GRDC (Global Runoff Data Centre)
Presentation at Data Storage Solution Workshop

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Federal Institute of Hydrology (BfG) Koblenz, Germany
GRDC operational environment

Operates under the auspices of the
World Meteorological Organisation (WMO)

with the financial support of the
Federal Republic of Germany

within the
Federal Institute of Hydrology (BfG)
GRDC Data in WMO Catalogue for Climate Data

The WMO Catalogue for Climate Data is a trustworthy source for climate data. The datasets have been assessed through an internationally agreed maturity evaluation process. An initial 18 global climate datasets have been so far submitted by international domain Subject Matter Experts (SMEs) and assessed. The content of the catalogue is expected to expand quickly in the future with the addition of other global datasets as well as regional and national climate datasets.

- Temperature: NOAAGlobalTemp
- Temperature: HadCRUT4
- Temperature: GISTEMP
- Precipitation: GPCP
- Precipitation: CoCoRaHS
- Sea level: GLOSS
- Sea level: CCI-SeaLevel
- Sea level: CIS SeaLevel
- Sea ice: SeaIce Index
- Ice sheets: GLAS-DEM-500m
- Ice sheets: GLAS-DEM-1km
- Ice sheets: Antarctica-GRACE
- Ice sheets: Greenland-GRACE
- Glaciers: GLIMS
- Climate indices: HadEX2
- Hydrology: GRDC
- Marine: WOD13
- Marine: ICOADS
Current status of the Global Runoff Database

Global Coverage of GRDC Stations indicated by time series end

9922 GRDC stations with monthly data, incl. data derived from daily data (Status: 22 January 2020)
## Current status of the Global Runoff Database

Quality controlled mean daily and mean monthly discharge data

<table>
<thead>
<tr>
<th></th>
<th>World</th>
<th>Africa</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Number of stations</strong></td>
<td>9,922</td>
<td>1,568</td>
</tr>
<tr>
<td><strong>Station years</strong></td>
<td>436,678</td>
<td>44,014</td>
</tr>
<tr>
<td><strong>Average length</strong></td>
<td>44.01</td>
<td>28.07</td>
</tr>
<tr>
<td><strong>Longest timeseries</strong></td>
<td>212</td>
<td>116</td>
</tr>
<tr>
<td><strong>Earliest timeseries</strong></td>
<td>1806</td>
<td>1869</td>
</tr>
<tr>
<td><strong>Latest timeseries</strong></td>
<td>2019</td>
<td>2019</td>
</tr>
</tbody>
</table>
Data availability for Southern Africa
## Data availability for SADC Member Countries

<table>
<thead>
<tr>
<th>Country</th>
<th># of stations</th>
<th>Earliest data</th>
<th>Latest data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Angola</td>
<td>19</td>
<td>1963</td>
<td>1974</td>
</tr>
<tr>
<td>Botswana</td>
<td>24</td>
<td>1933</td>
<td>2001</td>
</tr>
<tr>
<td>Comoros</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>DRC</td>
<td>6</td>
<td>1903</td>
<td>2010</td>
</tr>
<tr>
<td>Eswatini</td>
<td>37</td>
<td>1953</td>
<td>1993</td>
</tr>
<tr>
<td>Lesotho</td>
<td>23</td>
<td>1964</td>
<td>1993</td>
</tr>
<tr>
<td>Madagascar</td>
<td>35</td>
<td>1948</td>
<td>1988</td>
</tr>
<tr>
<td>Malawi</td>
<td>50</td>
<td>1951</td>
<td>1991</td>
</tr>
<tr>
<td>Mauritius</td>
<td>6</td>
<td>1976</td>
<td>1988</td>
</tr>
<tr>
<td>Mozambique</td>
<td>19</td>
<td>1951</td>
<td>1993</td>
</tr>
<tr>
<td>Namibia</td>
<td>50</td>
<td>1942</td>
<td>2018</td>
</tr>
<tr>
<td>Seychelles</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>South Africa</td>
<td>317</td>
<td>1904</td>
<td>2019</td>
</tr>
<tr>
<td>Tanzania</td>
<td>96</td>
<td>1940</td>
<td>1991</td>
</tr>
<tr>
<td>Zambia</td>
<td>75</td>
<td>1941</td>
<td>2005</td>
</tr>
<tr>
<td>Zimbabwe</td>
<td>121</td>
<td>1948</td>
<td>1990</td>
</tr>
</tbody>
</table>
**Data acquisition**

