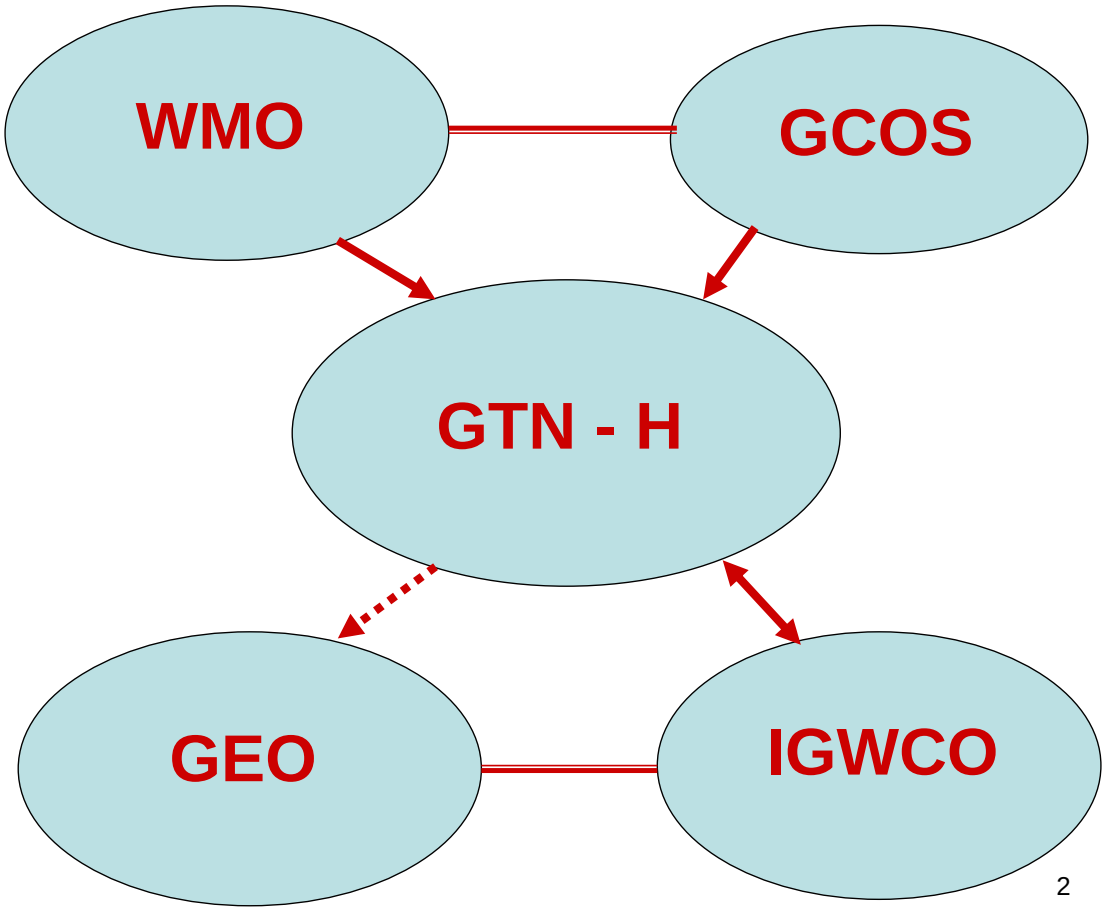
Global Terrestrial Network

HYDROLOGY (GTN–H)

Global Terrestrial Network – Hydrology



Global Terrestrial Network – Hydrology

Main Objectives

- Make available data from existing global hydrological observation networks and enhance their value through integration
- Generation of datasets suitable for:
  - Research in the areas of global and regional climate change
  - Environmental monitoring, and
  - Hydrology and water resource management

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WMO: Observations, Models, Data and Information

