



United Nations
Educational, Scientific and
Cultural Organization



International Centre
for Water Resources and Global Change
under the auspices of UNESCO

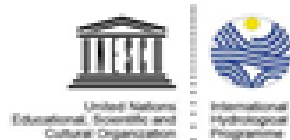


International Centre for Water Ressources and Global Change

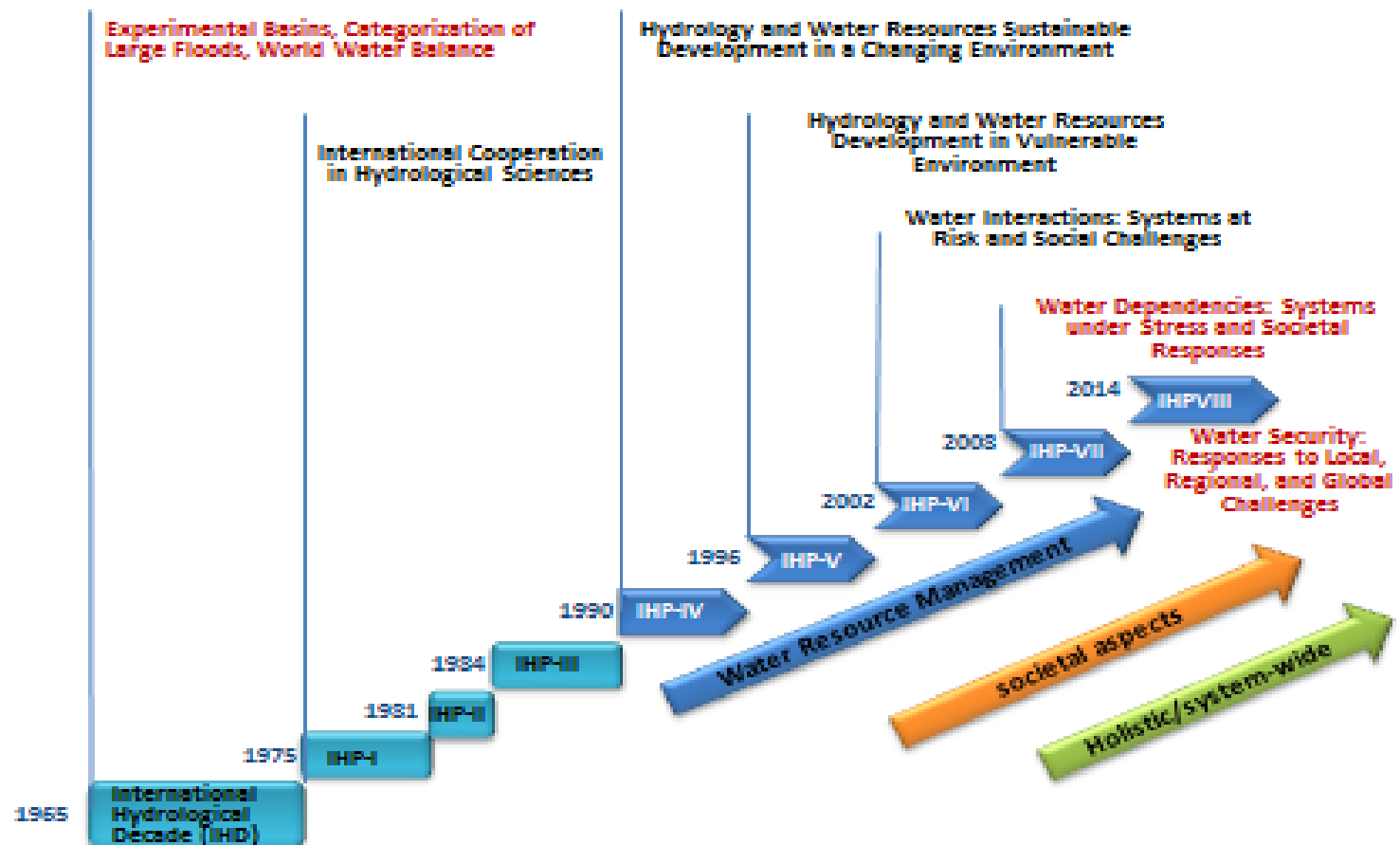
Ulrich Schröder



Entwicklung des IHP der UNESCO



Evolution of IHP: From Hydrological Science to Integrated Science, Policy, and Society

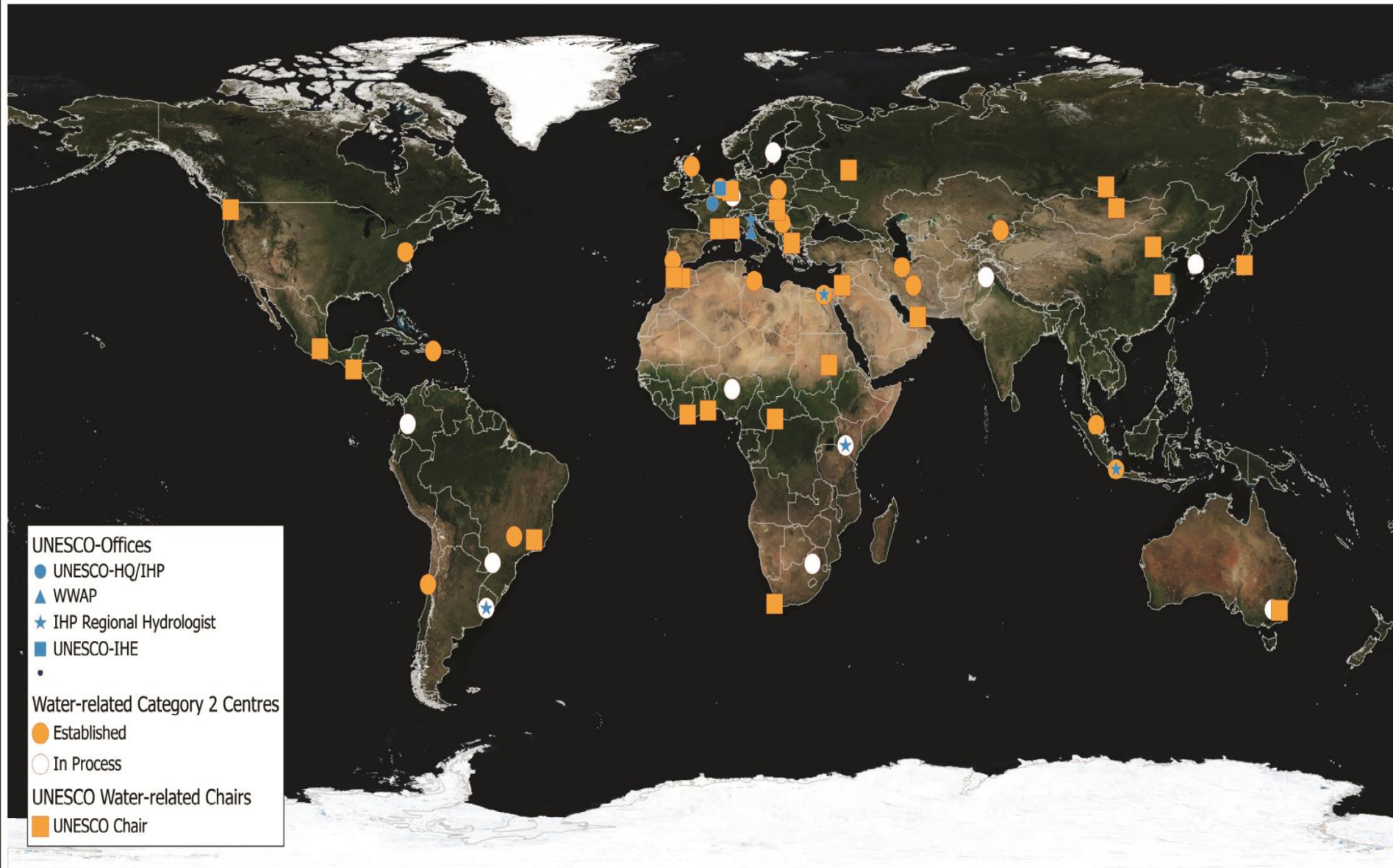




VIII Phase des IHP der UNESCO 2014-2021



Water family



International Centre for Water Resources and Global Change

UNESCO Cat 2 Centre



Research Projects

Seamless Prediction

- Operational water level forecasting, application of error correction procedures (BfG)