Based on: WMO Resolution 21 (Cg XII, 1995) Support to GRDC
WMO Resolution 25 (Cg XIII, 1999) Exchange of Hydrological Data and Products

- **Primary data providers are the National Hydrological Services**
- **Ownership of the data remains with original data provider**
- **No institutionalised data provisioning**
- **No payment for offered data**
- **Data requests to National Services at intervals**
- **Opportunistic data acquisition strategy**
- **Individual contact often essential for successful data acquisition**
- **Data only offered by GRDC with authorisation by National Authorities**
GRDC Data Acquisition
GRDC data providers 2019

Recent Updates

2019-12-16 Update Iceland (21 stations, 2 new)
The GRDC has updated the Global Runoff Database for 21 stations from Iceland with daily discharge data.

2019-11-12 Update Canada (1113 stations)
The GRDC has updated the Global Runoff Database for 1113 stations from Canada with daily discharge data.

2019-11-08 Update USA (664 stations)
The GRDC has updated the Global Runoff Database for 664 stations from the United States of America with daily discharge data.

2019-10-31 Update Latvia (4 stations)
The GRDC has updated the Global Runoff Database for 4 stations from Latvia with daily discharge data.

2019-10-01 Update Greenland (1 station)
The GRDC has updated the Global Runoff Database for 1 station from Greenland (CI) with daily discharge data.

2019-08-27 Update Finland (138 stations, 41 new)
The GRDC has updated the Global Runoff Database for 138 stations, 41 new from Finland with daily discharge data.

2019-09-20 Update Jamaica (5 stations)
The GRDC has updated the Global Runoff Database for 5 stations from Jamaica with daily discharge data.

2019-09-10 Update Great Britain (225 stations)
The GRDC has updated 225 stations from Great Britain with daily discharge data.

2019-07-25 Update Denmark (31 stations, 16 new)
The GRDC has updated the Global Runoff Database for 31 stations from Denmark with daily discharge data.

2019-07-25 Update Liberia (7 stations)
The GRDC has updated the Global Runoff Database for 7 stations from Liberia with daily discharge data.

2019-07-25 Update Slovak Republic (15 stations)
The GRDC has updated the Global Runoff Database for 15 stations from the Slovak Republic with daily discharge data.

2019-07-25 Update Czech Republic (36 stations)
The GRDC has updated the Global Runoff Database for 36 stations from the Czech Republic with daily discharge data.

2019-07-05 Update Azerbaijan (2 stations)
The GRDC has updated the Global Runoff Database for 2 stations from Azerbaijan with daily discharge data.

2019-07-04 Update Peru (4 new stations)
The GRDC has updated the Global Runoff Database for 4 stations from Peru with daily discharge data.

2019-07-04 Update Bolivia (4 new stations)
The GRDC has updated the Global Runoff Database for 4 stations from Bolivia with daily discharge data.

2019-06-25 Update Estonia (54 stations, 59 new)
The GRDC has updated the Global Runoff Database for 54 stations from Estonia with daily discharge data.

2019-06-25 Update Israel (8 stations, 2 new)
The GRDC has updated the Global Runoff Database for 8 stations from Israel with daily discharge data.

2019-06-25 Update Poland (35 stations, 45 new)
The GRDC has updated the Global Runoff Database for 35 stations from Poland with daily discharge data.

2019-05-15 Update Latvia (65 new stations)
The GRDC has updated the Global Runoff Database for 65 new stations from Latvia with daily discharge data.

2019-06-16 Update Lithuania (64 new stations)
The GRDC has updated the Global Runoff Database for 64 new stations from Lithuania with daily discharge data.

2019-06-11 Update Belarus (46 new stations)
The GRDC has updated the Global Runoff Database for 46 stations from Belarus with daily discharge data.

2019-06-23 Update Namibia (62 stations)
The GRDC has updated the Global Runoff Database for 62 stations from Namibia with daily discharge data.

