



# GDC Services and Usage

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# Agenda

- Introduction: Global Services
- Technical considerations
- Working with a GDC
- Retired data



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# Introduction

# Global Services

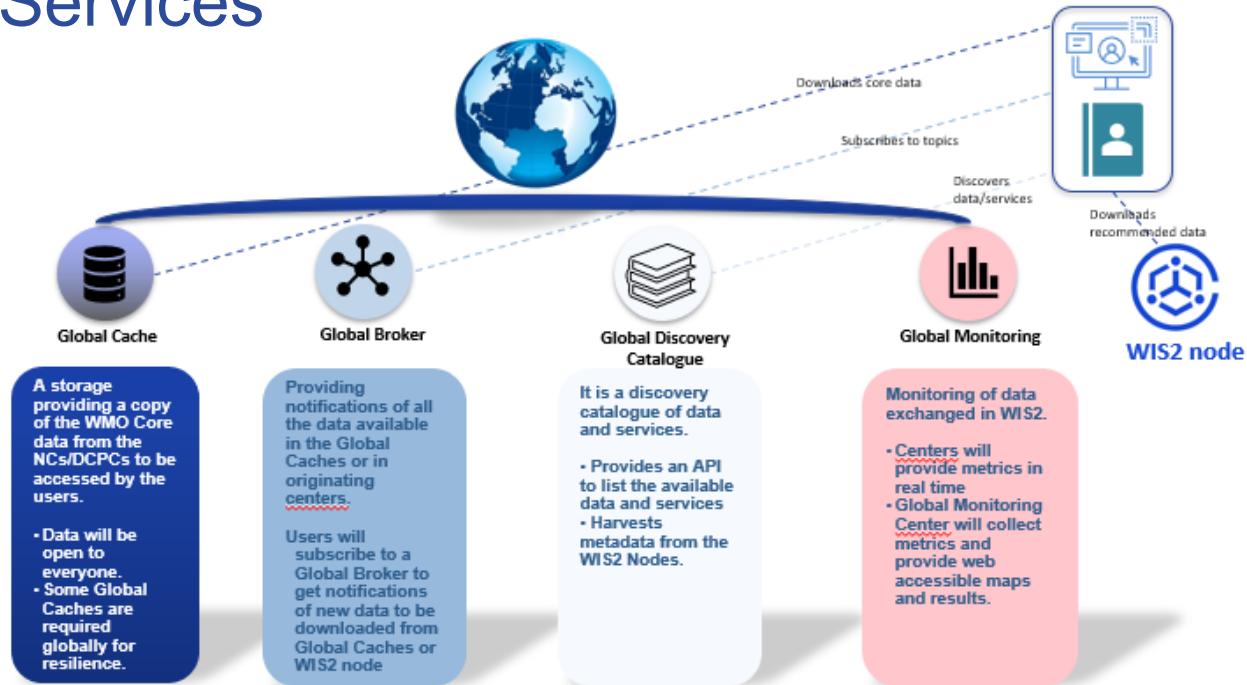


Image: Remy Giraud, [MeteoFrance](http://www.meteofrance.com)