World Meteorological Organization

Weather • Climate • Water

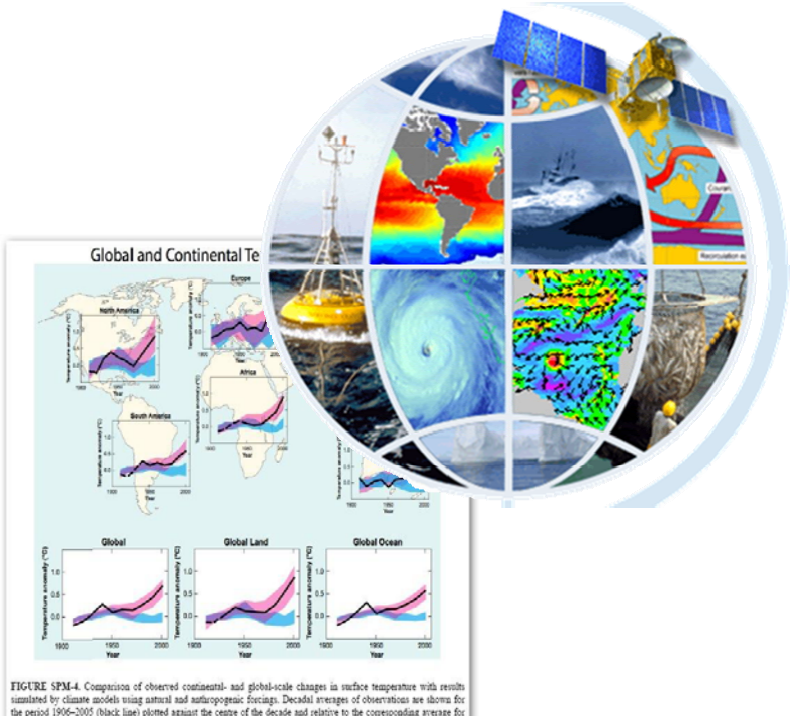


FIGURE SPM-4. Comparison of observed continental- and global-scale changes in surface temperature with results simulated by climate models using natural and anthropogenic forcings. Decadal averages of observations are shown for the period 1906–2005 (black line) plotted against the centre of the decade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

Global Terrestrial Network – Hydrology

WIGOS Purpose

To create a **specific structure**
(***organizational, programmatic, procedural and governance***)
that will provide:

- a single focus for the operational and management functions of all WMO Observing Systems and
- a mechanism for interactions with WMO co-sponsored observing systems.

Global Terrestrial Network – Hydrology

WIGOS Benefits

- Enable WMO Members to meet expanding national mandates to help them better respond to natural hazards, improve weather, water, climate and related environmental monitoring, and adapt to climate change;
- Enhance operational components of WMO Programmes, especially in Developing and LDCs;
- Ensure essential WMO support for the observational and information components of the future GFCS;
- Contribute strongly to GOOS, GTOS, GCOS and GEOSS.

Global Terrestrial Network – Hydrology

WIGOS – System of Systems

WIGOS must benefit society through enhanced availability and integration of global weather, climate and water observations contributed by constituent systems.

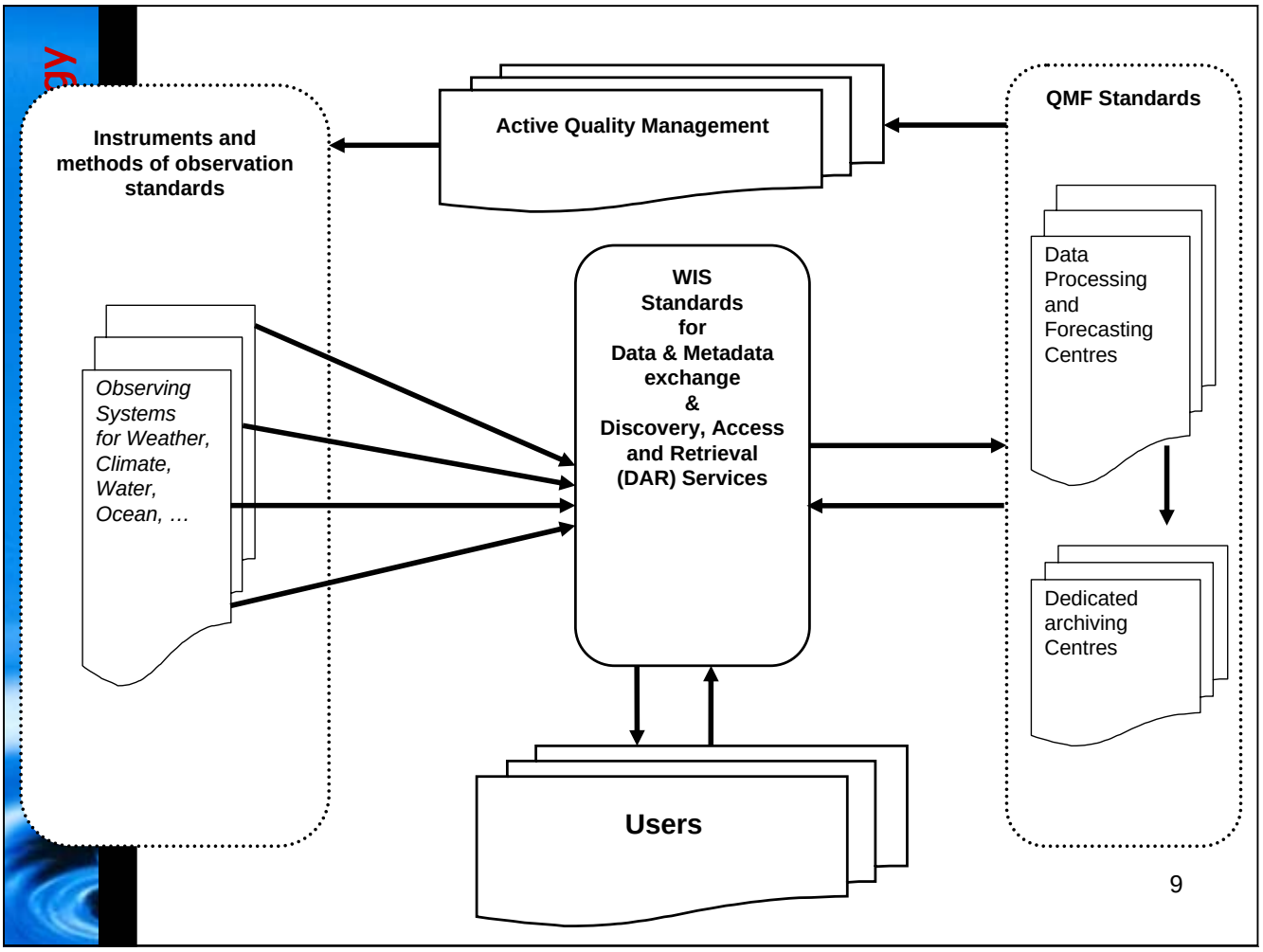
- WIGOS relies on a fully functional WIS not only to circulate data, but to facilitate data access and retrieval by partner organizations

