



Checking instrumentation inside a gauging station of the Scottish Environment Protection Agency (Photo by courtesy of SEPA, 2003)

CURRENT PARTNERS

- The City College of New York/City University of New York
- European Space Agency Soil Moisture and Ocean Salinity (ESA SMOS) mission
- FLUXNET
- Food and Agriculture Organization of the United Nations (FAO)
- Global Environment Monitoring System - Water (GEMS/Water)
- Global Precipitation Climatology Centre (GPCC)
- Global Runoff Data Centre (GRDC)
- International Atomic Energy Agency/ Global Network of Isotopes in Precipitation (IAEA/GNIP)
- International Data Centre on the Hydrology of Lakes and Reservoirs (HYDROLARE)
- International Groundwater Resources Assessment Centre (IGRAC)
- US National Climatic Data Center (NCDC)
- US National Snow and Ice Data Center (NSIDC)
- US World Glacier Monitoring Service (WGMS)

CONTACT

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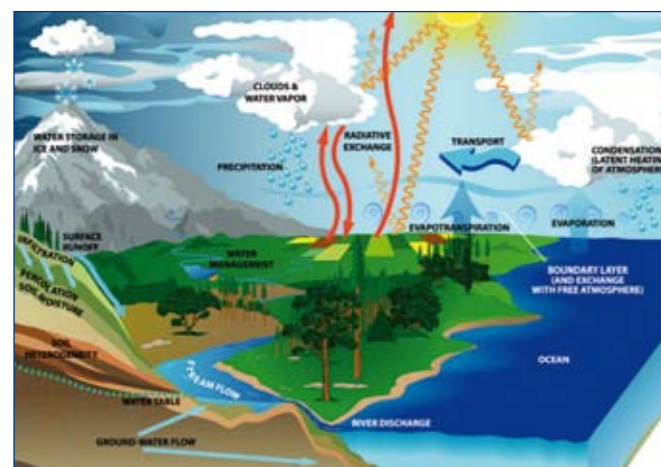
River flow measurement using an Acoustic Doppler Velocimeter in the Crocodile River, South Africa (Photo D. Joubert, Hydrology Mpumalanga, 2005)

INTERNATIONAL CONTEXT

The GTN-H is a joint effort of the following:

- World Meteorological Organization (WMO), through its Climate and Water Department
- Global Climate Observing System (GCOS), co-sponsored by WMO; the United Nations Environment Programme (UNEP); the Intergovernmental Oceanographic Commission of the United Nations Educational, Scientific and Cultural Organization (IOC/UNESCO); and the International Council for Science (ICSU)
- Global Terrestrial Observing System (GTOS), co-sponsored by WMO; the UNESCO; the ICSU; the UNEP; and the Food and Agriculture Organization of the United Nations (FAO)

GTN-H represents the observational arm of the Group on Earth Observations/Integrated Global Water Cycle Observations (GEO/IGWCO) theme.



The global water cycle (US Global Change Research Program, 2003)

GLOBAL TERRESTRIAL NETWORK HYDROLOGY (GTN-H)

WHAT GTN-H IS

The Global Terrestrial Network – Hydrology (GTN-H) links existing networks and systems for integrated observations of the global water cycle.

The network was established in 2001 as a “network of networks” for global and regional climate and water applications.

GOALS OF GTN-H

- Aims at creating a global hydrological network of networks
- Plans and implements projects that facilitate access to hydrological networks and observation data, and generates derived products
- Forms an essential component for integrated global and regional hydrological products

MAIN OBJECTIVES

The main objective of the GTN-H is to make available data from existing global hydrological observation networks and to enhance their value through integration. GTN-H thus underpins the generation of data sets suitable for the following:

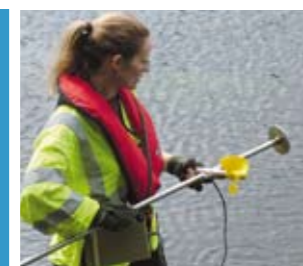
- Research in the areas of global and regional climate change
- Environmental monitoring
- Hydrology and water resource management

SELECTED ACHIEVEMENTS

- Prototype system for online near-real-time data access to over 400 river gauge stations worldwide
- Access to a first-guess global gridded precipitation product
- First-time online access to a global water quality database
- Prototype definition of a hydrological metadata standard, based on the WMO core metadata standard



Examples of routine observing activities for water quality, river flow and runoff undertaken by GTN-H partners



WATER QUALITY

The United Nations Global Environment Monitoring System/Water Programme provides scientifically sound data and information on the state and trends of global inland water quality. These are required as a basis for sustainable management of the world's freshwater resources and to support global environmental assessments and decision-making. GEMS/Water operates a network of about 3 000 stations in more than 100 countries.



