



## 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:
  - GEWEX-CEOP Global Energy and Water Cycle Experiment-Coordinated Energy and Water Cycle Observations Project)
  - GCOS (Global Climate Observing System)
  - GTOS (Global Terrestrial Observing System)
  - TOPC (Terrestrial Observation Panel for Climate)
  - GEO (Group on Earth Observations)

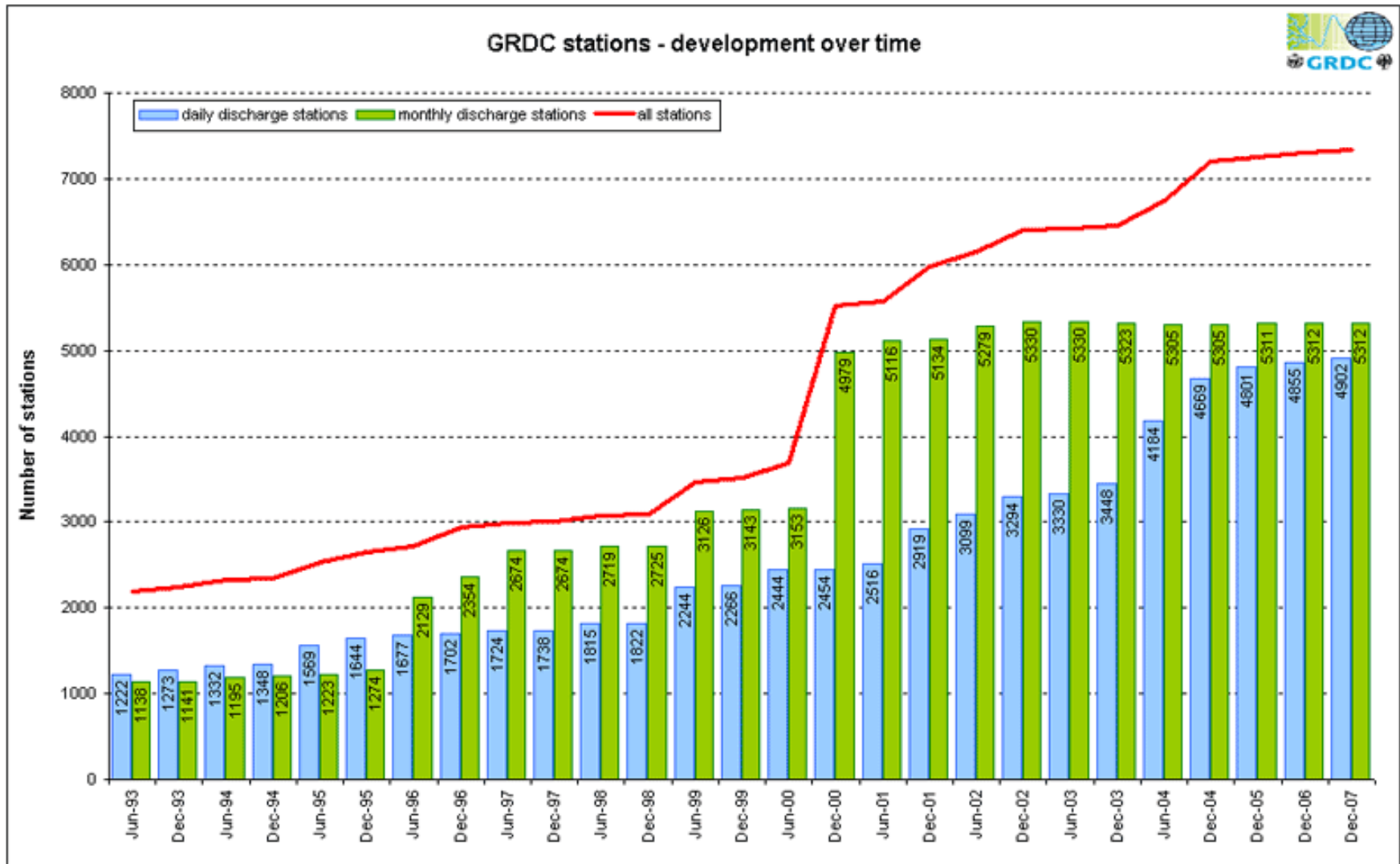
The GRDC is **not** substituting the functions of the National Hydrological Services  
Ownership of the data remains with the original Data Provider

