

# Workshop on climate data management, data sharing and exchange

## WMO-DGM

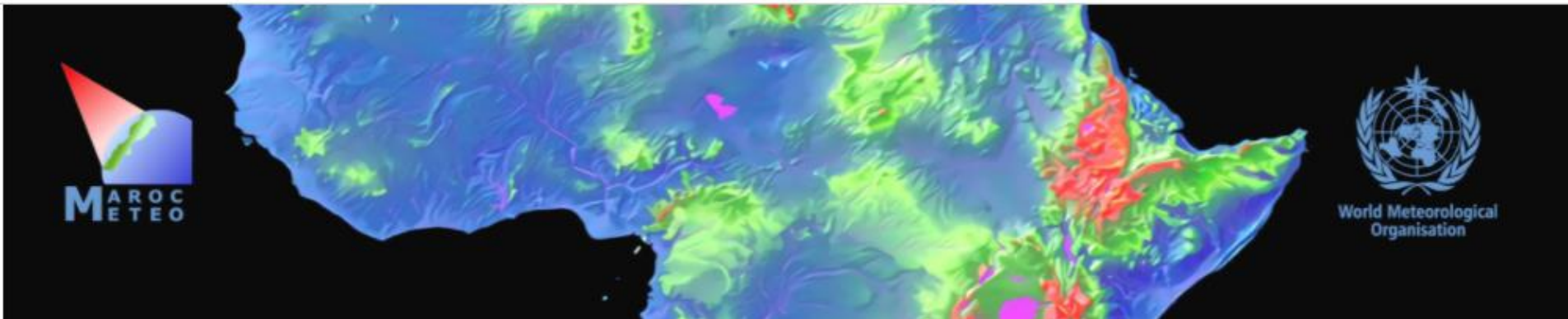
### Use of WIS to exchange data and products

04, 05 et 08 November 2021

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Direction Générale de la Météorologie/  
Moroccan Meteorological Service





- Why should we exchange data and for what purpose?*
- What Shall/Should we exchange?*
- How will the data exchange take place and by what means?*
- How will WIS 2.0 improve data exchange?*



# Data exchange: WHY?



## Long Term Goal 2 (Infrastructure)

Enhance Earth system observations and predictions -  
Strengthening the technical foundation for the future

### SO 2.1 (WIGOS)

Optimize the **acquisition of observation data** through the WMO Integrated Global Observing System

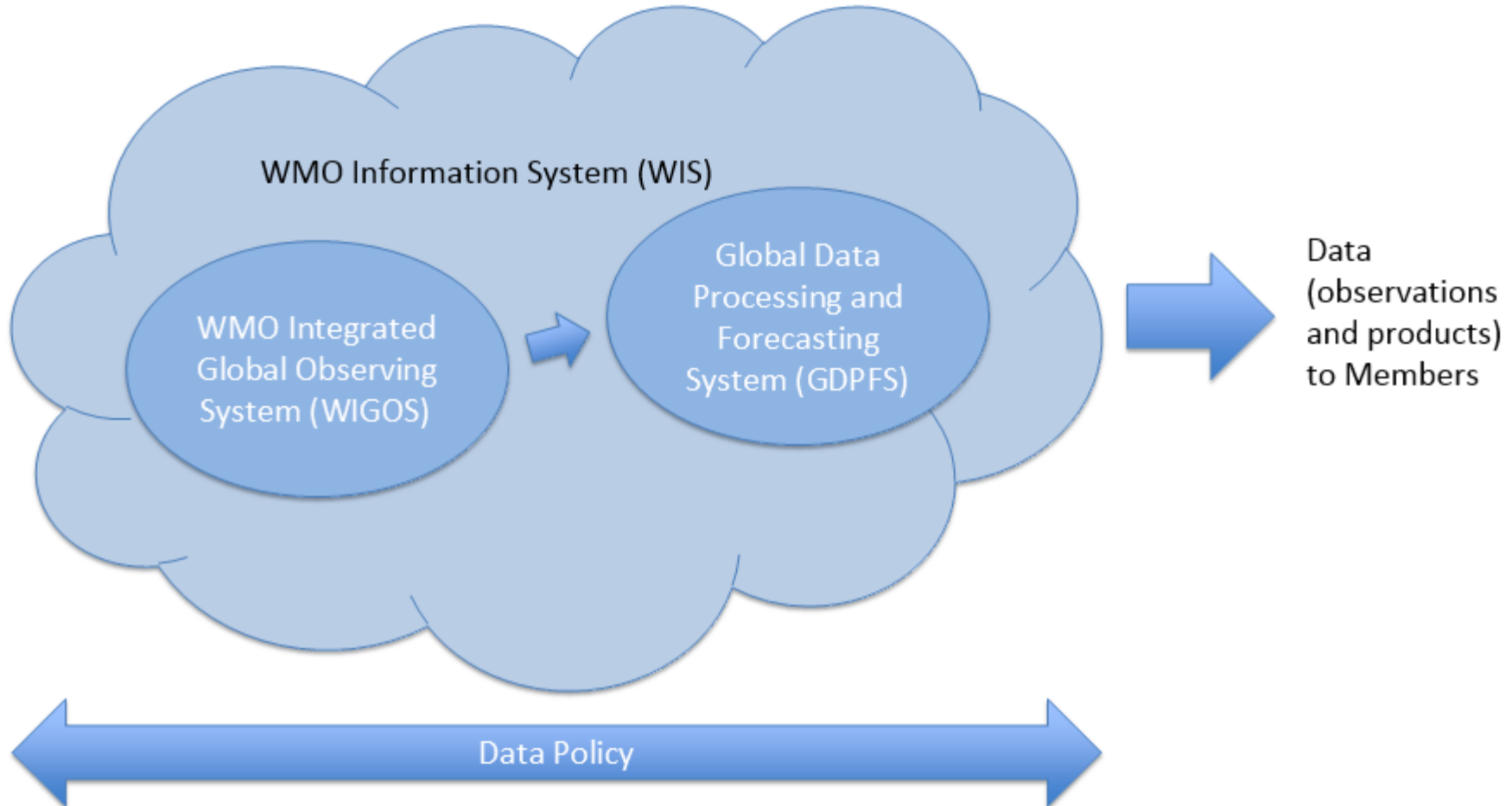
### SO 2.2 (WIS)

