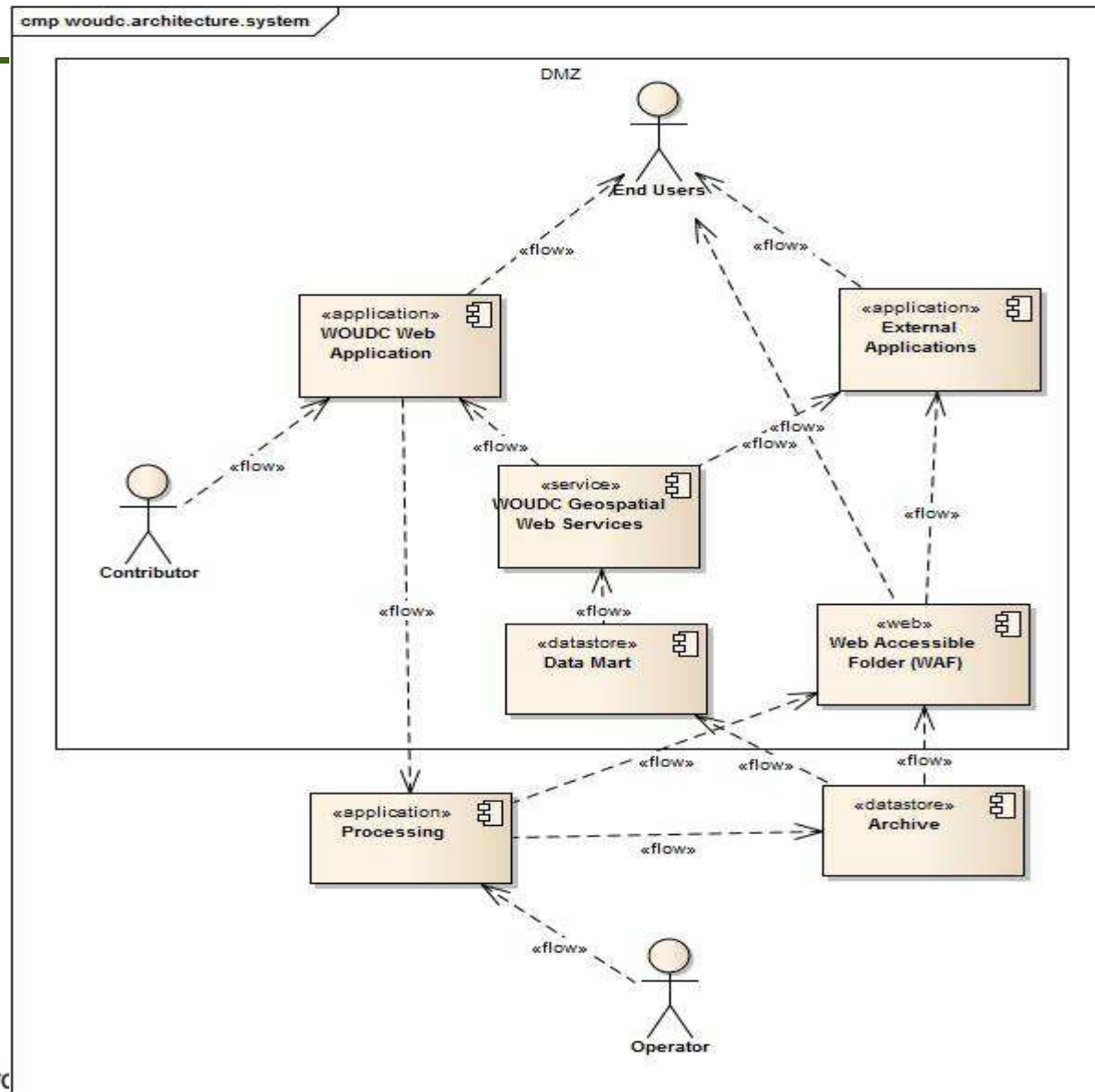
- Meeting Government of Canada / WCAG Accessibility and Usability Directives / Policies
- Enhance access to Ozone and UV data and metadata
- Streamline data centre processing workflow
- Support international standards (OGC/ISO) for discovery, access and visualization
- Modernize technology footprint
- Reduce operational level of effort
- Address gaps identified in ET-WDC audit

# WOUDC User Engagement

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- New methods, long-time existing user base
- Surveys / questionnaires
- Focus groups
- Beta releases
- Highly valuable
- Iterative

# System Overview: Architecture



# Beta Launch (<http://beta.woudc.org>)

Data ▾ Contributors ▾ Resources ▾ About ▾

## WOUDC - Home

### Discover, Visualize and Access a Global Archive of Ground-based Ozone and UV Radiation Data

Over 50 years of ozone and UV radiation data measured by instruments located on ground-based, shipborne or airborne platforms.

