

# **GRDC**

## **Global Runoff Data Centre**

**Facilitator between Runoff Data Providers and Data Users**

### **Second UN-SPIDER Workshop**

### **“Disaster Management and Space Technology – Bridging the Gap”**

**13–15 October 2008**

**Bonn, Germany**

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## GRDC

... the world-wide repository for river discharge data and associated metadata

...in support of Global Change Research and Integrated Water Resources Management.

Operates under the auspices of the

World Meteorological Organisation (WMO)



on the advice of an

International Steering Committee

with the financial support of the

Federal Republic of Germany



within the

Federal Institute of Hydrology



# GRDC Main functions



- Acquisition and storage of global historical and near real-time discharge data and associated metadata
- Dissemination of currently mainly historical discharge data and derived products from 7332 stations in 156 countries (“One-stop shop”)
- Support to the water and climate related programmes and projects of the United Nations and their specialised agencies
- Service to the international research community on global change
- Cooperation and participation in international projects and programmes such as:
  - GCOS (Global Climate Observing System)
  - GTOS (Global Terrestrial Observing System)
  - GEO (Group on Earth Observations)

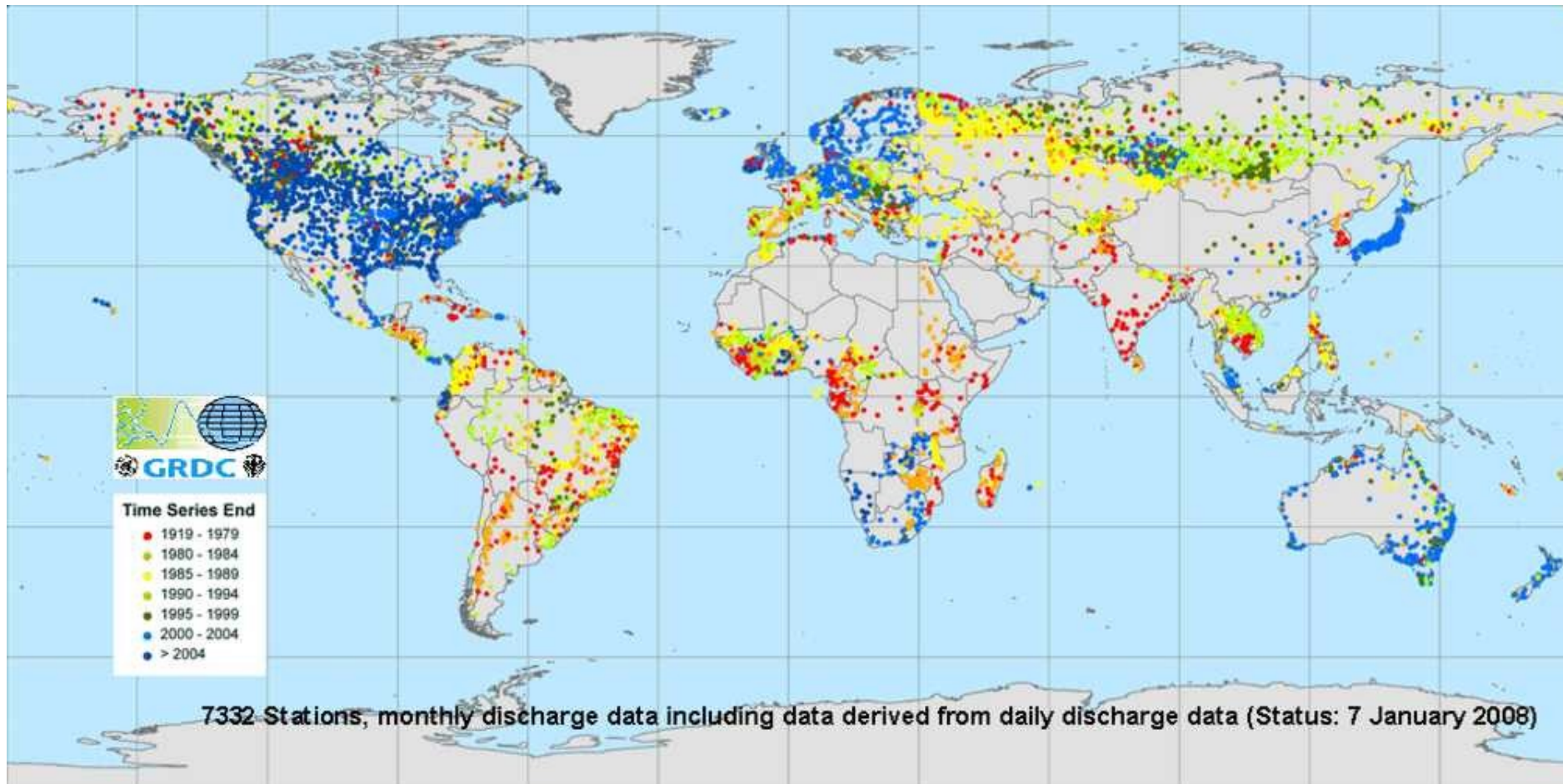
The GRDC is **not** substituting the functions of the National Hydrological Services  
Ownership of the data remains with the original Data Provider

