




A GLOBAL DATA EXCHANGE PERSPECTIVE

Data exchange

- **(Availability and quality)**
- **Policy**
- **Technology**
- **Dissemination**
 - **Experts and forecasters**
 - **End users**

WMO Data Exchange Policy



Committed to broadening and enhancing, whenever possible, the free and unrestricted international exchange of hydrological data and products, in consonance with the requirements for WMO's scientific and technical programmes

Policy background

- WMO mandate to:
 - Facilitate worldwide cooperation in the establishment of observing networks
 - Promote the establishment of systems for the rapid exchange of information
- Need for exchange of scientific data and access to systematic observation
- Need for exchange of data in support international convention (UNFCCC, UNCCD)
- Need to exchange on a regular basis available data and information and related forecasts on the state of a watercourse

WMO resolutions 40 and 25

- Res. 40 (Cg-XII) - WMO policy and practice for the exchange of meteorological and related data and products.

“Members shall provide on a free and unrestricted basis essential data and products which are **necessary for the provision of services in support of the protection of life and property and the well being of all the nations...**”

- Res 25 (Cg-XIII) - Exchange of hydrological data and products.

“Members shall provide on a free and unrestricted basis those hydrological data and products which are **necessary for the provision of services in support of the protection of life and property and the well being of all the nations...**”

WMO resolutions 40 and 25

- Members should also provide:
 - Additional data and product for WMO programmes and projects and for the provision of other services;
 - Free and unrestricted access to data and products to the research and education communities;
- Members have the right to put conditions on the re-export, for commercial purposes of data and products;

The practice (i)

- Constant monitoring and review by WMO governing bodies (CBS, Executive Council)
- Exchange of hydrological data and products is a vital requirement to reduce flood losses, maximize successful river management and support hydrological studies, particularly those on global change

The practice (ii)

- Minimum set of data
- Guidelines for relations among NMS
- Guidelines for relations between NMS and commercial sector

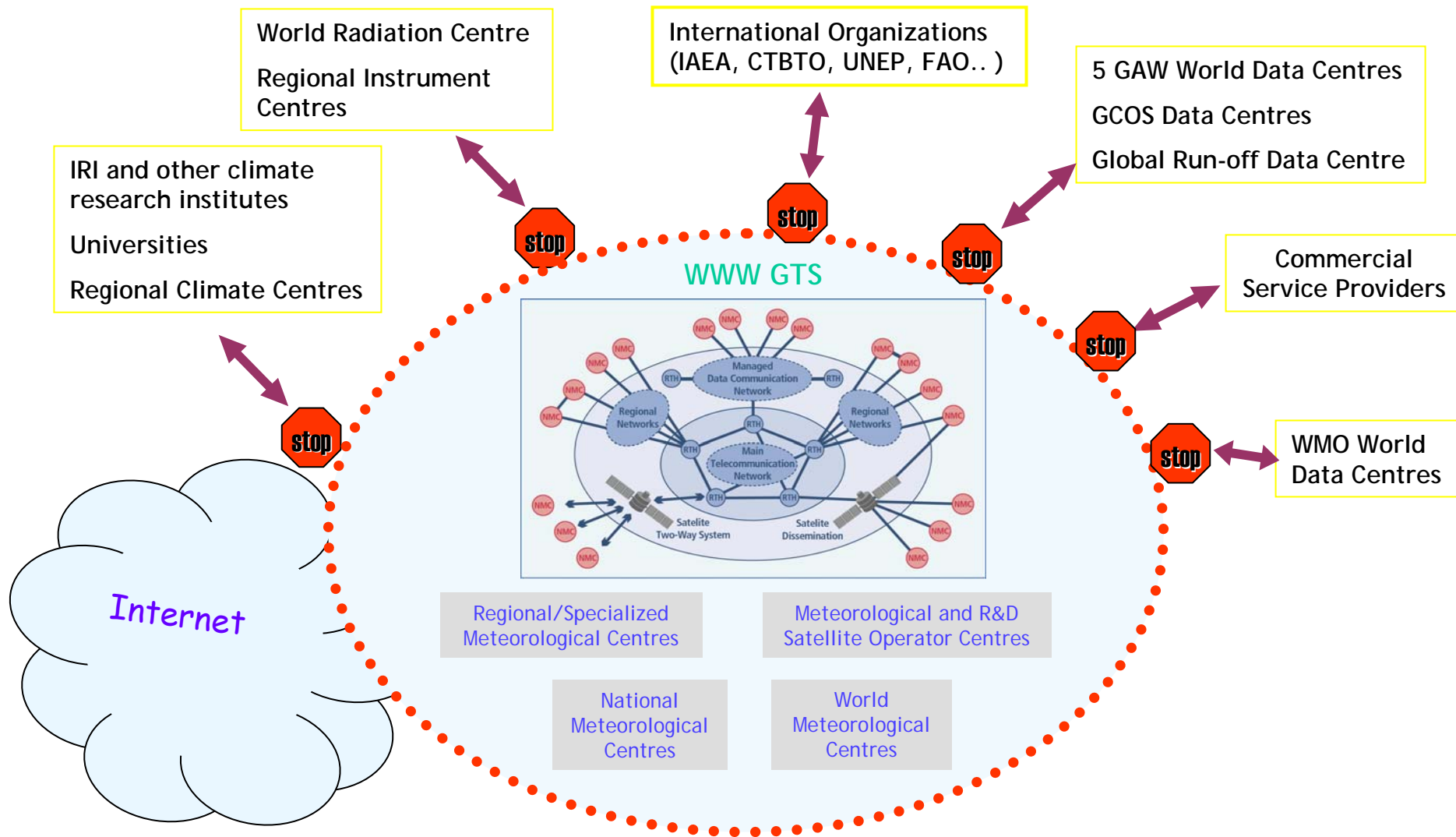
The practice (iii)