Improve and increase **access to, exchange and management of current and past Earth system observation data and derived products** through the WMO Information System

### SO 2.3 (GDPFS)

Enable **access and use of numerical analysis and prediction products** at all temporal and spatial scales from the WMO seamless Global Data Processing and Forecast System

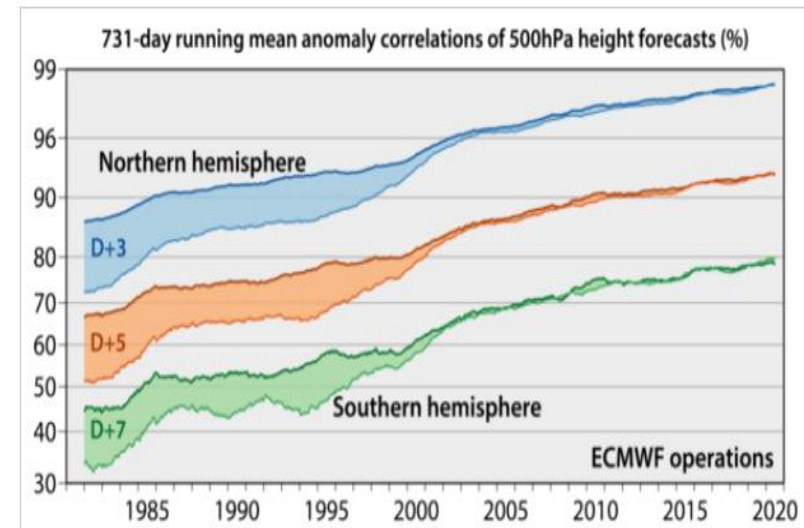
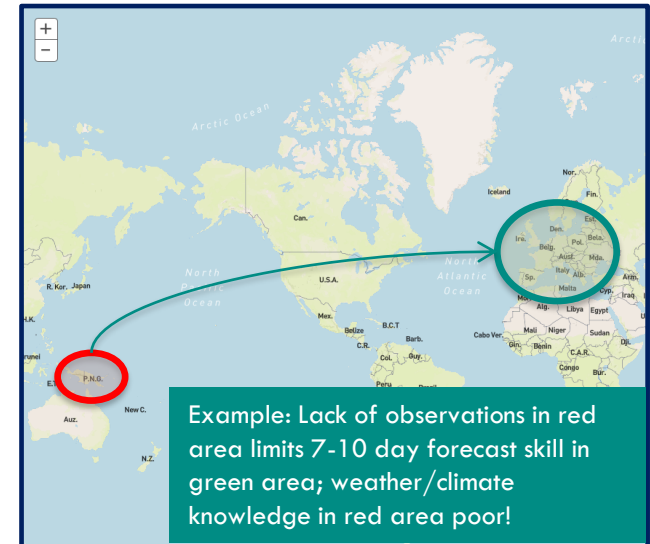
# Data exchange: WHY?



# Data exchange: WHY?

- Need for reliable numerical modeling on a global scale;
- NWP needs observations from all over the world;
- Lack of observations is a key factor limiting weather and climate monitoring and forecasting not only locally but also globally.
- Any missing or erroneous observation will have its impact on the quality of the forecast at the local scale which will spread over time to affect the quality of the weather forecast at the global scale.

**NWP: Enabling USD 132B annual world-wide economic benefits of weather prediction (Kull et al., 2021)**



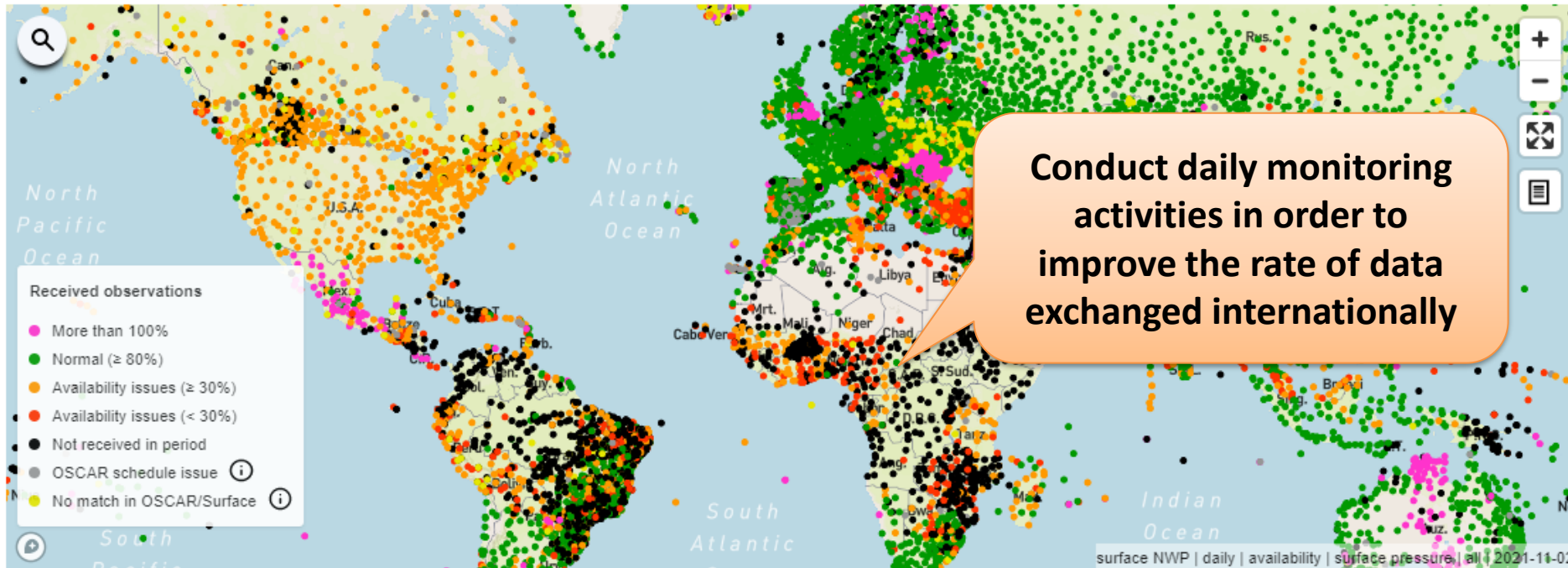
Number of surface observations exchanged on a daily basis across the African continent:  
(WDQMS-webtool)