- Governed by WMO Resolutions on free and unrestricted exchange of hydro-meteorological data and support to the GRDC
- Opportunity driven
  - Maintenance of contacts with the National Hydrological Services and especially with the people within the organisations
- Downloads form Internet websites
  - Only a limited number of countries
  - Labour intensive process
- No formalised processes
  - Cooperation and resolutions are not legally binding
  - Dependent on good will and voluntary cooperation
- Different formats and standards
  - Labour intensive to incorporate data into database and ensure data quality

# GRDC: Current stations in historical database indicated by **time series end**



(monthly discharge data including data derived from daily discharge data)



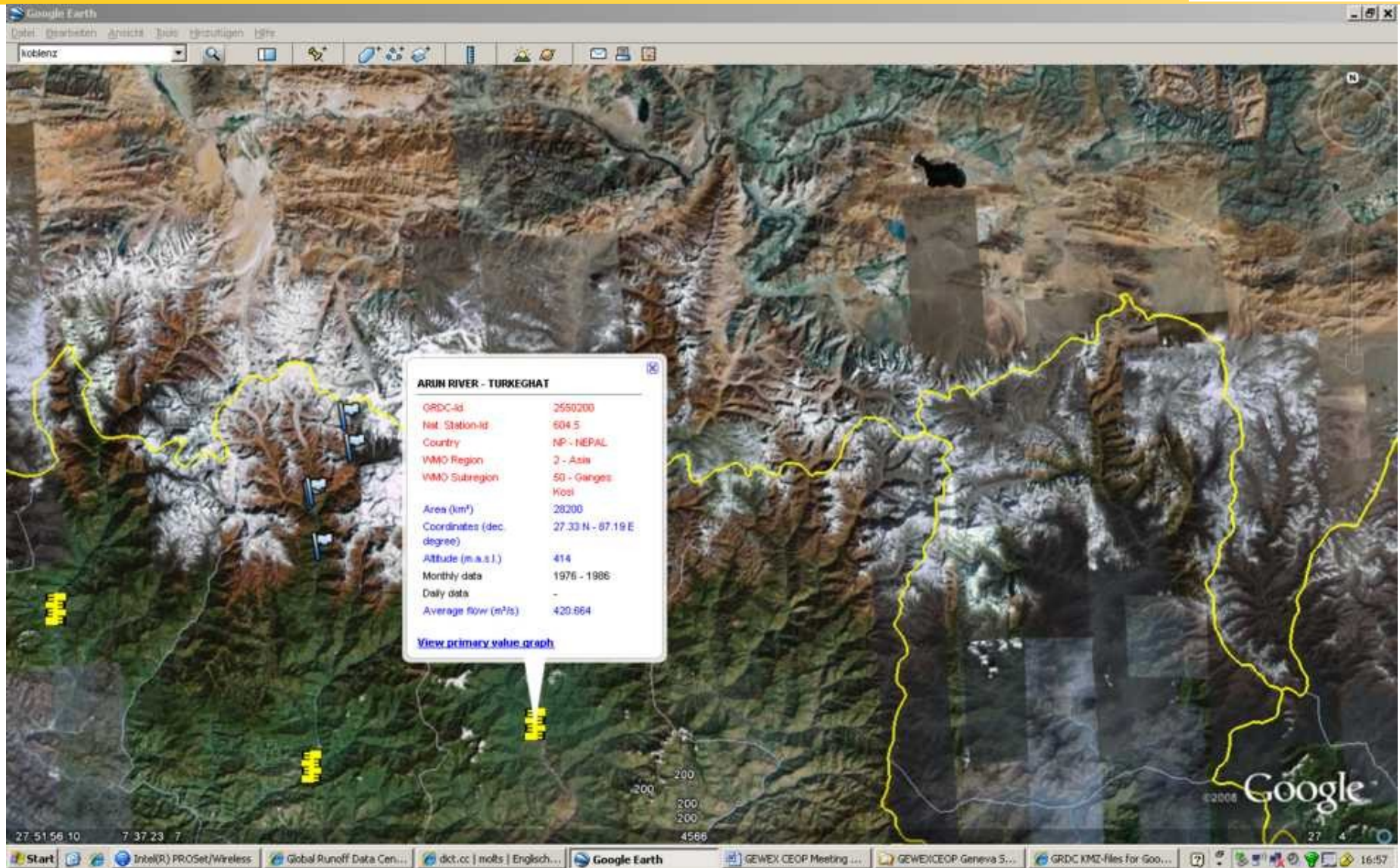


# GRDC Stations in Google Earth





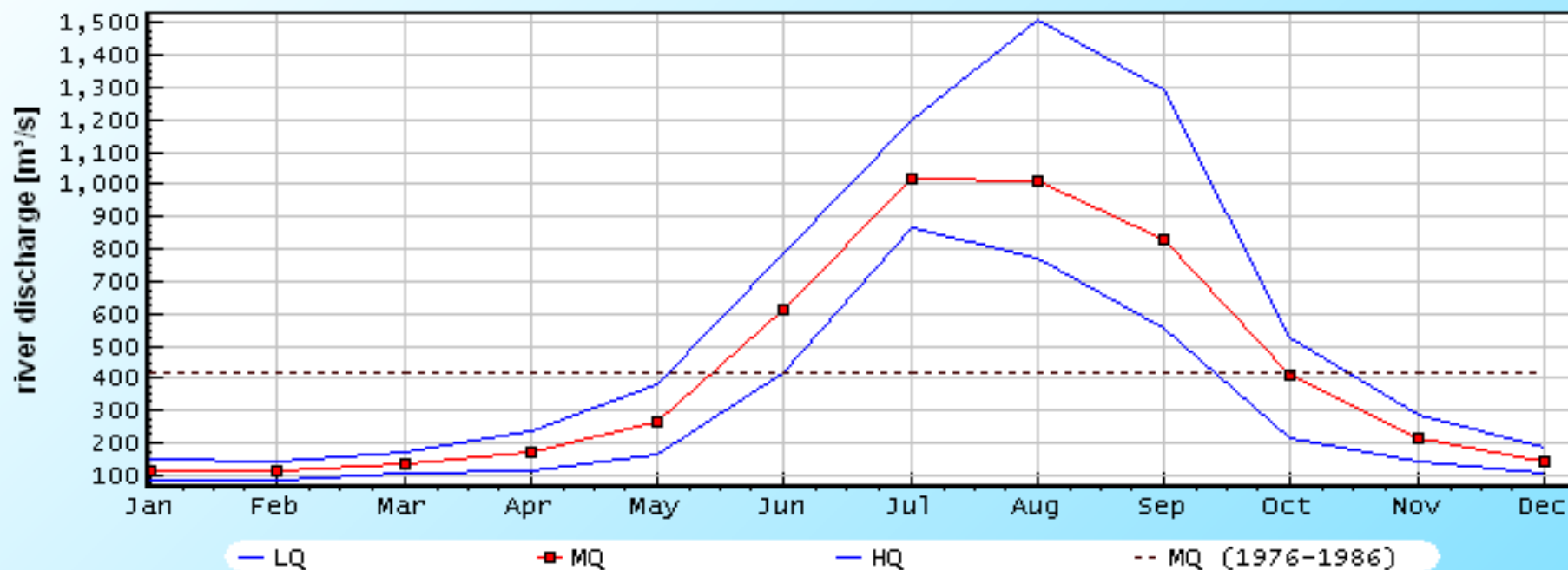
# Metadata and GRDC Stations



# GRDC Stations and Primary Value Graphs

## Long-term Statistics from Monthly River Discharges (1976 - 1986)

River: ARUN RIVER Station: TURKEGHAT  
GRDC-No.: 2550200 Country: NP



calculated 2008 by the Global Runoff Data Centre (GRDC) on the basis of data provided by national hydrological services



