

# WIS2 Introduction

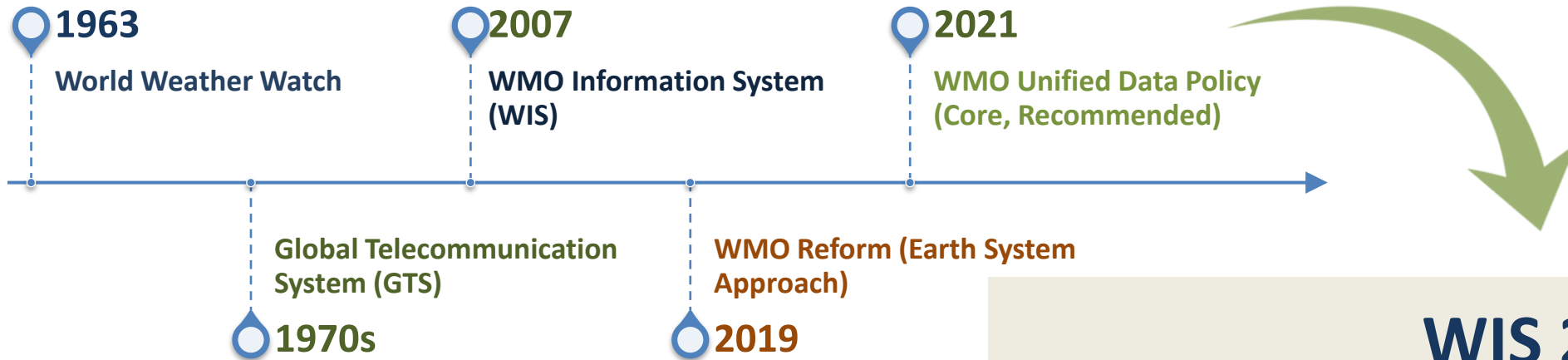
Hassan Haddouch  
WIS 2.0 Manager



WORLD  
METEOROLOGICAL  
ORGANIZATION



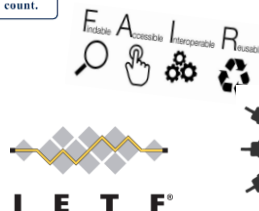
# Evolution of WMO data exchange



## WIS 2.0

*... collaborative system of systems using Web-architecture and open standards to provide simple, timely and seamless sharing of trusted data and information ...*

- Open Standards (OGC, W3C, IETF, ...)
- Free and Open Source tooling
- Data sharing through Web and real-time notifications with publication/subscription (pub/sub) protocols
- Cloud ready (turn-key solutions)
- Web services and APIs (Application Programming Interface)



# WMO Unified data policy

## WMO Unified Data Policy, [Resolution 1](#) (Cg-Ext(2021))

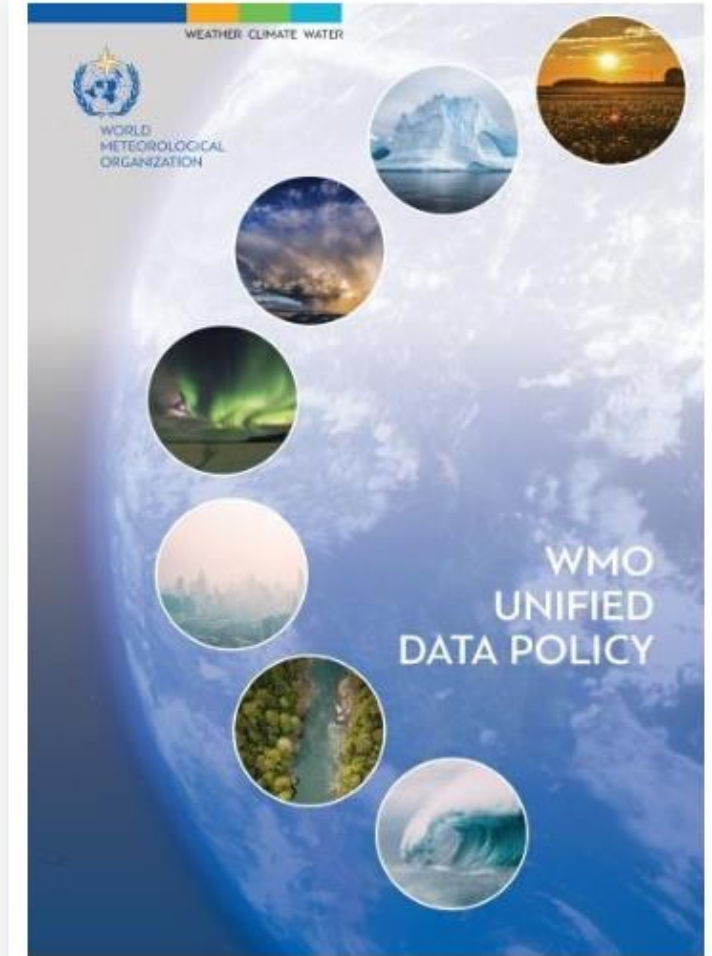
Adopted in 2021, this unified policy for the international exchange of Earth system data reaffirms WMO's commitment to free and unrestricted exchange of Earth system data necessary for the provision of services in support of the protection of life and property and for the well-being of all nations.