**2020 = 4657; 2021 (Q1/Q2) = 4575**

**(about 10 observations per country and per day counting only the secondary and main synop messages)**

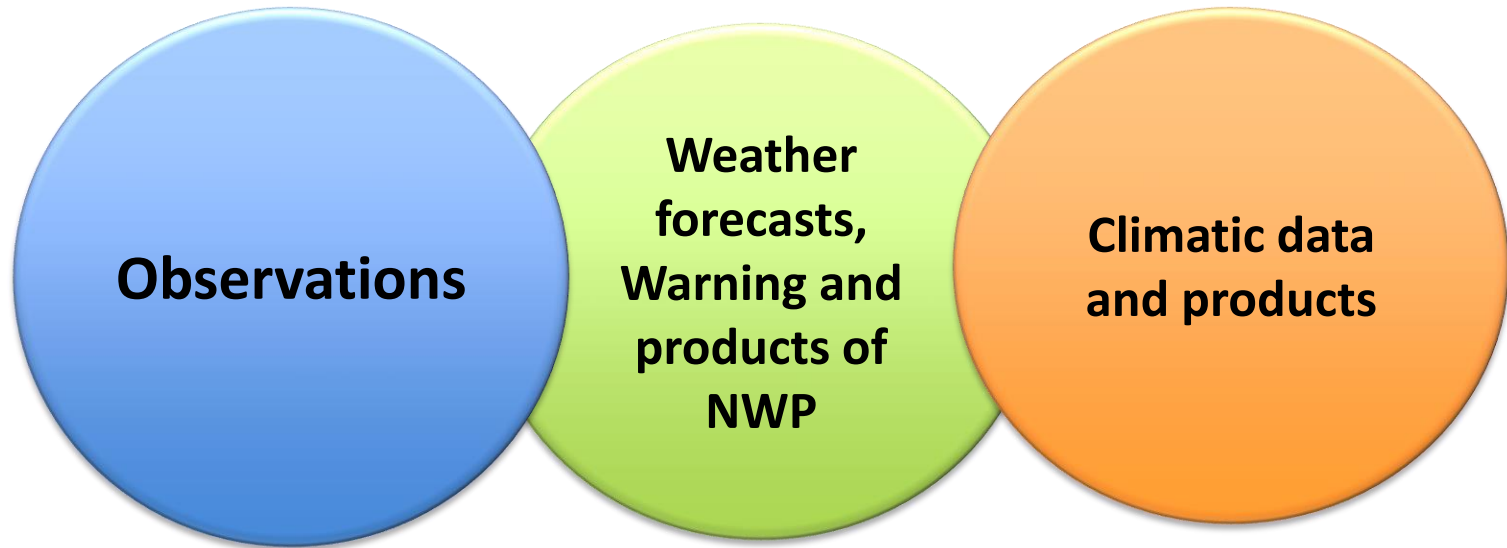
Availability of surface land observations (global NWP)

Type of period: Daily  
Monitoring category: Availability  
Variable\*: Surface pressure  
Monitoring Centre: All  
Date: 2021-11-02  
Baseline: OSCAR GBON\*





# Data exchange: WHAT?



# Data exchange: WHAT?

## At the National Level

National Surface and upper air observing networks

Increase spatial resolution (100km)

Complementary observing networks: weather Radar, wind profilers, solar radiation....

WIGOS

In addition to observation, NWP products, weather forecasts and warnings, climatic products, etc.

Partner's Observing networks : hydrology, universities, health and environment ....

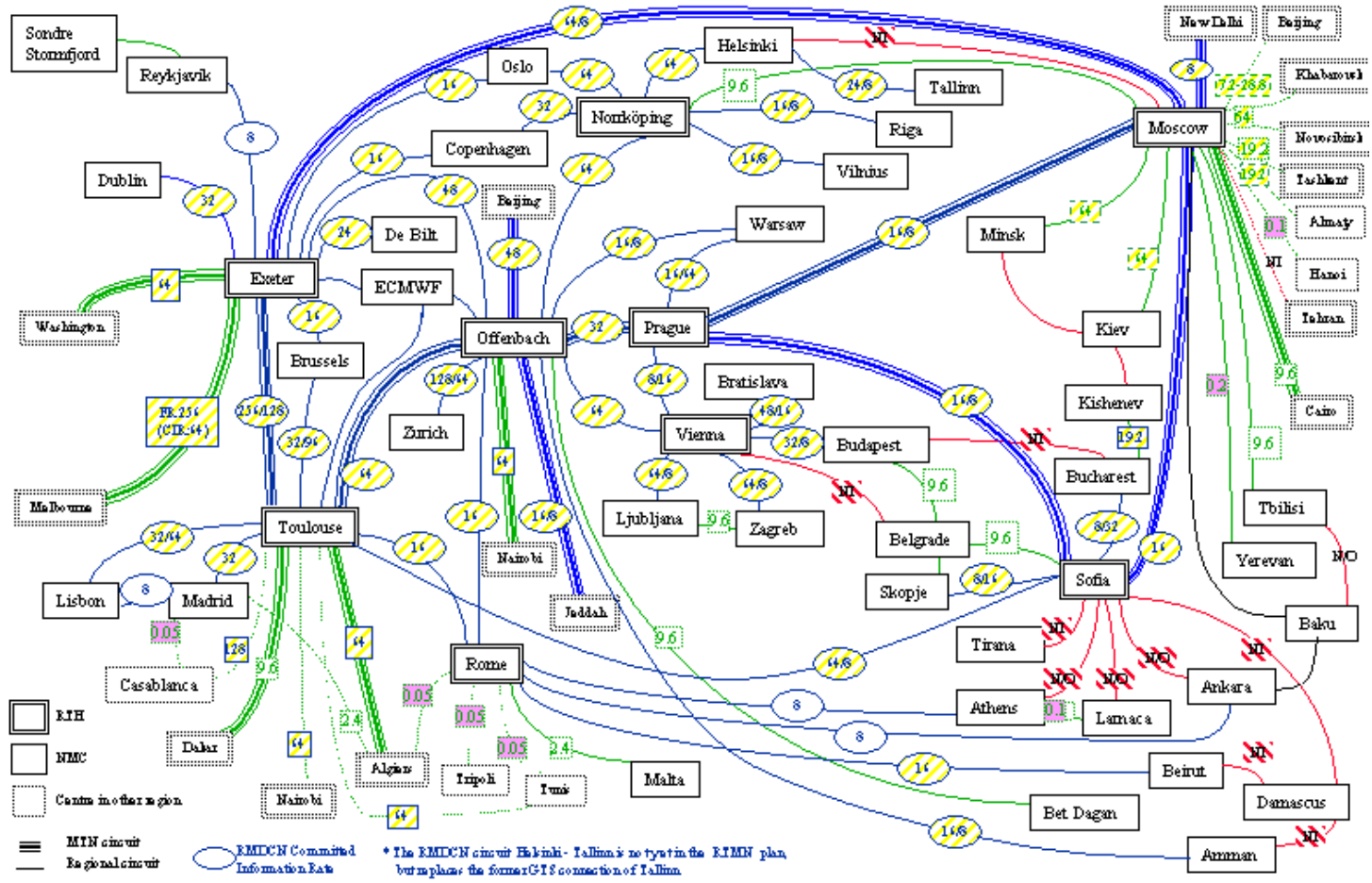
Temporal resolution (one hour)