# GRDC: Data acquisition



- 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
  - In many cases not one point of contact
  - Difficulties due to changing staff and functions
- Downloads form Internet websites
  - Only a limited number of countries
  - Labour intensive process
  - Easy and reliable
- 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

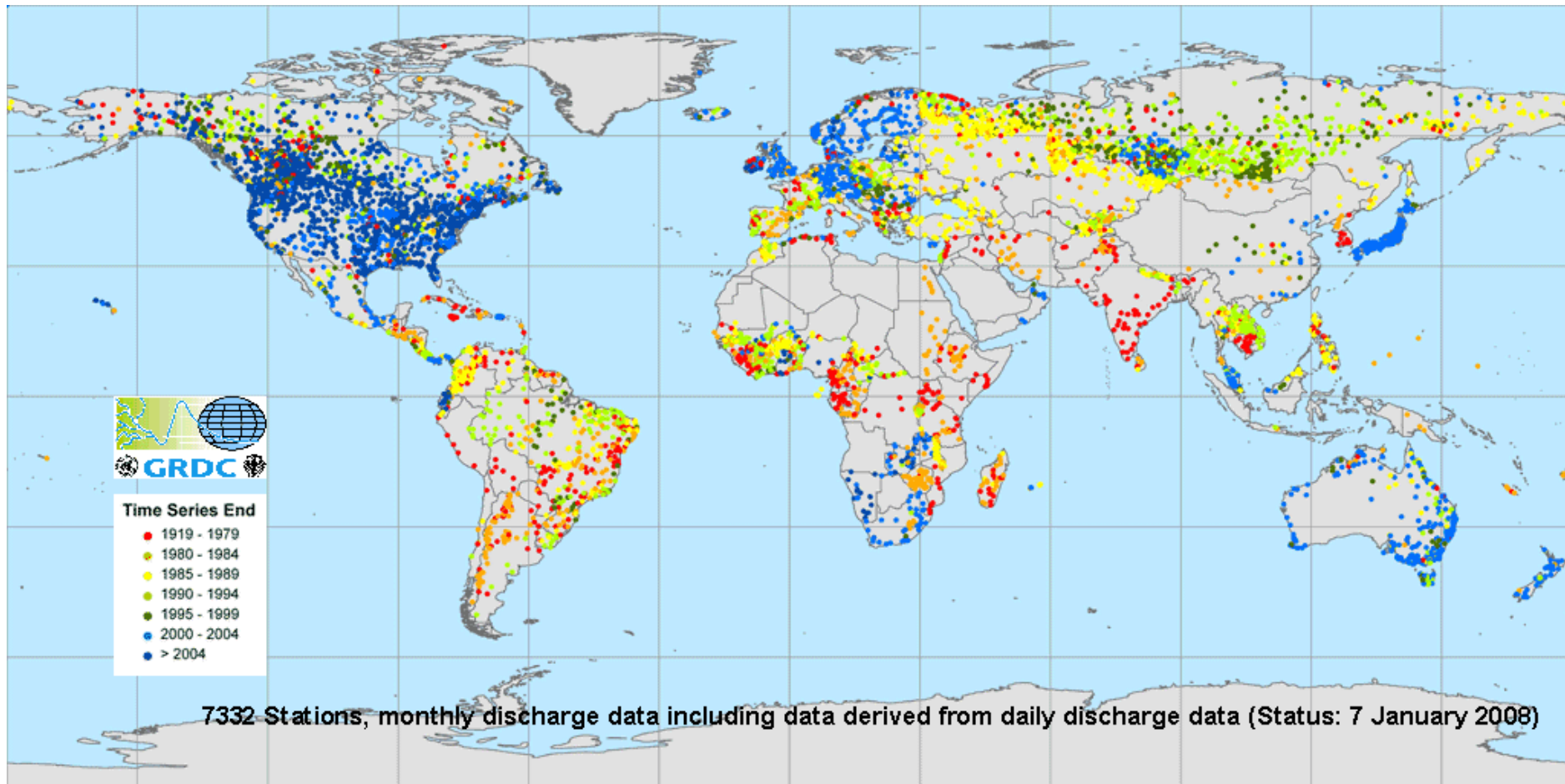