# Global Services

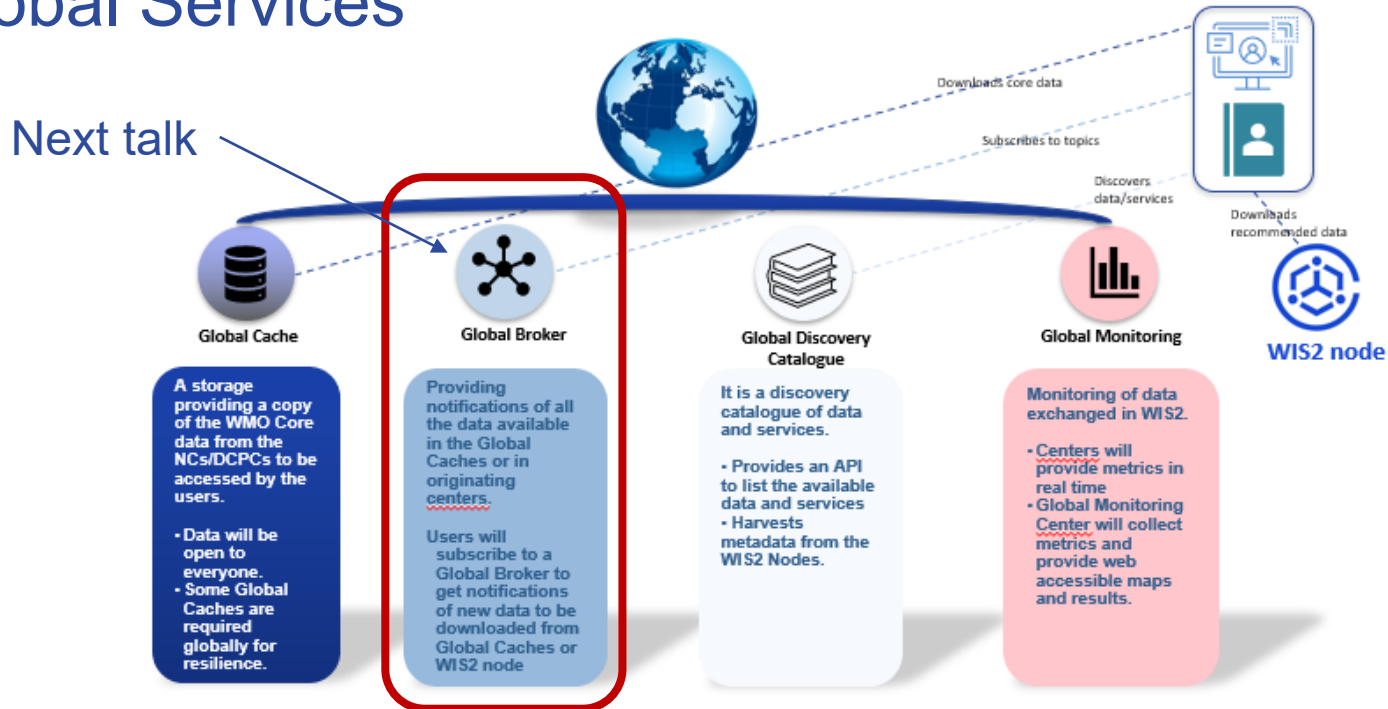


Image: Remy Giraud, [MeteoFrance](http://MeteoFrance)