## At the regional and the global Scale

All other WMO components and programs: Satellite, Hydrology, agrometeorology, GOOS, GAW,....



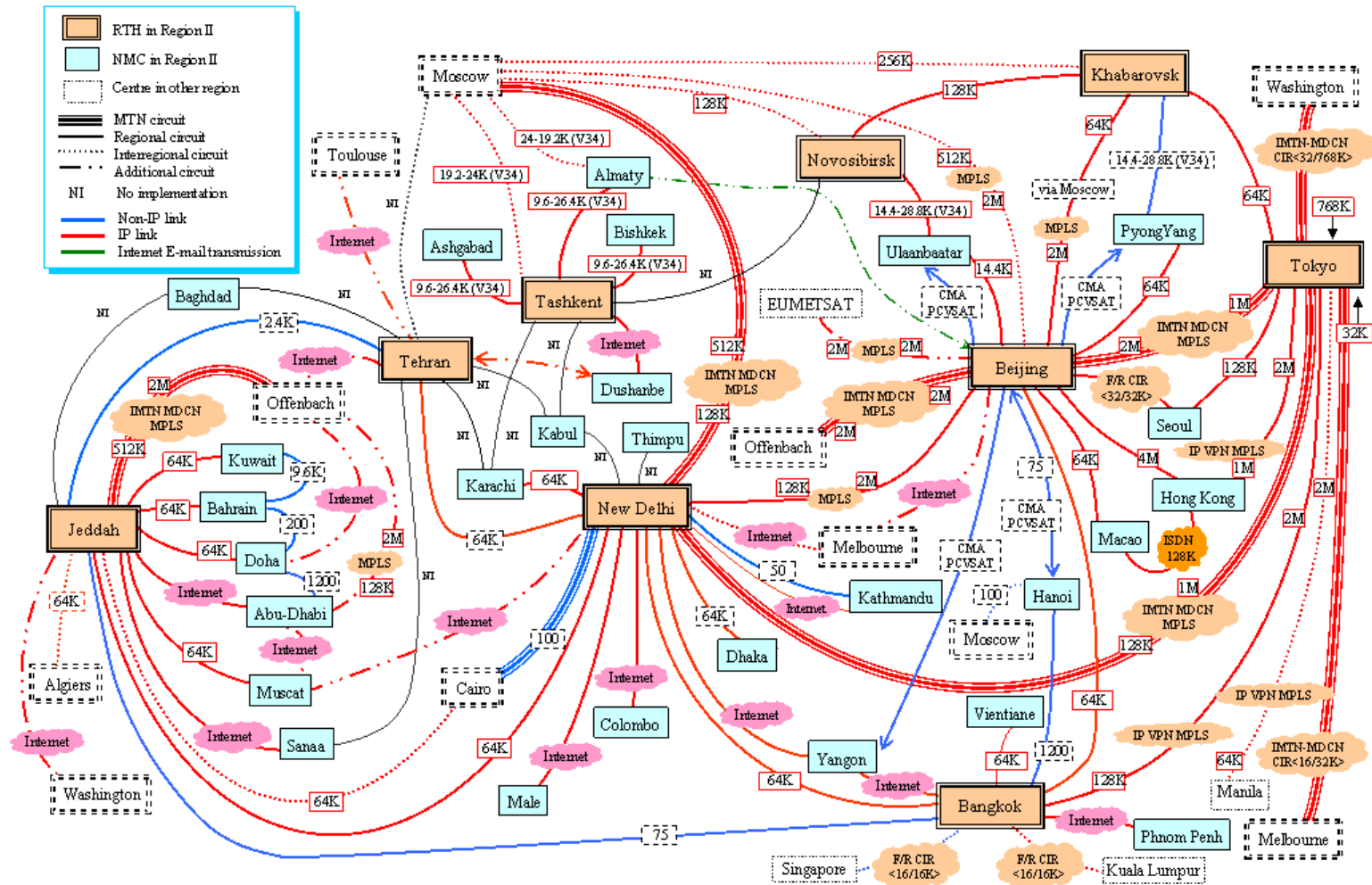
## Global telecommunication System



Regional Meteorological Telecommunication Network for Region VI (Europe)  
 Figure 1 - point-to-point circuits implementation (transmission speed in kilobits/s)

