



# *Global Runoff Data Centre (GRDC)*

*2018 GEWEX Hydroclimatology Program Panel Meeting  
24 - 26 October 2018  
Santiago, Chile*

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*Global Runoff Data Centre at the  
Federal Institute of Hydrology (BfG) Koblenz, Germany*

# *GRDC operational environment*

*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 river discharge data and associated metadata



Including data rescue



**Dissemination** of historical discharge data and derived data products of more than 9500 stations in 161 countries to science and research (“One-stop shop”)

**Note:**

*The GRDC does not have its own monitoring infrastructure and thus is not substituting the functions of the National Hydrological Services*

*Ownership of the data remains with the original Data Provider (National Hydrological Services)*

# GRDC Data Users

*The GRDC supports the climate-related programmes and projects of the United Nations and their special organisations such as the:*

- *UNESCO International Hydrological Programme (IHP) (FRIEND-Water, WHYMAP)*
- *Global Terrestrial Network for Hydrology (GTN-H)*
- *GCOS (Global Climate Observing System)*
- *GEO (Group on Earth Observations)*
- *GEWEX (Global Energy and Water Exchanges Project)*
- *Cross-sectoral issues on Intra-Regional Water Security and Disaster Management*

*and the international scientific community on:*

- *Global change*
- *Climate and hydrological modelling*
- *Climate services*
- *Research and assessment*

# GRDC Data Policy (excerpt)

*GRDC data are available to users free and unrestricted under specific conditions*

*Data requests must be in writing: e.g. E-mail, letter or facsimile*

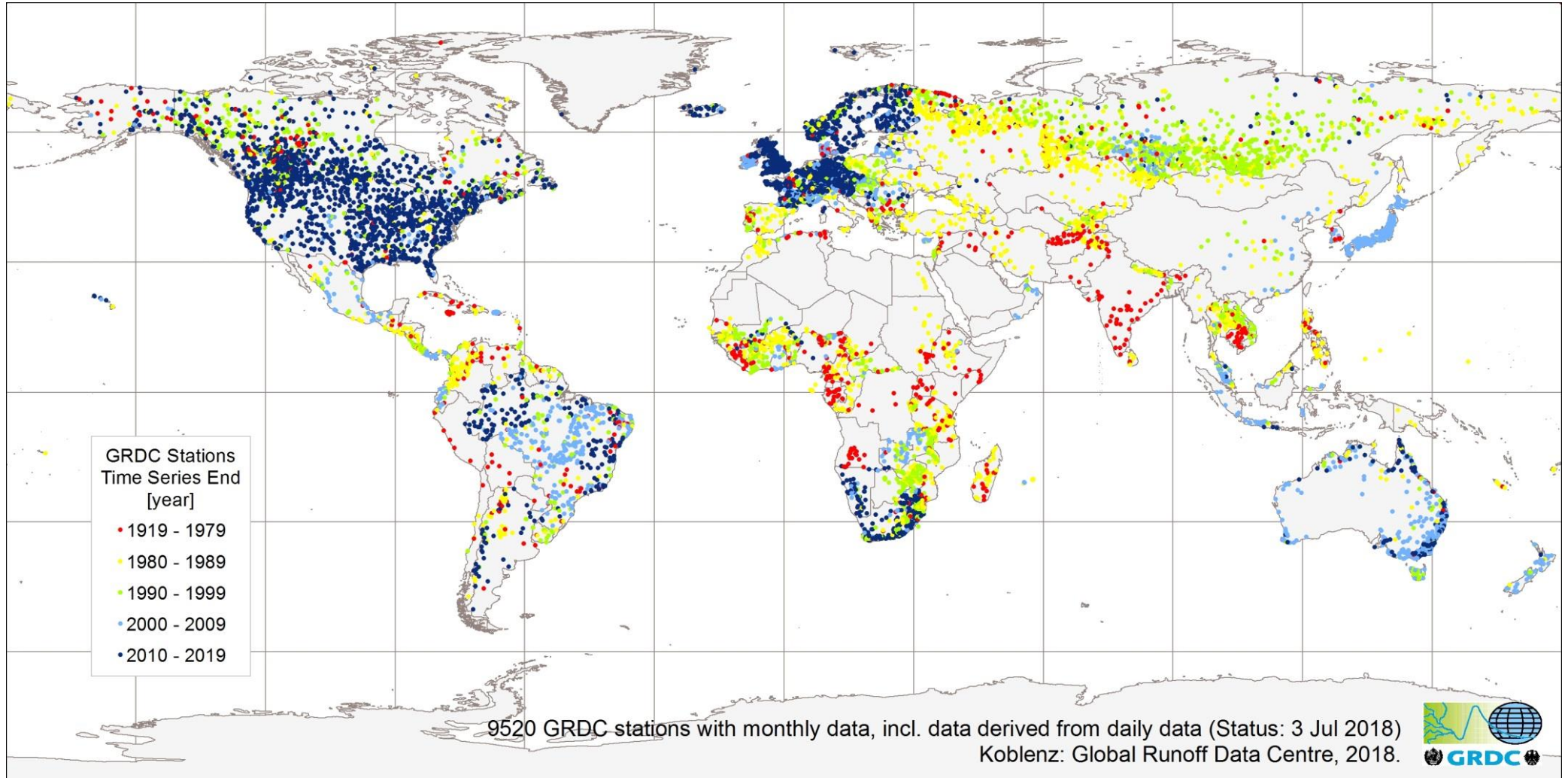
*Data users must sign a user declaration stating that:*