Climate impact research in Vietnam

- Interaction between land use and climate change (Institut für Technologie, KIT)

Global Change (to be discussed)



Education and Capacity Development

E-Learning

- Online learning modules on IWRM

GEMStat

- Training courses in water quality and data management (BfG)

Summer Schools

- Train-the-Trainer Course, Blended Learning (RWTH Aachen, Germany, 2015)
- Groundwater and Urbanization, Ruhr University of Bochum, Germany

Flood and Drought Management (Jakarta Office)

- Training Course on flood risk assessment
- Training guidelines on integrated flood and drought management



Data

Global Water Data Centre

- Development of data products and indicators based on GRDC and GEMS Water as contribution to SDGs and WWDR

GEMStat

- Acquisition, storage and analysis of water quality data for GEMS Water (BfG)

Global Water Portal

- Development of a global water information system



Networks

Scientific Commissions

- IHP Intergovernmental Council
- Commission for Hydrology (CHy, WMO)
- International Commission for the Hydrology of the Rhine basin (CHR, BfG)
- International Association of Hydrological Sciences (IAHS)
- International Association of Hydrogeologists (IAH)
- Regional Cooperation of the Danube Countries within the framework of the International Hydrological Programme (IHP) of UNESCO (BfG, WSV)
- German-Belgium-Dutch IHP cooperation



Events

Conferences

- International Conference „Water Resources Assessment and Seasonal Prediction“, 2015 (BfG)
- Success stories in conjunctive management of hydrological extremes, 2016 (Princeton, SIDA, ICHARM, Pakistan, Namibia, Niger)
- International Water Quality Symposium 2016 (Chinese Academy of Sciences)

Workshops

- Water Quality in Europe: Challenges and Best Practices, 2015 (IIWQ, BfG)

Meetings

- Tag der Hydrologie 2016
- Region 1 + C2C, Water Chairs, 2016

IHP/HWRP Secretariat

IHP-UNESCO Projects

- FRIEND-EWA (GRDC, BfG)
- CHR – Climate change on snow and ice (BfG)
- Case study on sediment management, Rhine (BfG, ISI)
- Water Quality – Meetings, Guidelines, Scientific (IIWQ, UNESCO)

HWRP-WMO Projects

- Intercomparison of Flood Forecasting Models (BfG)

National Services

- German Hydrological Society (DHG)
- Hydroforum – Internet platform on training and education (Uni Bonn)
- National Scientific Committee/WB
- Water Diplomacy (Federal Foreign Office, Germany; International Centre for Water Cooperation, Sweden; BfG)

International Services

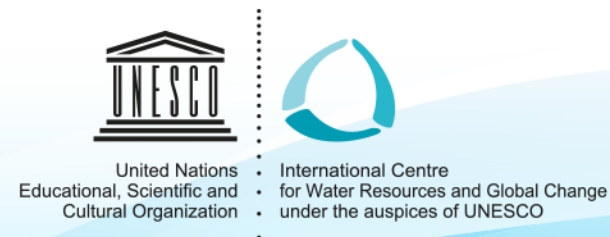
- Coordination of UNESCO's Category 2 Centers
- Series of Publications: IHP/HWRP-Berichte

Partner

CHR • GRDC • GPCC • IAHS • IAH • IGRAC • UN-Water • UNEP • UNESCO • WMO • WWAP

Events

- Workshop on modelling mixed-sediment river morphodynamics, Mai 2015, Delft, Nederland (KHR)
- International Symposium „Preventive Water Diplomacy – Developments and new concepts“, June 2015, Berlin (IHP-UNESCO, AA, BMUB)
- Train-the-Trainer Course – Blended Learning in Hydrology, August 2015, Aachen (IHP-UNESCO, RWTH-Aachen)
- International Conference on Water Resources Assessment and Seasonal Prediction, October 2015, Koblenz (IHP-UNESCO, BfG)
- Workshop “Exploring new data for SMART monitoring of water SDG targets”, November 2015, Maastricht, Nederland (IHP-HWRP Committees of The Netherlands and Belgium)
- UNESCO-IHP Regional Consultation Meeting on “Water Quality in Europe: Challenges and Best Practices”, December 2015, Koblenz (IHP-UNESCO, BfG)



Research

- International Symposium „Preventive Water Diplomacy – Developments and new concepts“, June 2015, Berlin (IHP-UNESCO, AA, BMUB) with the focus on:
 - (1) Conflict solution (e.g. negotiation platform, mediation)
 - (2) Conflict prevention (e.g. risk assessment, confidence building measures)
 - (3) Scope of the cooperation (e.g. international water treaties, conventions)
- International Conference on Water Resources Assessment and Seasonal Prediction, October 2015, Koblenz (IHP-UNESCO, BfG) with the focus on:
 - (1) Political-institutional: supporting institutions in establishing effective water management and coherent policies.
 - (2) *Scientific-technical: establishing* reliable data bases, supporting measures designed to enhance efficiency and developing new technical solutions.
 - (3) Capacity building: developing professional capacities necessary for integrated water resources management.

Paradigm shift from “sharing water” to “sharing the benefits”

New proposal: “Water Diplomacy - Strengthen International Cooperation by preventing conflicts and promoting mutual understanding among countries”

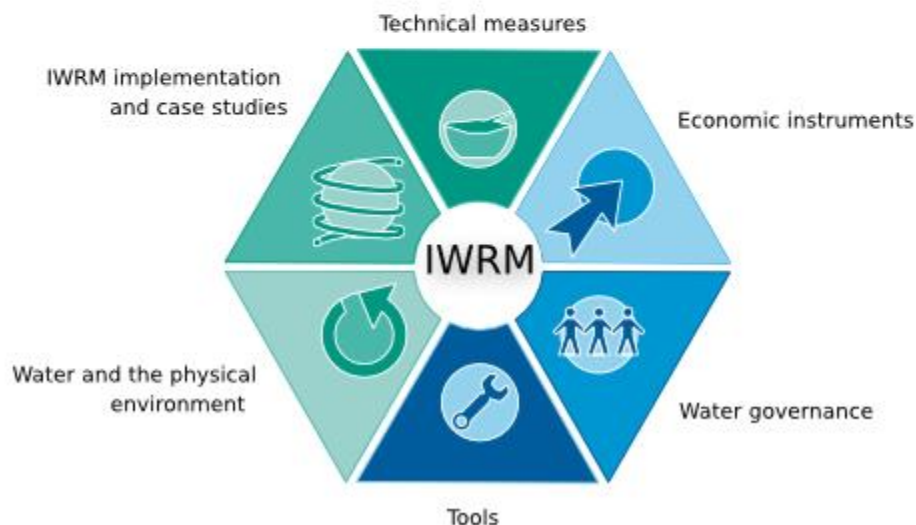


IWRM E-Learning

IWRM - education

E-Learning Module on Integrated Water Resources Management

HOME



To facilitate access to the module, the 39 lectures are subdivided into six categories:

- Water and the physical environment
- Technical measures
- Water governance
- Economic instruments
- Tools
- IWRM implementation and case studies

Target groups of the module are graduating students in water-related fields, decision makers, water experts and administrative staff.

