# World Meteorological Organization (WMO) Observing and Information Systems Department

## WMO Information System (WIS)

*Presented by*
Eliot Christian <echristian@wmo.int>
WIS Senior Scientific Officer
*at the*

## Data Alliances Workshop
Washington, DC, USA
11 November 2009

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# WMO: Observations, Models, Data and Information



**World Meteorological Organization**
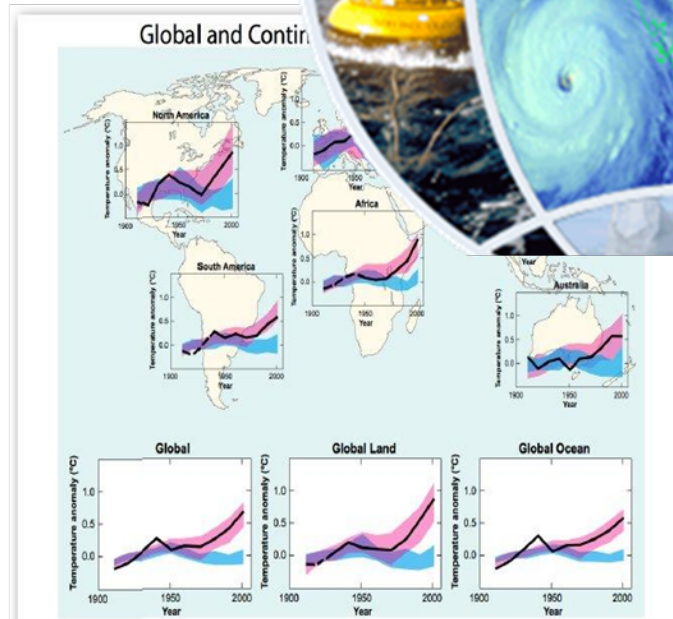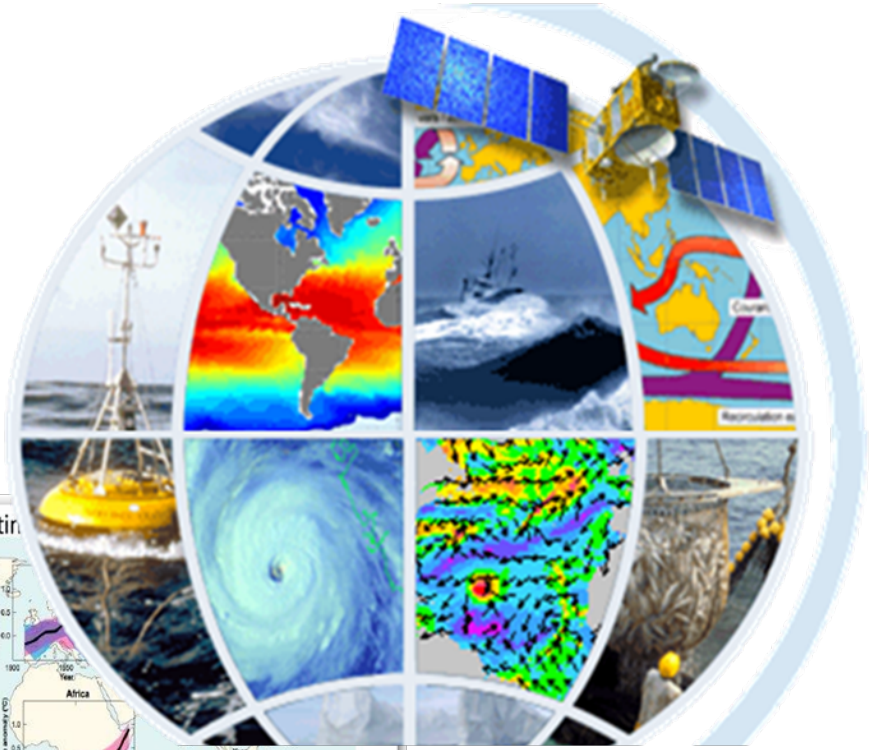
**Weather • Climate • Water**

FIGURE SPM-4. Comparison of observed continental- and global-scale changes in surface temperature with results simulated by climate models using natural and anthropogenic forcings. Decadal averages of observations are shown for the period 1906–2005 (black line) plotted against the centre of the decade and relative to the corresponding average for

# Global Telecommunications System (GTS)

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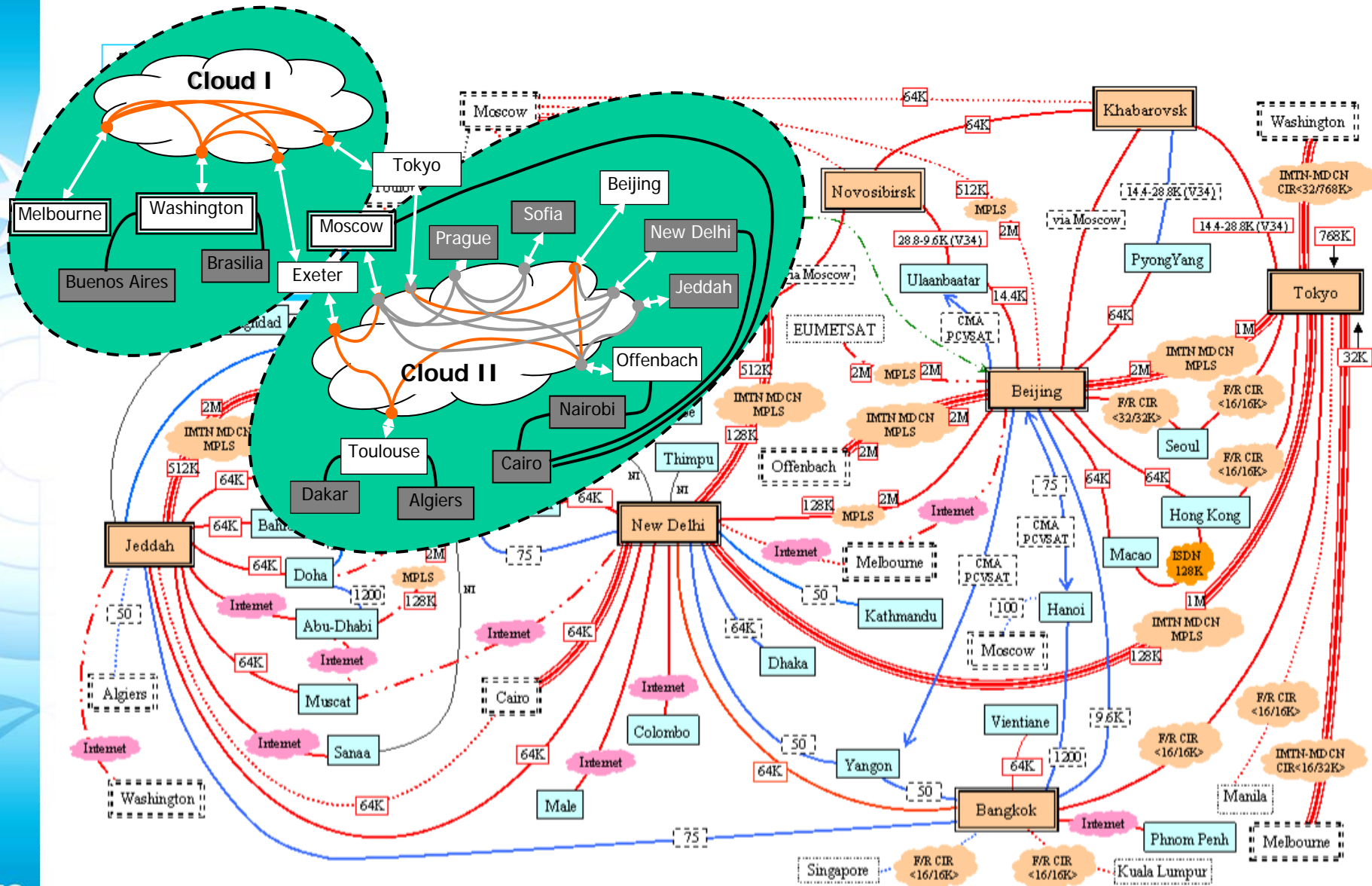
# Vision of WIS