- Data may not be used for commercial purposes*
- Data may not be transferred to third parties*
- Data users agree that the GRDC may inform data providers about the use of their data*
- The source of the data must be acknowledged in all publications*




# Status of the Global Runoff Database

Global Coverage of GRDC Stations indicated by **time series end**



# Global Runoff Database – Status October 2018

## Database Summary Statistics

Global Runoff Data Centre, Station Summary Statistics		19 October 2018 						
	# of stations	station years	individual values	average length	shortest timeseries	longest timeseries	earliest timeseries	latest timeseries
<b>AFRICA</b>								
all stations	1559	43498	12702587	27.90	1	116	1869	2017
original daily	1170	34267	12507455	29.29	1	112	1903	2017
original monthly	855	16261	195132	19.02	1	116	1869	2012
<b>ASIA</b>								
all stations	1922	57072	4280083	29.69	1	125	1865	2015
original daily	648	9995	3648175	15.42	1	82	1918	2015
original monthly	1703	52659	631908	30.92	1	125	1865	2015
<b>AUSTRALIA AND PACIFIC</b>								
all stations	550	22063	7872196	40.11	2	123	1886	2018
original daily	512	21128	7711720	41.27	2	123	1886	2018
original monthly	404	13373	160476	33.10	2	115	1886	2010
<b>EUROPE</b>								
all stations	2958	212178	21882188	38.88	1	237	1888	2018
original daily	2338	172178	17882188	38.88	1	237	1888	2018
original monthly	1078	32320	387840	29.98	1	137	1860	2002
<b>SOUTH AMERICA</b>								
all stations	740	25224	8103347	34.09	2	113	1901	2015
original daily	638	21739	7934735	34.07	1	113	1901	2015
original monthly	577	14051	168612	24.35	1	113	1901	2015
<b>WORLD</b>								
all stations	9540	415512	124709804	43.55	1	211	1806	2018
original daily	7316	336340	122764100	45.97	1	211	1806	2018
original monthly	5574	162142	1945704	29.09	1	192	1807	2015

Updates 2017: RU, GB, NO, CA, US, BE, LV, ZA

Updates 2018: KR, GL, FI, NL, CA, IS, DE, CH, BE, SL, CF, BO, MM, BY, US, JM, LV, SI, DK, BW, PL, EE...(not all in database yet)

# *Integration of BALTEX Dataset*

*Permission to integrate BALTEX dataset obtained from BALTIC Earth Steering Committee*

*Status:*

*SE - Sweden: Data to be integrated with next update*

*FI - Finland: Data to be integrated with next update*

*RU – Russian Federation: Integration requested: Answer pending*

*EE - Estonia: Data update obtained, to be integrated soon*

*DK - Denmark: Data update obtained, to be integrated soon*

*PL - Poland: Data update obtained, to be integrated soon, some metadata issues pending*