Outreach

EURO-FRIEND

Information zum UNESCO Projekt Flow Regimes from International Experimental and Network Data – Europa

Digitales Inventar kleiner hydrologischer Untersuchungsgebiete

www.euro-friend.de

Hydroforum

Wasserportal zur Aus- und Fortbildung in Hydrologie und Wasserwirtschaft in Deutschland. Information zu internationalen Organisationen mit Bezug zum Wasser.

www.hydroforum.de



International C
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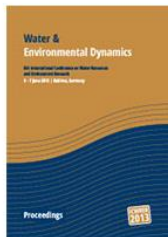
Networks

Network of national and international Experts with objective to exchange knoweldge (350 Participants)



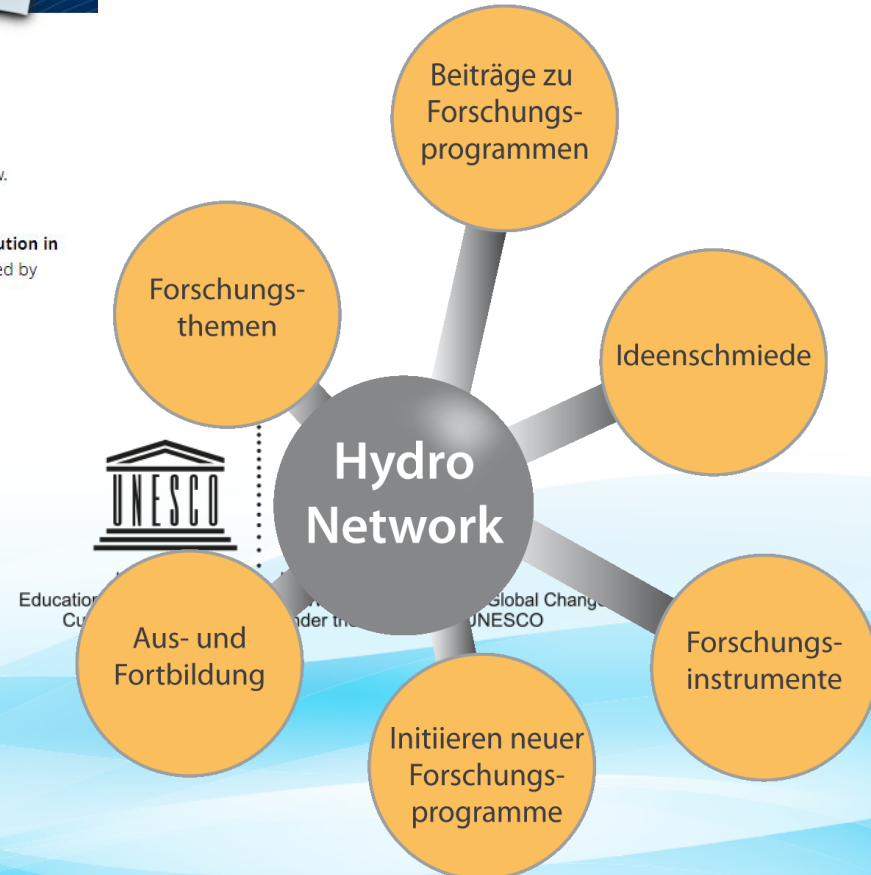
» Welcome	
» Proceedings	NEW
» Gallery	NEW
» Scope of the Conference	
» Highlights	
» Session Programme	
» Conference Committee	
» Downloads	
» Contact	

Welcome to ICWRER 2013 Water & Environmental Dynamics



The electronical full paper conference proceedings are available now. You can download the pdf [here](#).

The books "**Sediment matters - the challenges**" and "**Conflict Resolution in Water Resources and Environmental Management**" will be published by Springer in the course of this year.