- 39% no requirement for exchange of data and products;
- 59% dissatisfied with the exchange at the international level;
- 47% place restrictions on international exchange;
- Mostly non-on-real time or historical data. .
- Water levels in rivers and dams, discharge or flow data and precipitation.
- 20% provide flood forecasts, ice jams or alerts on water quality or pollution events.

Current situation

Information exchange – **multiplicity of procedures**; real-time and non-real time; push & pull

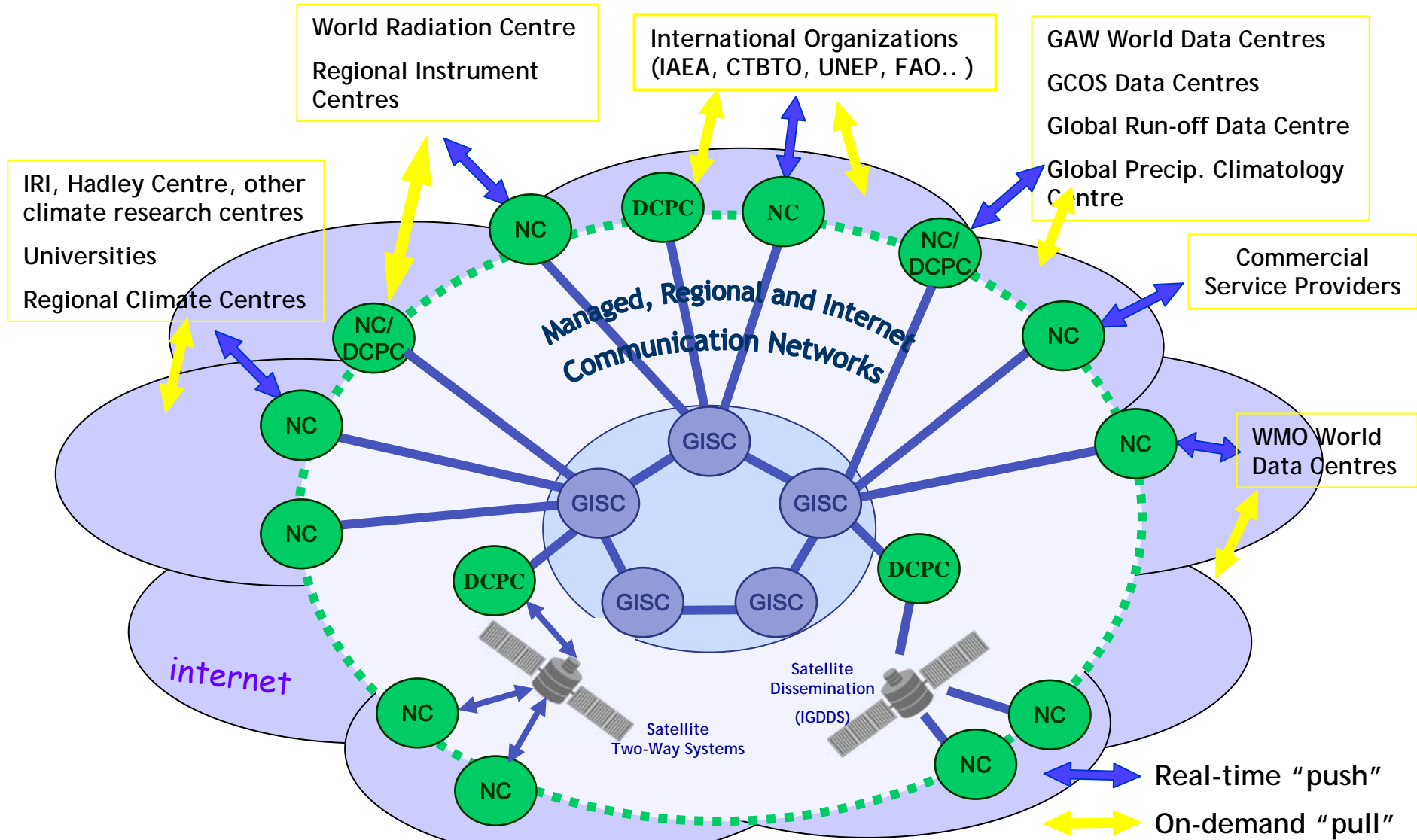
Information management – **multiplicity of data formats**; few and uncoordinated metadata catalogues