WMO Members decided that WIS will:

➢ Use international industry standards

➢ Build on the Global Telecommunication System (GTS), with a smooth and coordinated transition;

➢ Provide time-critical data exchange, as well as data access and retrieval services;

➢ Support all WMO and related international programmes.

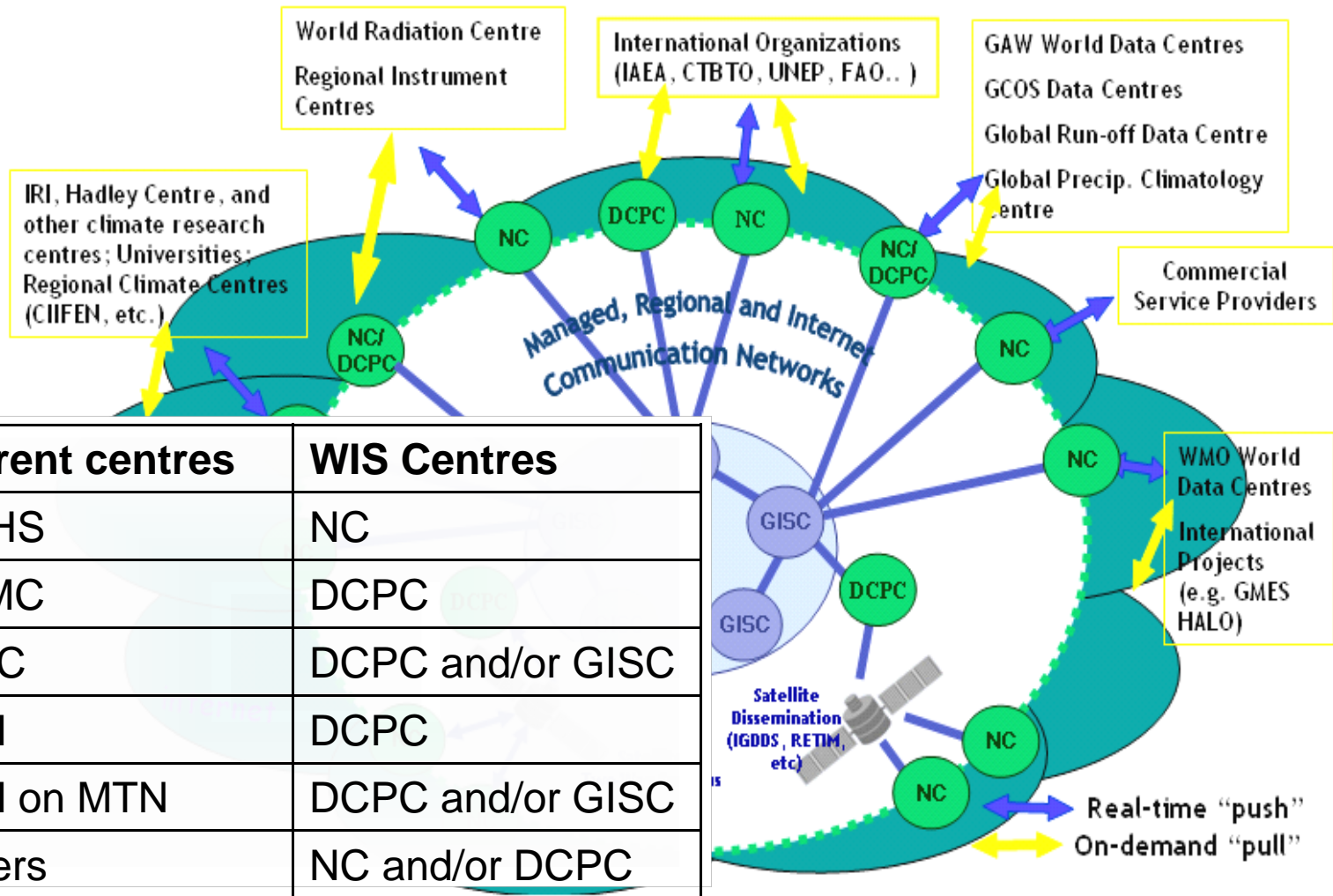WMO
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# Implementation of WIS (Cg-XV, 2007)

WIS is evolving in two parallel parts:

**Part A:** GTS continued consolidation and further improvements for data and products delivery

➢ **Time-critical and operation-critical delivery** based on real-time "push" via the dedicated telecommunications network

➢ **Timely delivery** based on delayed mode "push" via combination dedicated + public networks

**Part B:** extension of services through flexible data discovery, access and retrieval services, as well as flexible timely delivery

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# Types of Centres: GISCs, DCPCs, and NCs



World Radiation Centre
Regional Instrument Centres

International Organizations (IAEA, CTBTO, UNEP, FAO.. )

GAW World Data Centres
GCOS Data Centres
Global Run-off Data Centre
Global Precip. Climatology Centre

IRI, Hadley Centre, and other climate research centres; Universities; Regional Climate Centres (CIIFEN, etc.)