International provision and exchange of Earth system data shall follow a 2-tier approach

- (1) Members **shall** provide on a free and unrestricted basis **Core** data that is necessary for the provision of safety critical services
- (2) Members **should** provide the **Recommended** data that are required to support Earth system monitoring and prediction

Members **should** provide **Recommended** data without charge to public research and educational communities for non-commercial use

Encourages all users of Earth system data to **attribute** the source of data wherever possible



# WIS2 node and Global Services



Each WMO Member shall implement at least one WIS2 node to share data in WIS2



A WIS2 node replaces the GTS Message Switching System



Data and metadata are shared through a WIS2 node



A WIS2 Node shares data via an HTTPS service and sends notifications to MQTT subscribers



A WIS2 node shares notifications with Global Broker

## Global Services



# WIS2 Components: Global Services



## Global Services



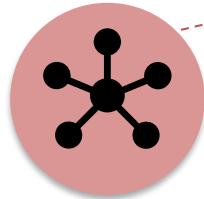
Global  
Monitoring

Discovers datasets



Global  
Discovery  
Catalogue

Provides an API to  
discover datasets and  
services



Global  
Broker



Global  
Cache

Sends notifications  
of new data to be  
downloaded from  
Global Caches or  
WIS2 nodes

Provides users HTTP  
download of core  
data cached from  
WIS2 nodes

Downloads core data



WIS2 node



WIS2 node



WIS2 node

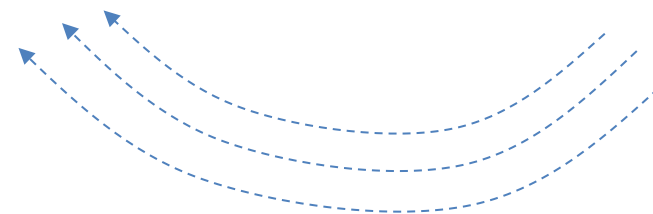


Data users

Downloads recommended data

Downloads recommended data

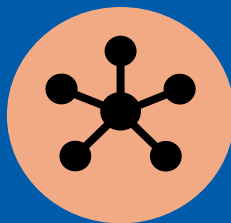
Downloads recommended data



Scale to highly-available, global data sharing

# WIS2 Global Service instances

**Global  
Broker**



Brazil  
France  
China  
USA

**Global  
Discovery  
Catalogue**



Canada  
China  
Germany

**Global  
Cache**



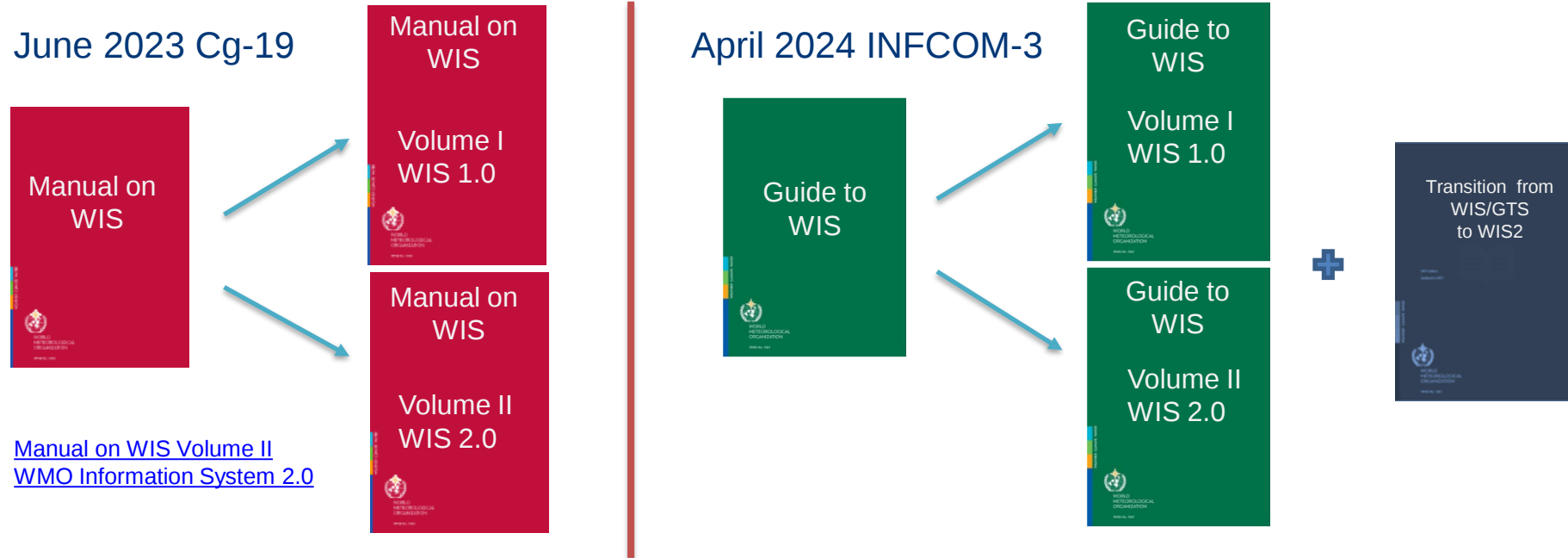
China  
Germany  
Japan  
Korea  
Saudi Arabia  
USA/UK

**Global  
Monitoring**



China  
Morocco

# WIS 2.0 Regulatory material



WMO OMM

# The Manual On The WIS Metadata

## Amendments to the Manual on WIS

Addition of

### **WMO Core Metadata Profile 2.0 (WCMP2)– *New standard for WIS Metadata***

- Discovery metadata describes a given dataset or collection
- Aligning with the WIS 2.0 Principles, discovery metadata will be published to the Global Discovery Catalogue
- WCMP2 is an extension of the International Standard OGC API - Records