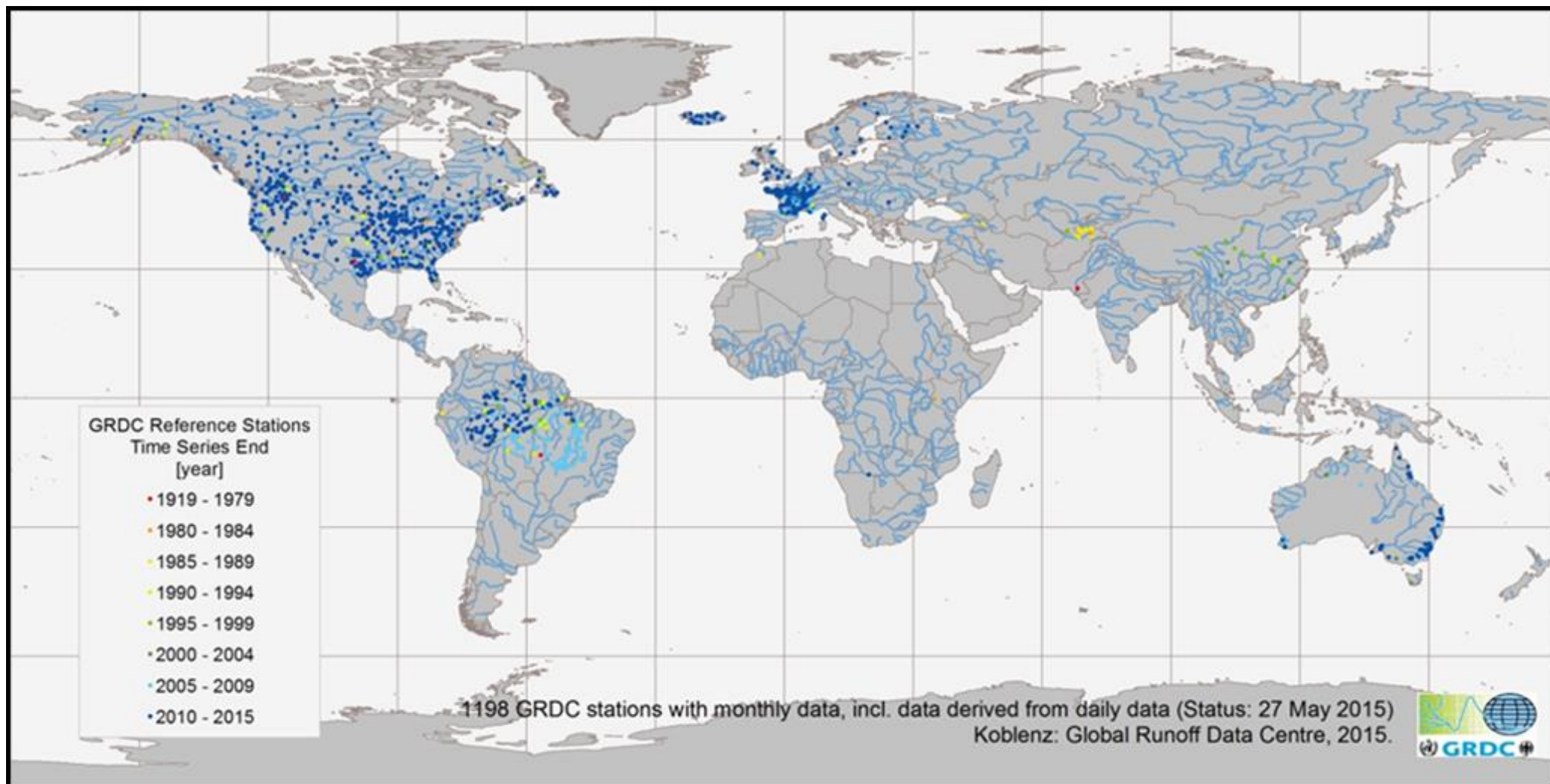
*LT - Lithuania: Integration requested: Answer pending*