- WIGOS and WIS working together should improve the Members' capability to provide a wide range of services, by making observations easier to use through better documentation, Metadata, and quality management

Global Terrestrial Network – Hydrology

WIGOS integration

- **Key requirements** for integration within WIGOS have now been expressed as **standardization in three key areas**:
  - **measurements and observations area** (homogeneity, interoperability, compatibility of all observations);
  - **WIS information infrastructure** (standardized set of WIS data representation and exchange requirements for all WMO Programmes & DAR services);
  - **end-product quality management** (QMS).



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Reasons for WIS

- Various WMO Programmes developing information systems independently
  - Incompatibilities, inefficiencies, duplication of effort and higher overall costs
- Continued systems development in an uncoordinated manner would:
  - Exacerbate these problems
  - Increase difficulty in sharing information between programmes
  - Further isolate WMO Programmes from each other and from wider environmental community

WIS brings new features and opportunities

- Common information exchange standards, functions and services for all WMO programmes
- Inter-disciplinary discovery, retrieval and exchange of information in real-time and non-real time
- Inter-operability through on-line catalogues using metadata based on ISO 19100 (geographic information standard)
- Industry standards and off-the-shelf hardware and software systems to ensure cost-effectiveness and compatibility

Structure of WIS

Functional centres interconnected by data communication networks:

- **National Centres (NC)**
  - Links national data providers and users to regional and global data exchange nodes, and administrates access to WIS
- **Data Collection and Production Centres (DCPC)**
  - Provides for regional and international exchange of WMO programmes' data and products
  - Supports data and information push and pull
- **Global Information System Centres (GISC)**
  - Provides for global exchange of data and products
  - Collects and provides metadata for all data and products
  - Supports data and information discovery and pull

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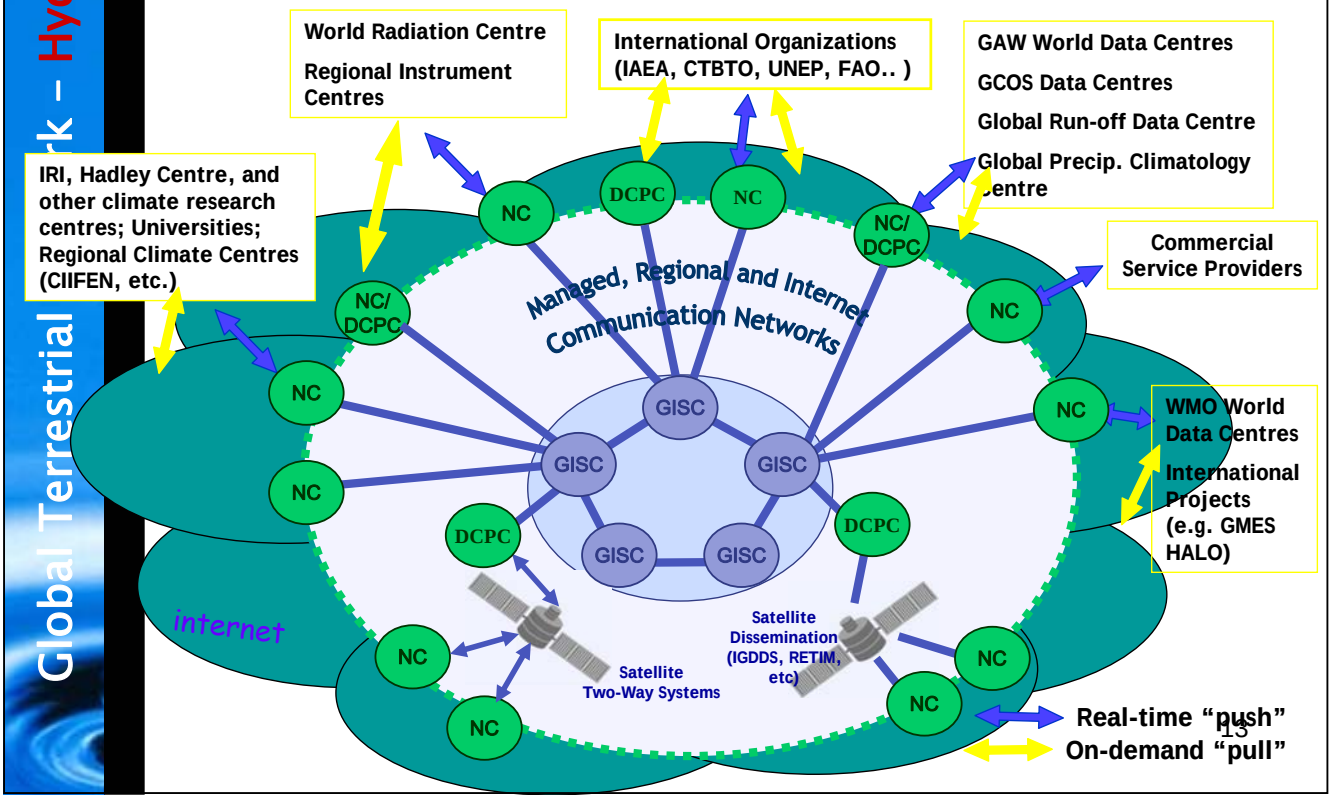
WIS