WIS

Information exchange – **common procedures**; real-time and non-real time services

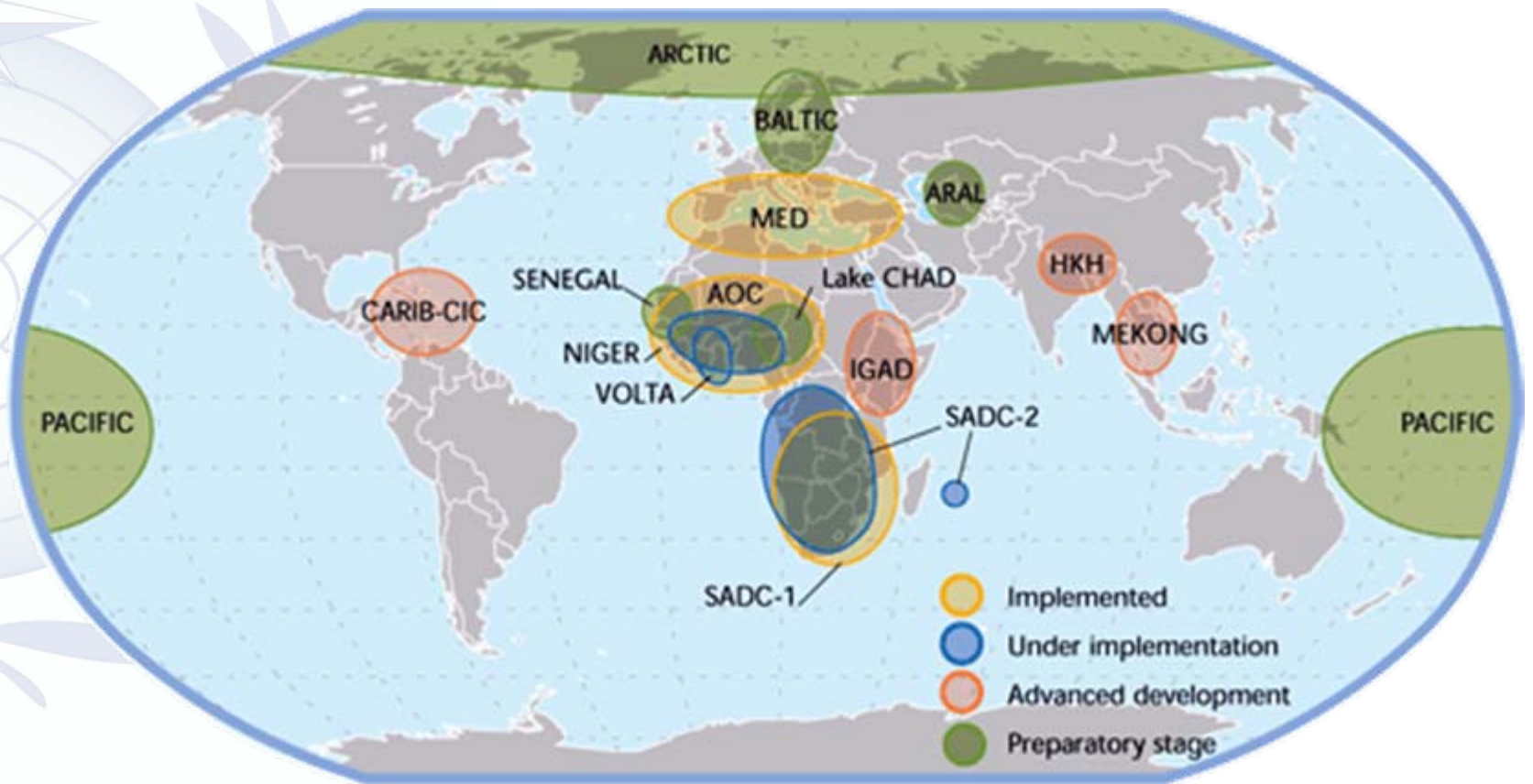
Information management – **few standard data formats**; **coordinated metadata & catalogues**