Commercial Service Providers

Managed, Regional and Internet Communication Networks

WMO World Data Centres
International Projects (e.g. GMES HALO)

Satellite Dissemination (IGDDS, RETIM, etc)

Real-time "push"
On-demand "pull"

| Current centres | WIS Centres |
|-----------------|-------------|
| NMHS | NC |
| RSMC | DCPC |
| WMC | DCPC and/or GISC |
| RTH | DCPC |
| RTH on MTN | DCPC and/or GISC |
| Others | NC and/or DCPC |

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# WIS Compliance Specifications

➢ Existing centres within WMO Member States may apply for designation as one of the functional centres forming the core infrastructure of WIS:

◇ Global Information System Centres (GISCs)

◇ Data Collection or Production Centres (DCPCs)

◇ National Centres (NCs)

➢ Designation requires a statement of compliance with WIS requirements, compiled by the Inter-Commission Coordination Group on WIS (ICG-WIS)

➢ The WIS Compliance Specifications document is the authoritative source for specifications applicable to WIS GISCs, DCPCs, and NCs

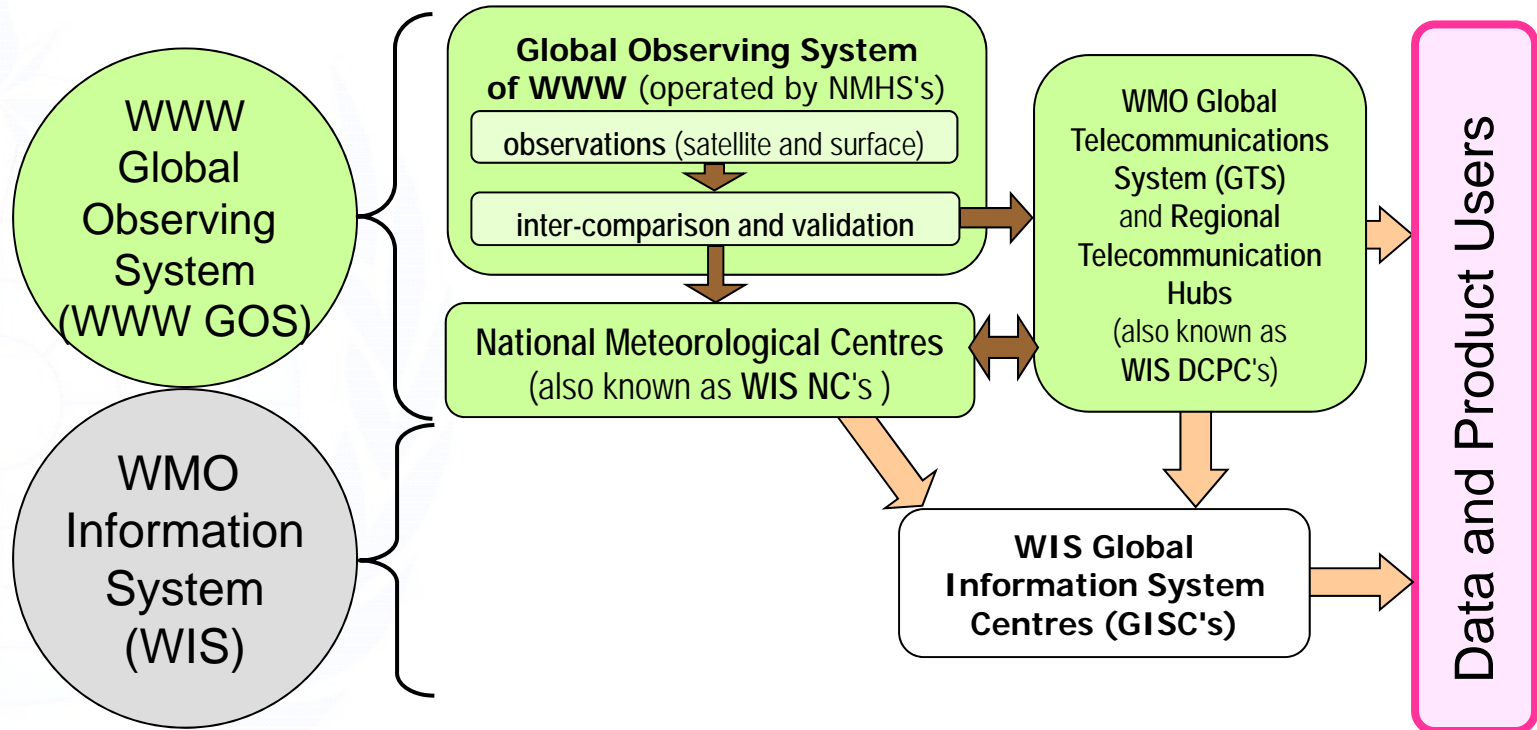# *Major Components and Services of WIS:* Interoperability and WIS Networking



National Centres (NCs)

Global Information System Centres (GISCs)

Data Collection or Production Centres (DCPCs)