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WMO Core Profile of the ISO Metadata standards

Version 1.1 including WMO's extensions to code lists

- UML representation:
  http://wis.wmo.int/2008/metadata/draft_version_1-1/WMOCore_ver1_1_UML_20081030.pdf
- Code list:
  http://wis.wmo.int/2008/metadata/draft_version_1-1/WMOCodeLists_ver1_1.pdf

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Evolution of the WMO Core Profile

Development of a WMO core profile of the ISO 19100 series of standards for metadata and data, including:

- Feature catalogues
- Metadata schemas
- Application schemas

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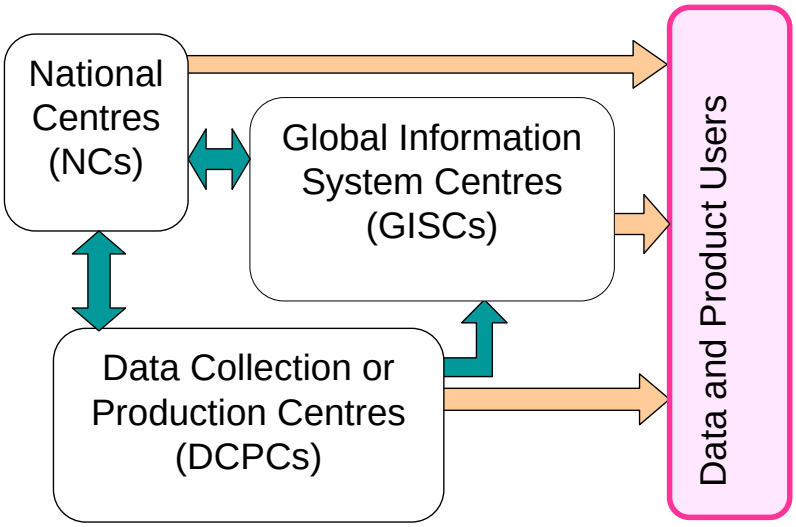
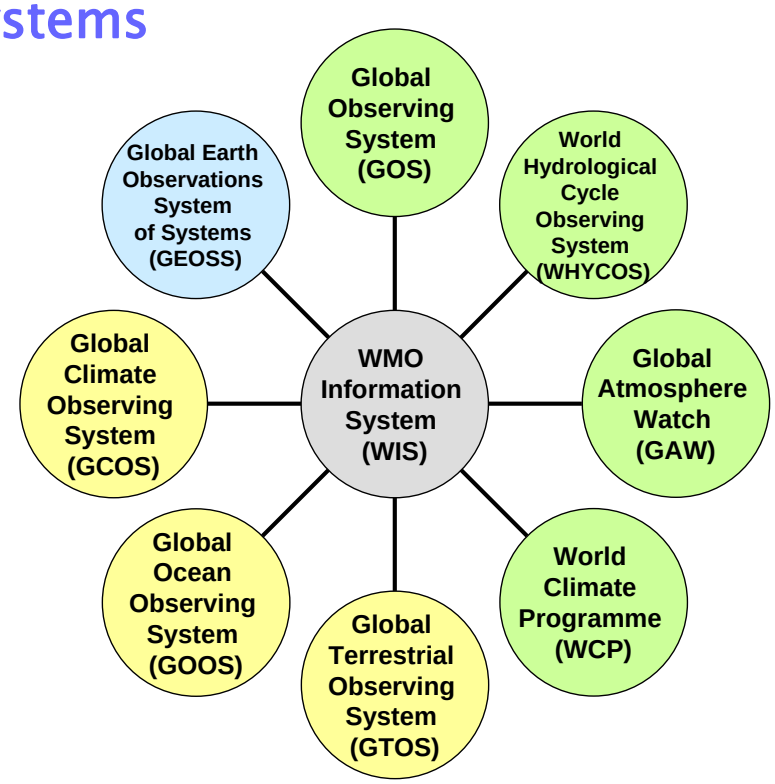
Interoperability and WIS Networking