<http://www.gemswater.org>
<http://gemstat.org>

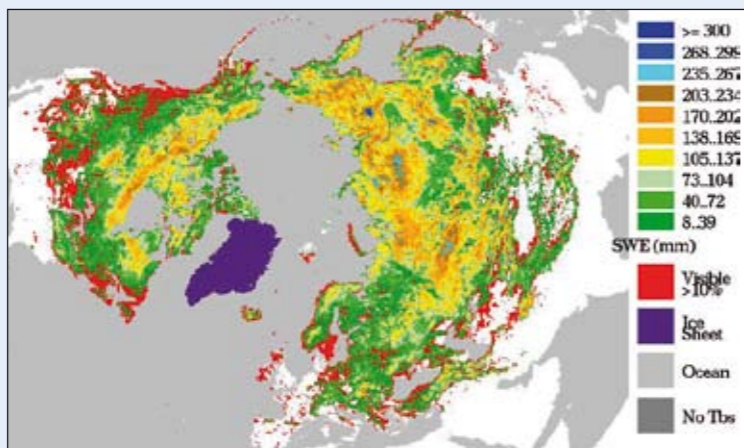
GLOBAL MONITORING OF GROUNDWATER RESOURCES

The International Groundwater Resources Assessment Centre (IGRAC) initiated the Global Groundwater Monitoring Network (GGMN) in 2007. The network aims to improve in situ monitoring of groundwater resources and to integrate the results of terrestrial observations with those of remote sensing. Subsequently, these results will improve predictions of global hydrological models.

<http://www.igrac.nl/>

NATIONAL SNOW AND ICE DATA CENTER (NSIDC)

The NSIDC supports research of the world's cryosphere: snow, ice, glacier, permafrost and climate interactions. Observational data, whether taken in the field or relayed from satellites orbiting the Earth, are available from the Centre. For observation on glaciers and ice caps, NSIDC is cooperating with the World Glacier Monitoring Service (WGMS) and the Global Terrestrial Network for Glaciers (GTN-G). The example shows the daily snow extent and snow water equivalent (SWE) derived from NASA EOS AMSR-E (passive microwave) and MODIS (optical) Satellite Data (26 February–5 March 2003).



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<http://nsidc.org/>

EUROPEAN SPACE AGENCY (ESA)

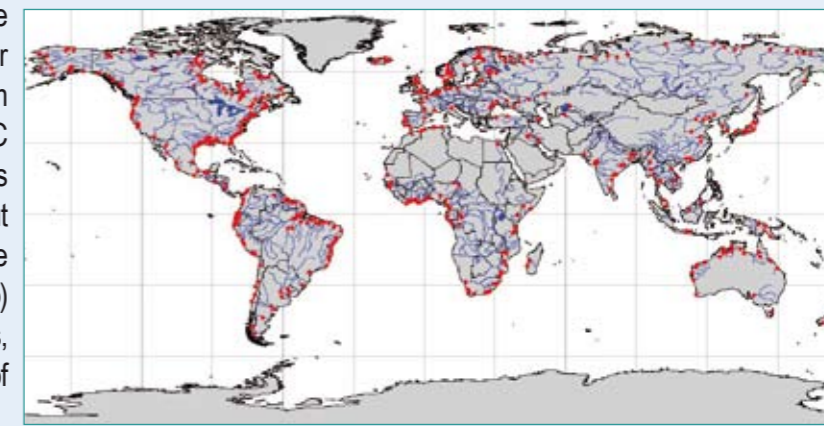
Soil Moisture and Ocean Salinity (SMOS) mission