# Data exchange: HOW?

## Global telecommunication System – RA II

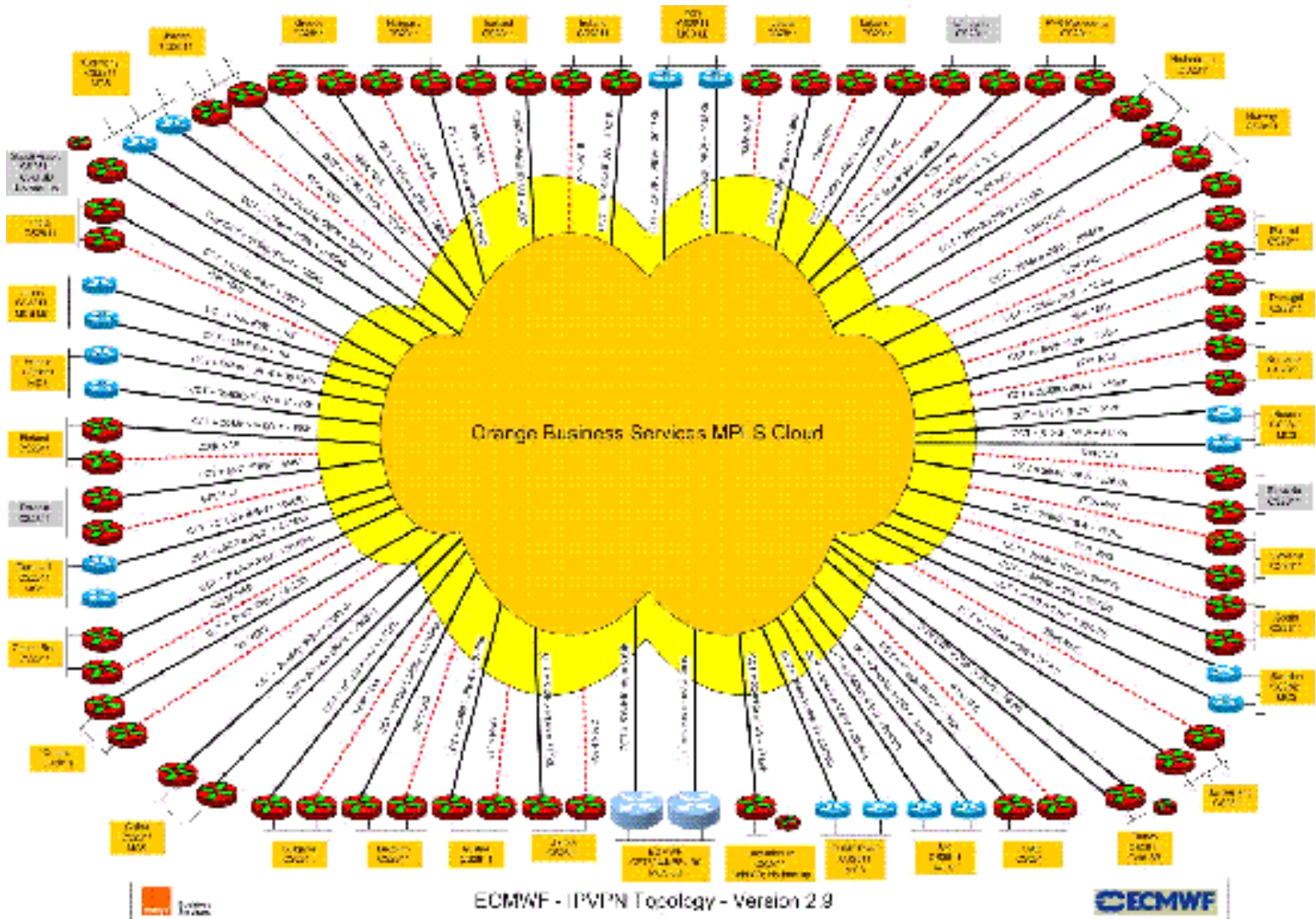


Regional Meteorological Telecommunication Network for Region II (Asia)