# GRDC stations - development over time



# 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

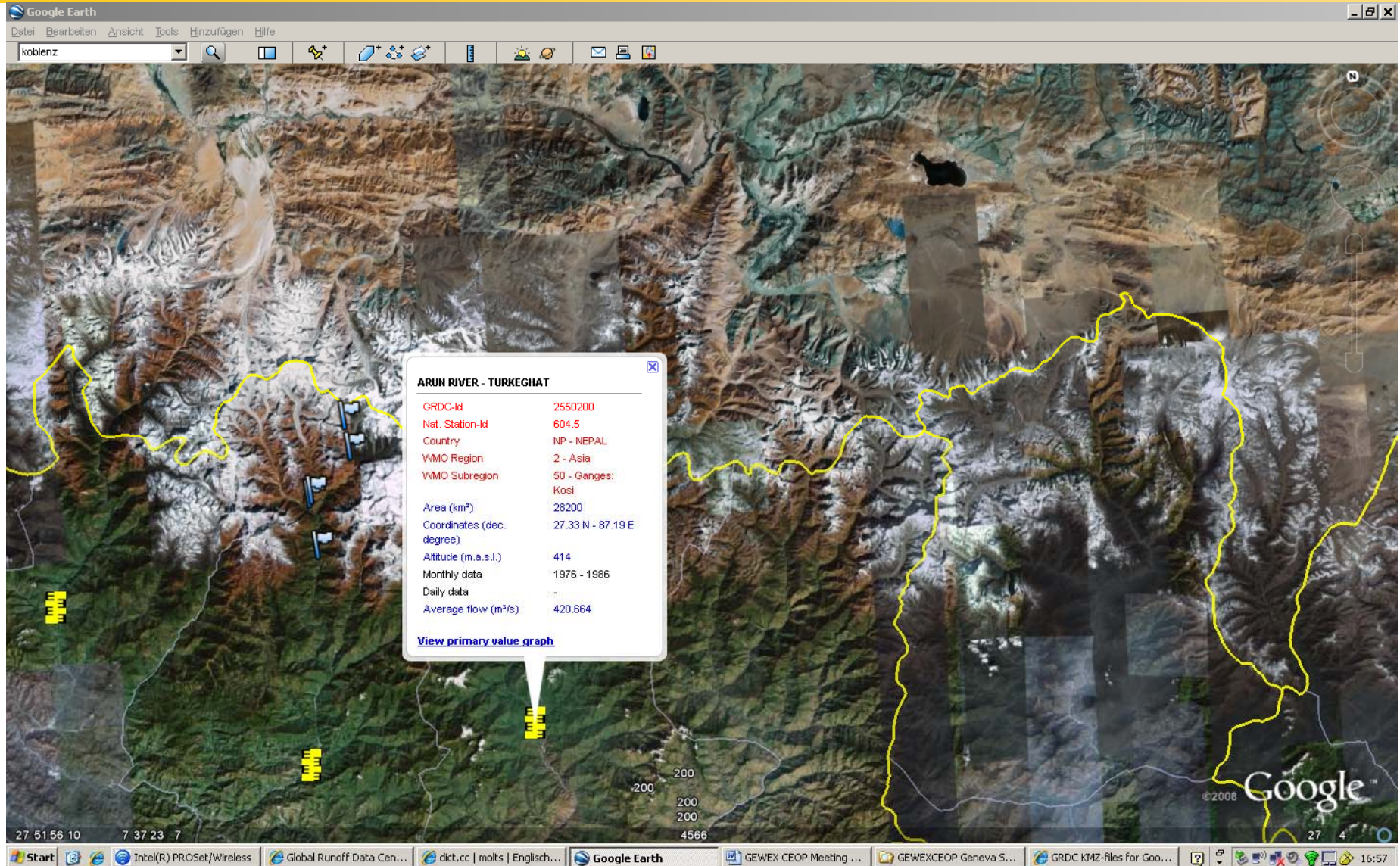


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21 20 55 0 3 52 07 56

# CEOP Reference Sites and GRDC Stations

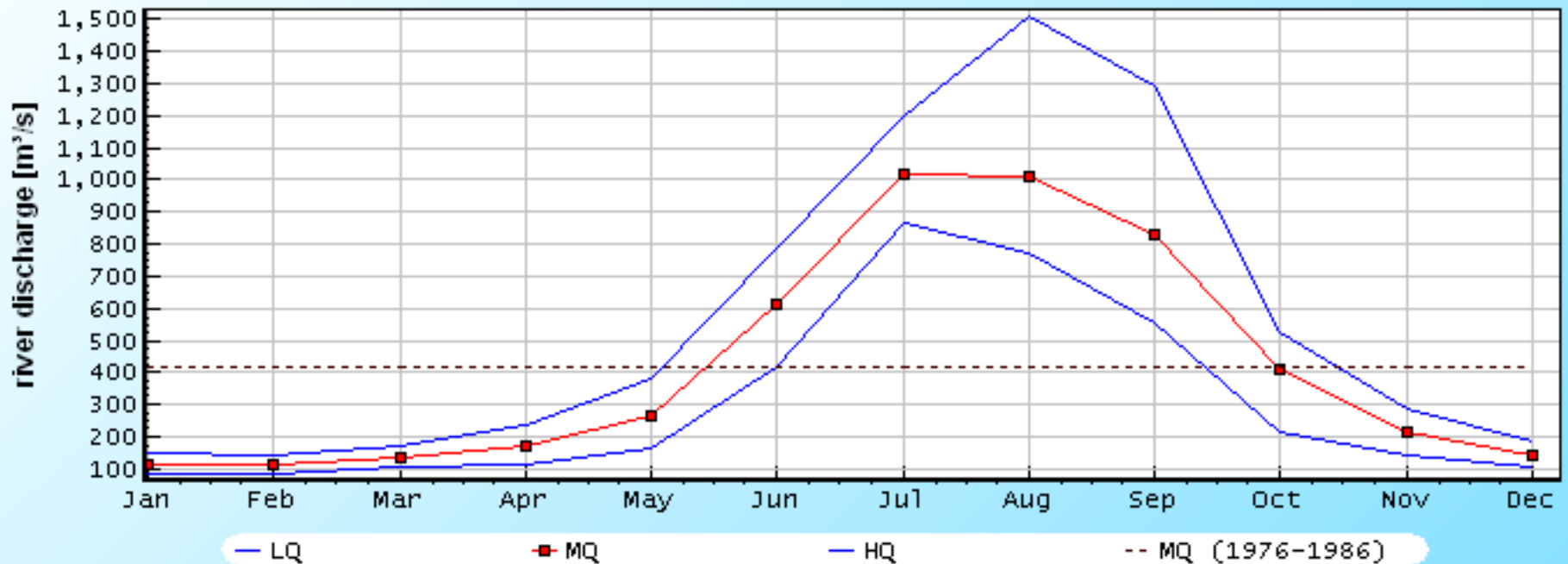


# GRDC Stations and Primary Value Graphs



## 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)
- **ETN-R**      **European Terrestrial Network for River Discharge**, a GRDC contribution to the European Flood Alert System (EFAS), funded by the European Commission
- **EWA**      **European Water Archive**, a GRDC contribution to the UNESCO European FRIEND research community
- **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