WIS brings new features and opportunities

- Interoperable information exchange standards, functions and services through Portal architecture allowing a variety of codes, protocols, and data representation forms
- Inter-disciplinary discovery, retrieval and exchange of information in real and non-real time through a single entry point in each country
- Open to all users for data discovery, to authorized users for data access (according to national data policies)
- Data are described in on-line catalogues using metadata based on ISO 19139
- Industry standards and off-the-shelf hardware and software systems to ensure cost-effectiveness and inter-operability

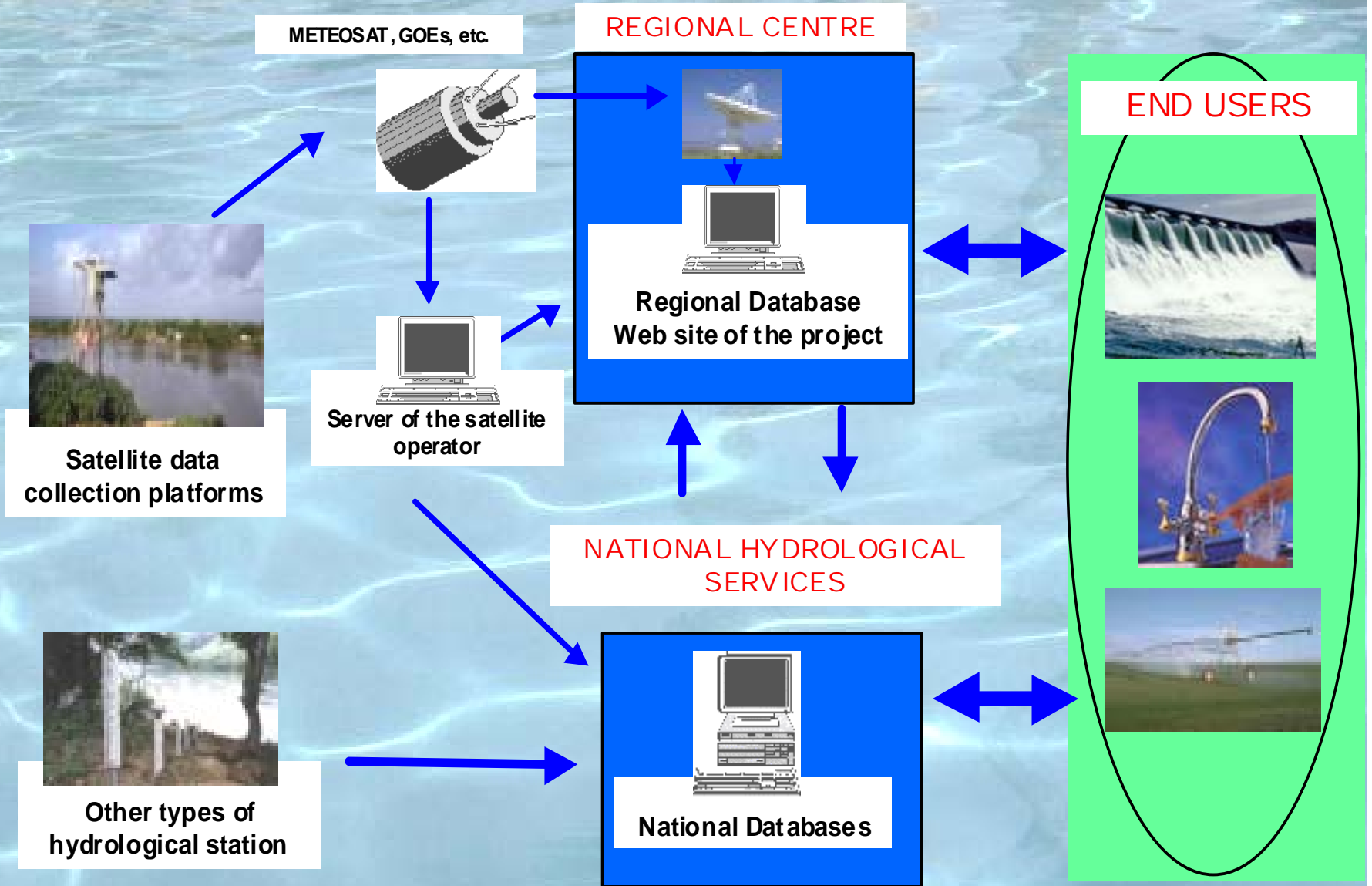
WHYCOS



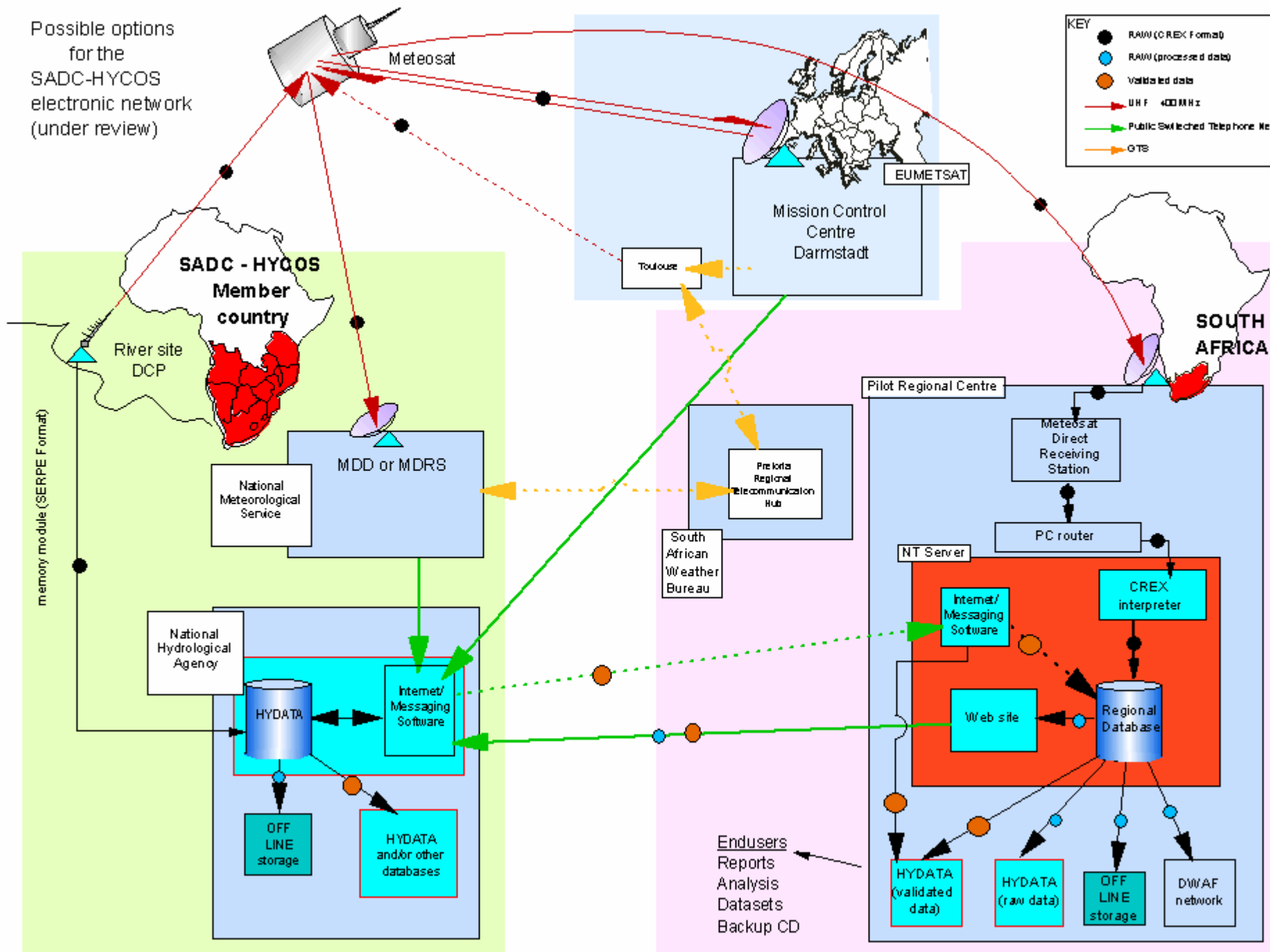
Key components of Regional Hydrological Information Systems