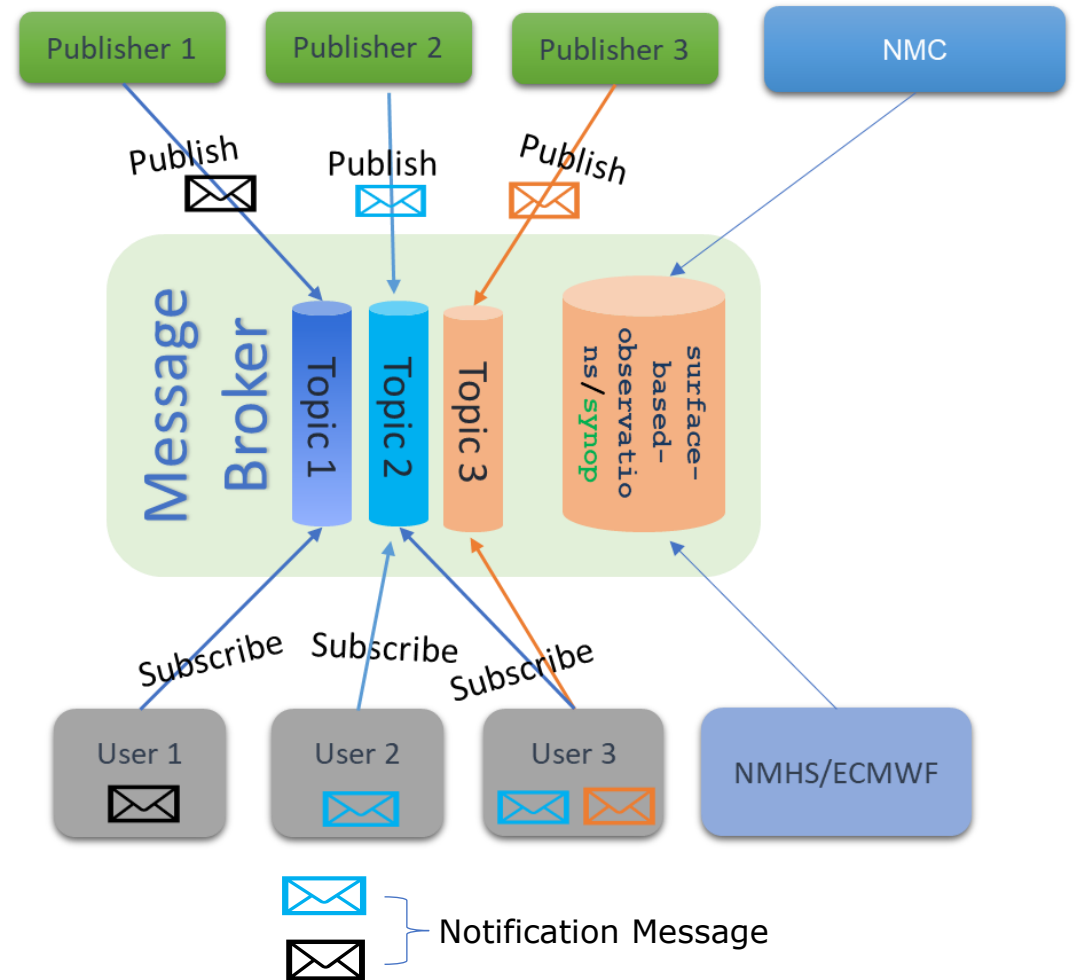


# The Manual On The WIS

## Topic Hierarchy and Notification Message

**WIS2 Topic Hierarchy** – “Backbone” of the notification architecture where the messages will be available

**WIS2 Notification Message** – Format of the Notification Messages



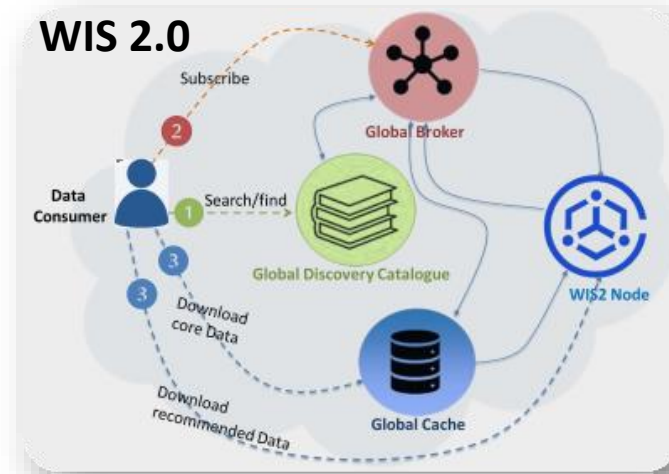
**Example:**

```
origin/a/wis2/ca-eccc-msc/data/core/weather/ surface-based-observations/synop
cache/a/wis2/int-ecmwf/data/core/weather/prediction/forecast/medium-range/deterministic/global
```

# Guide to the WIS Volume II

- WIS2 Architecture
- Specifications of WIS2
- Implementation and operation of a WIS2 Node
- WIS2 Node reference implementation: wis2box
- Implementation and operation of a Global Service
- Procedure for registration of a new Global Service

- Information management
- Security
- Competencies



- How to subscribe to notifications about the availability of new data
- How to use a notification message to decide whether to download data
- How to download data
- How to use data
- How to provide data to WIS2