Data and Product Users

**WMO OMM**
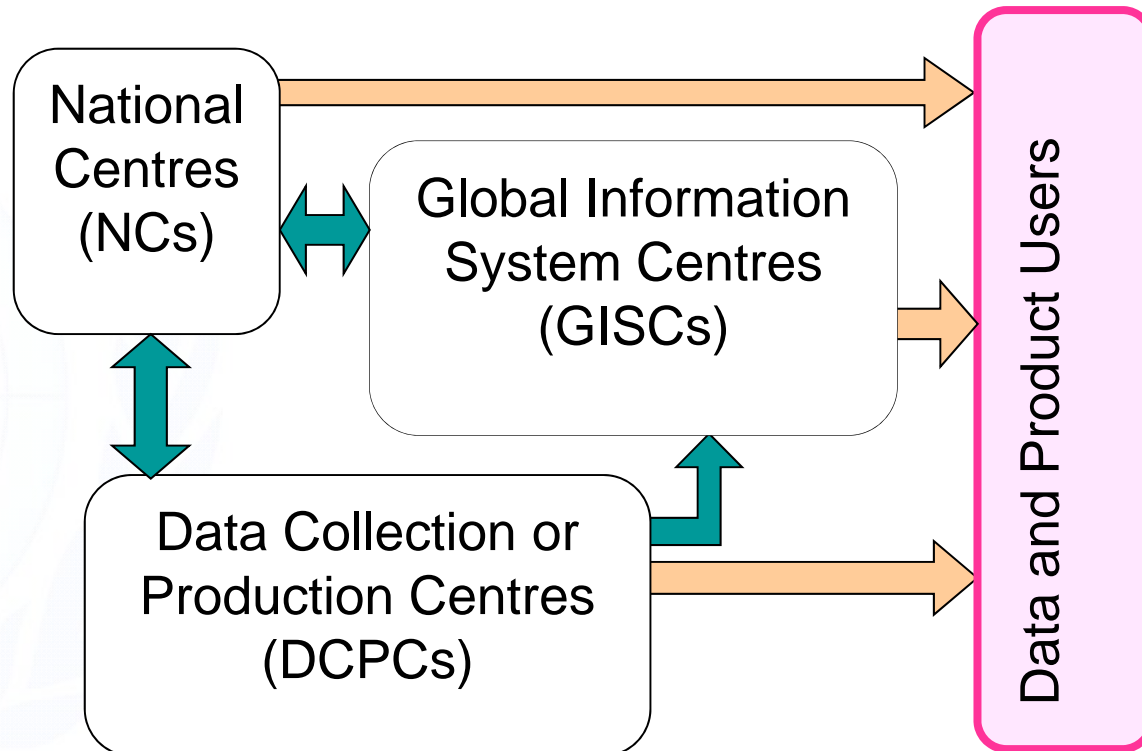
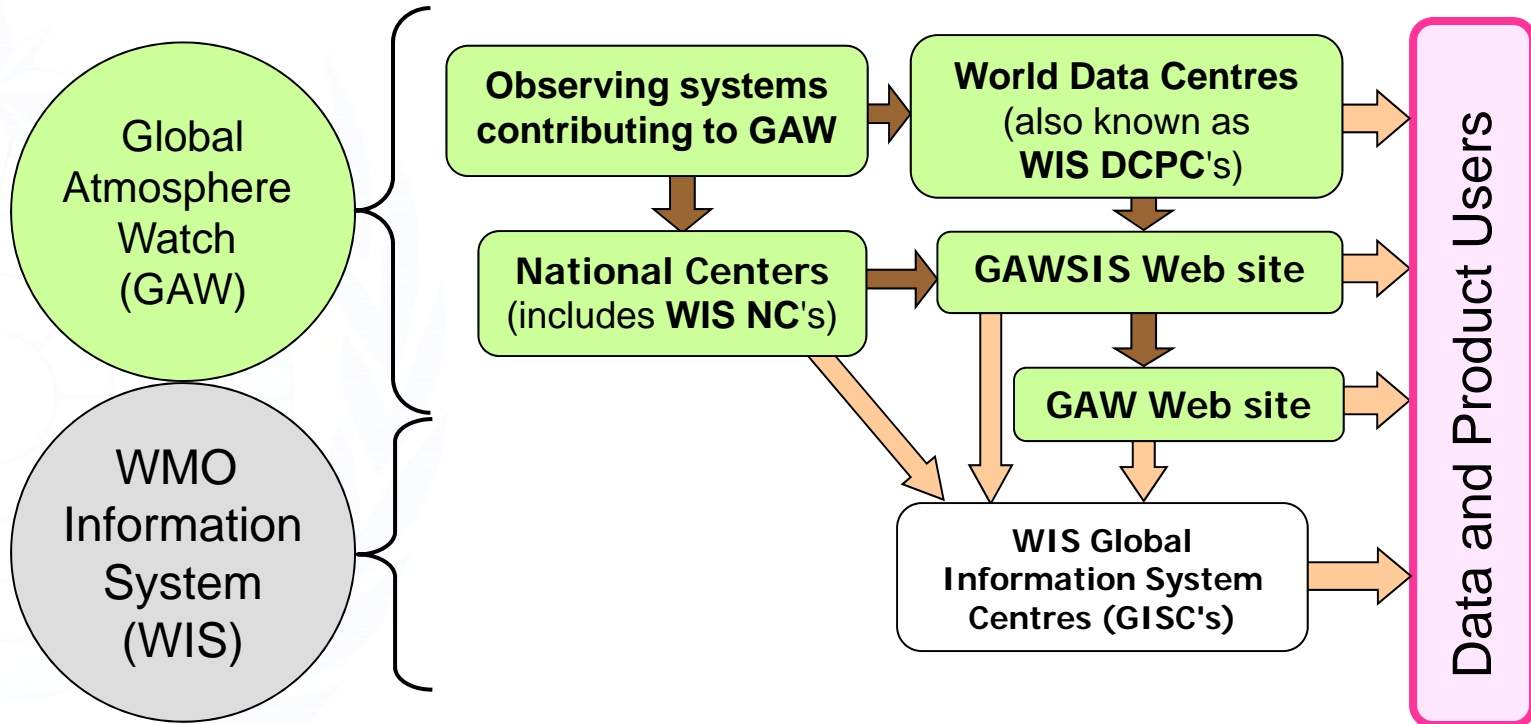# WIS, GEOSS, and Selected WMO Observing and Data Exchange Systems