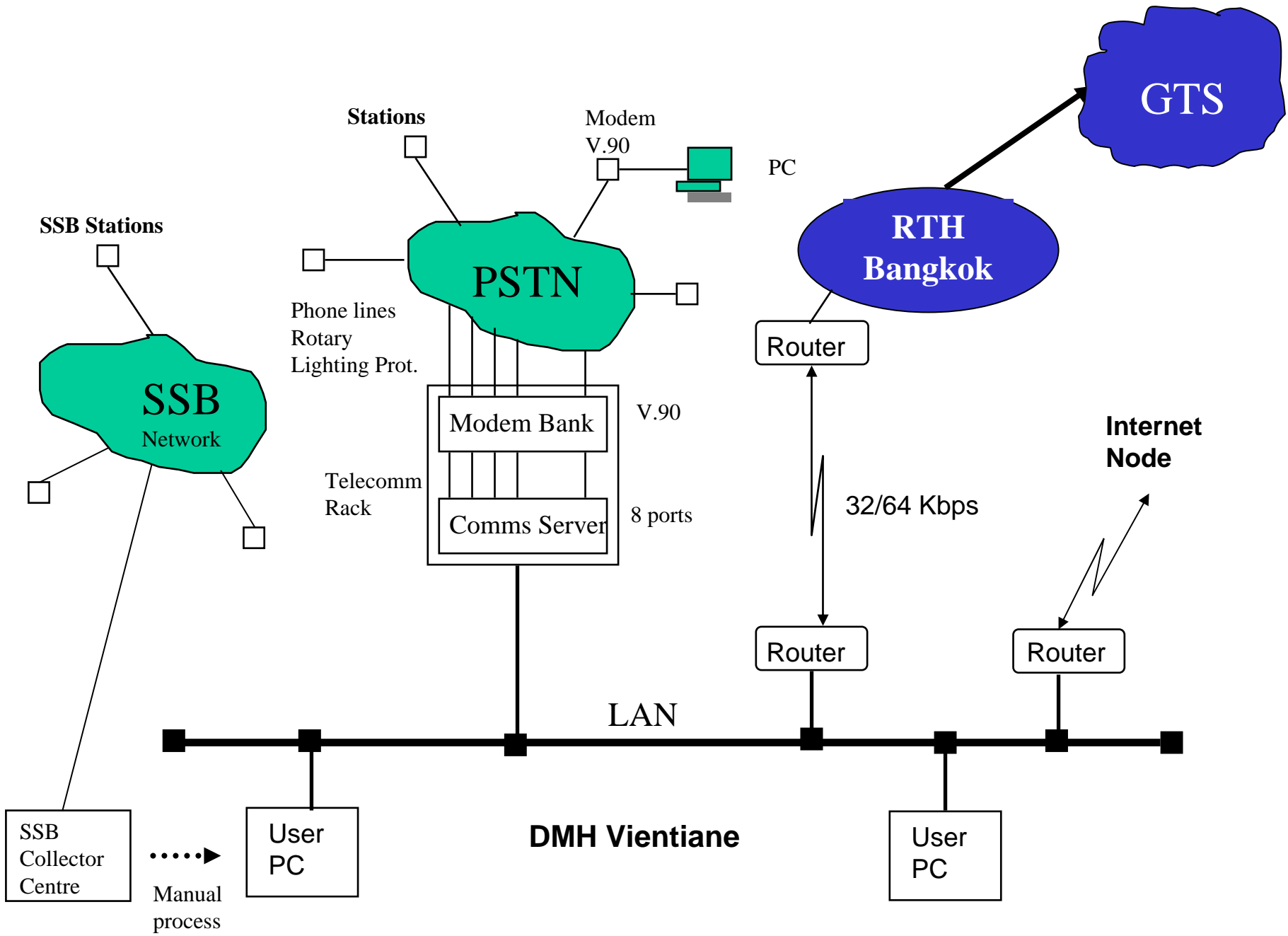
- Enhanced existing field data collection systems and installation of new facilities where necessary
- Upgraded national data processing and archiving systems.
- Establishment of a regional data and information base
- Establishment of a Regional Telecommunication Network (RTN) on flood-related information
- Preparation and dissemination of hydrological information of national and regional interest