WIS and Selected WMO Observing and Data Exchange Systems



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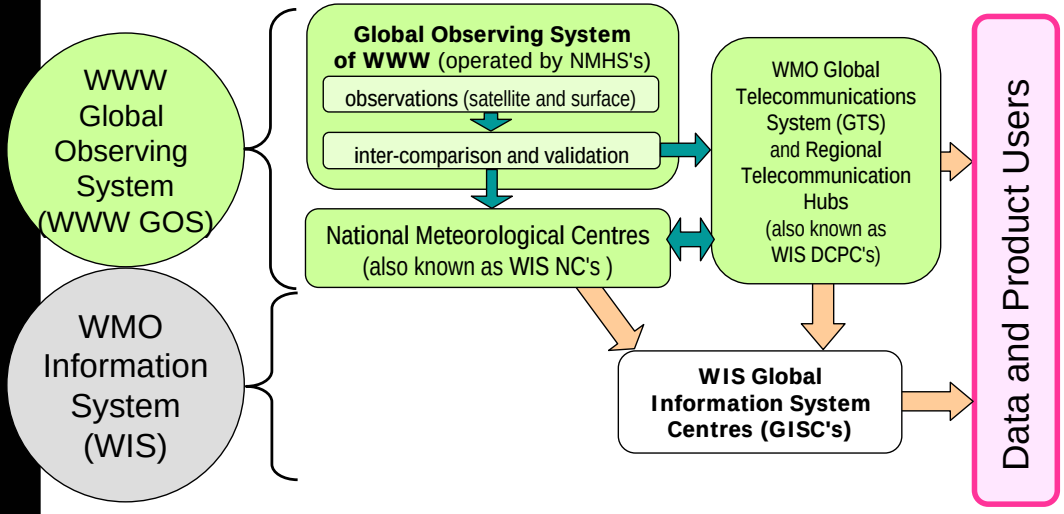
Global Observing System (GOS)



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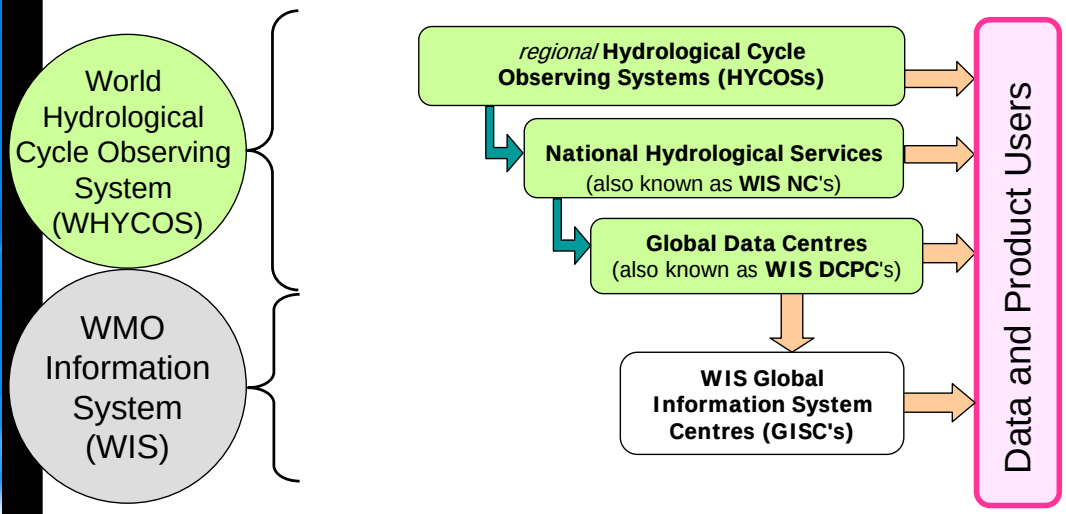
World Hydrological Cycle Observing System (WHYCOS)



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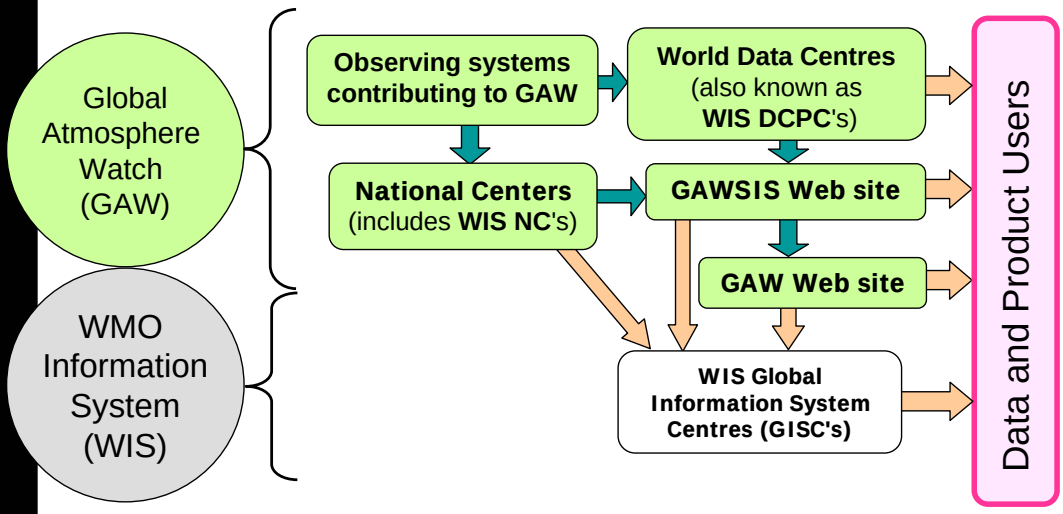
Global Atmosphere Watch (GAW)