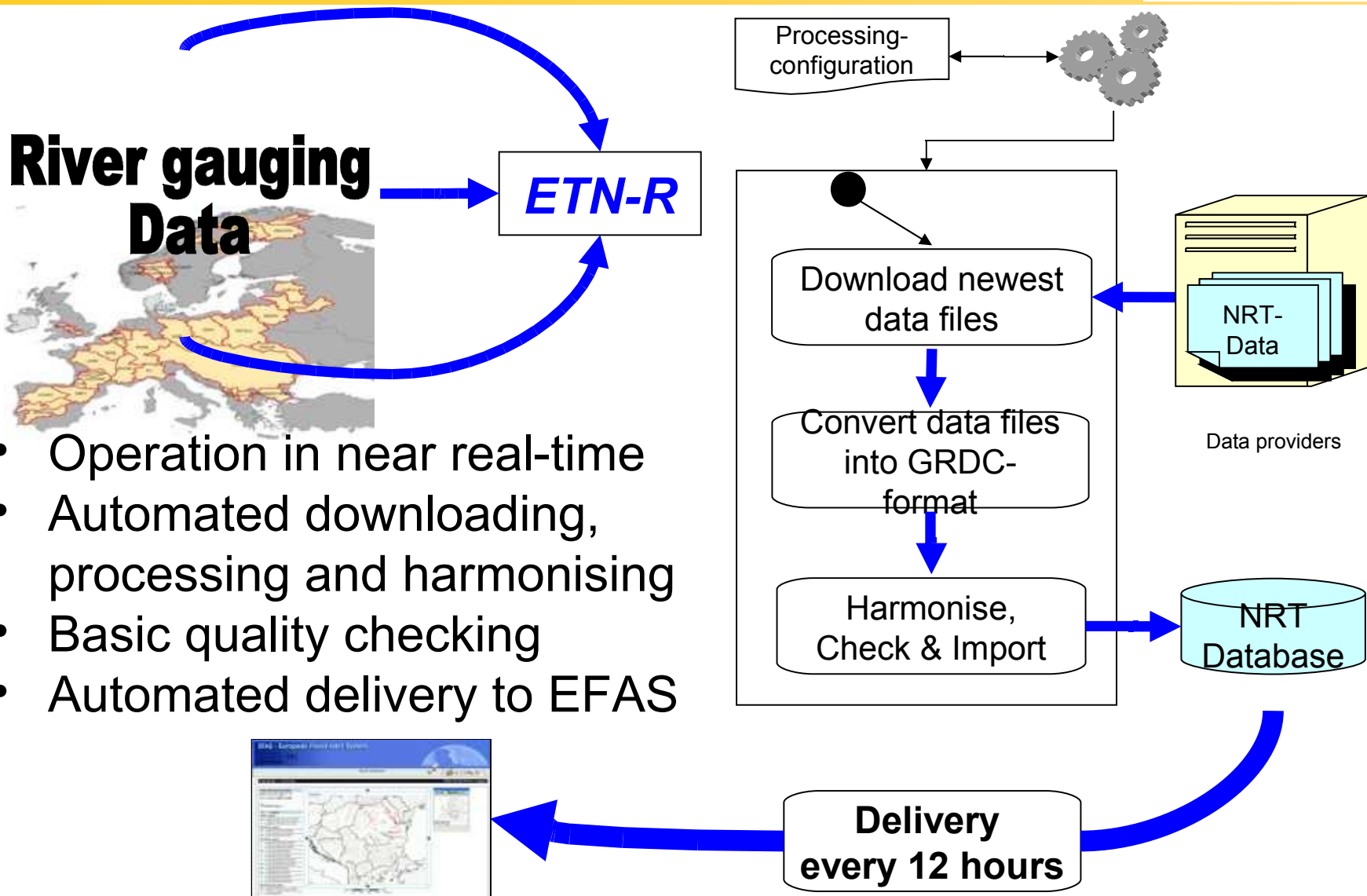
- ARDB      **Arctic Runoff Data Base**, a GRDC contribution to ACSYS, Arctic Climate System Study (WMO – WCRP)
- EWA      **European Water Archive**, a GRDC contribution to the UNESCO European FRIEND research community
- ETN-R      **European Terrestrial Network for River Discharge**, a GRDC contribution to the European Flood Alert System (EFAS), funded by the European Commission
- GTN-R      **Global Terrestrial Network for River Discharge**, a GRDC contribution to the Implementation Plan for the Global Observing System for Climate and to GTN-H, sponsored by GCOS, GTOS and WMO

# The ETN-R Project in support of EFAS



- The European Flood Alert System (**EFAS**) is an **early warning system** that aims to provide National flood warning centres with **complimentary information on floods** within 3 – 10 days
- **ETN-R** provides **near real-time discharge data** of the major European rivers to **improve quality of EFAS forecasts** and provide an **overview of the current flood situation**

# ETN-R: Regular system operation



- Operation in near real-time
- Automated downloading, processing and harmonising
- Basic quality checking
- Automated delivery to EFAS



## Global Terrestrial Network for River Discharge (GTN-R) Aim:

Access to near real-time river discharge data for selected stations around the world to capture the majority of the freshwater flux into the oceans.