Current status as of April 2009

# Data exchange: HOW?

## The RMDCN





# Data exchange: HOW?



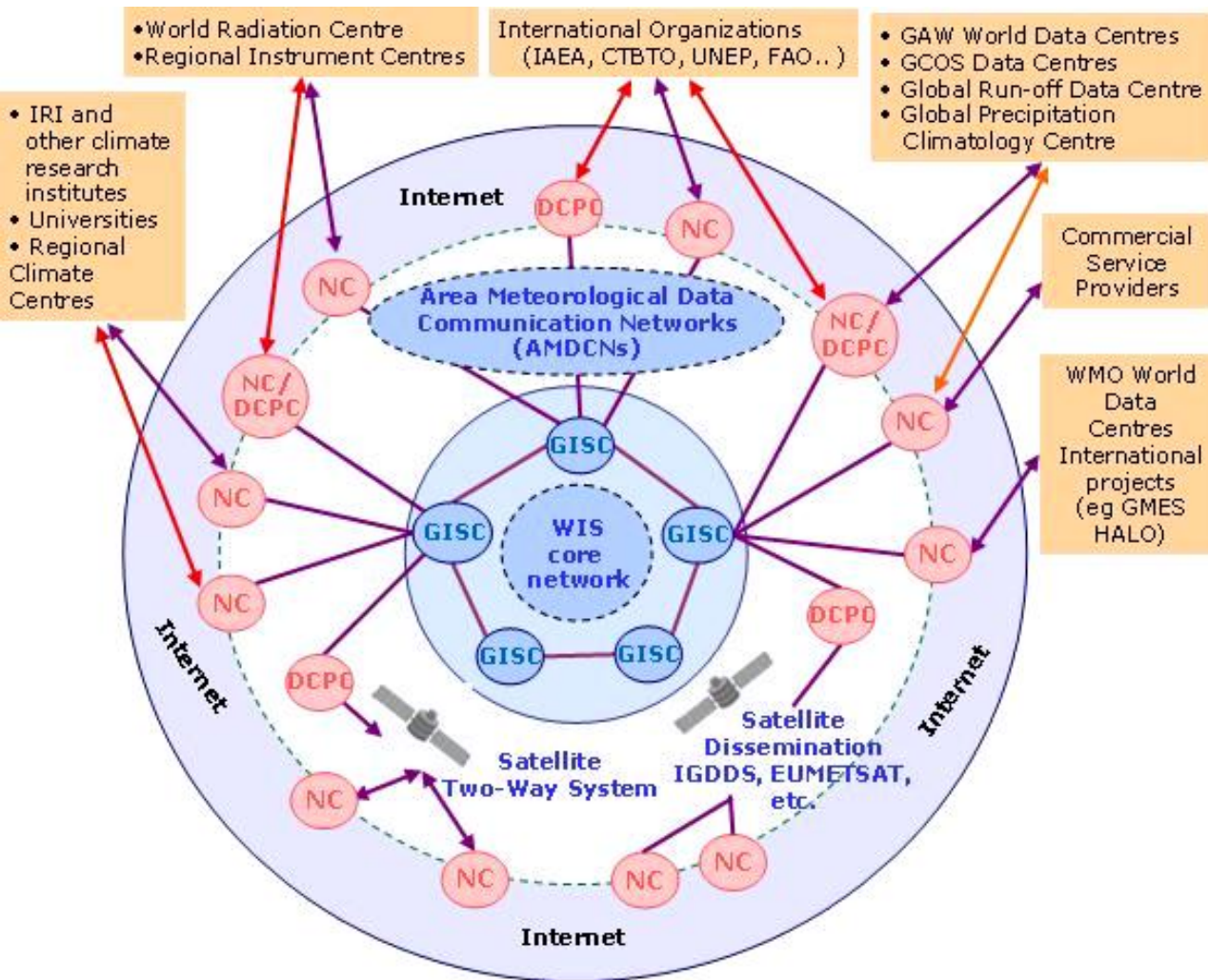
The WMO Information System

**WIS**

**DATA**

**Catalogue of  
Metadata**

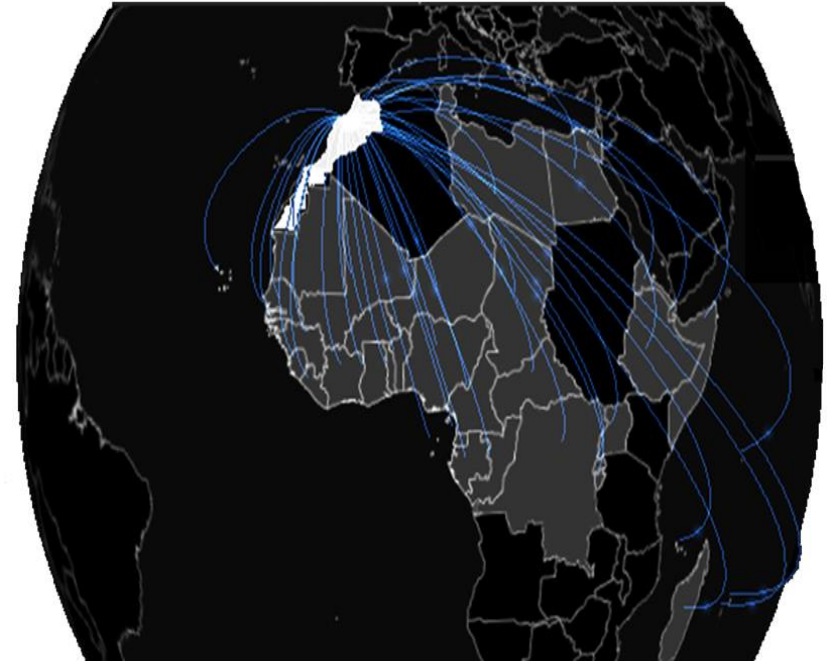
# Data exchange: HOW?



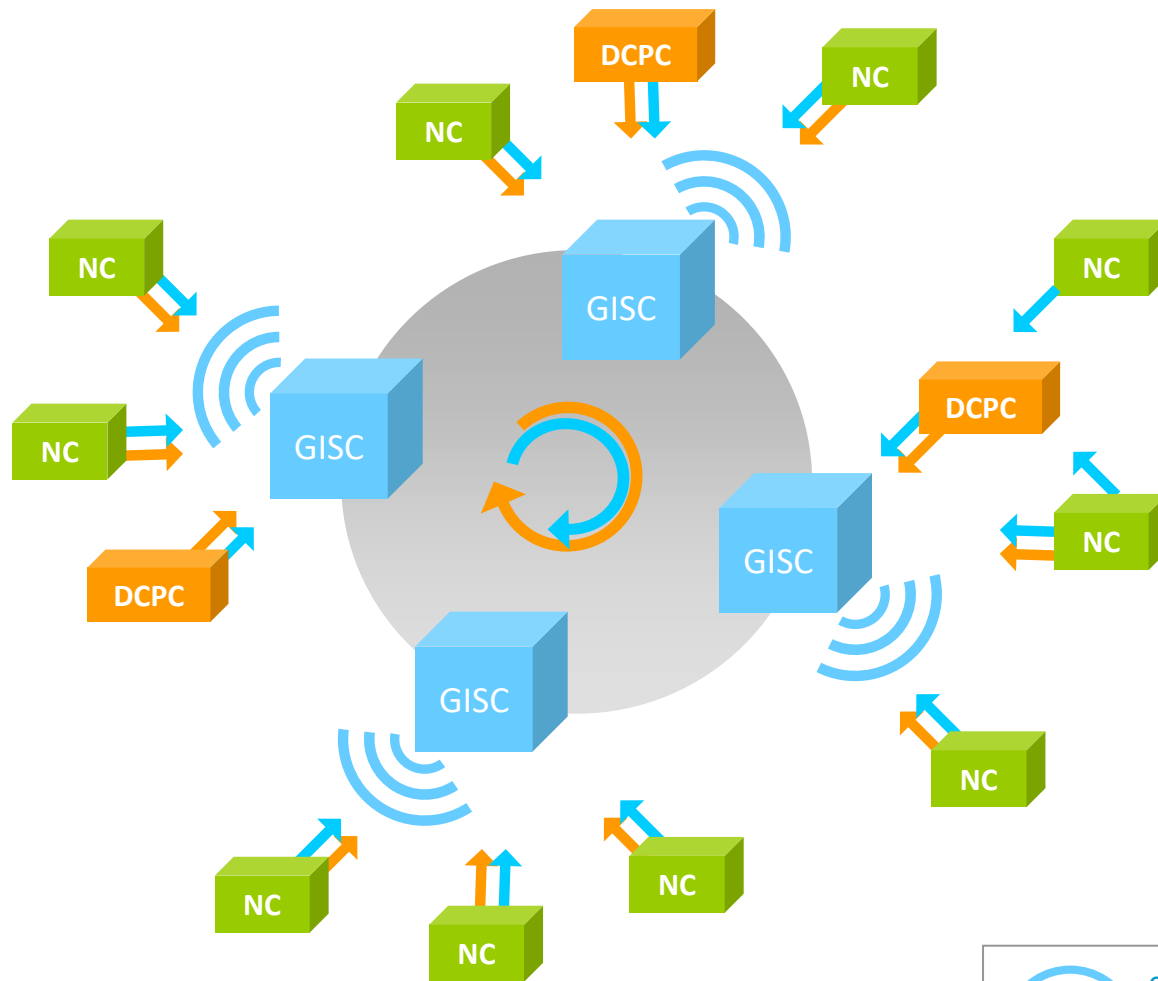
- Each WIS NC must provide metadata for its data and products.
- DCPCs collect, generate, disseminate, add value and archive regional or program-specific data and products,
- DCPCs maintain catalogs of their products and services,
- GISCs hold and distribute at least 24 hour cash of WMO data and products for worldwide distribution.