## 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 Freshwater Surface Water Flux products

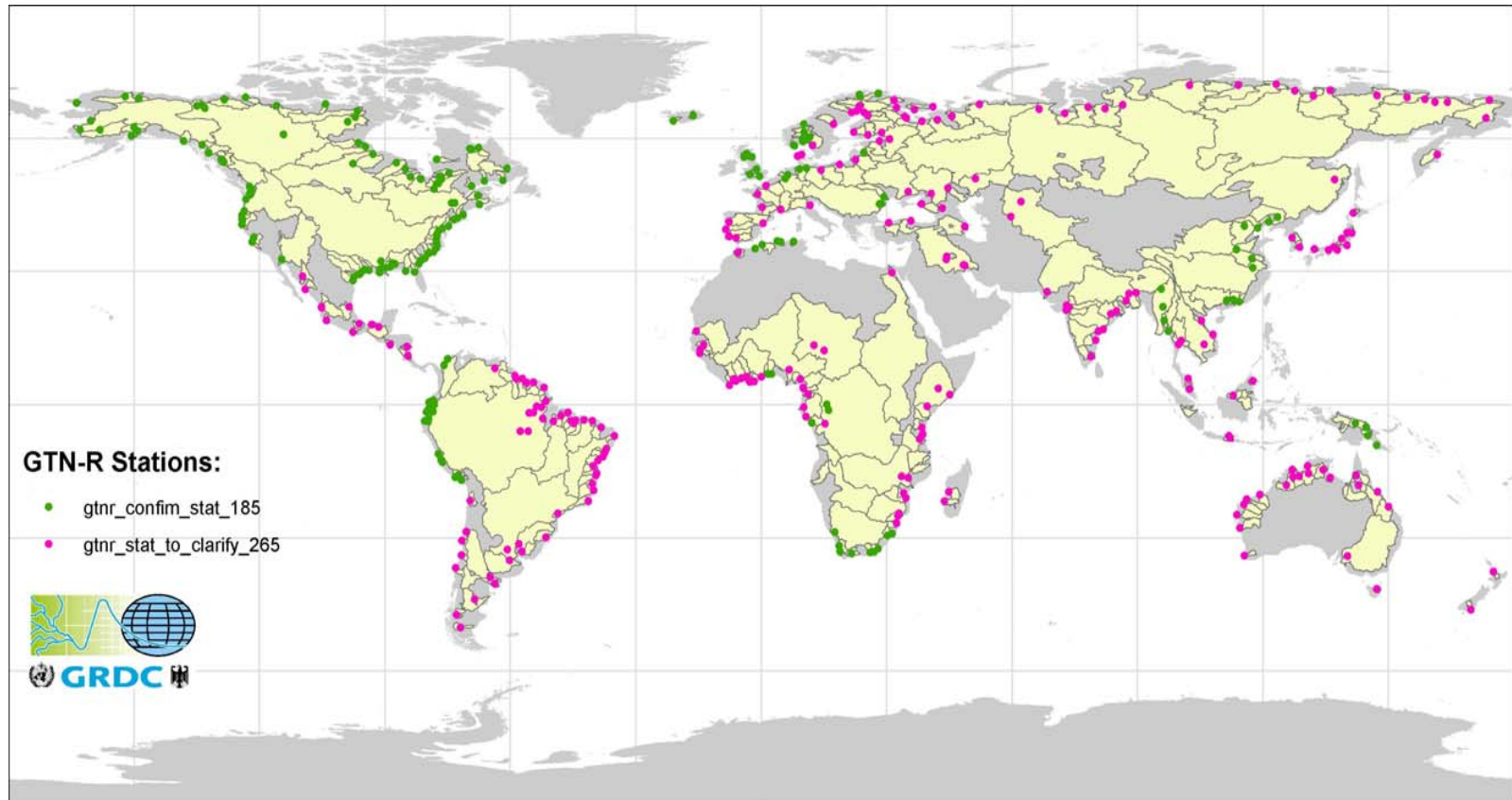
GRDC – GEMS/Water products on chemical loads

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.