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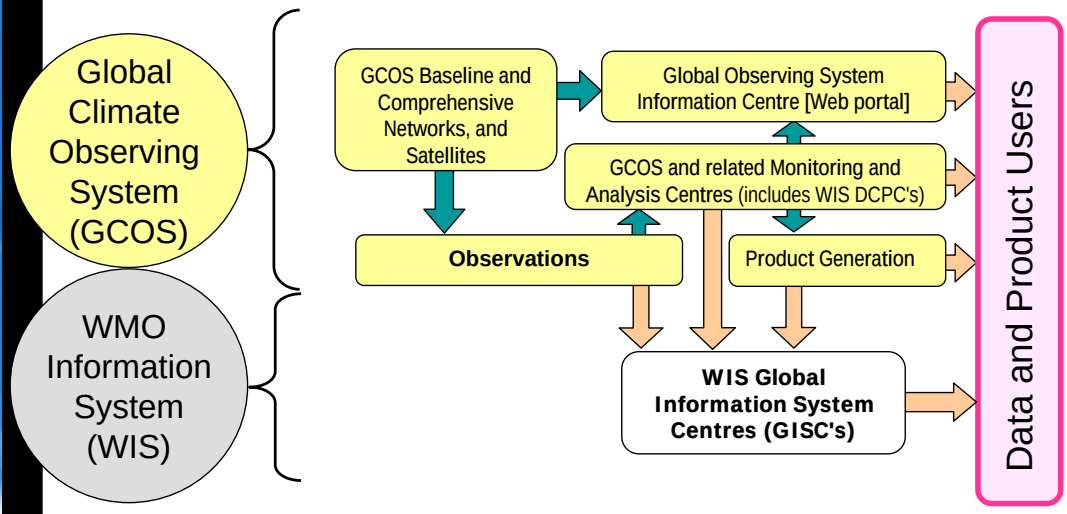
Global Climate Observing System (GCOS)



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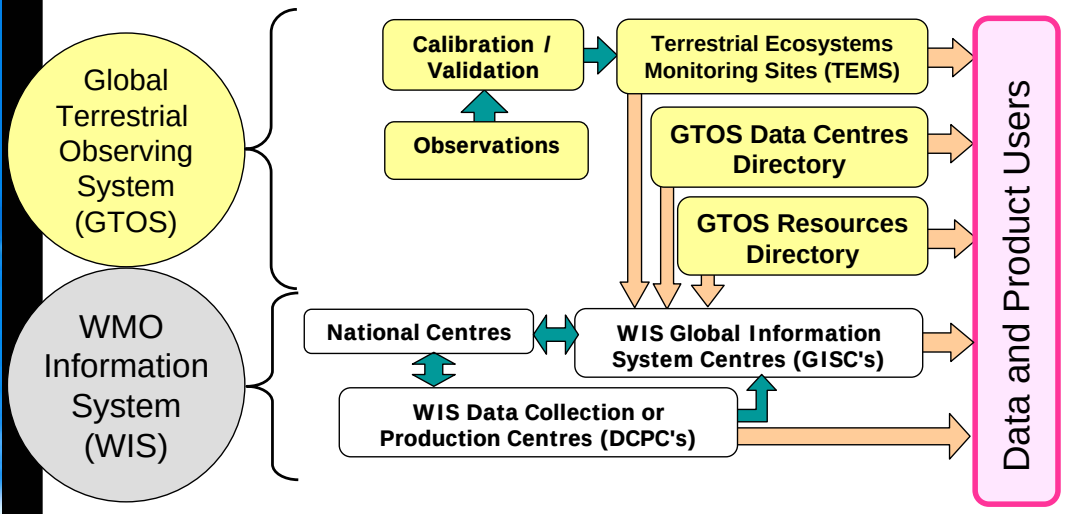
Global Terrestrial Observing System (GTOS)



