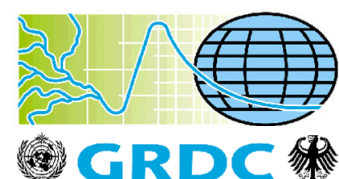
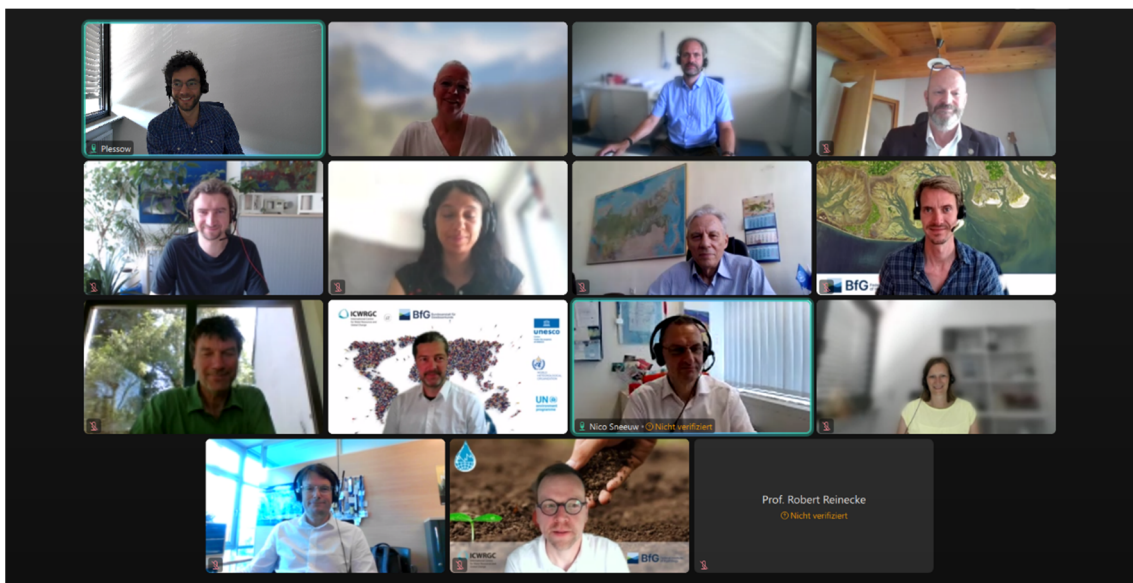


# Meeting Notes

## Fifteenth Meeting of the GRDC Steering Committee

26 June 2024, 09:00 – 14:30 CEST – Virtual



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## 1 Welcome and Opening of the 15th GRDC Steering Committee Meeting

The 15th GRDC Steering Committee Meeting was opened on 26 June 2024 at 09:00 by Ms. Petra Herzog, representing Ms. Birgit Esser, Director-General of the Federal Institute of Hydrology (BfG). Attendees included representatives from WMO, UNESCO and GCOS as well as the universities of Mainz and Stuttgart, along with representatives from GTN-H partner data centres, and staff from BfG and GRDC. The full Agenda is provided in ANNEX I. A full list of participants is provided in ANNEX II.

In her welcoming words, Ms. Herzog highlighted that BfG is hosting GRDC for more than 35 years and appreciated its visibility in the global hydrological community. Since 2014, the UNESCO Category 2 Centre on Water Resources and Global Change (ICWRGC) and the Global Water Quality Database GEMStat are additionally located at BfG, as well as the International Soil Moisture Network (ISMN) since 2022. All these initiatives significantly enhance BfG's global presence.

Ms. Herzog further highlighted that increasingly more data requests have been received since the launch of GRDC's data portal and that the database is successfully growing. She also pointed out the changes in the personal resources since the last Steering Committee. Dr. Simon Mischel is the new head of the GRDC since October 2023, replacing Mr. Ulrich Looser who has retired in August 2023. Additionally, Ms. Irina Dornblut has retired in December 2021. Her position has been replaced by Dr. Claudia Färber, who is responsible for outreach and GIS products since February 2022. In addition, Mr. Thomas Recknagel, responsible for product development, has left GRDC in early summer 2023. This position won't be replaced. Nevertheless, Ms. Herzog emphasized that the BfG is committed to make financial resources available to ensure GRDC's long term support as a German contribution to WMO.