## GISC Casablanca

- GISC Casablanca is the main GISC for 37 national centers in Africa and its area of responsibility (AoR) covers important regional bodies such as ACMAD, AGRHYMET, RSMCs... which are designated as DCPCs.



# Data exchange: HOW?



# Data exchange: HOW?



Registre metadata  
(NCs & DCPCs)

Research and Retrieval  
(custmers, users)

Receive Data  
(custmers, users)





# Data exchange: HOW?



GIS Status Table

GIS	Update time	Distribution System	Portal	Catalogue Sync	SRU	Network Usage (WIS Core Network)	Metadata records (Catalogue records)	Data & Products in 24h Cache	Size of Data & Products in 24h Cache	Unique Data & Products Missing Metadata in 24h Cache
Remarks										
<b>Beijing</b> <a href="#">Portal</a> <a href="#">Detail</a> <a href="#">AoR</a>	11-04 00:00	UP	UP	UP	UP					
Any additional text message										
<b>Brasilia</b> <a href="#">Portal</a> <a href="#">Detail</a> <a href="#">AoR</a>	11-04 00:00	UP	UP	UP	UP					
-										
<b>Casablanca</b> <a href="#">Portal</a> <a href="#">Detail</a> <a href="#">AoR</a>	11-04 00:00	UP	UP	UP	UP					
-										
<b>Exeter</b> <a href="#">Portal</a> <a href="#">Detail</a> <a href="#">AoR</a>	06-06 00:00	Unknown	Unknown	Unknown	Unknown					
-										
<b>Melbourne</b> <a href="#">Portal</a> <a href="#">Detail</a> <a href="#">AoR</a>	07-02 00:00	Unknown	Unknown	Unknown	Unknown					
-										



# Data exchange: HOW?



English ▾

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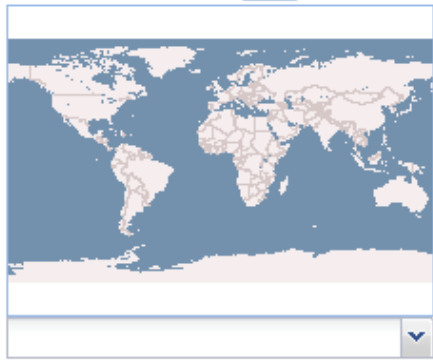
[Login](#) [Choose Domain](#)

[Normal Search](#) | [Advanced Search](#)

WHAT?

précipitations

WHERE?



Options

[Reset](#) [Search](#)

### What's New

- Basic measurements of radiation at station Yushan (2020-12)
- Basic measurements of radiation at station Yushan (2021-04)

### FIND INTERACTIVE MAPS, GIS DATASETS, SATELLITE IMAGERY AND RELATED APPLICATIONS

Aggregate Results matching search criteria: 1-10/1124 (page 1/113)

GRIB ARPEGE 75N/10N 60W/65E AT 00 AND 12 PARAMETER PRECIPITATION LEVEL SURFACE 96 HOUR FORECAST



[Request](#) [Subscribe](#) [Other actions](#)

**Abstract**  
 --- The bulletin is coded as GRIB code form:FM 92 (GRIB, General regularly-distributed information in binary form) .(Refer to WMO No.306 - Manual on Codes for the definition of WMO international c...

**Keywords**  
 Meteorological geographical features meteorology weatherForecasts GlobalExchange precipitation

Unknown Owner

GRIB ARPEGE 75N/10N 60W/65E AT 00 AND 12 PARAMETER PRECIPITATION LEVEL SURFACE 72 HOUR FORECAST



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# Data exchange: HOW?



GRIB ARPEGE 75N/10N 60W/65E at 00 and 12 parameter Precipitation level surface 96 hour forecast

View - Simple ▾

Identification info

Title	GRIB ARPEGE 75N/10N 60W/65E at 00 and 12 parameter Precipitation level surface 96 hour forecast		
Date	2009-03-24		
Date type	<b>Creation:</b> Date identifies when the resource was brought into existence		
Date	2009-03-24		
Date type	<b>Publication:</b> Date identifies when the resource was issued		
Date	2017-05-04		
Date type	<b>Revision:</b> Date identifies when the resource was examined or re-examined and improved or amended		
Code	<a href="http://wispi.meteo.fr/openwis-user-portal/srv/en/iso19139.xml?uuid=urn:x-wmo:md:int.wmo.wis::HEUM98LFPW">http://wispi.meteo.fr/openwis-user-portal/srv/en/iso19139.xml?uuid=urn:x-wmo:md:int.wmo.wis::HEUM98LFPW</a>		

Cited responsible party

Organisation name	NMC FRANCE - Météo-France		
Role	<b>Resource provider:</b> Party that supplies the resource		

Presentation form **Digital document:** Digital representation of a primarily textual item (can contain illustrations also)

Abstract  
---- The bulletin is coded as GRIB code form:FM 92 (GRIB, General regularly-distributed information in binary form) .(Refer to WMO No.306 - Manual on Codes for the definition of WMO international codes)---- The HEUM98 TTAaII Data Designators decode (2) as:T1 (H): Grid point information (GRIB).T2 (E): Precipitation.A2 (M): 96 hours forecast.ii (98): Air priorities for the Earth's surface.(2: Refer to WMO No.386 - Manual on the GTS - Attachment II.5)---- WMO No.9 - Volume C1 'Content' field:Bloc 'Europeen'---- Grid size: 1 X 1---- Forecast Offset: 96 (hours)---- WMO No.9 - Volume C1 'Remarks' field:(60W-65E) (75N-10N) res 1x1, 126x66 points