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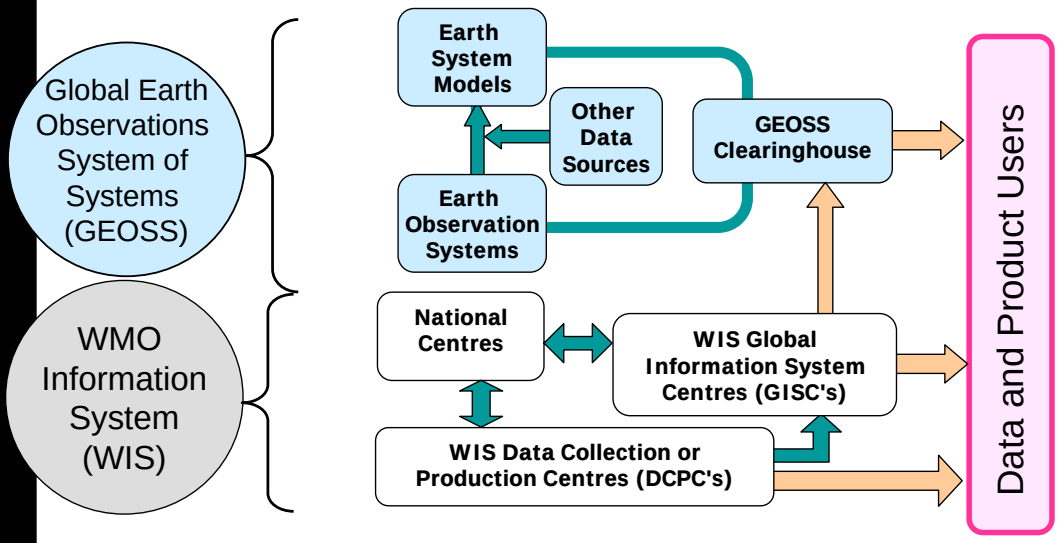
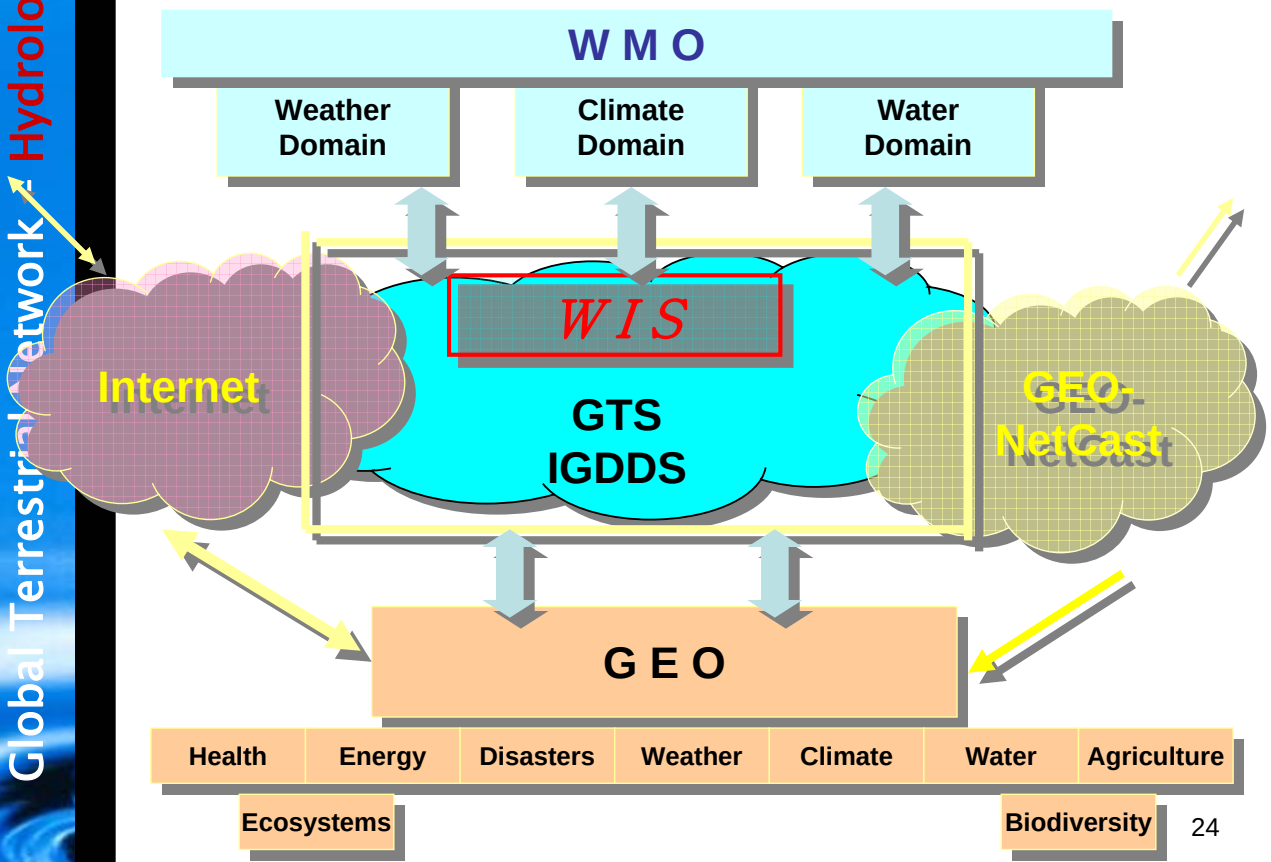
Global Earth Observations System of Systems (GEOSS)