*LV - Latvia: Permission to integrate old dataset – update available at cost*



# Climate Sensitive Stations and/or Reference Stations

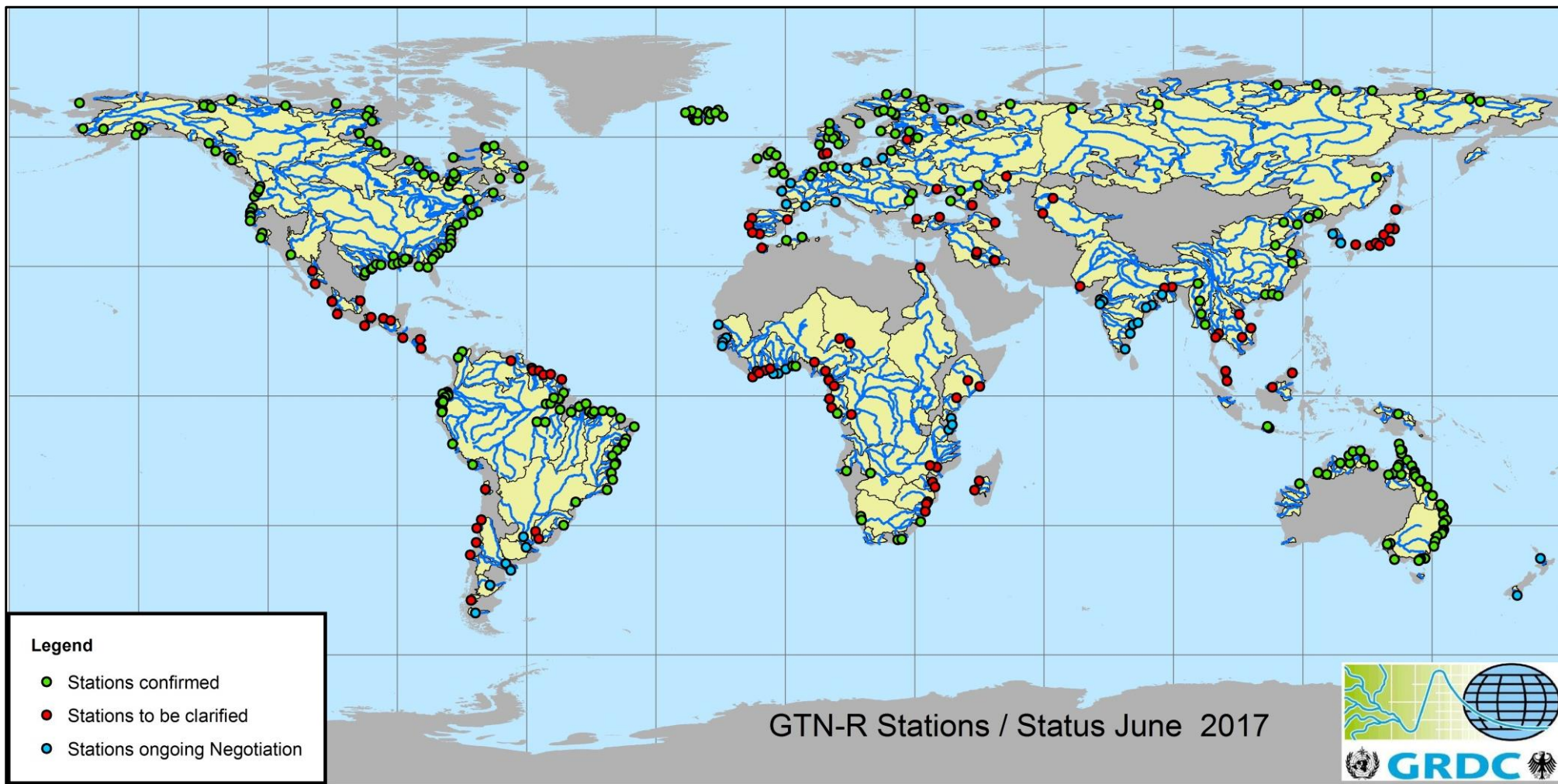
*33 Countries that have reported climate sensitive stations to WMO and or GRDC*



# GRDC Station Selection for the Global Terrestrial Network for River Discharge (GTN-R)

280 Stations confirmed

160 Stations to be clarified





# Global Freshwater Fluxes

IMPRINT SITEMAP CONTACT

Bundesanstalt für Gewässerkunde

The GRDC   Standard Services   **Data Products**   Special Datasets   Collaboration   News and Updates

You are here: GRDC > Data Products > Freshwater Fluxes into the World Oceans

search item

**Freshwater Fluxes into the World Oceans** ↓  
**Long-Term Mean Monthly Discharges** →  
**Global Composite Runoff Fields** →

**Services**  
▶ Global Runoff Database  
▶ River Discharge Data  
▶ GIS Layers  
▶ BfG Homepage

## Global Freshwater Fluxes into the World Oceans (GRDC, 2014)

*Recommended citation: GRDC (2014): Global Freshwater Fluxes into the World Oceans / Global Runoff Data Centre. Koblenz: Federal Institute of Hydrology (BfG), 2014.*

The GRDC re-calculated in 2014 the *Global Freshwater Fluxes into the World Oceans* based on results from the global hydrological model *WaterGAP* (Doell et al., 2003) for 0.5° grid cell resolution. The annual and long-term means of freshwater fluxes calculated for land areas associated with the UNEP GIWA Regions (UNEP, 2014) are displayed and as well freshwater fluxes for 5° and 10° latitude bands show how

**To be updated soon as a joint product:**  
**GPCC**  
**GRDC**  
**University Frankfurt, WaterGAP Group**

individual flux values of the 11-00. For the reason of (2015).

The edition of July 2014 is listed for comparison.

The applied geoprocessing workflow was compiled for the first time a specially designed reproducible toolbox by UDATA - Umweltschutz und Datenanalyse Neustadt / Weinstraße, Germany (Wilkinson et al., 2014). This workflow will be used to regularly re-calculate the freshwater fluxes, at least when the *WaterGAP* inputs are updated by the team at the University Frankfurt, Germany. [GRDC Report 44](#) describes input data and methodical steps.