www.esa.int

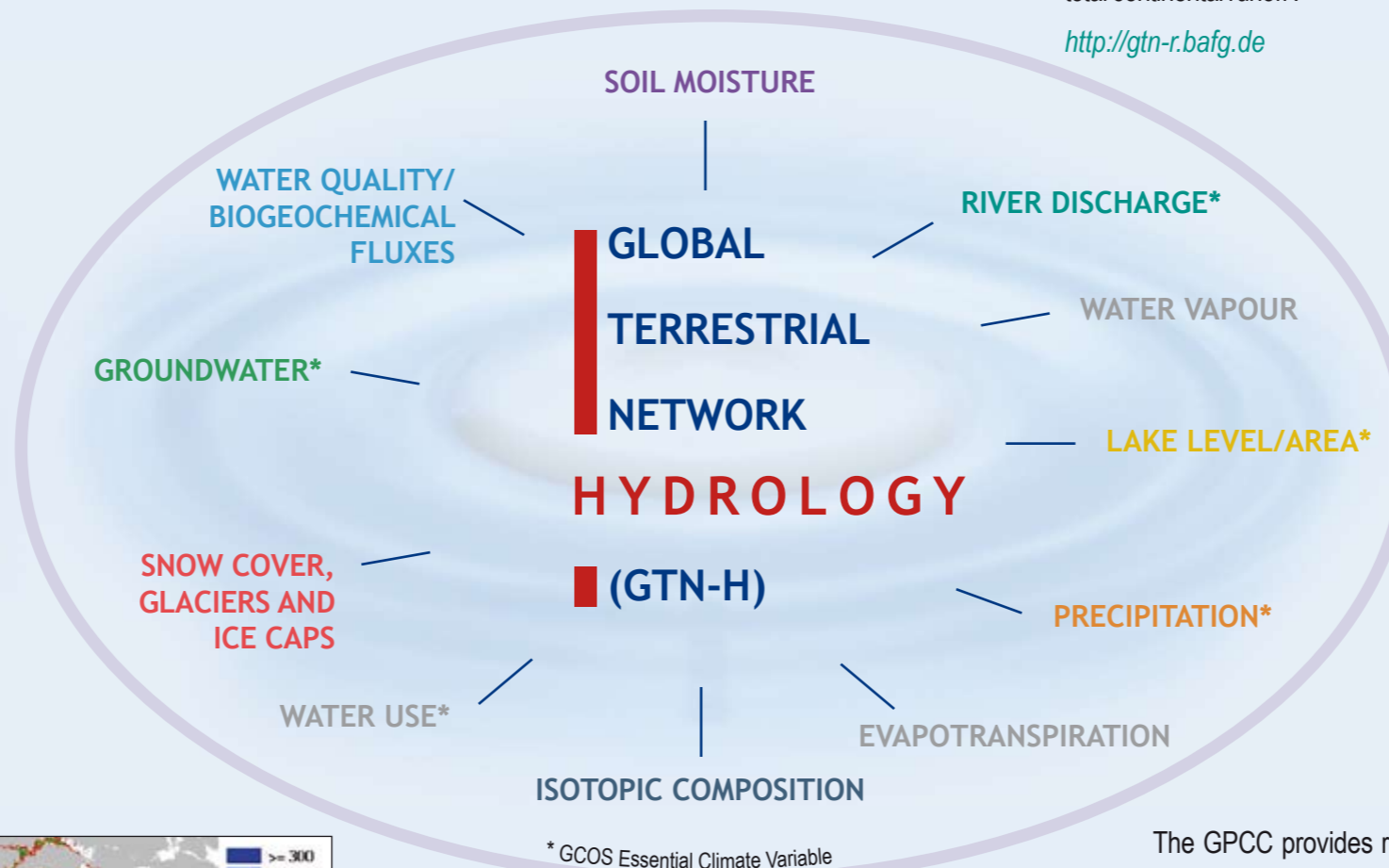


GLOBAL TERRESTRIAL NETWORK FOR RIVER DISCHARGE (GTN-R)

The Global Runoff Data Centre (GRDC) hosts data of over 7 000 river gauge stations from 156 countries. Of these, GRDC has identified the GTN-R as a priority network of about 400 river discharge reference stations (depicted on the map) along the continental coastlines, covering about 70 per cent of total continental runoff.



<http://gtn-r.bafg.de>

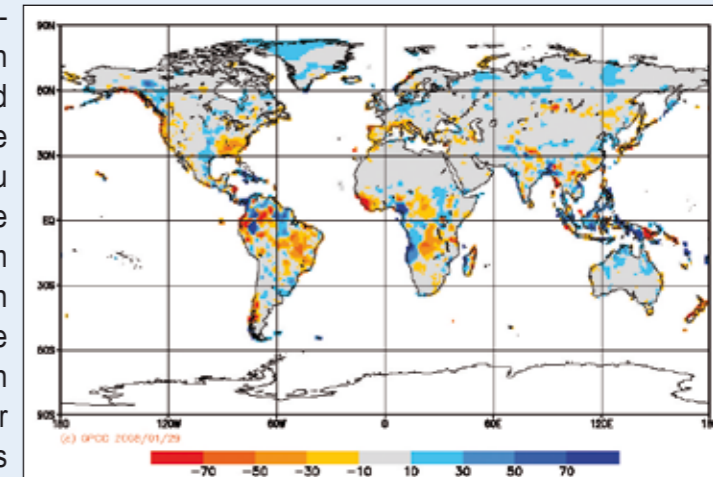


GLOBAL TERRESTRIAL NETWORK FOR LAKES (GTN-L)

The International Data Centre on the Hydrology of Lakes and Reservoirs (HYDROLARE) was established in 2007 to develop and regularly update an international database on the hydrological regime of lakes and reservoirs (including metadata). The centre will focus on monitoring the 150 major lakes and reservoirs in the GTN-L worldwide.

GLOBAL PRECIPITATION CLIMATOLOGY CENTRE (GPCC)

The GPCC provides raingauge-based monthly precipitation analyses, for monitoring and research of the Earth's climate based on the largest in situ precipitation database in the world, comprising data from over 78 000 different stations in more than 180 countries. The map shows the precipitation anomaly for January–December 2007 in millimetres per month as a departure from the 1961–1990 base period.



<http://gpcc.dwd.de>

INTERNATIONAL ATOMIC ENERGY AGENCY (IAEA)

Global Network of Isotopes in Precipitation (GNIP)

www.iaea.org/water

NETWORK PARTNERS OF THE GLOBAL TERRESTRIAL NETWORK - HYDROLOGY (GTN-H)