## Beneficiaries:

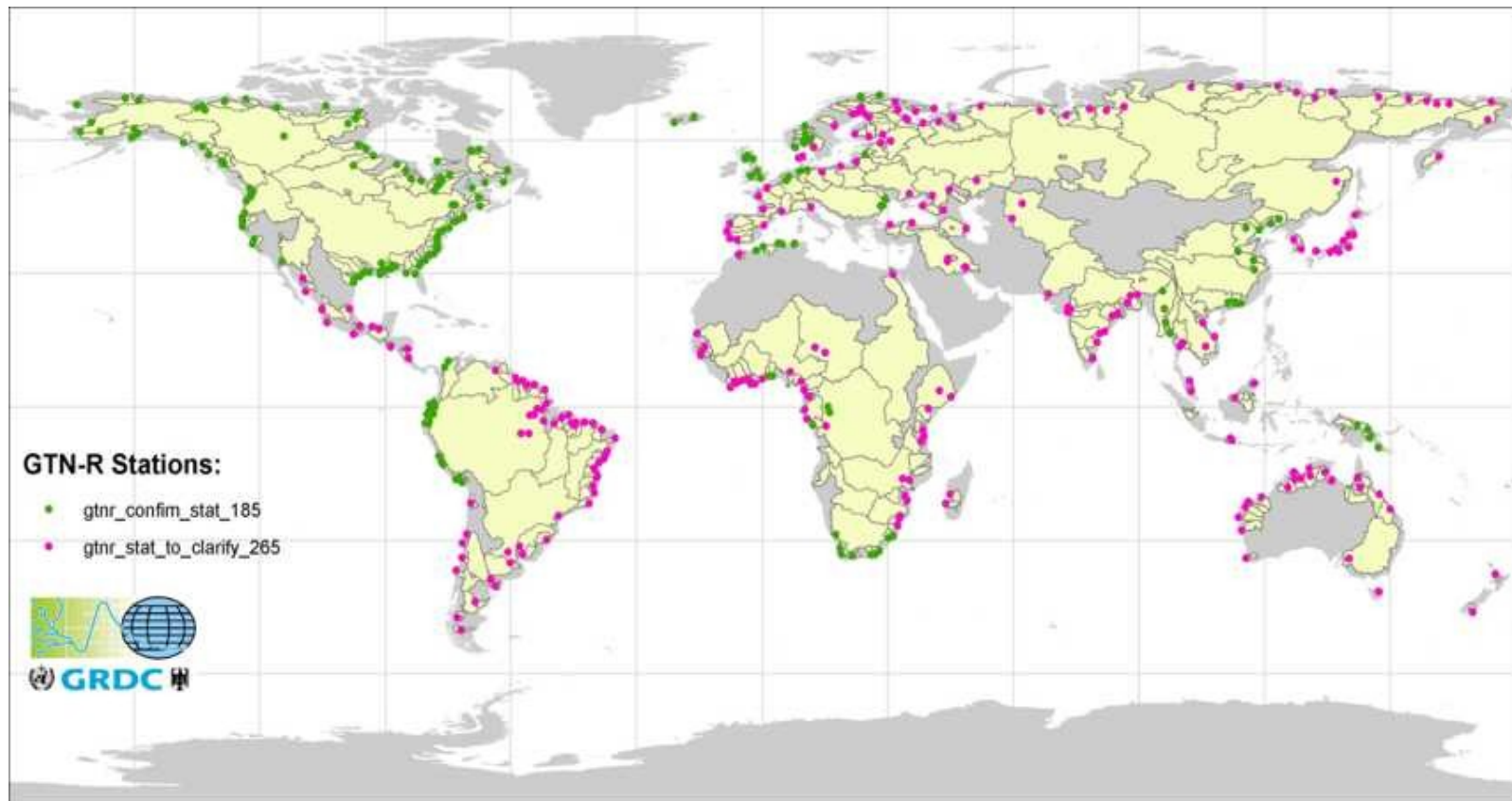
- Baseline river discharge network supported by the Implementation Plan for the Global Observing System for Climate in Support of the UNFCCC (GCOS-IP)
- Global Terrestrial Network for Hydrology (GTN-H)
- GRDC – GEMS/Water products on chemical loads
- Climate and hydrological research and monitoring...