# Global Services

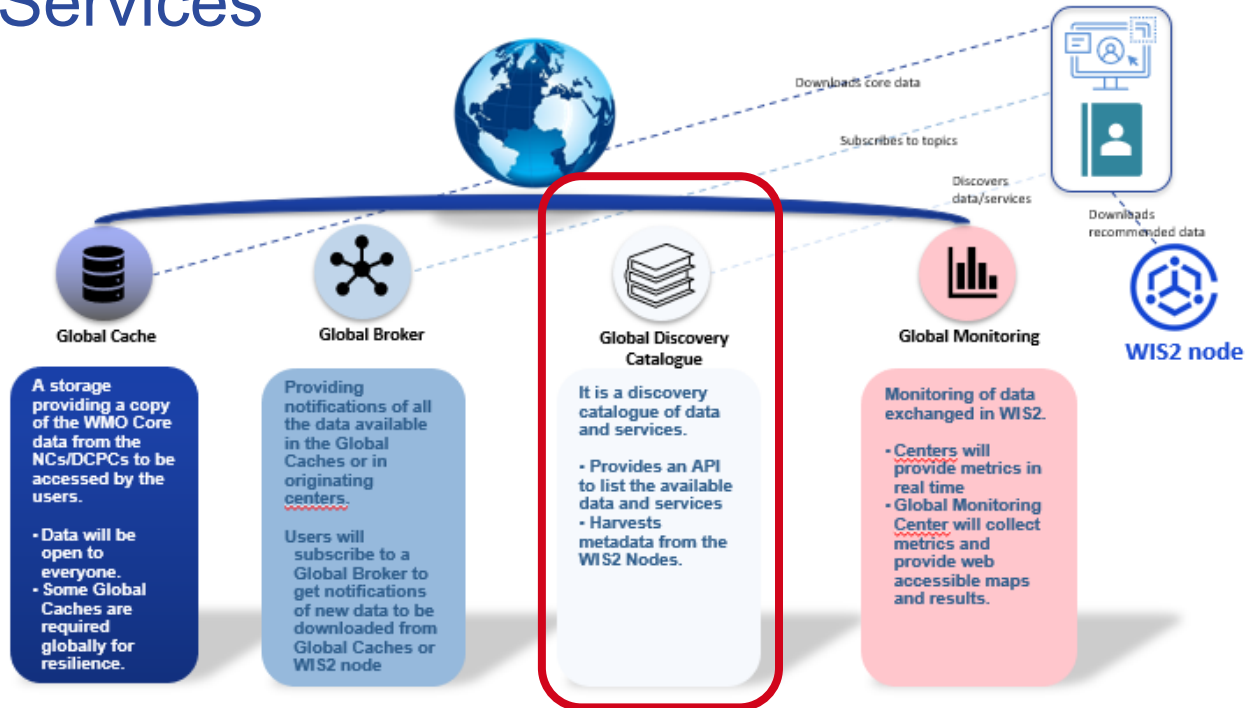


Image: Remy Giraud, [MeteoFrance](#)

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# Global Discovery Catalog



# Finding data without GDC



[https://wwwcourses.github.io/ProgressBG-Front-End-Dev/pages/themes/beginners/JS\\_BasicSyntax\\_1/JS\\_BasicSyntax\\_1.html](https://wwwcourses.github.io/ProgressBG-Front-End-Dev/pages/themes/beginners/JS_BasicSyntax_1/JS_BasicSyntax_1.html)



# Finding data without GDC

There are thousands of weather, climate, and water datasets distributed across hundreds of centers in 193 WMO member countries. Without a global catalogue, finding the right data is like searching for a needle in a haystack... in the dark... while wearing mittens.







# Finding data with GDC







<https://courses.lumenlearning.com/wm-retailmanagement/chapter/merchandise-management/>



## How do we reach this state?

-  **Unified standard: WCMP2**
-  **Metadata required** before publishing data
  -  **Mandatory metadata creation** by all countries
-  **Single global catalog** for all metadata files

# Technical considerations

-  **Discovering datasets:**
  - Provides data consumers a mechanism for discovering/searching datasets
-  **Interface:**
  - Provides human-readable web pages with embedded schema.org markup
  - Works with search engines
-  **Availability**
  - Advertises availability of datasets & access/subscription
-  **Metadata**
  - Does NOT advertise individual data objects