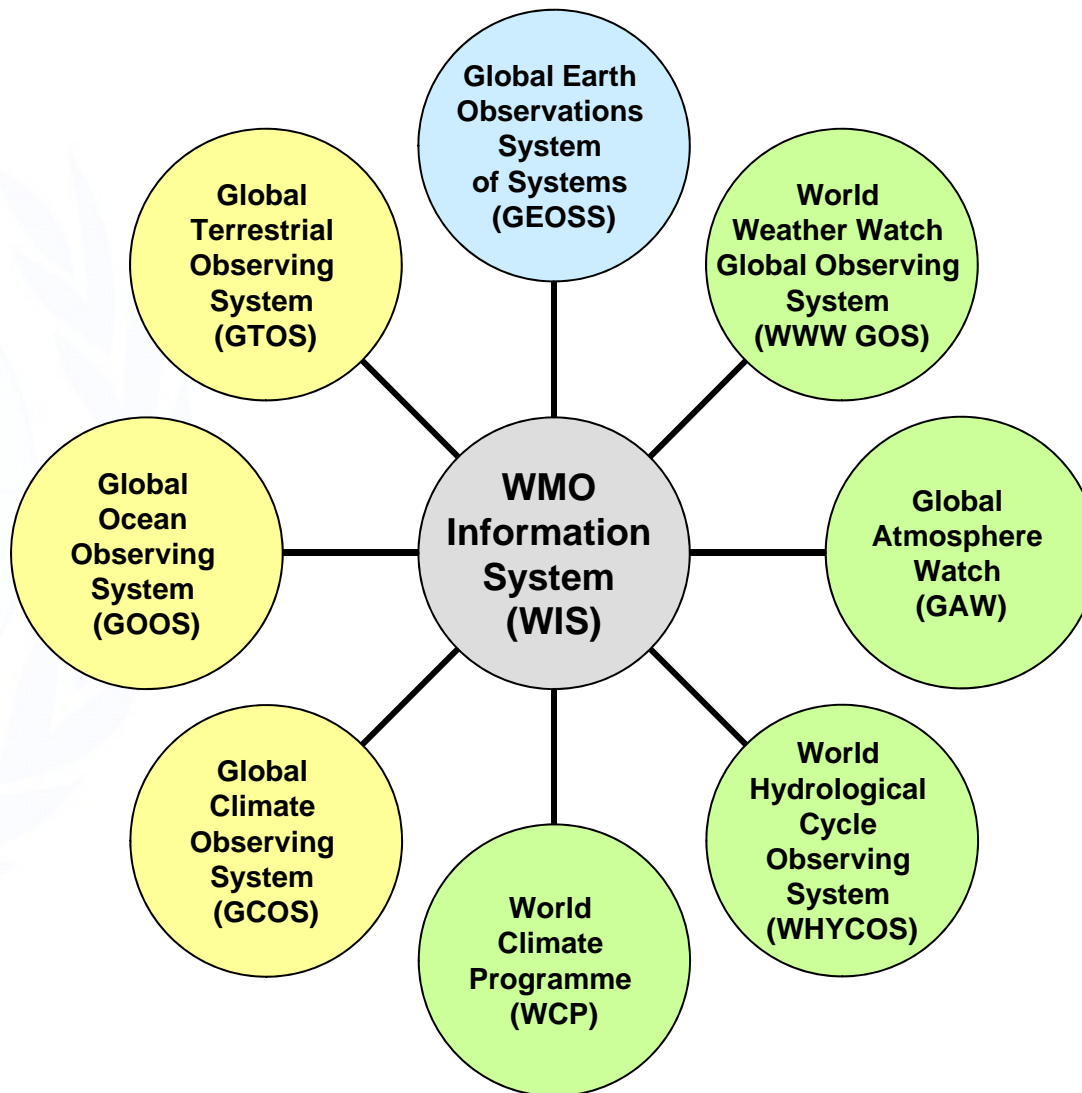
# Global Earth Observations System of Systems (GEOSS)
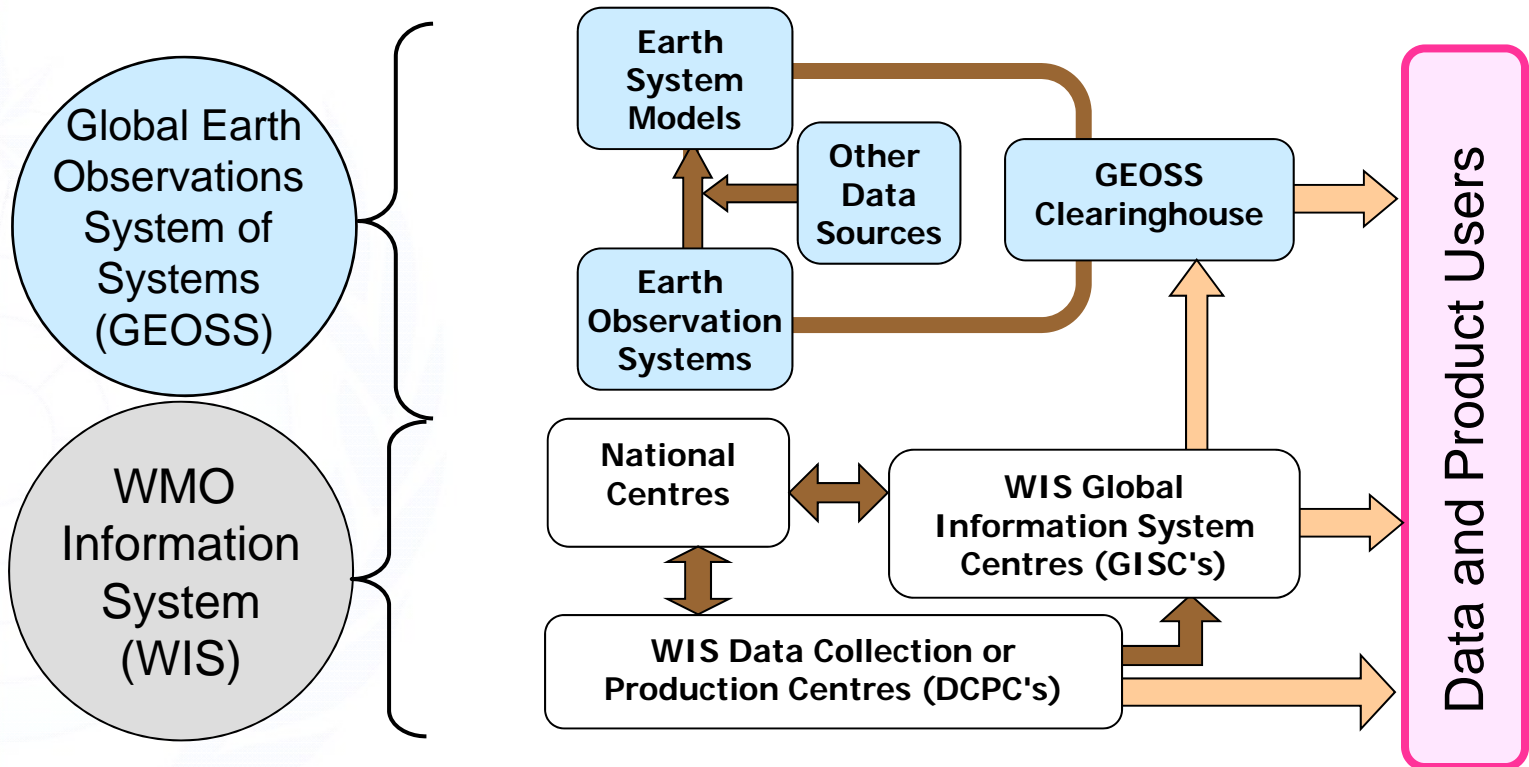
# World Weather Watch
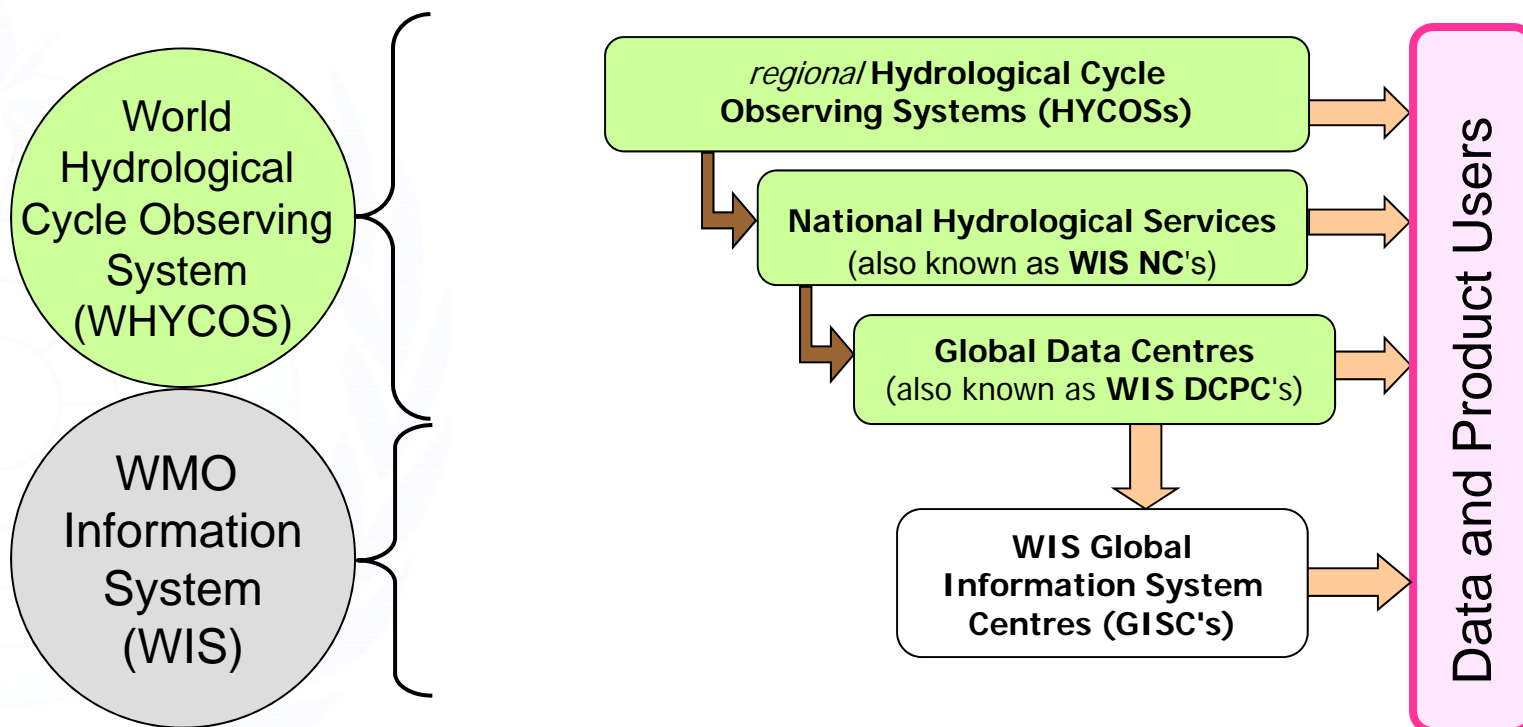