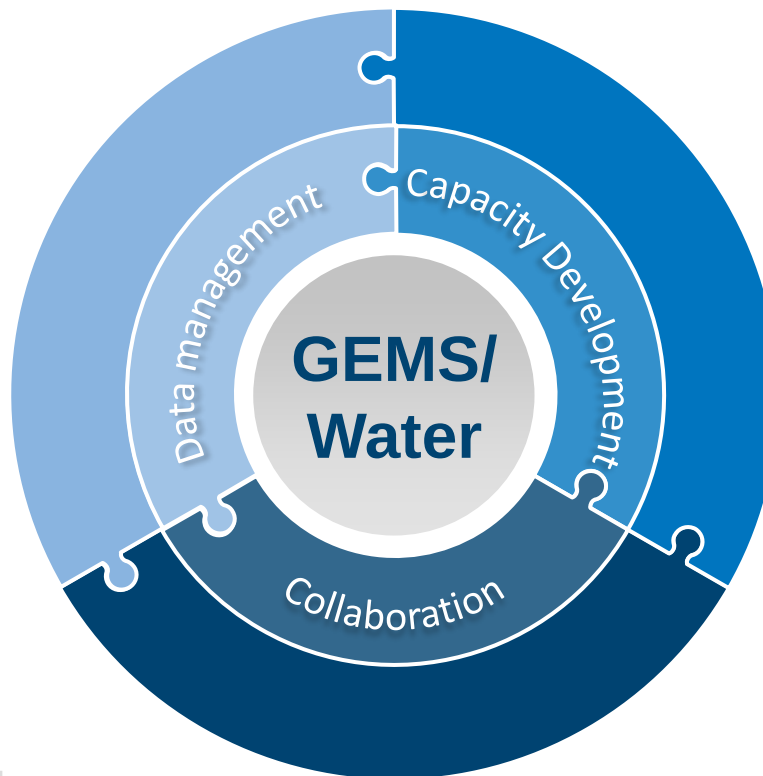
The GEMS/Water Programme

GEMS/Water Data Centre

- Data collection
- QA/QC
- Reporting
- Data products

GEMS/Water Capacity Development Centre

- Assessments
- Member support
- PE studies
- Training courses



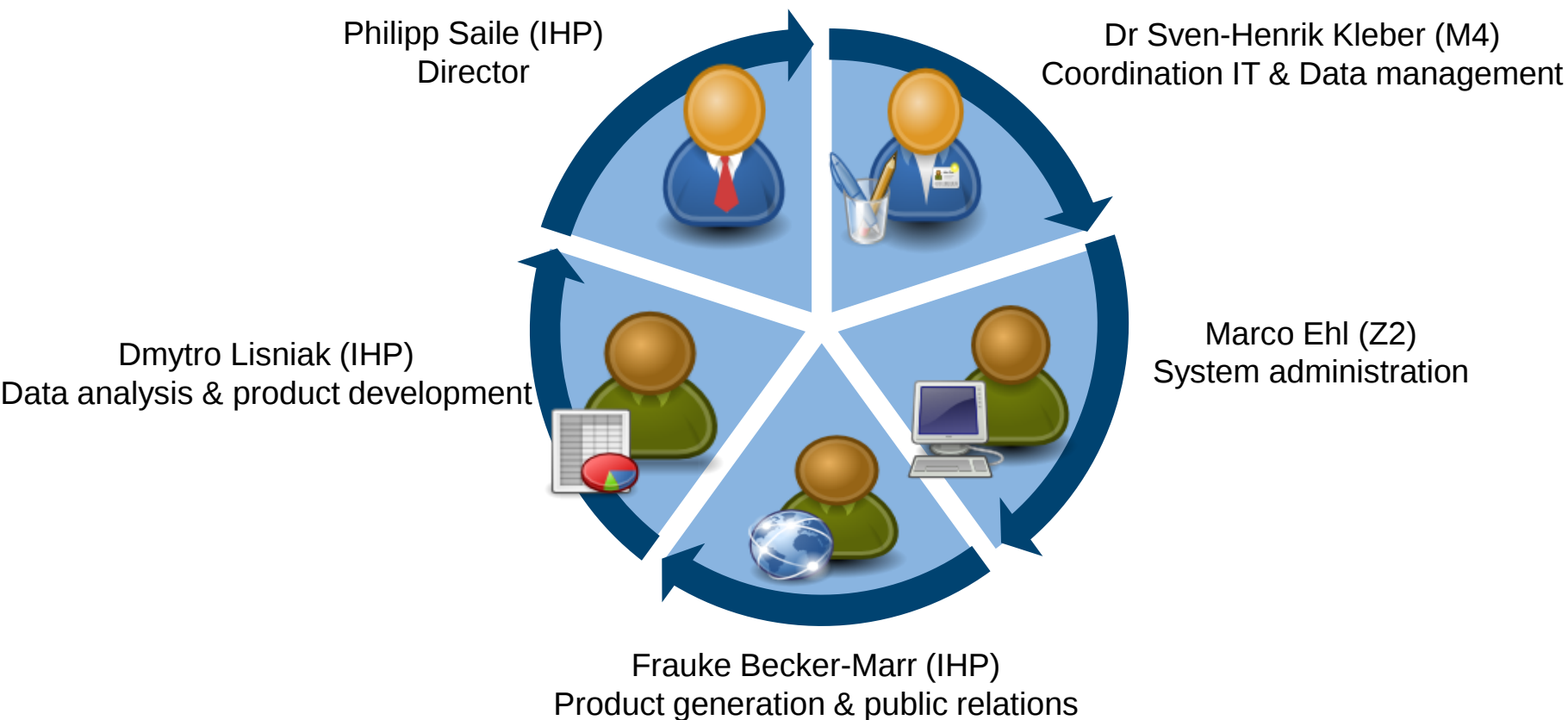
**National/Collaboration
Focal Points**

**Regional offices &
collaborating centres**

Regional hubs

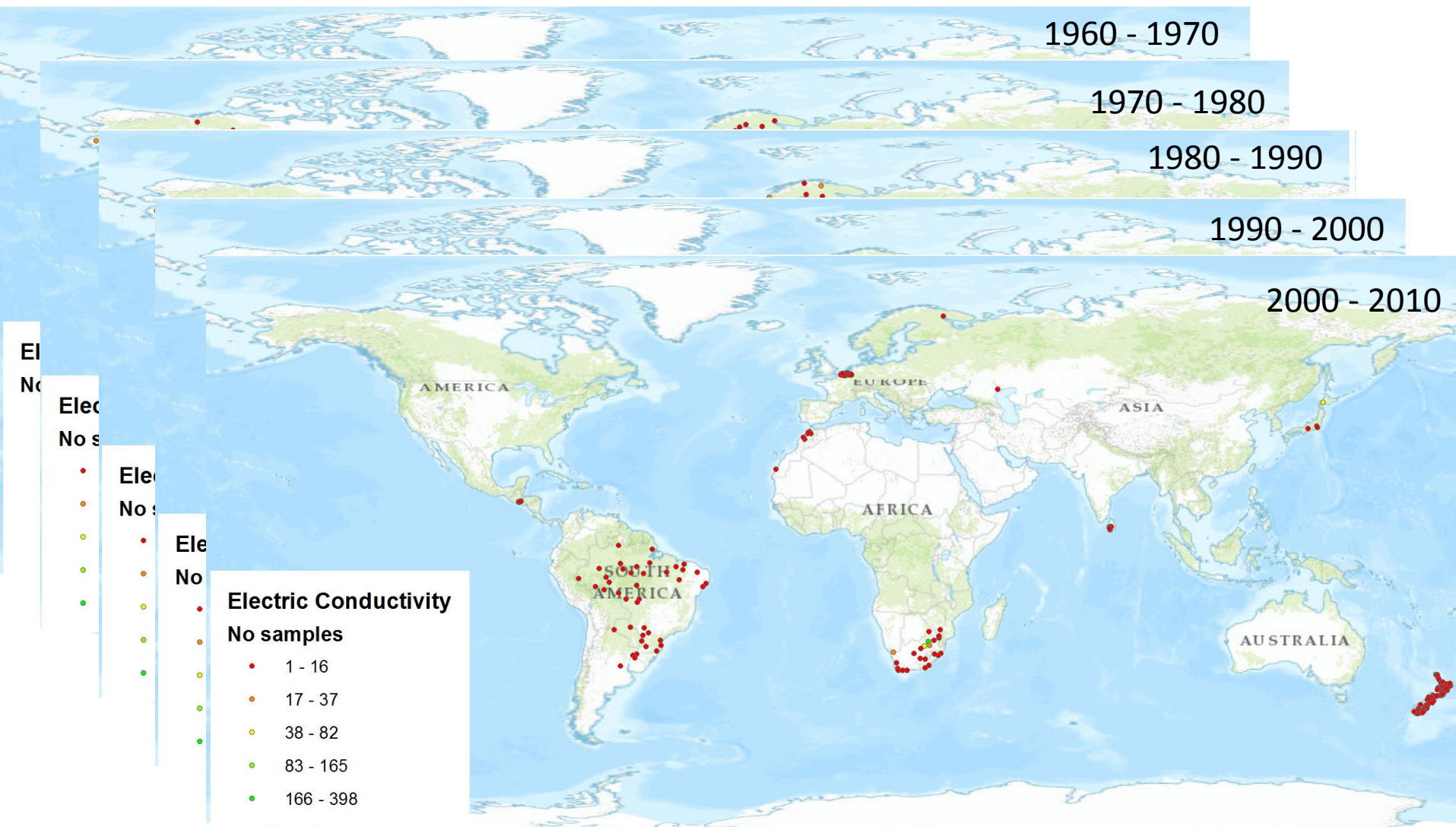


GEMS/Water Data Centre



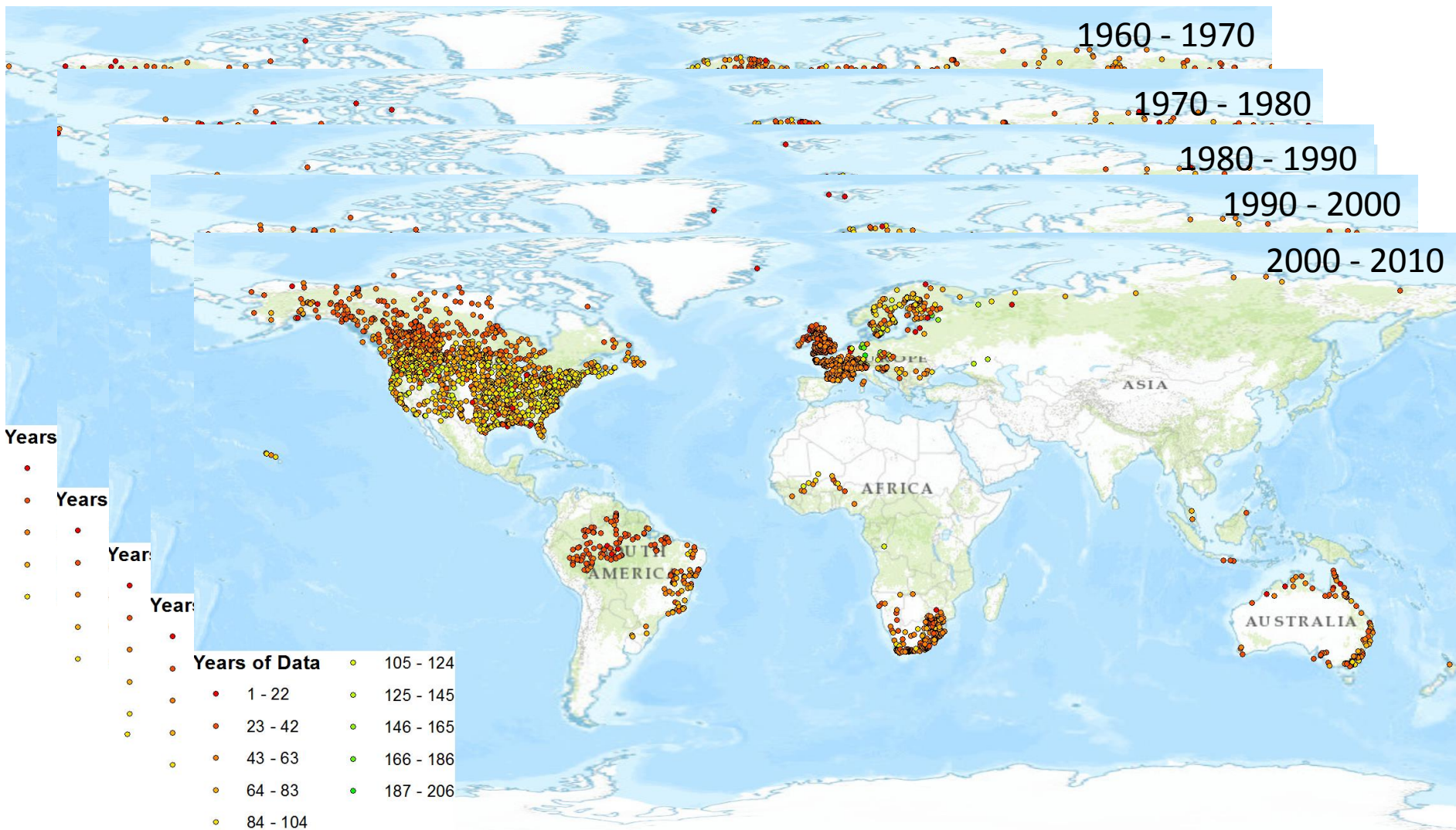


GEMS/Water Data availability (e.g. Electrical Conductance)