### GRDC Global Freshwater Fluxes into the World Oceans:

- > Global Freshwater Fluxes into the World Oceans via Web Map Service
- > Global Freshwater Fluxes into the World Oceans for use within GIS clients

### Global Freshwater Fluxes - 5° and 10° latitudinal zones (tables)

# GRDC Map Products

**GRDC Map Products**

All map products are provided under the conditions of the GRDC Data Policy, which states the non-commercial use of the data and the overall citation of GRDC as the source. If you are interested to use GRDC data or products for your research, please accept and sign the *Declaration of the project* and the *explanatory summary of the project*. Please cite in all publications and products GRDC as the source of data: Global Runoff Data Centre, Koblenz, Federal Institute for Hydrology.

*Disclaimer: GRDC reserves the right to change the data and responsibility for errors remains with the user. Please check data for plausibility and errors in the data unknown to the GRDC are not held responsible for the consequences.*

**Major River Basins**

The Major River Basins dataset is part of the Global Runoff Data Centre (GRDC) that aims at the provision of a set of shape files for the use with Geographic Information Systems (GIS). This dataset was created for the generation of GRDC map products and will be updated from time to time whenever extensions are required by future GRDC projects. At present the dataset comprises the GIS layer of 405 river basins and 687 associated rivers.

[More ...](#)

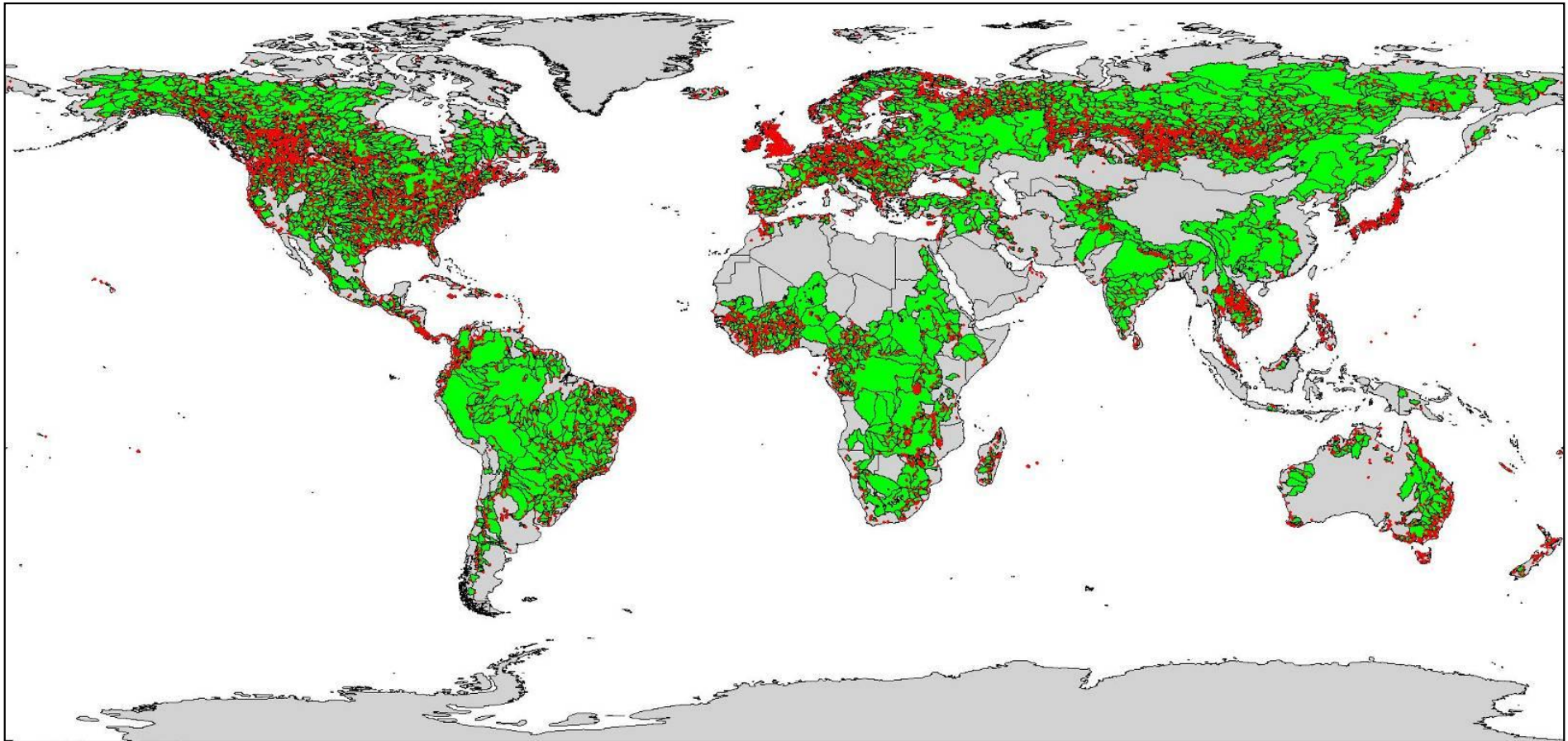
**To be updated soon:**

- Watershed Boundaries of GRDC Stations
- WMO Regions and Sub-Regions





# *Watershed boundaries of GRDC stations*

*Watershed Boundaries of GRDC Stations provided as GIS Shapefile  
Delineation based on HydroSHEDS drainage network  
GRDC Data Policy applies*