The main aim of the Steering Committee was to discuss the following points with the participants:

- Introduction of "river water level" as new parameter for GRDC's portfolio.
- Integration of station data via API

- Provision of data for commercial use/license issues
- Development of GRDC API
- Changes in the data policy of GRDC

After the welcome words of Ms. Herzog, all participants were given a chance to introduce themselves.

## 2 WMO and UNESCO

The current developments within WMO were presented by Dr. Dominique Berod, including the report on INFCOM-3 and the most important decisions.

Dr. Antonio Bombelli from the Global Climate Observing System (GCOS) gave an introduction into the Terrestrial Observation Panel for Climate (TOPC) with focus on the Essential Climate Variables (ECVs).

Ms. Ruth Nguma from UNESCO-IHP, presented the role of UNESCO-IHP in advancing science for global water security and provided an outlook for the future.

Due to the absence of Mr. Fabio Bernal, his presentation was skipped.

## 3 Contributions and feedback on GRDC key activities and status report

Dr Mischel gave an overview about GRDC, including its recent networking and data acquisition activities. The database is successfully growing and has increased by 500 stations since the last Steering Committee Meeting in 2021. He further highlighted the contribution of GRDC to the WMO State of Global Water Resources Report in the last two years and that the number of discharge stations for this year's report has more than doubled. In addition, he pointed out that GRDC has a new collaboration with Prof. Nico Sneeuw and his team at the University of Stuttgart, initiated at the Hydrospace2023 conference in Lisbon last year. In a recent project, Prof. Sneeuw and his team have expanded the monthly time series of 839 GRDC stations using satellite data (also presented later in the SC Meeting). The connection established between the WMO reporting team and the University of Stuttgart was viewed positively by both sides.

Dr. Mischel further reported on the development of the extended BALTEX (Baltic Sea Experiment) dataset as a contribution to the Baltic Earth conference in 2024. An accompanying scientific paper is currently in preparation. Additionally, Dr. Mischel explained the differences between GRDC, the Caravan contribution and the ROBIN project and assured their long-term collaboration.

As a major future development of GRDC, Dr. Mischel presented the intended integration of river water level data as an additional parameter. As river water level data is currently collected by no global data centre, the integration into GRDC will significantly support GCOS and the ECV 'River' as well as the users interested in this parameter.

In the second presentation covering GRDC, Mr. Plessow gave a quick introduction how to download time series data from the GRDC data portal and presented a statistical overview of the database and the GRDC user requests.

In the third presentation for the GRDC activities, Dr. Färber briefly presented current GRDC data products and outreach activities. This included the applications 'Freshwater Fluxes into the World's Oceans' and 'Major River Basins'. In addition, she presented the collaboration with Caravans and the accompanying dataset published on Zenodo. Finally, she provided an overview about conference contributions from the past three years and planned publications of GRDC as well as the new GRDC website, which will be accessible soon.

In the following discussion, Dr. Berod highlighted the need to link different cycles, to establish the connection to satellite community (CNES, LEGOS) and to develop linkages between different communities (terrestrial, hydrological, marine). Prof. Reinecke recommended to develop a strategy how to close data gaps (e.g. local workshops) and to highlight how to contribute data on the homepage. Prof. Sneeuw pointed out the need to flag data quantitatively according to their quality. Dr. Dietrich highlighted the need for uncertainty estimates as discussed with data centres during GTN-H meeting. Dr. Berod highlighted that data providers can be very sensitive and must stay owners of data. Therefore, the potential problem to share data with private companies should be discussed with Caravan/Robin initiatives. In addition, Dr. Berod highlighted the need for analyses on changes in hydrological regime (like freshwater fluxes) with time. Finally, Prof. Vuglinsky mentioned the possibility to integrate satellite water level data from LEGOS into GRDC.