# Technical considerations

## **Validation:**

→ Validates discovery metadata records against the WCMP2

## **Centre-id:**

→ Verifies centre-id token matches the topic's centre-id

## **Cleanup:**

→ Removes discovery metadata marked for deletion

# Technical considerations

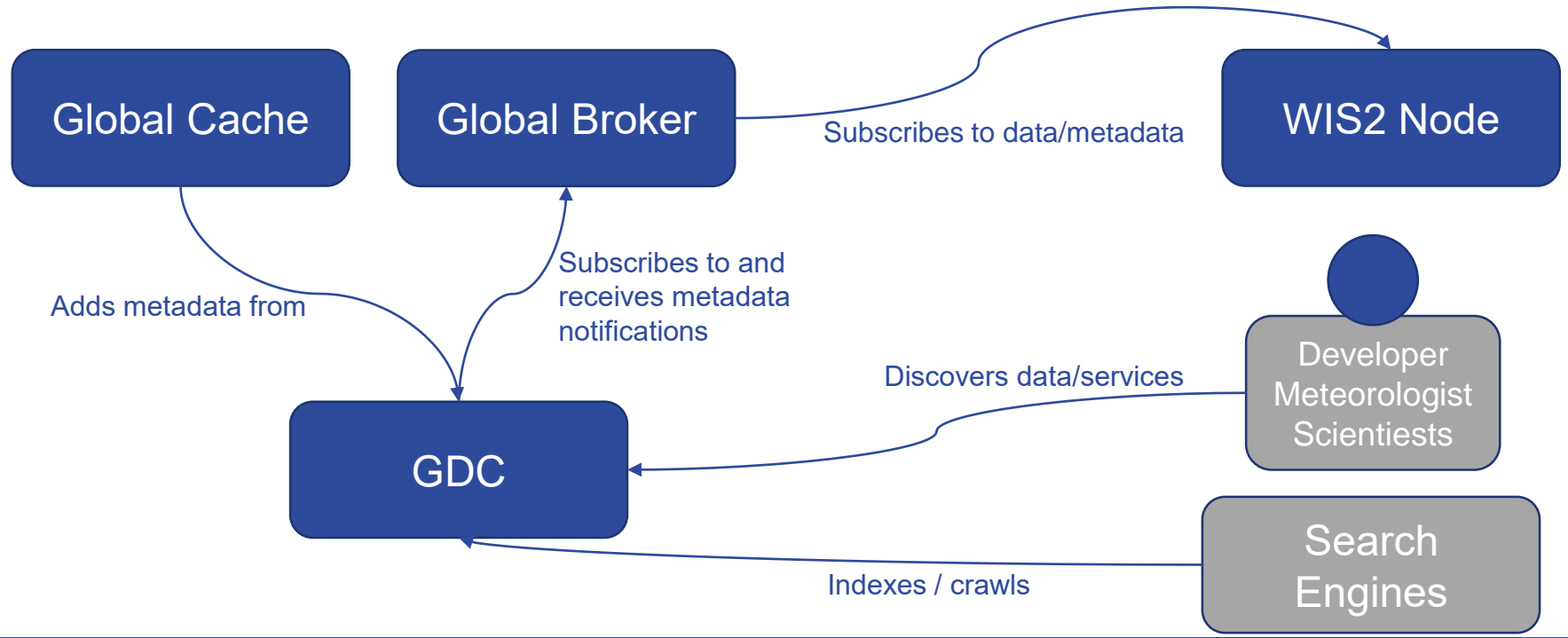
## **Connectivity:**

→ GDC is connected to at least one Global Broker

## **Independence:**

→ GDCs work independently → no synchronization

# GDC - Global context



# Where to find the GDCs?

## → 3 Global Discovery Catalogs

→  Canada: <https://wis2-gdc.weather.gc.ca>

→  China: <https://gdc.wis.cma.cn>

→  Germany: <https://wis2.dwd.de/gdc>

→ <https://gisc.dwd.de/angular-frontend/home>




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# Working with a GDC



## How to search for (meta)data?

→ <https://github.com/wmo-im/pywiscat/>

→  Small Python tool for searching WMO metadata

→  Installation:

```
pip install pywiscat
```

→  Search:

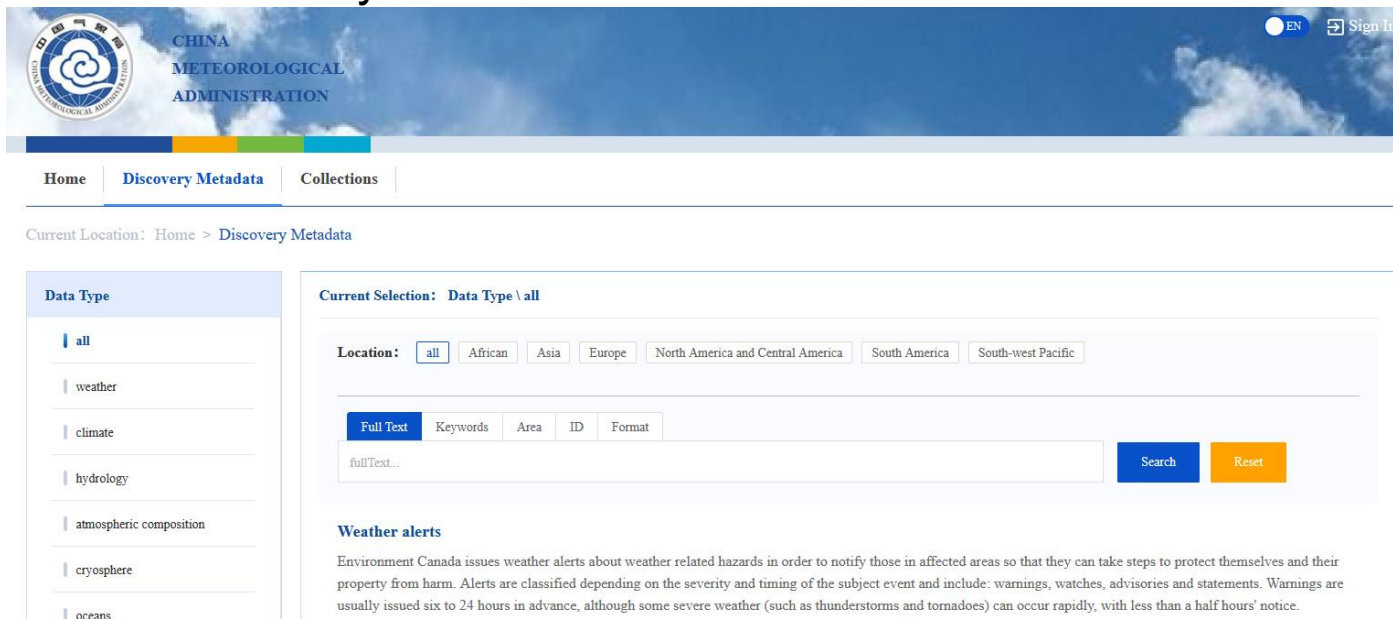
```
pywiscat search --query radar
```

```
pywiscat search --centre-id de-dwd
```

```
pywiscat get urn:wmo:md:can:eccc-msc:c7c9d726-c48a-49e3-98ab-78a1ab87cda8
```

# How to search for (meta)data?

→ Use GDC directly:



The screenshot shows the China Meteorological Administration (CMA) website. The header includes the CMA logo and the text "CHINA METEOROLOGICAL ADMINISTRATION". There are navigation links for "Home", "Discovery Metadata", and "Collections". The current location is "Home > Discovery Metadata".

The "Data Type" sidebar lists the following categories:

- all
- weather
- climate
- hydrology
- atmospheric composition
- cryosphere
- oceans

The "Current Selection: Data Type \ all" section shows search filters:

- Location: all, African, Asia, Europe, North America and Central America, South America, South-west Pacific
- Search options: Full Text, Keywords, Area, ID, Format
- Search input field: fullText...
- Search and Reset buttons


**Weather alerts**

Environment Canada issues weather alerts about weather related hazards in order to notify those in affected areas so that they can take steps to protect themselves and their property from harm. Alerts are classified depending on the severity and timing of the subject event and include: warnings, watches, advisories and statements. Warnings are usually issued six to 24 hours in advance, although some severe weather (such as thunderstorms and tornadoes) can occur rapidly, with less than a half hours' notice.



# How to search for (meta)data?

→ Use GDC directly:

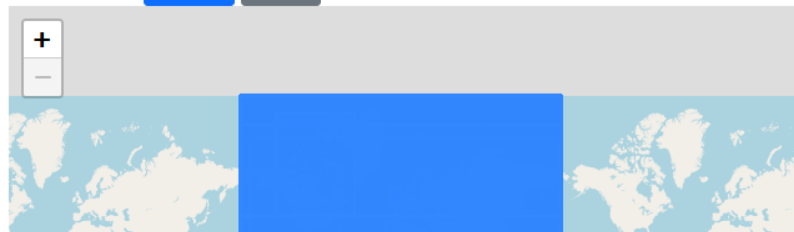

 Environment and Climate Change Canada    Environnement et Changement climatique Canada
 [Contact](#)

Home / Collections / WIS2 discovery metadata / Items json   json-ld

## WIS2 discovery metadata

Search    
 Start date     
 End date  

Spatial filter   
 Search   
 Reset



title	description	themes	type	language	created
<a href="#">North American Radar Composite (1 km)</a>	This mosaic is calculated over...	[{"concepts": [{"id": "Radar"}],...}	dataset	{"code": "en"}	2018-03-08T00:00