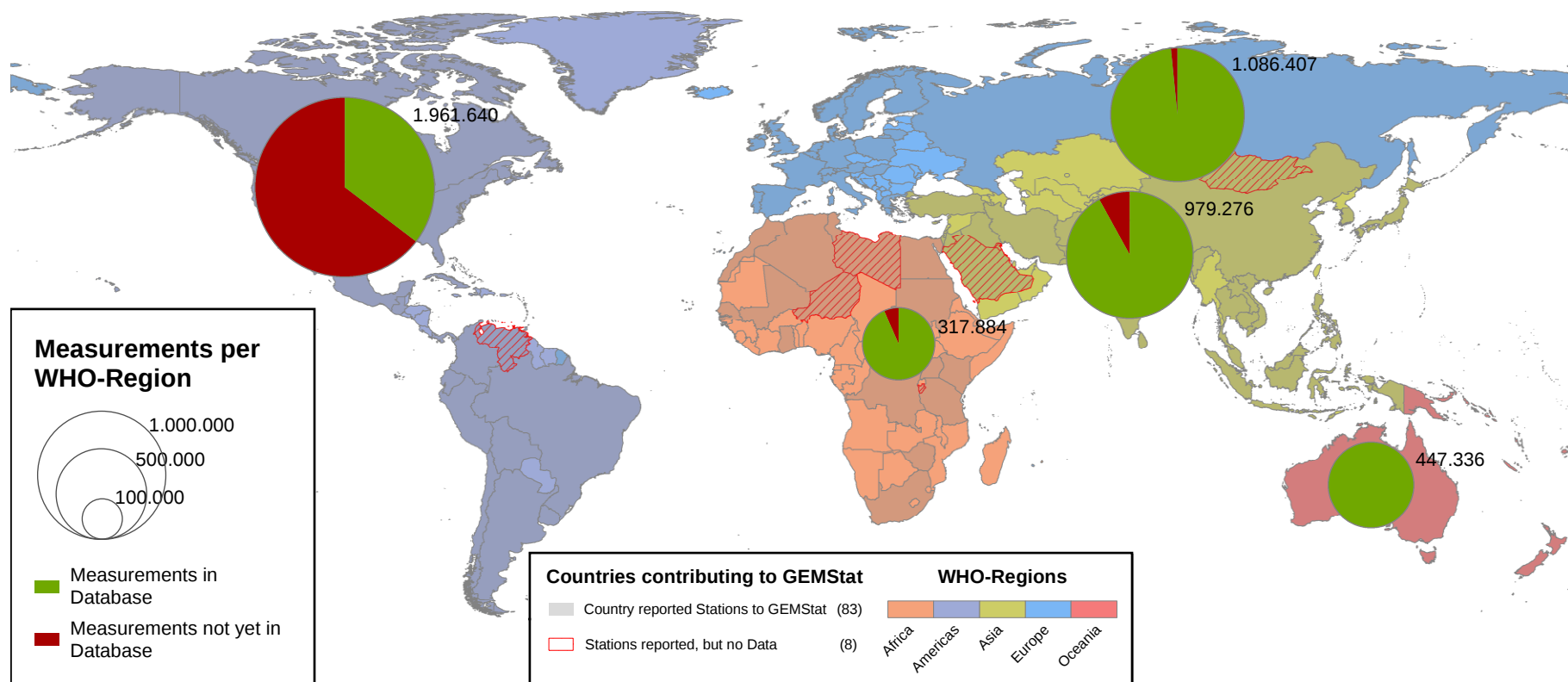




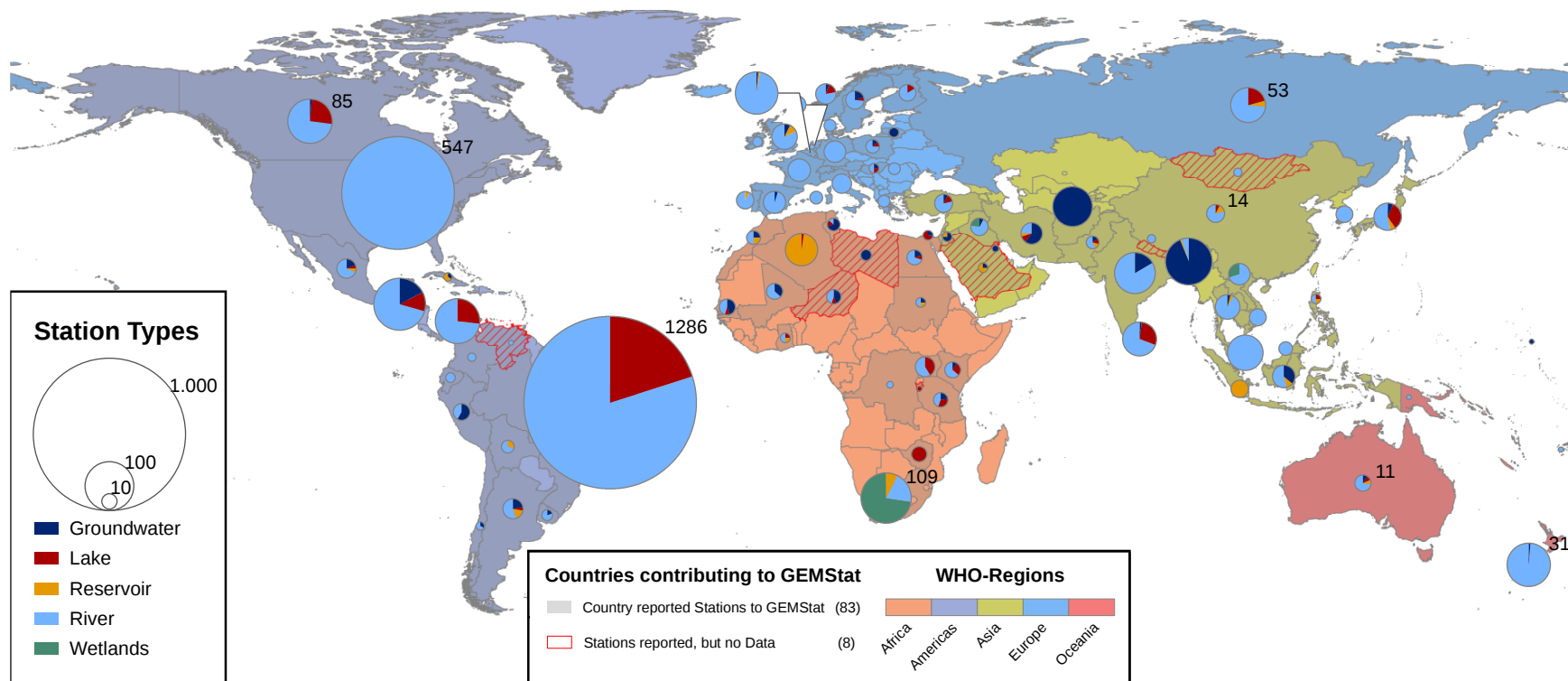
GRDC Data availability



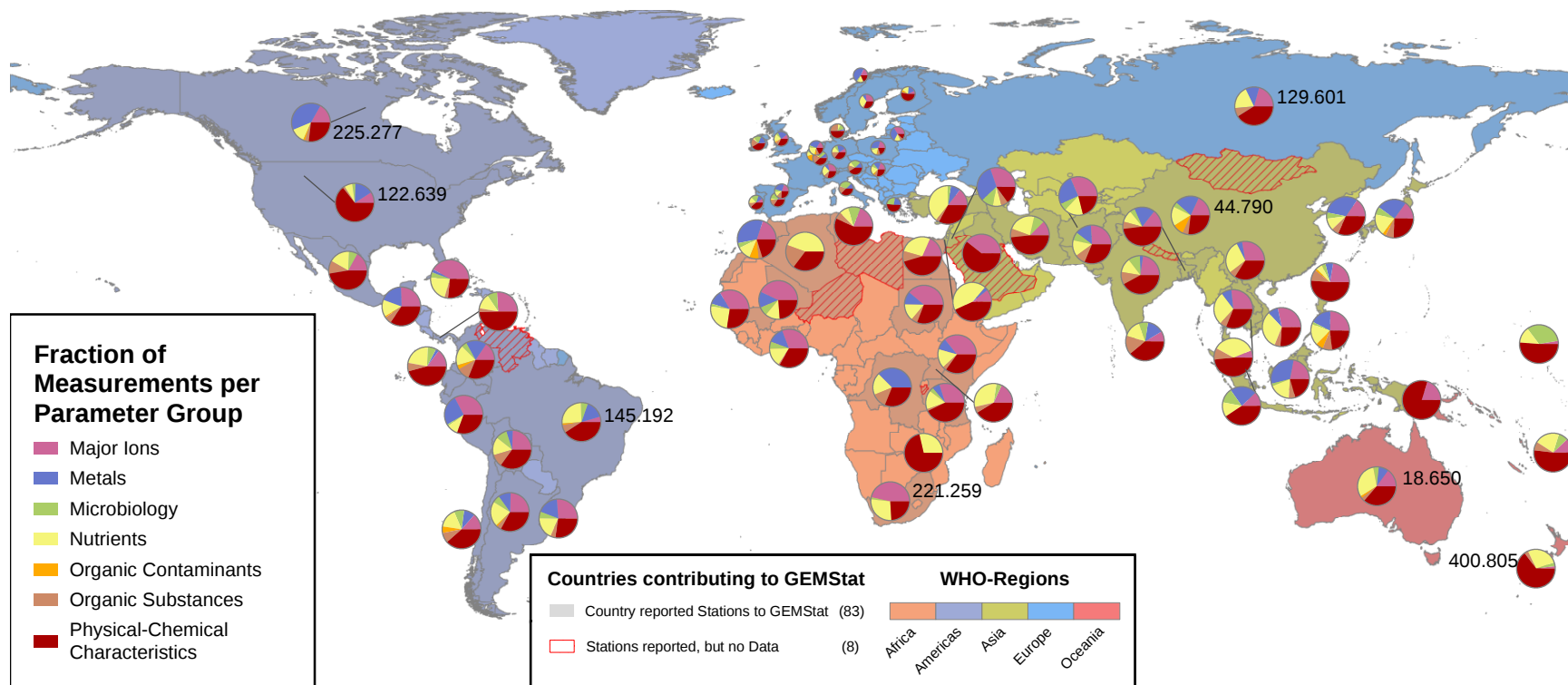
Monitoring data availability by region



Monitoring data availability by station type



Monitoring data by parameter group





GEMStat Station filter

gemstat 

Text filter
Search

Parameter
All

Region
All

Sub-region
All

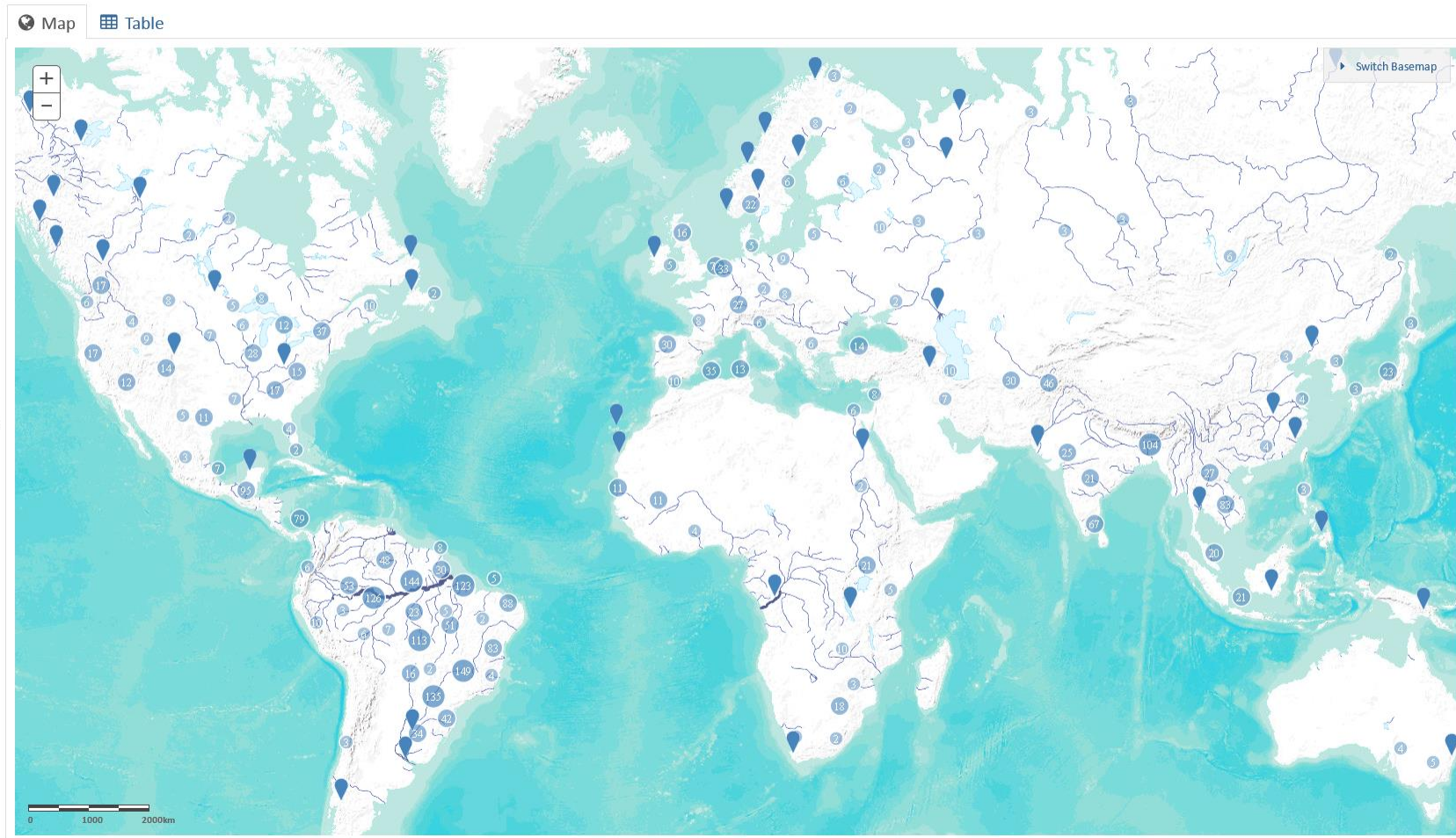
Country
All

Object
All

1950 - 2016
1950 2016

2922
0 Stations 2,922

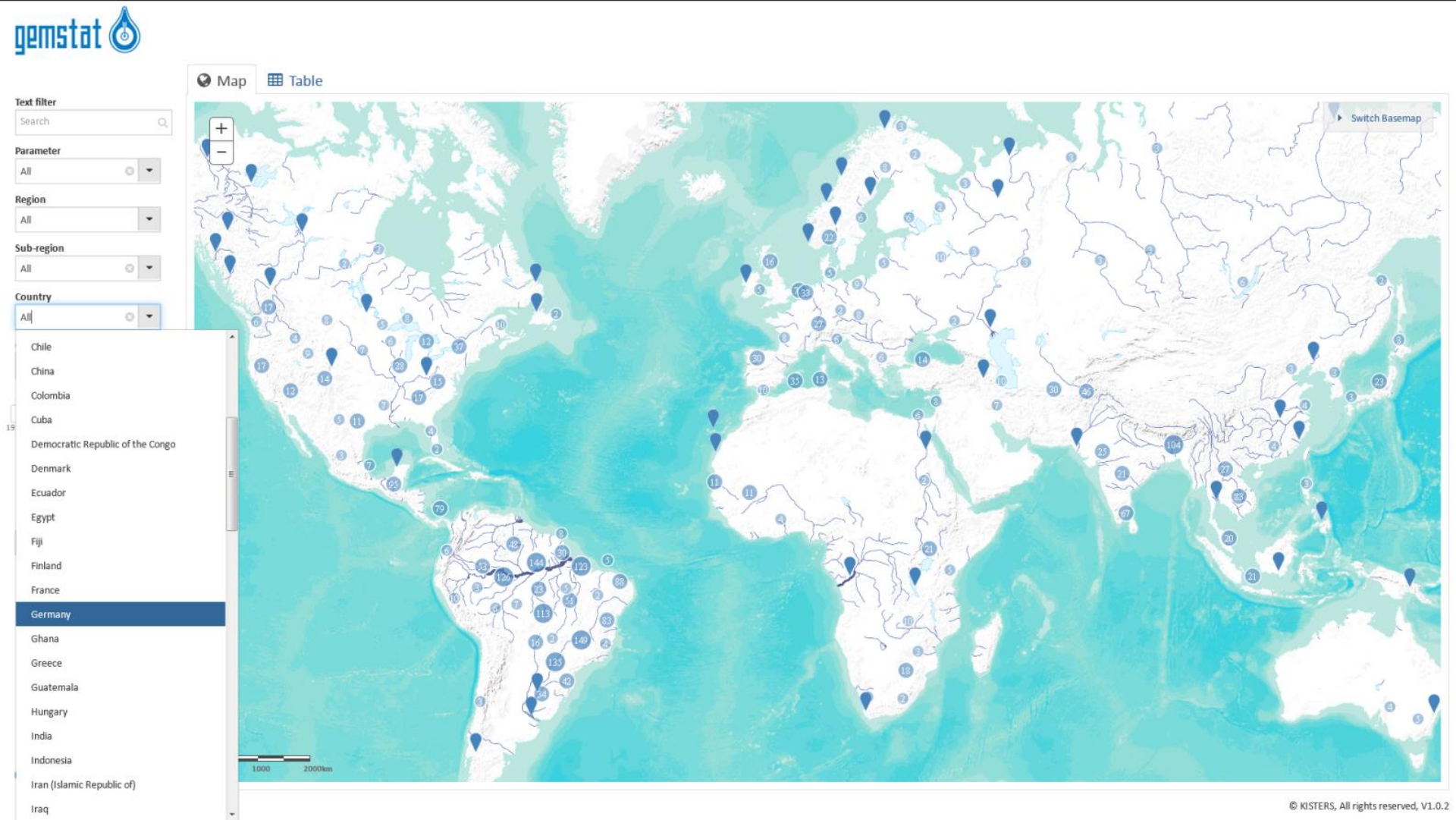
Reset all filters



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GEMStat Station filter





GEMStat Station filter



Text filter
Search

Parameter
All

Region
All

Sub-region
All

Country
All

- Chile
- China
- Colombia
- Cuba
- Democratic Republic of the Congo
- Denmark
- Ecuador
- Egypt
- Fiji
- Finland
- France
- Germany**
- Ghana
- Greece
- Guatemala
- Hungary
- India
- Indonesia
- Iran (Islamic Republic of)
- Iraq



Station selection from table

Map

Table

Text filter

Parameter

All

Region

Europe

Sub-region

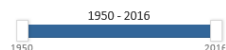
Western Europe

Country

Germany

Object

All



Reset all filters

Station name	Station number	Latitude	Longitude	Region	Sub-region	Country