## 4 Brief contributions from data centres and scientific partners

In the following, representatives from partner data centres and universities provided an overview about relevant activities.

Dr. Dietrich summarized the outcomes of the 11<sup>th</sup> GTN-H panel meeting held in July 2024 in Geneva.

Mr. Saile from GEMStat presented his current work in OGC and WMO (data sharing, WHOS/WIS).

Prof. Vuglinsky (HYDROLARE) and Dr. Ziese (GPCC) gave a report on their current status and update of their data centres work.

Ms. Ruz-Vargas (Delft, Netherlands) presented the recent developments of IGRAC and their work to provide information and knowledge on groundwater worldwide to support decision-making.

Prof. Sneeuw (University of Stuttgart) showed in this presentation how to augment the GRDC database by satellite data.

In the discussion, Prof. Reinecke asked if there are plans to search for synergies with the scientific modelling community e.g. through ISIMIP (<https://www.isimip.org> and <https://data.isimip.org>). He highlighted the potential benefit to make insights about the water cycle more visible to decision-makers. This discussion has also been held in the context of HydroSOS and the State of the Global Water Resources Report and could be continued by the data centres as well. Mr. Cullmann highlighted the need to make information visible for policy development. Ms. Ruz Vargas recommended to reach out to other types of media, e.g. newspapers. Dr. Dietrich pointed out the potential to find observational station where GRDC data and satellite data are available.

## 5 Discussion and future developments

The discussion was started by a presentation of Dr. Mischel targeting the following future developments of GRDC:

- River water level integration
- Data Integration via API
- Data policy

### 1) River water level

In the discussion, most participants supported the planned expansion of GRDC to provide river water level data. WMO and GCOS suggested to write a support letter to NHSs to request for water level data as additional parameter to river discharge. However, Prof. Sneeuw raised the concern, that in the non-geodetic practice often no concept of the variable "height" exists. He stated that there are different height definitions and it is crucial that a date reference is defined. He suggested to collaborate with BfG's geodesy department. Dr. Berod recommended the available definitions in WMO guidelines available and pointed out the opportunity for GRDC to act as a data recovery service for other NHS's. He also highlighted the need to collaborate with the satellite community and to establish connection to the lake community (also lake level measured). Prof. Reinecke raised the concern if enough personnel resources are available for implementing the new variable into GRDC database and asked if the development would lead to the integration of unverified data. Dr. Bombelli highlighted the importance of river water level for GCOS.

### 2) Data integration via API

The Steering Committee recognized additional data integration via API's from NHS as a chance, especially near real time data, but highlighted the need for a proper flagging scheme.

It was highlighted that WMO and WHOS would benefit from the station expansion, but the question which and how many stations should be imported, was discussed controversially. Prof. Reinecke pointed out that GRDC users would benefit from an integration of more stations in the database, but this would require as much automation as possible as well as a proper flagging scheme. Mr. Saile and Dr. Zink expressed concerns about the time demand of quality assurance, especially in consideration of the limited personnel situation of GRDC. But they likewise suggested to automate as much as possible and flag data accordingly. Mr. Saile additionally saw a large overlap with WHOS in terms of API and mentioned the staged approach of GEMStat (creative commons, attribution, non-commercial use). Dr. Zink recommended to split the database into quality-controlled historical and non-quality assured close to near-time data. He also offered help from ISMN for automation. Dr. Berod highlighted that the whole WIS family could help with open source and suggested to have an automatic solution. He offered to provide contact to Fabio Bernal and other regional advisors to set up a test. It was also discussed that the difficulty in this approach is that each country uses its own flagging system, which cannot be passed through equally and would requires proper categorization.