2019-06-22 Update Iran (24 new stations)
The GRDC has updated the Global Runoff Database for 24 new stations from Iran with daily discharge data.

2019-03-26 Update Jordan (3 Stations, 1 new)
The GRDC has updated the Global Runoff Database for 3 stations (1 new) from Jordan with daily discharge data.

2019-02-07 Update South Africa (207 Stations)
The GRDC has updated the Global Runoff Database for 207 stations from South Africa with daily discharge data.
GRDC Data Access Policy

based on RESOLUTION 25 (Cg-XIII, 1999)
Exchange of Hydrological Data and Products

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
GRDC data portal coming soon

The GRDC
30 years of serving international programmes and trans-national projects
Multiple station selection options
Multiple station selection options
Data policy integrated in data request

Download Discharge Data for 1 Stations

Please provide your contact information and details for the requested download. A download link for the requested data will be sent to the email address entered.

Last name, First name
Ulrich Looser

Email address
Looser@bafg.de

Institution
GRDC at BFG

Working sector
Academic Institution

Country
Germany

GRDC Export Format (daily and monthly data)

- GRDC Export Format (daily only)
- GRDC Export Format (monthly data only)
- GRDC Export Format (daily and monthly data)

GRDC Export Format (daily and monthly data)

- GRDC Statistics Format (statistics only)
- WaterML2 (monthly data only)
- ZrXP (daily data only)
- ZrXP (monthly data only)
- ZrXP (daily and monthly data)

The selected format is estimated to be around 2 files with a total download size of 0.02 MB. If you choose to submit, your download will be processed and an email will be sent to you when it is ready.

I, as the representative of the requesting organisation, accept the general Terms of Use and the Data Protection Regulations.

I, as the representative of the requesting organisation, specifically agree to the following Data Sharing Conditions.

Cancel Request download
GRDC data formats for daily and monthly discharge data
GRDC Data Products
Examples from GRDC Website

Apart from river discharge timeseries GRDC offers related data products which are listed on the GRDC Website [http://grdc.bafg.de](http://grdc.bafg.de)

**Major River Basins of the World (GRDC, 2007)**
The Major River Basins of the World is an ongoing GIS project 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 607 associated rivers.

**Watershed Boundaries of GRDC Stations (GRDC, 2011)**
Modern GIS technology allows for the delineation of basins for almost every point on the Earth's surface. Against this background, GRDC is repeatedly asked for the provision of watershed boundaries for the gauging stations represented in the Global Runoff Data Base. The watershed boundaries of more than 7000 GRDC stations were generated using the HydroSHEDS drainage network.

**WMO Regions and Subregions (GRDC, 2004)**
The meteorological and related activities within WMO are coordinated by the WMO Regional Associations (RAs), composed of the WMO-Members from the respective regions of the world. The WMO regions basically coincide with the outlines of the continents.

**Global Freshwater Fluxes into the World Oceans (GRDC, 2014)**
The GRDC Global Freshwater Fluxes into the World Oceans are re-calculated and displayed for land areas associated with the UNEP GIIWA Regions (UNEP, 2014) and as well freshwater fluxes from the 5° cells along the continent’s coastlines. Freshwater fluxes calculated per 5° and 10° latitude bands show how much freshwater flows from a specific continent into a specific ocean.

**Annual Characteristics and Long-Term Statistics of GRDC Timeseries Data**
Basic hydrological statistics of timeseries data of the gauging stations being represented in the Global Runoff Database. Annual characteristics are derived from monthly discharge data, either aggregated daily data or originally provided monthly data. Long-term statistics and long-term variability are derived from

**Global Composite Runoff Fields (CSRC-UNH and GRDC, 2002)**
The Global Composite Runoff Fields product was developed in a cooperation between the Water Systems Analysis Group (WSAG) at CSRC of University of New Hampshire (UNH) and the GRDC. It demonstrates the potential of combining observed river discharge information with a climate-driven water balance model in order to develop composite runoff fields which are consistent with observed discharges.
Global Runoff Data Centre (GRDC)

Ulrich Looser (Head, Liaison, Data Acquisition)
Thomas de Couet (Requests & GIS Products)
Irina Dornblut (Data & Metadata QC, Website, Portal Development)
Thomas Recknagel (Product Development)

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Thank you for your attention!