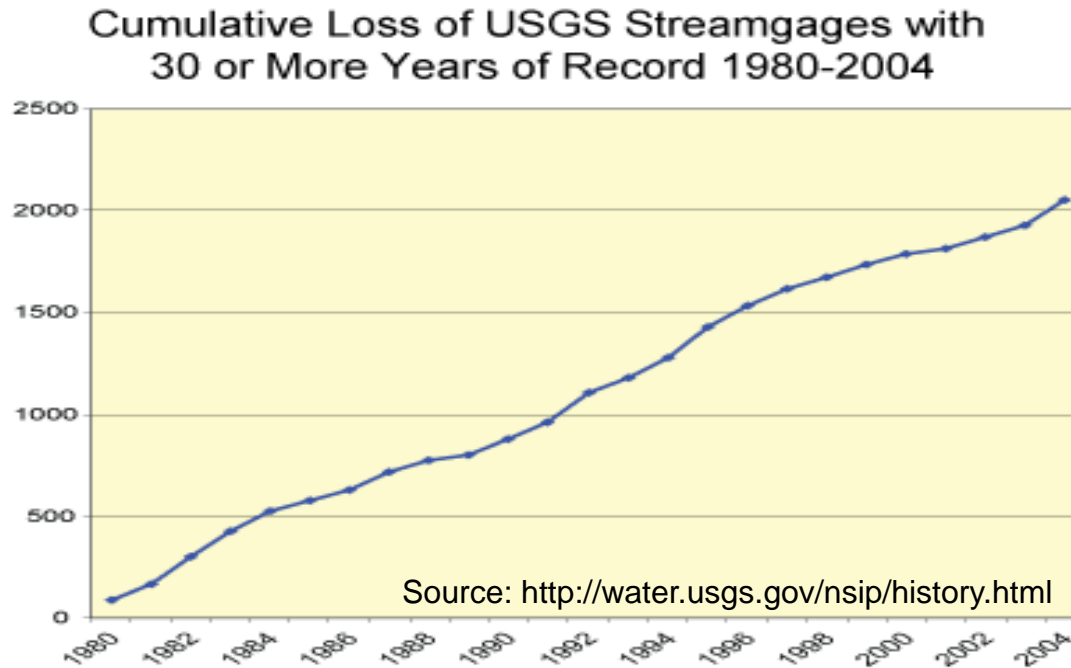
# GTN-R is a GRDC contribution to the Implementation Plan for the Global Observing System for Climate and to GTN-H, sponsored by GCOS, GTOS and WMO



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 linkages to the HARON initiative to obtain funding.

- 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

Utilisation of GRDC discharge data and data products subject to WMO and GRDC data policies:

- Free of charge for science and research
- Identified access
- No transfer of data to third parties
- Proper reference of data source
- Signing of User Declaration

CEOP Elements to support GRDC data acquisition initiatives by providing contacts to relevant discharge data providers for GRDC to follow-up discharge data provision

# GRDC: Partner Data Centres



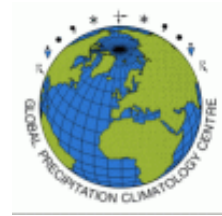
## Precipitation: GPCC

**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>

**The GRDC at your service:**

[grdc@bafg.de](mailto:grdc@bafg.de)

Tel: +49-261-1306-5224  
Fax: +49-261-1306-5280

Am Mainzer Tor 1  
D-56068 Koblenz

Ulrich Looser  
Irina Dornblut  
Johannes Pauler  
Thomas de Couet  
Kirsten Hohmann  
Maik Bunschowski  
Marion Kapp

Head GRDC  
Deputy Head  
Database Manager  
GIS Specialist  
Project Coordinator (ETN-R)  
Computer Scientist (ETN-R)  
Project Assistant (ETN-R)

[Looser@bafg.de](mailto:Looser@bafg.de)  
[Dornblut@bafg.de](mailto:Dornblut@bafg.de)  
[Pauler@bafg.de](mailto:Pauler@bafg.de)  
[Decouet@bafg.de](mailto:Decouet@bafg.de)  
[Hohmann@bafg.de](mailto:Hohmann@bafg.de)  
[Bunschowski@bafg.de](mailto:Bunschowski@bafg.de)  
[Kapp@bafg.de](mailto:Kapp@bafg.de)