### 3) Data policy

The suggestion to enable the possibility to download the entire database at once was well received. Dr. Berod welcomed to adjust the current paragraph in the GRDC data policy, that no consent of WMO Secretariat will be needed to download the entire database. Additionally, Dr. Berod offered to provide the contact of the data policy coordinator of WMO to discuss the envisaged changes in the GRDC data policy. Ms Herzog also highlighted that the legal and technical divisions of BfG should be included into the discussions. The changes in the data policy will need a final agreement by the Steering Committee.

Mr. Saile pointed out that countries have different data policies for different parameters (e.g. India). He recommended to use synergies such as shared spreadsheet and highlighted the need for a clear communication of data policy and licenses to users. In addition, he pointed to the potential technical issue that a separation between the data portal and the API might not be possible and raised the question of potential performance issues using the API for near-real time data. Dr. Zink added the solution to use API tokens for identified access.

## 6 Date of next meeting, any other business and closure

It was agreed that the Steering Committee will be held every two years, preferably in person. A date should be found at the beginning of 2026.

Dr. Berod thanked the German Government and the BfG on behalf of the WMO for funding and hosting GRDC over the past 35 years and commended the GRDC team on the work done over the last years.

Ms Herzog thanked the Steering Committee members for their constructive and positive contributions and willingness to support GRDC. As chair, she closed the 15<sup>th</sup> GRDC Steering Committee Meeting at 14:30.

## ANNEX I Agenda

Time (CEST)	Topic	Presenter
08:45 – 09:00	<b>Login and testing of communication tools (link will be provided)</b>	All
09:00 - 09:20	<b>Opening, Introduction, Background and Feedback</b> <ul style="list-style-type: none"> <li>Welcome and opening of 15<sup>th</sup> GRDC Steering Committee Meeting</li> <li>Objectives and expected outcomes of the meeting</li> <li>Introduction of participants and adoption of the agenda</li> </ul>	P Herzog  All
09:20 – 10:30	<b>WMO and UNESCO</b> <ul style="list-style-type: none"> <li>Current developments, report on INFCOM-3</li> <li>GCOS TOPC</li> <li>WMO RA III: Report on activities</li> <li>The role of UNESCO-IHP towards enhancing science for a water secure World and outlook to the future</li> </ul>	D Berod A Bombelli F Bernal R Nguma
10:30 – 10:40	<b>Health break</b>	
10:40 - 11:40	<b>Contributions and feedback on GRDC key activities and status report</b> <ul style="list-style-type: none"> <li>Overview of GRDC and its network</li> <li>Data acquisition</li> <li>GRDC database and download Portal</li> <li>Data request statistics</li> <li>Introduction of new website</li> <li>Data product development and publications</li> </ul>	S Mischel  H Plessow  C Färber
11:40 - 12:30  8 min each presentation + 2 min Q/A	<b>Brief contributions from data centres</b> <ul style="list-style-type: none"> <li>Outcomes of the 11<sup>th</sup> GTN-H panel meeting</li> <li>GEMStat: current work in OGC and WMO (data sharing, WHOS/WIS)</li> <li>HYDROLARE: current status and update</li> <li>DWD GPCC: Status update</li> <li>IGRAC: recent developments and questionnaire</li> <li>Augmenting the GRDC database by satellite data</li> </ul>	S Dietrich P Saile  V Vuglinsky M Ziese C Ruz-Vargaz  N Sneeuw
12:30 – 13:00	<b>Lunch break</b>	
13:00 – 14:45	<b>Discussion and future developments</b> <ul style="list-style-type: none"> <li>Integration of water level data</li> <li>Additional data integration via API</li> </ul>	GRDC, All

Time (CEST)	Topic	Presenter
	<ul style="list-style-type: none"> <li>• Update of GRDC data policy</li> </ul>	
14:45 – 15:00	<b>Date of next meeting, any other business and closure</b> <ul style="list-style-type: none"> <li>• Q/A: Data centres</li> <li>• Connecting participants for future activities</li> <li>• TBD</li> </ul>	All P Herzog



## ANNEX II List of Participants

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