Flow of hydrological data and information within a HYCOS regional project



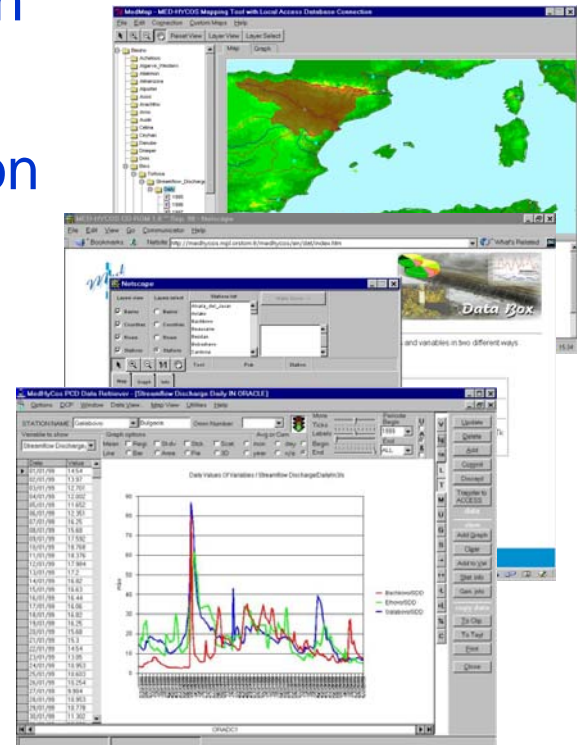
Possible options
for the
SADC-HYCOS
electronic network
(under review)





WHYCOS and data exchange

- Countries are the owners of the data they generate
- NHSs are responsible for data validation
- Agreement to share data and information within HYCOS project
- Establishment of Hydrological Information Systems
- Access to data using Internet and other data transmission technologies
- Cooperation with international data centres and programmes (GRDC, GPCC)



Experienced difficulties in data processing

- Different formats and protocols
- Quality management
- Limited metadata
- Data inconsistency
- Inconsistent coding
- Outliers in data itself
- Database management systems

Important strategic considerations

- Inter-country cooperation on water resources management;
- Flood related issues to be addressed at the regional scale;
- Availability of real-time hydrological and meteorological data.

Flood Forecast Information Requirements


- Quantitative precipitation forecast (qpf)
- Real time rainfall data
- Real time water level data
- Transmission of real time data
- Discharge data
- Morphological data
- Numerical model for flood forecast
- Effective dissemination of flood information up to community level

Improved Meteorological and Hydrological Forecasting for Flood Situations

Problem Statement:

- Many meteorological and hydrological services do not presently have adequate means or the knowledge to provide extended forecasting services in flood critical situations and to communicate effectively with disaster management authorities

Current weakness

- 
- Meteorological forecasts not usable for hydrological forecast
 - Qualitative and not risk qualified
 - Limited use of NWP
 - Inconsistency of data formats and transmission protocols
 - “Communication gap”
 - Not user-oriented

Communication gap

- **Between meteorological and hydrological services**
- **Between forecasters and forecast users**
- **The Flood Forecasting Initiative**

Flood warning

- Reach as many people as possible in the affected area
- Success depends on:
 - Coverage
 - Reliability
 - Dissemination
 - Reaction
 - Effectiveness of the reaction

Warning dissemination

- Clearly defined responsibilities
- Access to media
- Legal responsibilities
- Limitation of forecasts



Thank you