# How to search for (meta)data?

→ Use GISC-Portal:








The screenshot shows the DWD WIS-Portal search interface. At the top is the DWD logo and navigation links: HOME, GEOSS, RSS, SUBSCRIPTIONS, METADATA, and SIGN IN/REGISTRATION. The main heading is "WIS-Portal" with the instruction "Search the WIS:". Below this are search filters: "Full Text" (selected), "Keywords", "Area", "Bulletin", and "Date", along with a checkbox for "combine search terms". A search input field contains the text "synop". Below the input are buttons for "wis2" (selected) and "wis1". The results section shows "Showing results for: Full Text Search (Terms combined with OR): synop" and "76 matches - currently showing records 1 - 10". Filter options include Region, Originator, Keywords, License, Metadata-Type, and Creation Date, with a checkbox for "Titles only". A "Result rows per page:" dropdown is set to "10". A pagination bar shows "1" as the current page, followed by "2", "3", "4", "5", "6", "7", "8", and "Next »". The first search result is titled "Synop observations in BUFR" with a thumbnail image of a map and the product ID "urn:wmo:md:it-meteoam:observations.surface.synop-bufr".



## How to validate your metadata – part 2

### Using pywcmp as a Service

1.  Navigate to <https://wis2-gdc.weather.gc.ca/openapi?f=html> or <https://wis2.dwd.de/gdc/openapi?f=html>
  -  Section `pywcmp-wis2-wcmp2-ets`
  -  Endpoint `/processes/pywcmp-wis2-wcmp2-ets/execution` (POST)
2.  Click "**Try it out**,"
3.  In **Mandatory execute request JSON**, paste your **WCMP2 JSON** inside the record object  
  
Or provide a **URL** if the WCMP2 record is online

# How to validate your metadata – part 2

pywcmp-wis2-wcmp2-ets

GET /processes/pywcmp-wis2-wcmp2-ets Get process metadata

POST /processes/pywcmp-wis2-wcmp2-ets/execution Process WCMP2 ETS validator execution

Validate a WCMP2 document against the ETS

Parameters Try it out

Name	Description
Prefer string (header)	Indicates client preferences, including whether the client is capable of asynchronous processing.
	Available values : respond-async
	--

Request body required application/json

Mandatory execute request JSON

Example Value | Schema

```

{
  "inputs": {
    "fail_on_schema_validation": true,
    "record": {
      "conformsTo": [
        "http://wis.wmo.int/spec/wcmp2/conf/core"
      ],
      "geometry": {
        "coordinates": [
          [
            [
              -180,
              -90
            ],
            [
              -180,
              90
            ],
            [
              180,
              90
            ],
            [
              180,
              -90
            ],
            [
              -180,
              -90
            ]
          ]
        ]
      }
    }
  }
}

```



# How to validate your metadata – part 2

pywcmp-wis2-wcmp2-ets

GET /processes/pywcmp-wis2-wcmp2-ets Get process metadata

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**Parameters** Try it out

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--

Request body required application/json

Mandatory execute request JSON

Example Value | Schema

```
{
  "inputs": {
    "fail_on_schema_validation": true,
    "record": {
      "conformsTo": [
        "http://wis.wmo.int/spec/wcmp2/conf/core"
      ],
      "geometry": {
        "coordinates": [
          [
            [
              -180,
              -90
            ],
            [
              -180,
              90
            ],
            [
              180,
              90
            ],
            [
              180,
              -90
            ],
            [
              -180,
              -90
            ]
          ]
        ]
      }
    }
  }
}
```