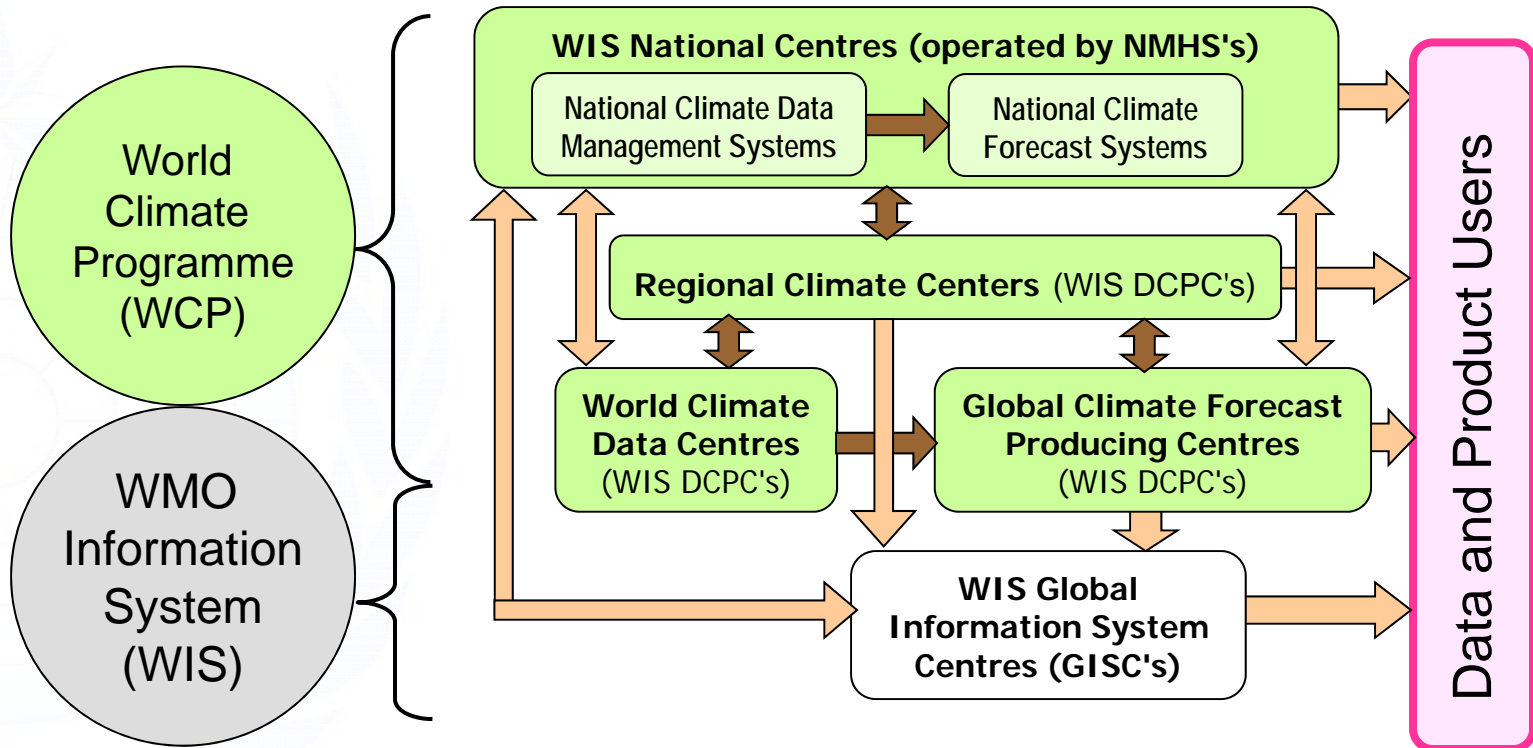# Global Observing System (WWW GOS)
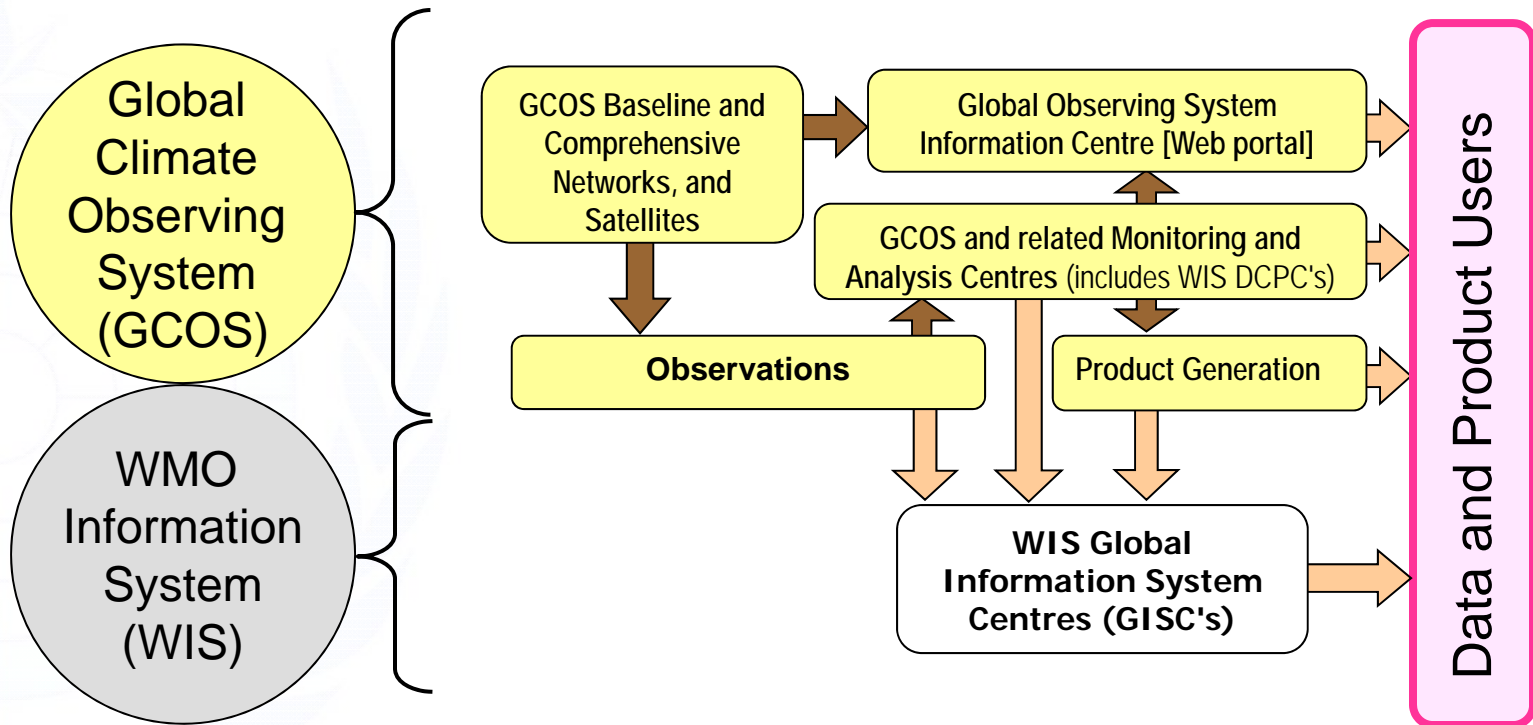
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# Global Atmosphere Watch (GAW)