## Network:

Initial proposal of 380 near real-time river discharge stations by the GRDC for verification by the National Hydrological Services.



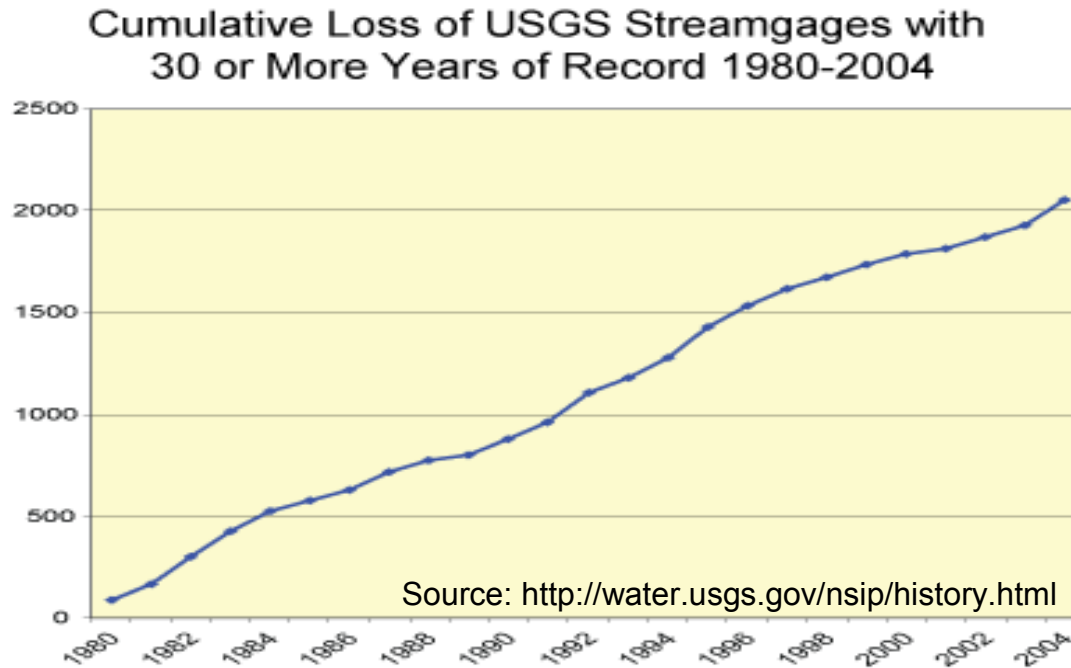
GTN-R is a GRDC contribution to the Implementation Plan for the Global Observing System for Climate and to GTN-H, sponsored by GCOS, GTOS and WMO



Next steps:

- Approach participating countries to inform on status and request additional metadata, time series data and access to near real-time data.
- Re-approach not participating countries to reconsider their position and to participate in the GTN-R project.
- Finalise river discharge station selection together with participating countries.
- Adopt real-time data collection software currently developed within the ETN-R project for utilisation of GTN-R data collection.
- Investigate funding options together with related programmes.

- Outdated information on database
- Declining Hydrological Networks – example USGS



From 1980 to 2004, 2051 stream gauges with 30 or more years of stream flow record were discontinued.

At the end of 2005, 7360 stations were active

# GRDC: Partner Data Centres



## Precipitation: GPCC

**Global Precipitation Climatology Centre**

Tel.: +49-69-8062-2872

Offenbach, Germany

[gpcc@dwd.de](mailto:gpcc@dwd.de)



## Water Quality: GEMS/Water

**Global Environment Monitoring System /  
Water Programme Office of UNEP DEWA**

Tel.: +1-306-975-6047

Burlington, Ontario, Canada

<http://www.gemswater.org>



## Groundwater: IGRAC

**International Groundwater Resources Assessment Centre**

Tel.: +31-30-256-4270

Utrecht, The Netherlands

<http://www.igrac.nl>



## Lakes and Reservoirs: HYDROLARE

(almost operational)

**International Centre on the Hydrology of Lakes and Reservoirs**

Tel.: +7-812-323-1261

St. Petersburg, Russia



Thank you for your attention:

Please visit GRDC at  
<http://grdc.bafg.de>

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