[Learn More](#)

#### Quick Links:

[Search / Download All Datasets](#)

[Stations](#)

[Instruments](#)

[Contributors](#)





# WOUDC Data Search / Download

To search and download data, select the dataset and observation time period. Optionally, draw your map extent of interest and then hit search. All for that time period will be displayed.

Select Dataset and Time Period

**Dataset**

**Start**

**End**

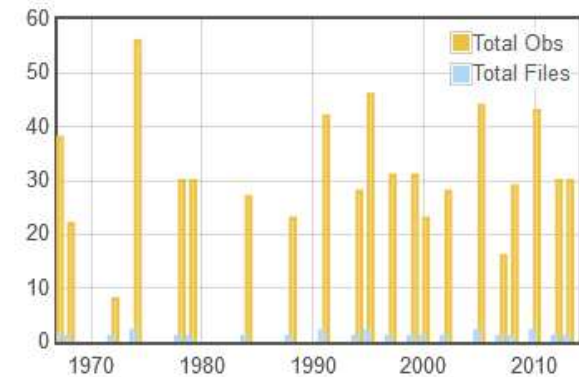
 

Set Your Map Extent

► How to Use: Interactive Map



Data Distribution For: **TotalOzone**



Total Observations in Range: 655

Save Graph



# WOUDC Data Search / Download

Start: 1967-10-13

End: 2014-12-31

Total Observations in Range: 655

Save Graph

**Download Search Results**

Format: Select Format

- Select Format
- Extended CSV
- Data URL File List
- GeoJSON
- CSV
- GML2
- GML3
- KML
- ESRI Shapefile
- MapInfo File

Search Results

Show Entries: 100

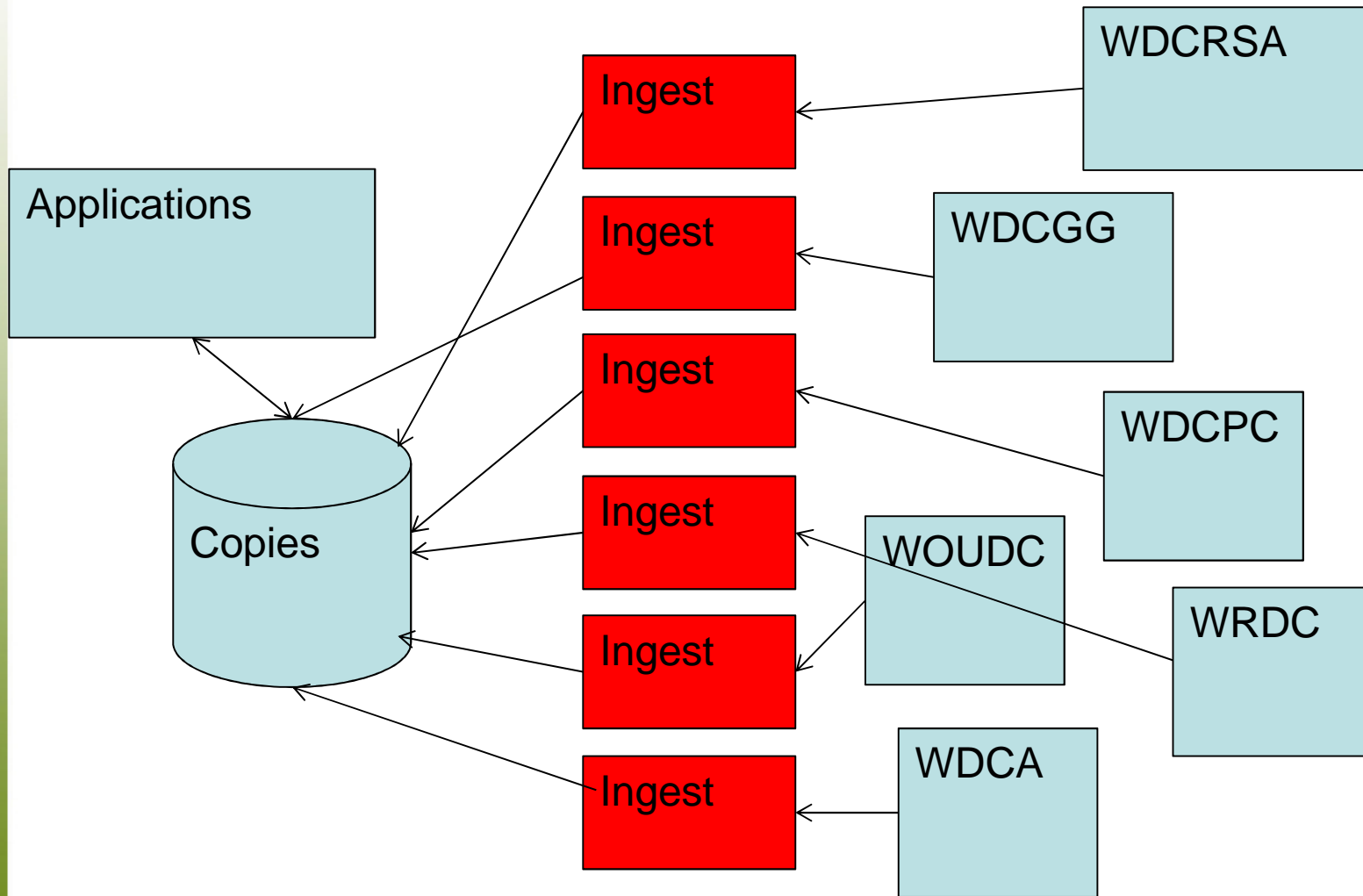
Observation Date (UTC)	Agency	Platform ID	GAW ID
1968-08-01	NOAA-CMDL	STN104	BED
1968-08-01	NOAA-CMDL	STN104	BED
1968-08-01	NOAA-CMDL	STN104	BED
1968-08-01	NOAA-CMDL	STN104	BED