**Global Atmosphere Watch (GAW)**

**WMO Information System (WIS)**

Observing systems contributing to GAW

World Data Centres (also known as **WIS DCPC**'s)

National Centers (includes **WIS NC**'s)

GAWSIS Web site

GAW Web site

WIS Global Information System Centres (GISC's)

Data and Product Users

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# World Hydrological Cycle Observing System (WHYCOS)

# World Climate Programme (WCP)



World Climate Programme (WCP)

WMO Information System (WIS)

**WIS National Centres (operated by NMHS's)**

National Climate Data Management Systems → National Climate Forecast Systems

**Regional Climate Centers** (WIS DCPC's)

**World Climate Data Centres** (WIS DCPC's)

**Global Climate Forecast Producing Centres** (WIS DCPC's)

**WIS Global Information System Centres (GISC's)**

Data and Product Users

# Global Climate Observing System (GCOS)

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# Global Ocean Observing System (GOOS)
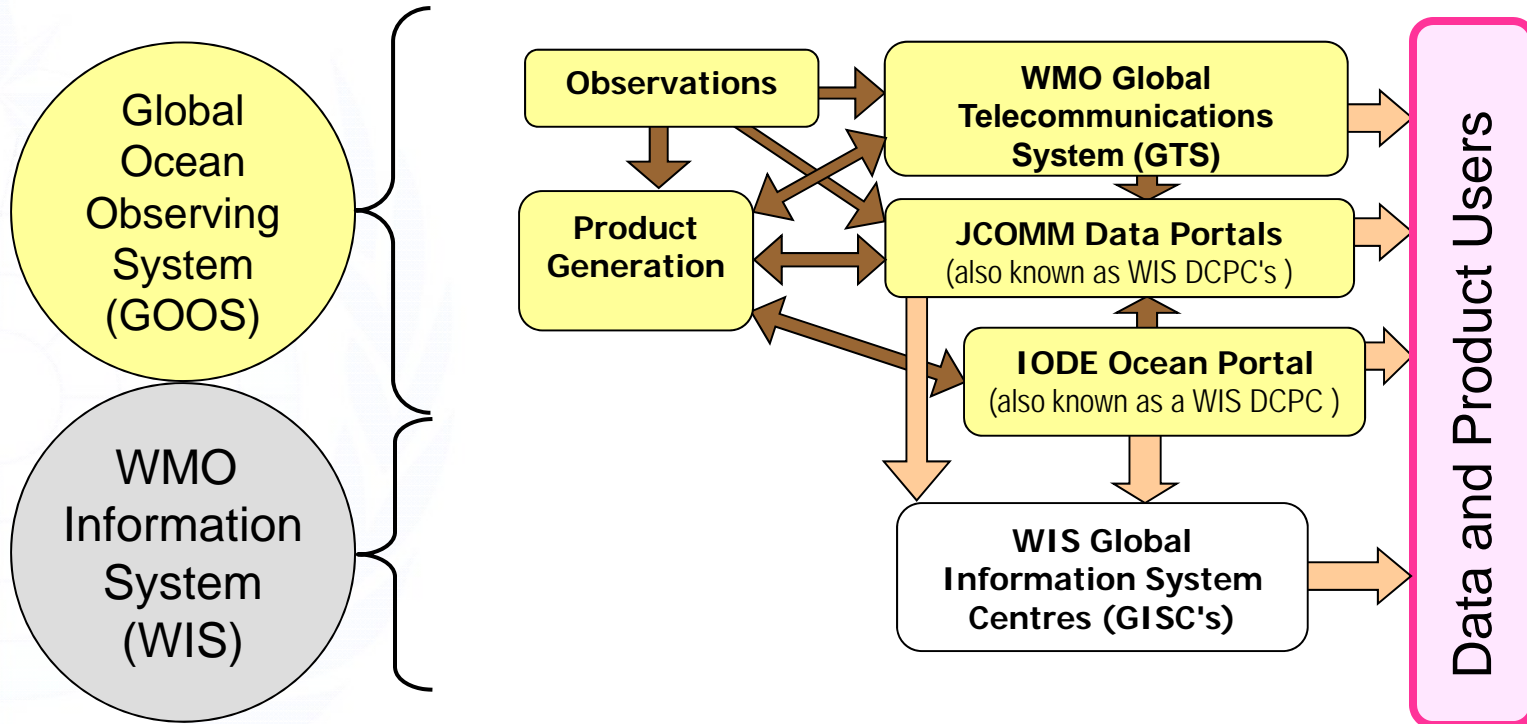
# Global Terrestrial Observing System (GTOS)