Point of contact

Individual name	DT/DSI/OP/TEL	Delivery point	Direction des Systèmes d'Information, 42 avenue Gaspard CORIOLIS
Organisation name	NMC FRANCE - Météo-France	City	TOULOUSE
Role	<b>Point of contact:</b> Party who can be contacted for acquiring knowledge about or acquisition of the resource	Postal code	31057
		Country	France
		Electronic mail address	<a href="mailto:gisc_support@meteo.fr">gisc_support@meteo.fr</a>
		On line	<a href="http://www.meteo.fr">http://www.meteo.fr</a>

meteorological geographical features meteorology weather forecasts GlobalExchange precipitation



## Contribution of WIS 2.0



WIS 2.0 will significantly increase data exchange through:

- a. A WEB-oriented approach,
- b. Integration of new technologies,
- c. Promotion of the use of CLOUD services,
- d. Sharing of value-added services,
- e. Opening up to new formats and the abolition of the file naming,
- f. Inclusion of protocols dedicated to web research,
- g. Direct exchange between the data producers and the final user,
- h. Referencing in search engines ...



# Contribution of WIS 2.0

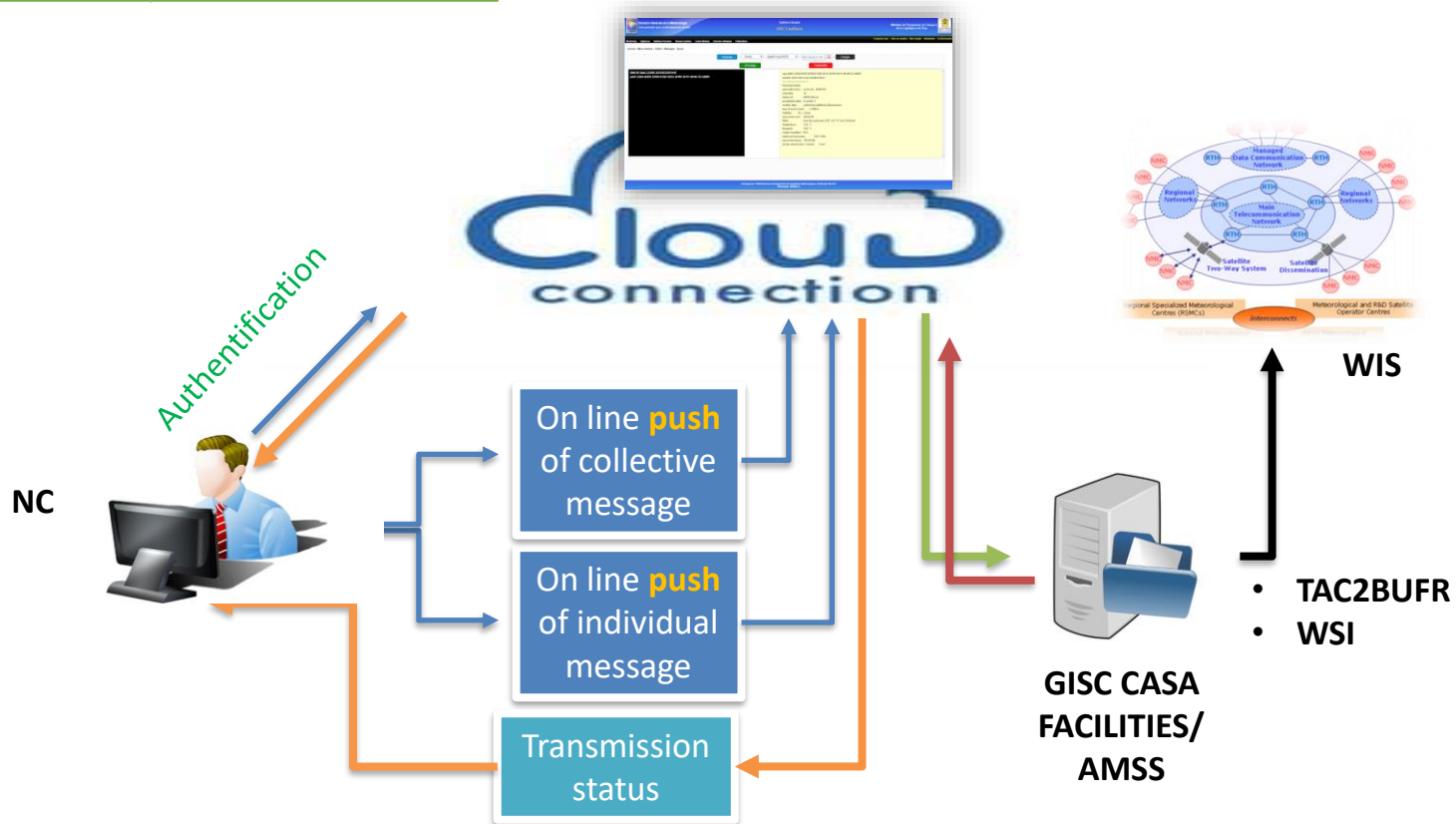


## WIS 2.0 Principles

- 1** Web technologies, industry best practices and open standards
- 2** Uniform Resource Locators (URL) to identify resources
- 3** Use of public telecommunications networks (i.e., Internet) when publishing digital resources
- 4** Provision of Web service(s) to access or interact with digital resources
- 5** Provide 'data reduction' services via WIS that process 'big data'
- 6** Add open standard messaging protocols that use the publish-subscribe message pattern
- 7** Require all services that provide real-time distribution of messages to cache/store 24H
- 8** Adopt direct data exchange between provider and consumer
- 9** Phase out the use of routing tables and bulletin headers
- 10** Provide a Catalogue containing metadata that describes both data and the service
- 11** Encourages data providers to publish metadata in a way that can be indexed by commercial search engines

# Contribution of WIS 2.0

Web Based services (WIS 2.0)





Thank you  
Merci

WMO OMM

World Meteorological Organization

Organisation météorologique mondiale