Danube River - at Jochenstein	135012	48.52	13.72	Europe	Western Europe	Germany
Elbe River - at Geesthacht	135011	53.43	10.37	Europe	Western Europe	Germany
Elbe River - at Magdeburg	135019	52.07	11.68	Europe	Western Europe	Germany
Elbe River - at Schmilka	135021	50.89	14.23	Europe	Western Europe	Germany
Elbe River - at Zollenspieker	135016	53.43	10.07	Europe	Western Europe	Germany
Ems River - at Herbrum	135008	53.03	7.32	Europe	Western Europe	Germany
Goch-Niers River	135007	51.68	6.17	Europe	Western Europe	Germany
Moselle River - at Koblenz/Moselle	135005	50.35	7.55	Europe	Western Europe	Germany
Moselle River - at Palzem	135004	49.57	6.37	Europe	Western Europe	Germany
Oder River - at Hohenwutzen	135020	52.39	13.75	Europe	Western Europe	Germany
Rhine River - at Kleve/Bimmen	135006	51.84	6.17	Europe	Western Europe	Germany
Rhine River - at Koblenz/Braubach	135003	50.25	7.65	Europe	Western Europe	Germany
Rhine River - at Mainz	135002	50	8.23	Europe	Western Europe	Germany
Rhine River - at Maxau	135001	49.03	8.3	Europe	Western Europe	Germany
Ruhr River - at Duisburg	135018	51.82	6.14	Europe	Western Europe	Germany
Weser River - at Hemeln	135009	51.5	9.6	Europe	Western Europe	Germany