**Interoperability with external systems**

**WHOS**

Hydrology data sharing

**OpenCDMS**

Data management and data sharing for climate

**Cryosphere**

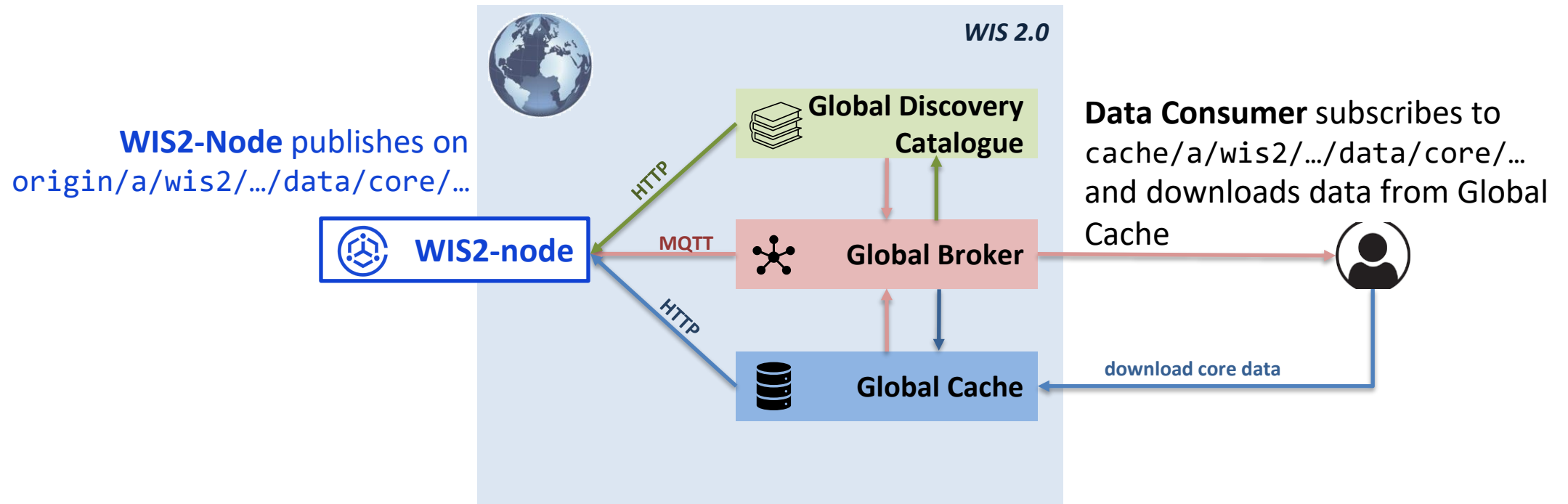
Data sharing for the cryosphere community

**Weather Ocean**

Data sharing for the weather and ocean

# WIS 2.0 supporting core data exchange

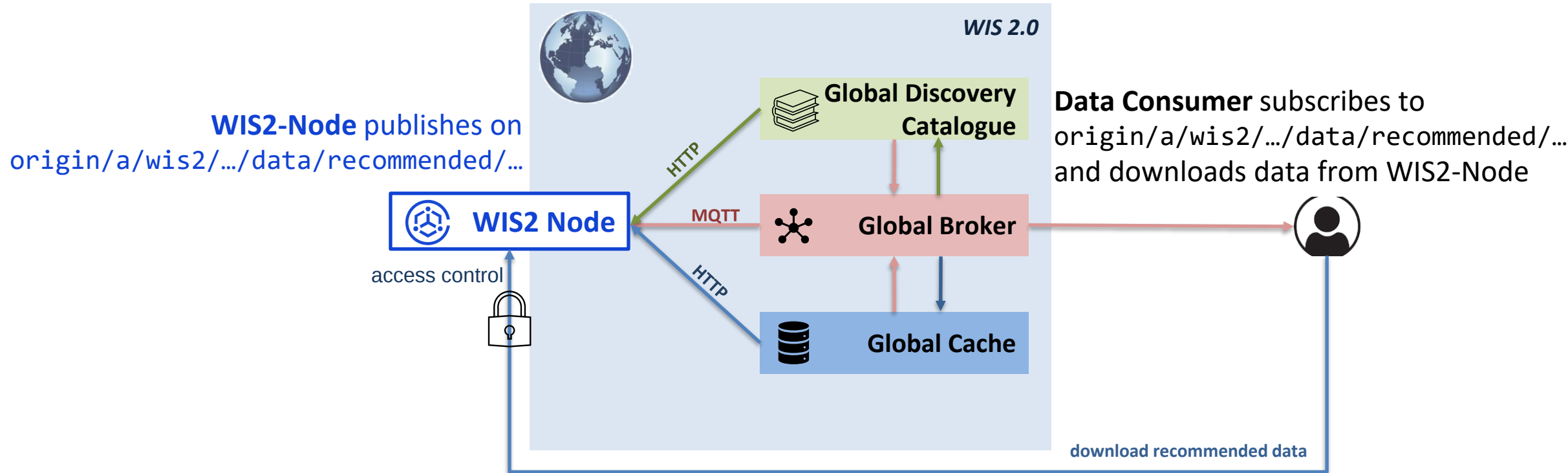
**WMO core data (free and unrestricted)  
can be downloaded from a Global Cache**



Global Cache subscribes to  
`origin/a/wis2/.../data/core/...`  
downloads data from WIS2-Node  
and publishes new notification on  
`cache/a/wis2/.../data/core/...`

# WIS 2.0 supporting recommended data and national needs

**WMO recommended data shall be downloaded directly from the WIS2 Node, access can be open or restricted**



Thank you  
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