Global Terrestrial Network – Hydrology

WIS contribution to GEO

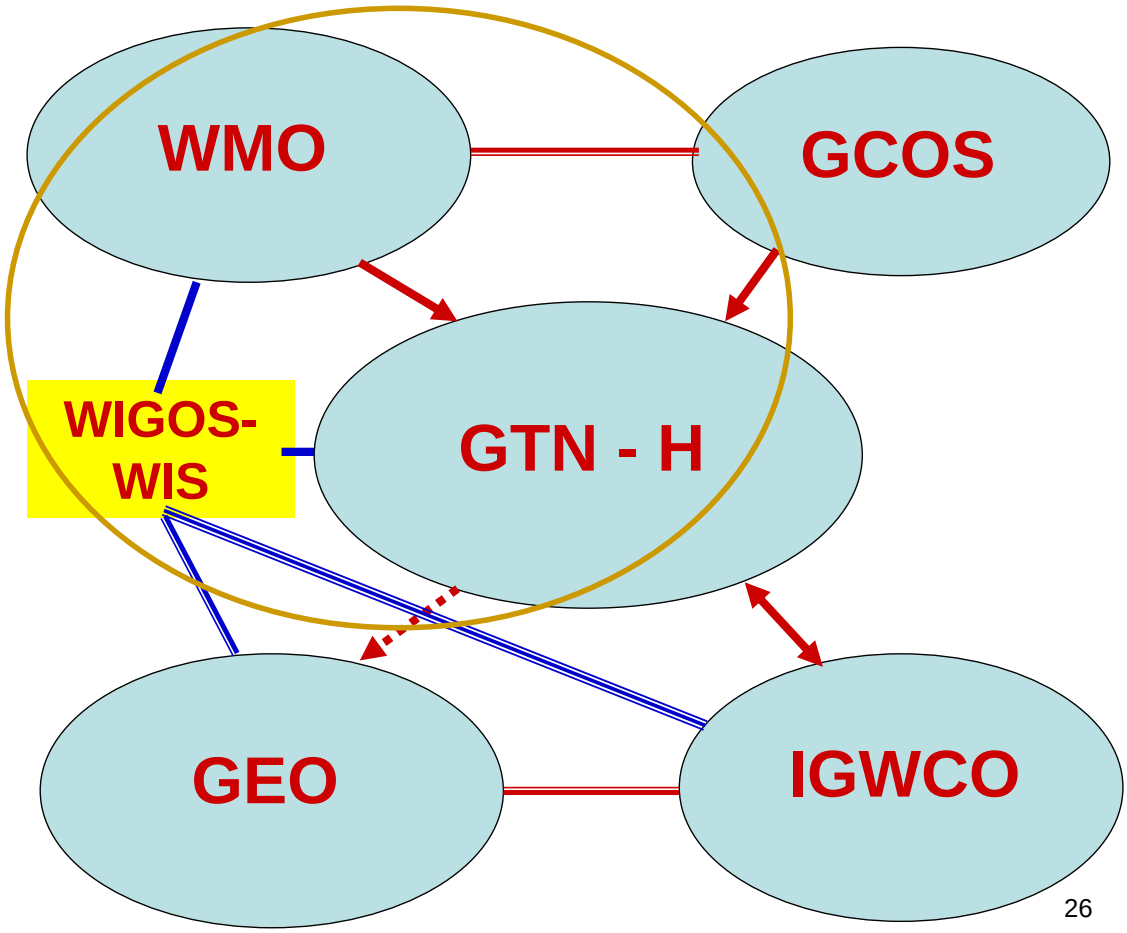


WIGOS – WIS contribution to GEO

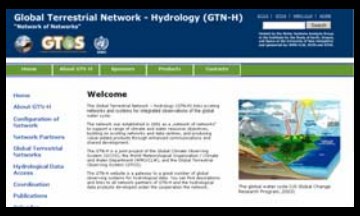
- WIGOS-WIS implementation contributes to GEO and from there Societal Benefit Areas including IGWCO:

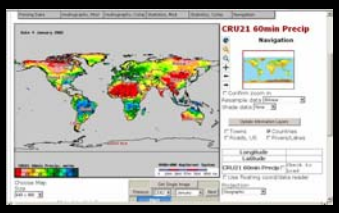
- As IGWCO's Observation component is represented by GTN-H, WIGOS-WIS has direct impact on GTN-H further development and operation.
- Note that GTN-H contributes directly to development of WIS in support of WIGOS !

Global Terrestrial Network – Hydrology



Thank You !


Global Terrestrial Network - Hydrology (GTN-H)
GTOS
Welcome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Navigation

GRDC
National & Background Information