Weser River - at Intschede	135010	52.97	9.13	Europe	Western Europe	Germany



Data visualization

Time series mean monthly values

Text filter

Search

Parameter

All

Region

Europe

Sub-region

Western Eur

Country

Germany

Object

All

1950

0

5

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15

20

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60

65

70

75

80

85

90

95

100

Rhine River - at Koblenz/Braubach

Station number 135003 # Variables 36
Latitude 50.25 # Samples 272
Longitude 7.65
Country Germany



Multiple Parameters

Histogram

Annual

Annual

LTV Month

Bulk Property

Carbon

Dissolved Gas

Indicator Organism

Metal

Nitrogen

Non-Metal

☐ Alkalinity (CaCO₃) - Total (52)

☒ Chloride - Dissolved (105)

☐ Sulphate - Dissolved (52)

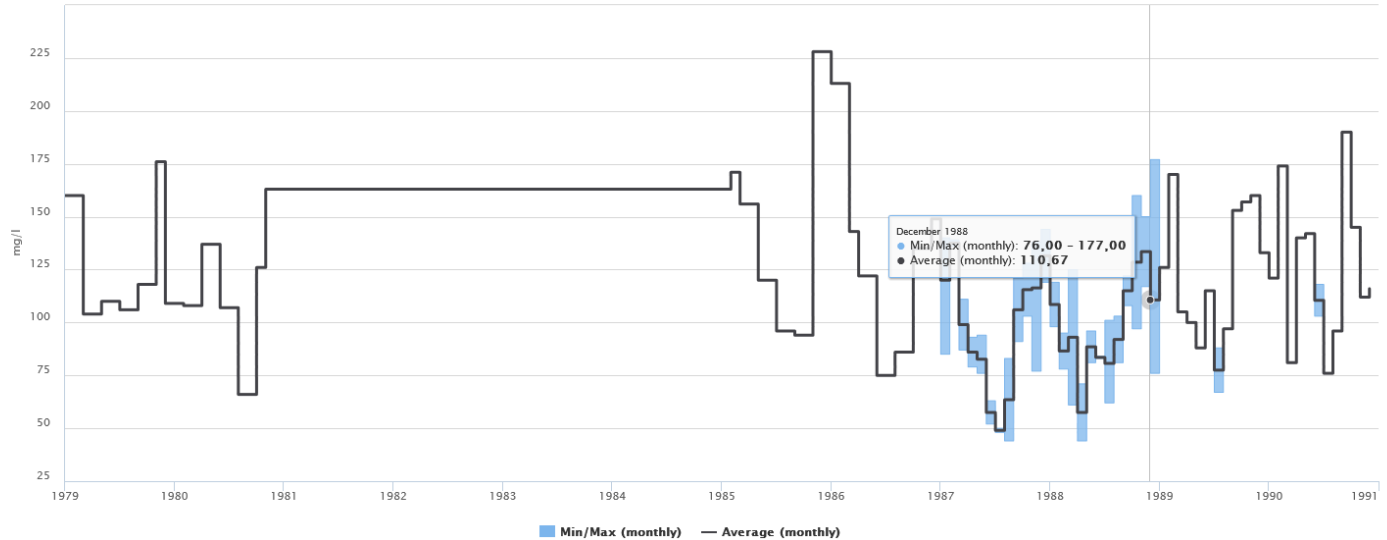
Oxygen Demand

Pesticide

Phosphorous

Temperature

GWDC/135003/CI-Dis



Data visualization

Boxplots by year

Text filter

Search

Parameter

All

Region

Europe

Sub-region

Western Eur

Country

Germany

Object

All

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Rhine River - at Koblenz/Braubach

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Multiple Parameters [Histogram](#) [Annual](#) [Annual](#) [LTV Month](#)