# WOUDC Data Services / Standards

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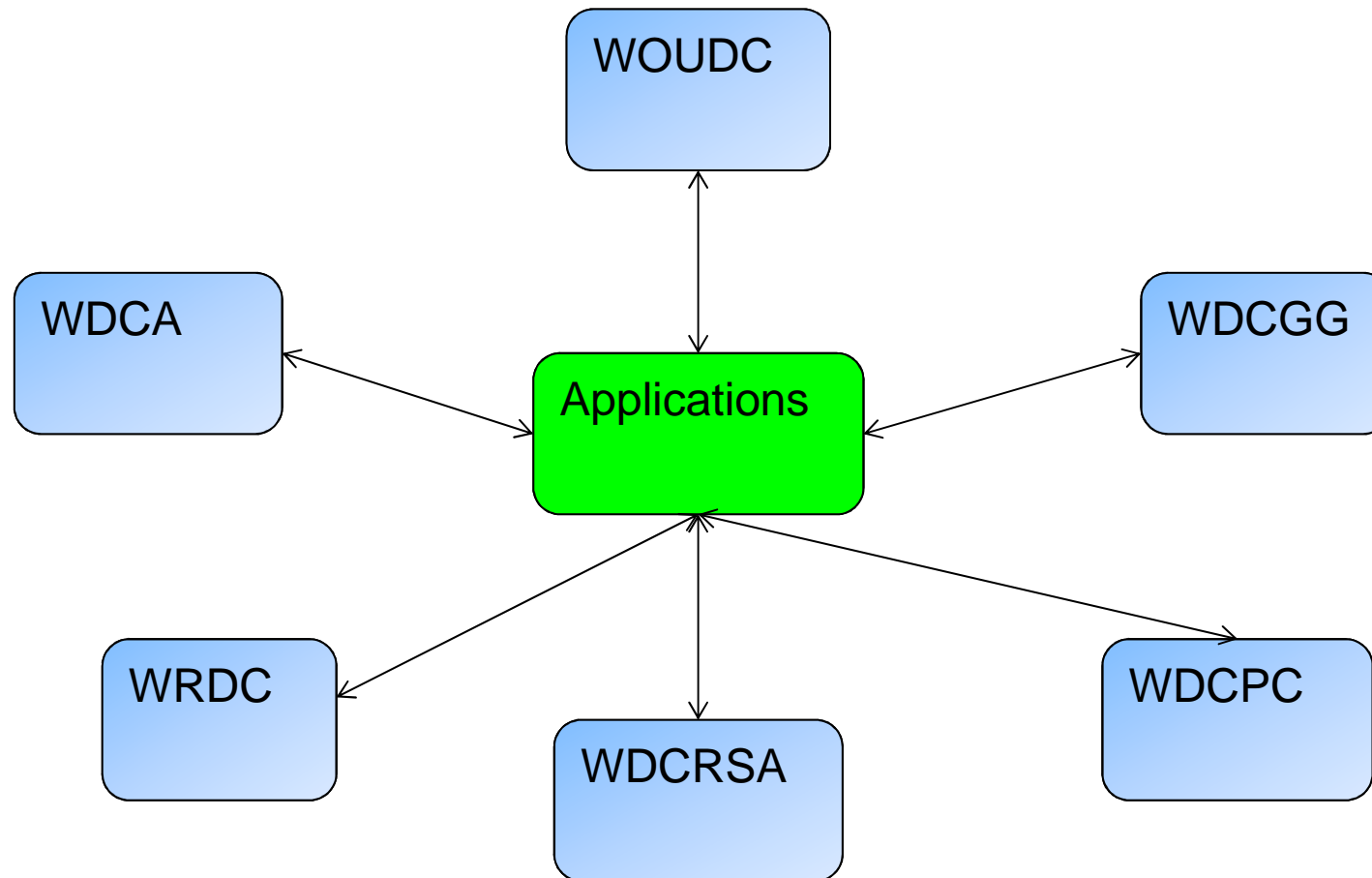
- Based on OGC / ISO
  - Government of Canada policy (WMS, ISO)
- Data Services Platform
  - Observations
    - WMS, WFS, SOS (MapServer)
  - Metadata
    - CSW, SRU, OAI-PMH (pycsw)
    - WMO Core Metadata Profile
  - Data
    - OGC O&M
    - WOUDC Extended CSV
    - 100s more, dynamically generated