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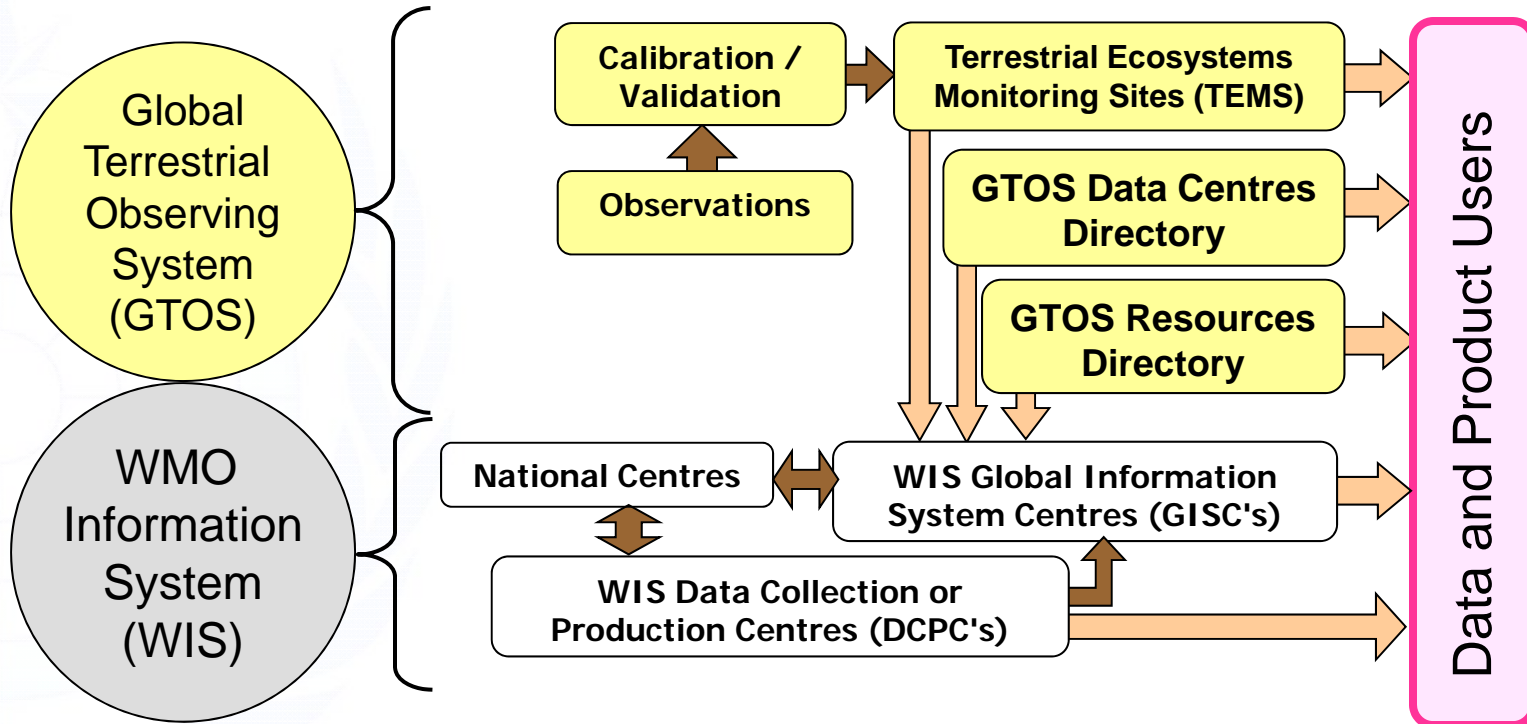
# *Major Components and Services of WIS:*
# Discovery, Access and Retrieval Catalogue
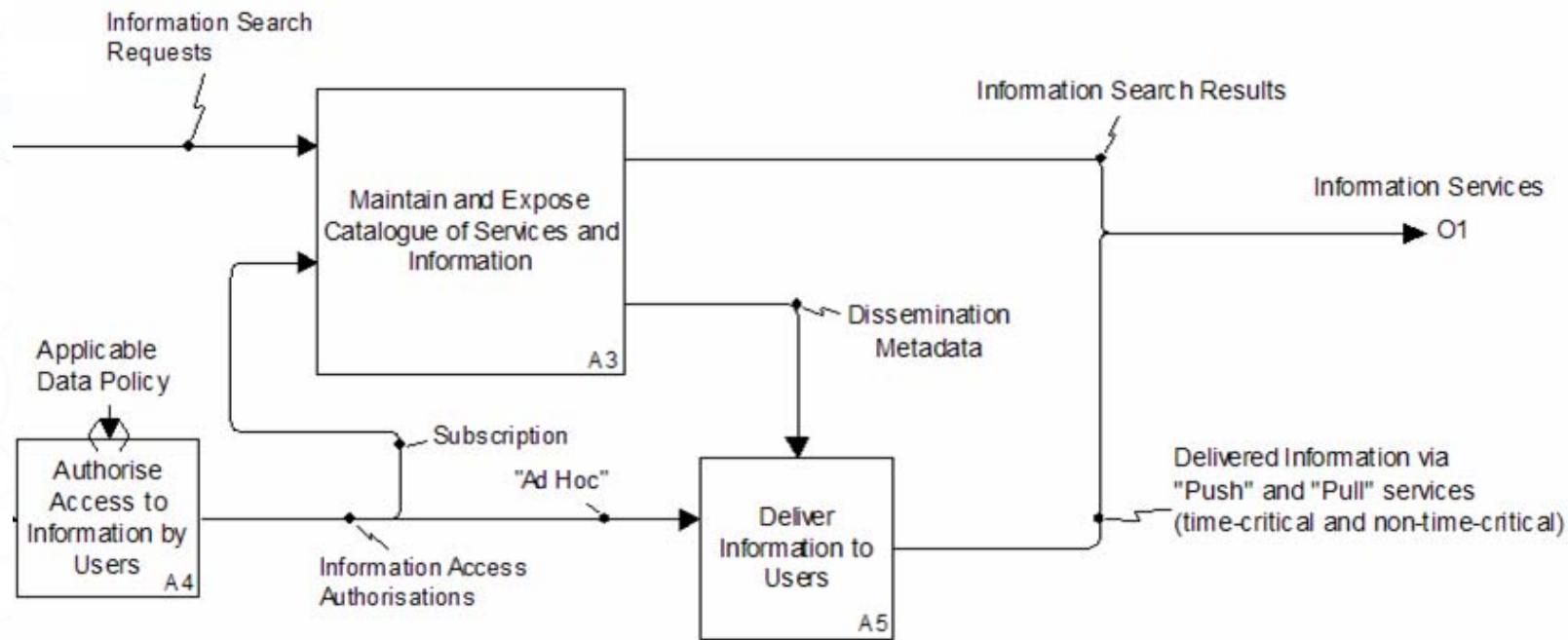
# *Standardized Interface Example:*
## Information Search and Retrieval (ISO 23950)

http://www.search.gov/gsdi/sru2kml.php?
operation=searchRetrieve&version=1.1&
  maximumRecords=100&recordSchema=XML&
  query=(geo.bounds within/partial/nwse
    "43.772 -101.411 31.7723 -77.7499") and
      (geo.keywords any "biologic ecologic")

latitude, longitude boundaries

terms, etc.

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# Standardized Metadata

- WMO adopted ISO 19115, an international standard for geospatial metadata content
- WMO Core Profile, version 1.1, provides cataloging rules for applying ISO 19115
- ISO 19139 defines an XML representation for ISO 19115 metadata

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```

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# Benefits of WIS

In addition to improving efficiency, WIS:

➢ Enhances collection of critical data

➢ Catalogs <u>all</u> WMO data and products

➢ Enhances availability of time-critical data and products at all national centres

➢ Opens up GTS to other types of data

➢ Exploits technology innovation

# WIS Reference Documents

**WIS Project & Implementation Plan (v1.1)**

**WIS Functional Architecture (v1.0)**

**WIS Compliance Specifications GISC, DCPC, NC ( v1.1)**

**Designation Procedures for GISCs and DCPCs**

[http://www.wmo.int/pages/prog/www/WIS/ref_docs_en.html](http://www.wmo.int/pages/prog/www/WIS/ref_docs_en.html)

# Questions?

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