# How to validate your metadata – part 2

```
Code    Details

200

Response body

{
  "id": "Rec17b73-9537-4f26-a7f2-76a94eac78db",
  "report_type": "ets",
  "summary": {
    "PASSED": 12,
    "FAILED": 0,
    "SKIPPED": 0
  },
  "generated_by": "pywcmp 0.12.4 (https://github.com/World-Meteorological-Organization/pywcmp)",
  "tests": [
    {
      "id": "http://wis.wmo.int/spec/wcmp/2/conf/core/conformance",
      "code": "PASSED",
      "message": "Passes given schema is compliant/valid"
    },
    {
      "id": "http://wis.wmo.int/spec/wcmp/2/conf/core/contacts",
      "code": "PASSED"
    },
    {
      "id": "http://wis.wmo.int/spec/wcmp/2/conf/core/conformance",
      "code": "PASSED",
      "message": "Passes given schema is compliant/valid"
    },
    {
      "id": "http://wis.wmo.int/spec/wcmp/2/conf/core/data_policy",
      "code": "PASSED"
    }
  ]
}

Response headers

access-control-allow-origin: https://wis2.dwd.de
connection: keep-alive
content-language: en-US
content-length: 2144
content-security-policy: frame-ancestors 'self'; upgrade-insecure-requests
content-type: application/json
date: Thu, 30 Oct 2025 15:07:10 GMT
location: https://wis2.dwd.de/gdc/jobs/1bd024da-b5a2-11f0-9b9f-85ddc7a246ea
server: nginx
vary: Origin
x-content-type-options: nosniff
x-powered-by: pygeoapi 0.22.dev0
```



# How to validate your metadata – part 2

**POST** /processes/pywcmp-wis2-wcmp2-kpi/execution Process WCMP2 KPI evaluator execution

Validate a WCMP2 document against the KPI suite

**Parameters** Try it out

Name	Description
Prefer string (header)	Indicates client preferences, including whether the client is capable of asynchronous processing. <i>Available values</i> : respond-async

Request body required application/json




Mandatory execute request JSON

Example Value | Schema

```
{
  "inputs": {
    "record": {
      "conformsTo": [
        "http://wis.wmo.int/spec/wcmp2/conf/core"
      ],
      "geometry": {
        "coordinates": [
          [
            [
              -180,
              -90
            ],
            [
              -180,
              90
            ],
            [
              180,
              90
            ],
            [
              180,
              -90
            ],
            [
              -180,
              -90
            ]
          ]
        ]
      }
    }
  }
}
```



# Monitoring WIS2 via Web Frontend & MQTT

-  Navigate and inspect using the web frontend
-  Listen to monitoring topic:
  - Tools like [MQTT-Explorer](#)
  - Topic: `monitor/a/wis2/<CENTRE_ID>`
-  Payloads follow **WME Message Encoding (WMEM)**
  - Reference: [WIS2 Monitoring Events Draft](#)

# Data is retired

## Purpose of WCMP2 Records

→ Primary target: **real-time data discovery and access**

## Data Lifecycle Considerations

→ Datasets may become **unavailable**

→ **End of life** reached → no longer maintained

## Importance of Metadata Persistence

→ Even **retired datasets** retain value for discovery

→ **Metadata should persist** even if datasets are no longer sustained

# Data is retired

## Reviewing Links

→ Reviewing all links

```
"properties": {  
  "status": {  
    "id": "retired",  
    "title": "Retired",  
    "url": "https://standards.iso.org/iso/19115/-3/mcc/1.0/codelists.xml#MD_ProgressCode_retired"  
  }  
}
```

## Update Access Mechanisms

→ Remove MQTT links

→ Consider **alternative access mechanisms**: email, web form

## Metadata Standards Update

→ [ISO 19115-3](#) as *"item is no longer recommended for use. It has not been superseded by another item"*

# Key Takeaways

## → Metadata Enables Discovery

→ Makes datasets findable, interoperable, and usable across WIS2

## → GDCs Make Metadata Work:

→ Centralizes distributed metadata for efficient searching and access

## → Practical Access Methods:

→ Web interface for casual users

→ Command-line/API for technical workflows

## → Lifecycle Consideration:

→ Retired data metadata still valuable for historical reference and reproducibility





The GDC is more than a technical service—it's a bridge that connects data, users, and insights. Understanding how to index, access, and manage metadata ensures your datasets have maximum impact.

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Thank you for your attention!