# Interoperability: From This



# Interoperability: To This

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# Bonus by-product: WMO Regional Associations GeoJSON

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- WMO Global Atmospheric Watch (GAW)
- World Ozone and Ultraviolet Radiation Data Centre (WOUDC)
- Data Centre Renewal
- Context layer used for visualizing Data Centre assets
- Future work: make available as WMS/WFS
  - <https://github.com/OGCMetOceanDWG/wmo-ra>

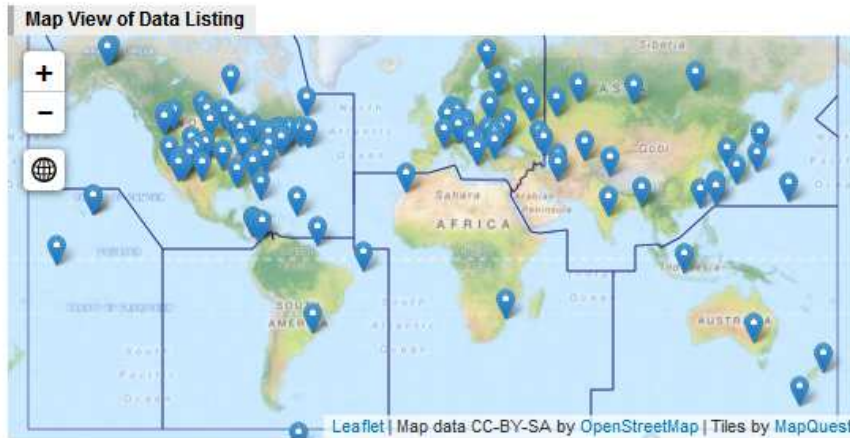


# Bonus by-product: WMO Regional Associations GeoJSON

## Station List

The WOUDC data archive can be sorted by station. To find out the identifying number of a particular station, select the metadata link on the WOUDC website and then the region that you are interested in. All available stations and their numbers for that region will then be displayed.

► How to Use: Interactive Map



► How to Use: Interactive Table

Show / Hide Extra Columns

Date From	Date To	GAW ID	WOUDC Station ID	Station Name
1963-03-23 UTC	2005-12-01 UTC	<a href="#">COG</a>	068	Belsk
1963-12-02 UTC	1963-12-02 UTC	<a href="#">MLH</a>	097	Magny-Les-Hameaux



# Perspectives

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- Shared IT / deployment environment
- WFS + GeoJSON for inter-application workflow
- Reproducible workflow is paramount
  - Continuous integration!
- Stabilizing production costs





# Conclusion

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- Thank you!

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<http://woudc.org>

<http://beta.woudc.org>

<https://github.com/OGCMetOceanDWG>

<http://www.ec.gc.ca/meteo-weather/default.asp?lang=En&n=C0D9B3D8-1>