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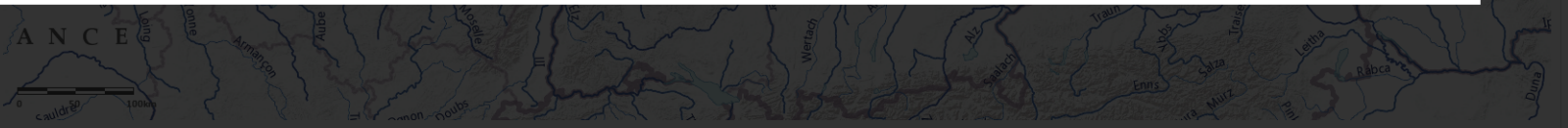
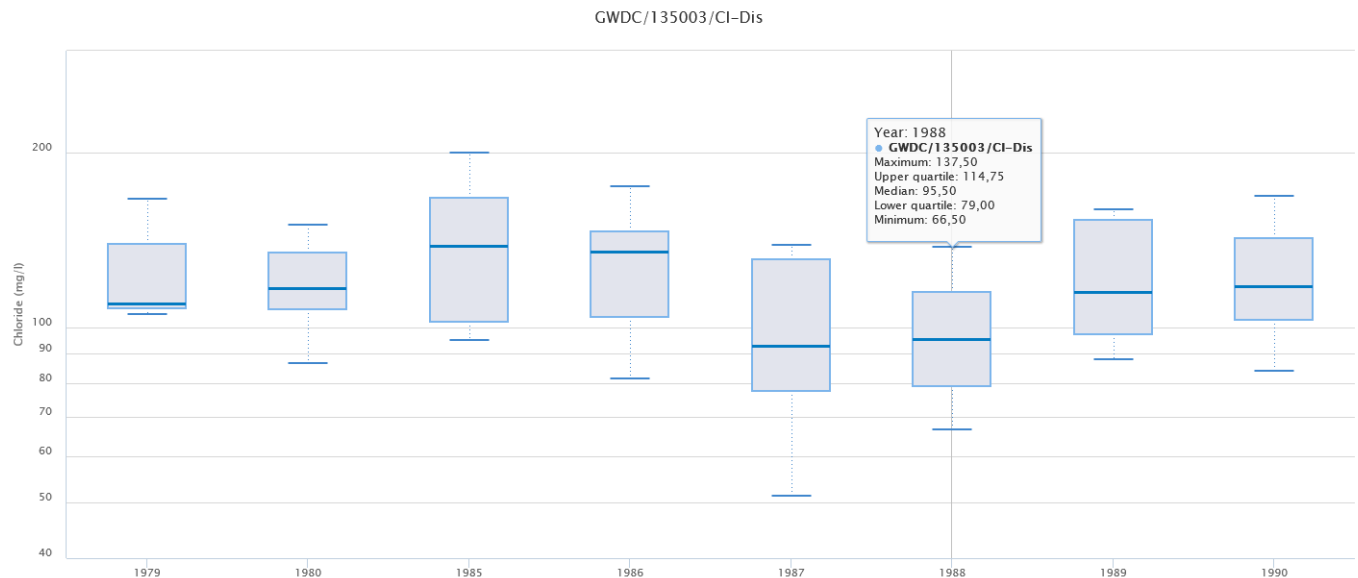
☐ Sulphate - Dissolved (52)

Oxygen Demand

Pesticide

Phosphorous

Temperature





Global Water Portal

Global Water Information System

Observed Data

Discharge



Precipitation



Water Quality



Groundwater



Thematic Maps

GWSP Digital Water Atlas



Modell-Input Data & -Results

HydroSHEDS

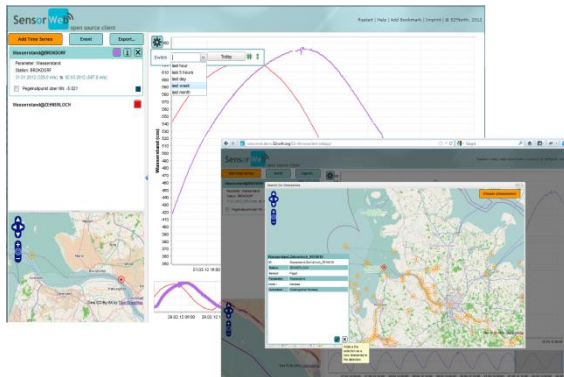


UNH WSAG WBM+ Modelle



Zeitreihen/
In-situ

Sensor Observation
Service (SOS)



Zeitreihen/
Raster

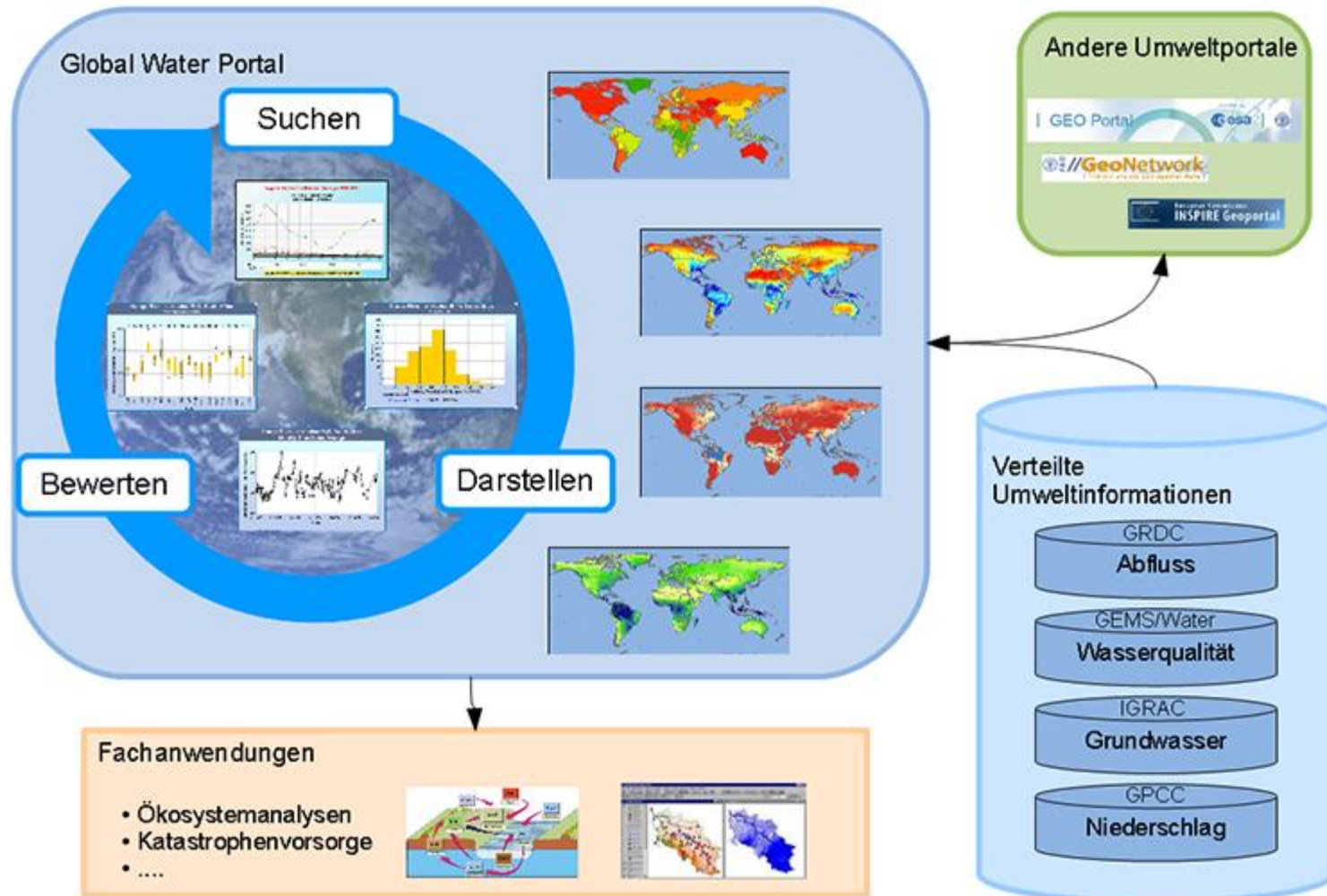
Web Coverage
Service (WCS)



Metadata

Catalog Service (CS-W)

Architektur Global Water Portal





www.ihp-germany.de

**International Centre for Water Resources and Global
Change (ICWRGC) (UNESCO)
IHP/HWRP-Secretariat, Koblenz**

Ana Maria Conde Corral, Frauke Becker-Marr, Siegfried Demuth, Dagmar Kronsbein,
Dmytro Lisniak, Philipp Saile, Ulrich Schröder, Michael Spitzer, Andrea Wessler



Ein globales Wasserinformationssystem

