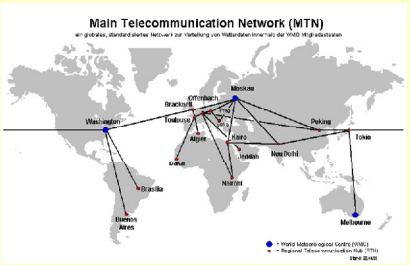
The GPCC – A contribution to Climate Monitoring and Research in context of GCOS and WCRP

The GPCC task and functions

- Continuous operation by the Deutscher Wetterdienst (DWD) since 1989 under auspices of WMO;
- Integration as Global Data Center in GCOS and in WCRP GEWEX;
- Provision of global precipitation analysis products for monitoring and research of the Earth's climate (gridded data sets of monthly precipitation totals for the global land-surface based on in situ EO data);
- The GPCC analysis products are freely available via Internet (http://gpcc.dwd.de).

The GPCC *in situ* precipitation station data base

Near real-time data from the Global Telecommunication System (GTS) of the World Meteorological Organisation (WMO):



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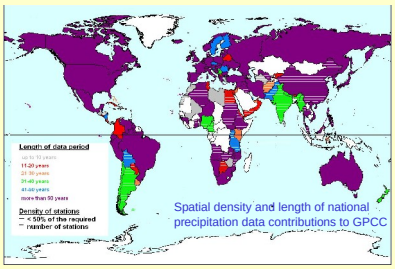
Non real-time data from international projects, historical data collections and more than 175 countries of the world:



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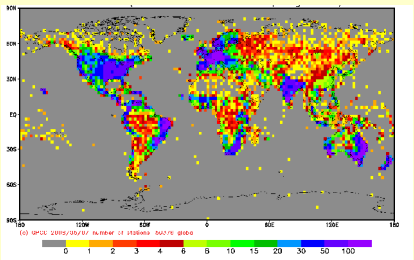
Total data base (number of stations per grid) used for calculation of the new GPCC global precipitation climatology in 2.5° x 2.5° grid resolution (Total number of stations: 50376)



GPCC contributes to *in situ* EO Network Monitoring activities of WMO WWW and GCOS; GPCC has the largest global monthly *in situ* EO rainfall data base

The current GPCC monthly gridded precipitation product suite

First Guess Analysis (since 2003)

- for early monitoring of precipitation anomalies
- available within 3-5 days after observation
- based on 6000 near real-time available stations
- automatic-only quality-control

Monitoring Product (since January 1986)

- for near real-time climate monitoring and adjustment of satellite-based EO
- available 2 months after the observation month
- based on 7500 near real-time available stations
- High Level Quality Control of metadata and data

Full Data Reanalysis Product (1901-2007)

- for model verification and water cycle analysis
- use of the complete GPCC data base
- monthly data coverage varies from 8,000 to more than 47,000 *in situ* rainfall stations
- High level QC/QA of metadata and data

VASClimO 50 Year Data Set (1951-2000)

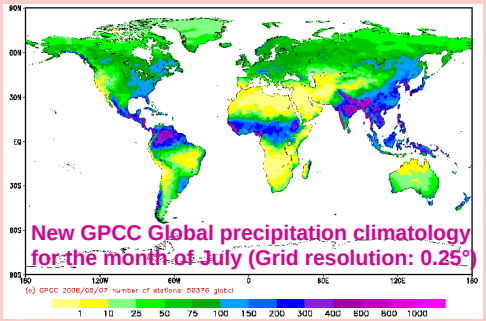
- for analysis of climate variability and trends
- High level quality and homogeneity control analysis based on climatic background
- based on 9343 *in situ* stations with nearly complete time-series

New GPCC Product versions (2008/2009)

Monthly Global Precipitation Climatology

(available since end of May 2008):

-> based on more than 50,000 stations with at least 10 years of data;
-> intensive QC/QA of metadata and data;
-> spatial grid resolution: 0.25°, 0.5°, 1°, 2.5°



Version 4 of Full Data Reanalysis Product

(available since end of September 2008)

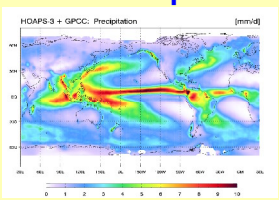
- extended time period: 1901-2007;
- significantly enlarged database;

Version 2 of VASClimO Data Set

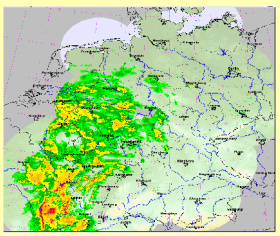
(to be available until spring 2009)

- extended time period: 1951-2005;
- significantly enlarged database.

Outlook into potential future GPCC products



Daily near real-time global precipitation analyses based on combination of GPCC (land) and HOAPS http://www.hoaps.zmaw.de (ocean). Example above: HOAPS3 and GPCC combination for 1994-2004 (Source:S. Bakan, MPI-M Hamburg).



Hourly precipitation products for Central Europe in 1 x 1 km resolution based on weather radar QPE online adjusted with automatic raingauges.

The users of GPCC gridded data sets and their applications

GPCC products are adjusted to the needs of different user communities and are used by institutions worldwide, in particular in context of water- and climate-related research and monitoring activities

WCRP GEWEX	Analyses of hydrometeorological processes and CalVal of satellite-based EO
GEO	Contribution to GEOSS implementation
GCOS	Global climate monitoring applications
IPCC	Climate variability and trend analyses
UNESCO IHP	Global and regional water resources assessments
WMO HWRP	Runoff estimation (ungauged rivers) and contribution to GTN-H development
ECMWF, UKMO	Weather forecast model verification (Re-analysis, seasonal forecasts)
FAO	Water stress and drought monitoring