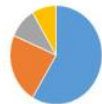

# GRDC Web Services Future



GRDC- requests & approvals   UliLooser

Data requests & approvals      Statistics

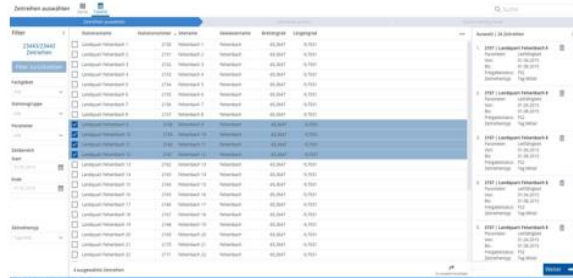

New application

New application

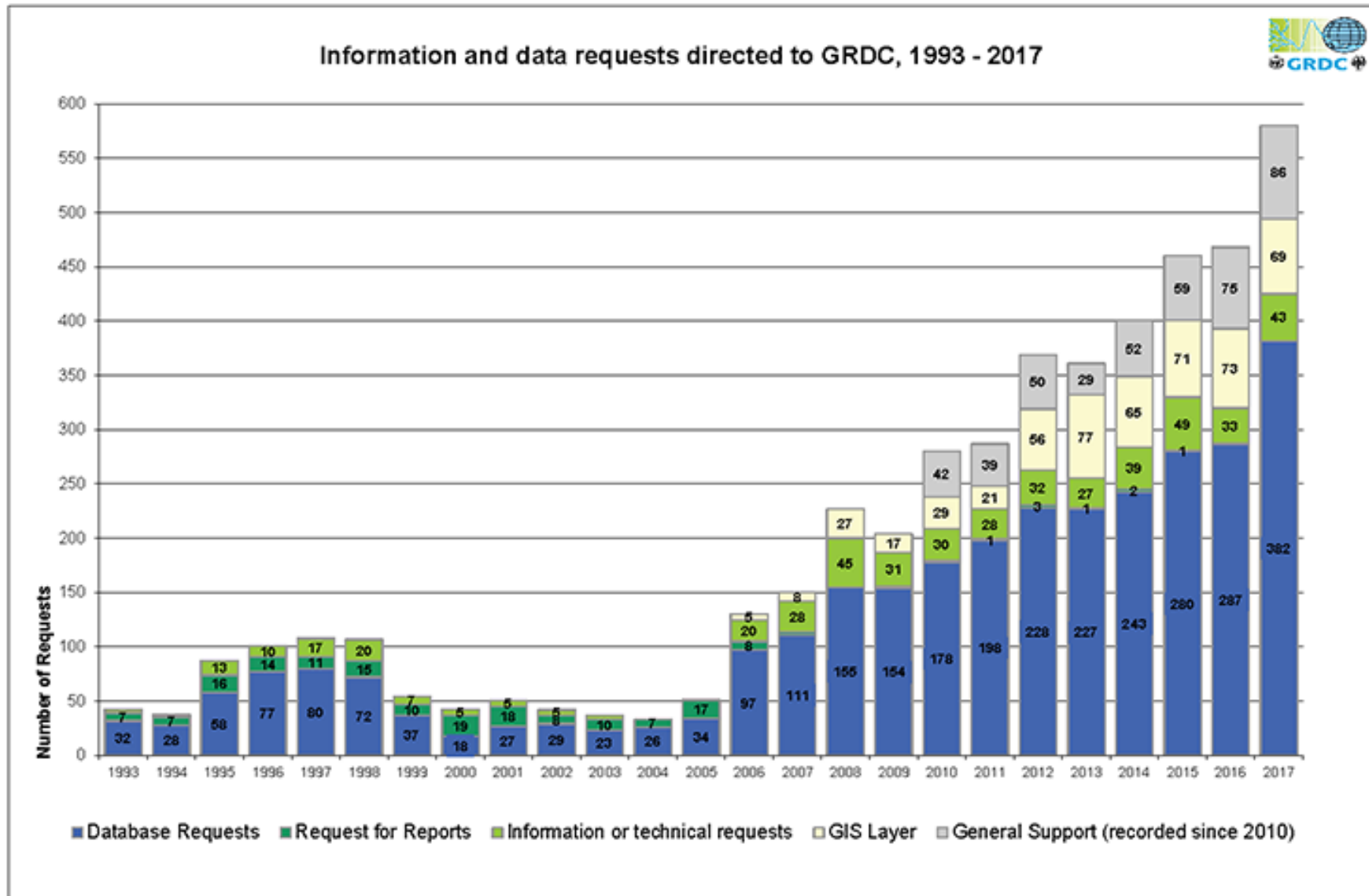


GRDC-Data   UliLooser

Discharge Viewer      TimeSeries Download



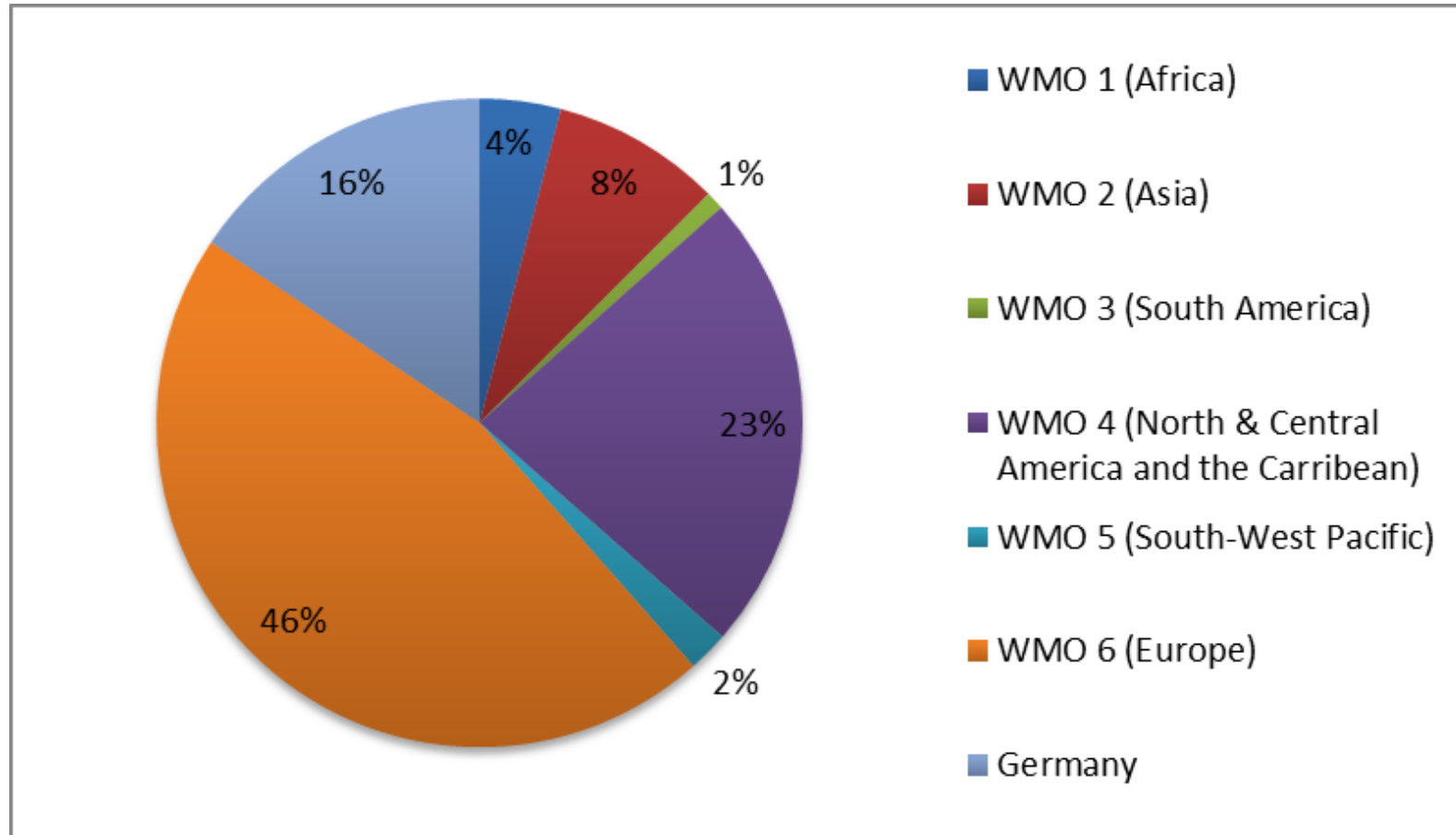
# GRDC Data Requests



# GRDC Data Requests

>2900 over last 10 years

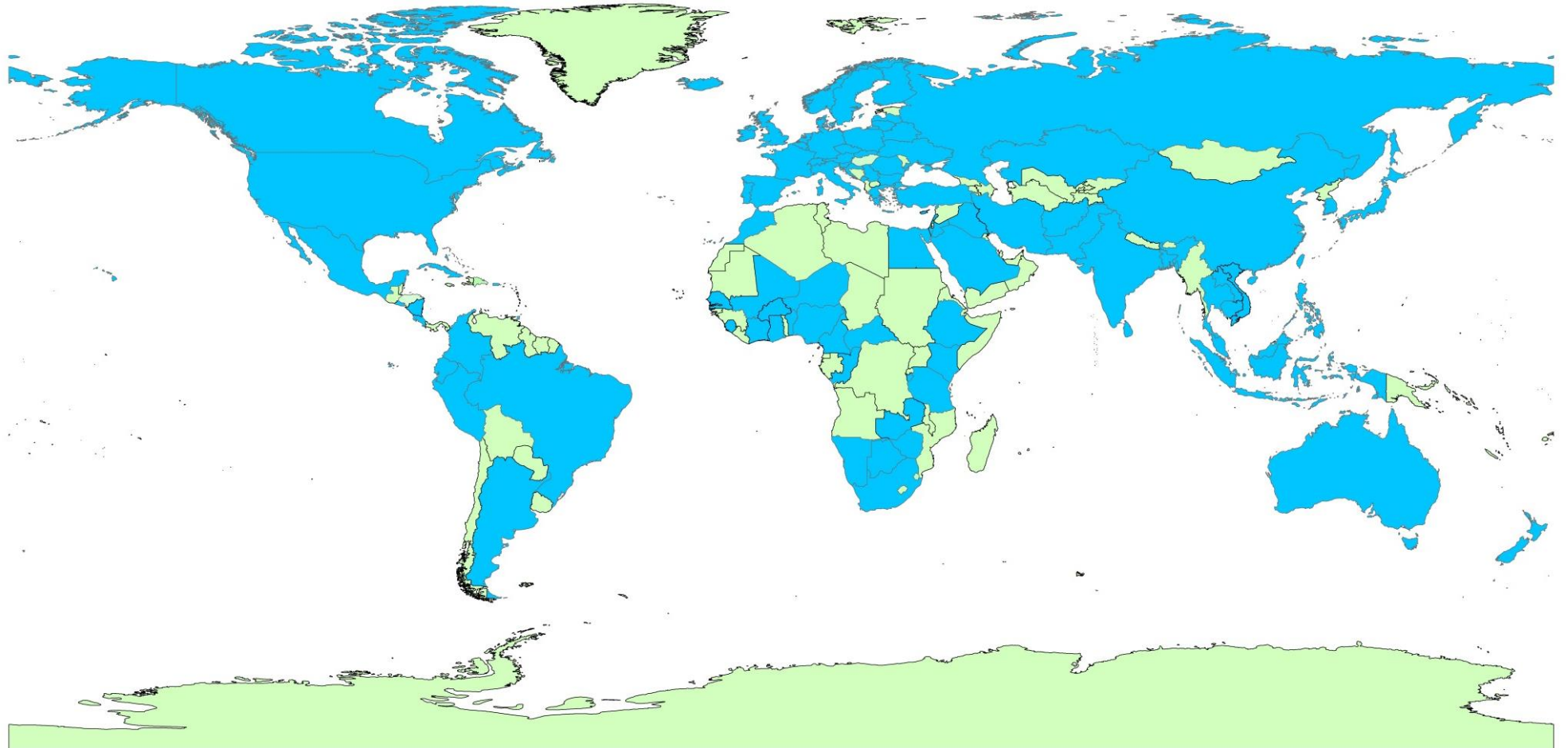
WMO Regions & Germany: deliveries to 96 countries



Last year alone more than 300,000 time series provided to data users

# *GRDC Data Requests*

*Data delivered to 96 countries (blue)*



*This year already more than 500,000 time series provided to data users*

# Partner Data Centres

*Precipitation: GPCC*

[gpcc.dwd.de](http://gpcc.dwd.de)

**Global Precipitation Climatology Centre**

Offenbach, Germany



*Water Quality: GEMS/Water GEMStat*

<http://www.gemstat.org>

**Global Environment Monitoring System of UN Environment**

Koblenz, Germany



*Groundwater: IGRAC*

<http://www.igrac.net>

**International Groundwater Resources Assessment Centre**

Delft, The Netherlands



*Lakes and Reservoirs: HYDROLARE*

[www.hydrolare.ru](http://www.hydrolare.ru)

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

St. Petersburg, Russia





# *...30 years GRDC*

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*Thank you for your attention!*