

Gridded Analysis Products provided by the Global Precipitation Climatology Centre (GPCC), and new Products getting operational 2013

M. Ziese, U. Schneider, A. Meyer-Christoffer, P. Finger,
K. Schamm, A. Becker, B. Rudolf

Deutscher Wetterdienst, Hydrometeorology, Offenbach am Main, Germany

Outline

- ➔ GPCC data base and quality control (QC)
- ➔ Current GPCC products
- ➔ New GPCC products
 - ➔ First Guess Daily
 - ➔ GPCC Drought Index
- ➔ Conclusion

GPCC Database

- core data from national meteorological and hydrological services
- global and regional data collections (e.g., FAO, GHCN, CRU, ECA&D)
- near-real time data from WMO-GTS (SYNOP reports, CLIMAT messages)

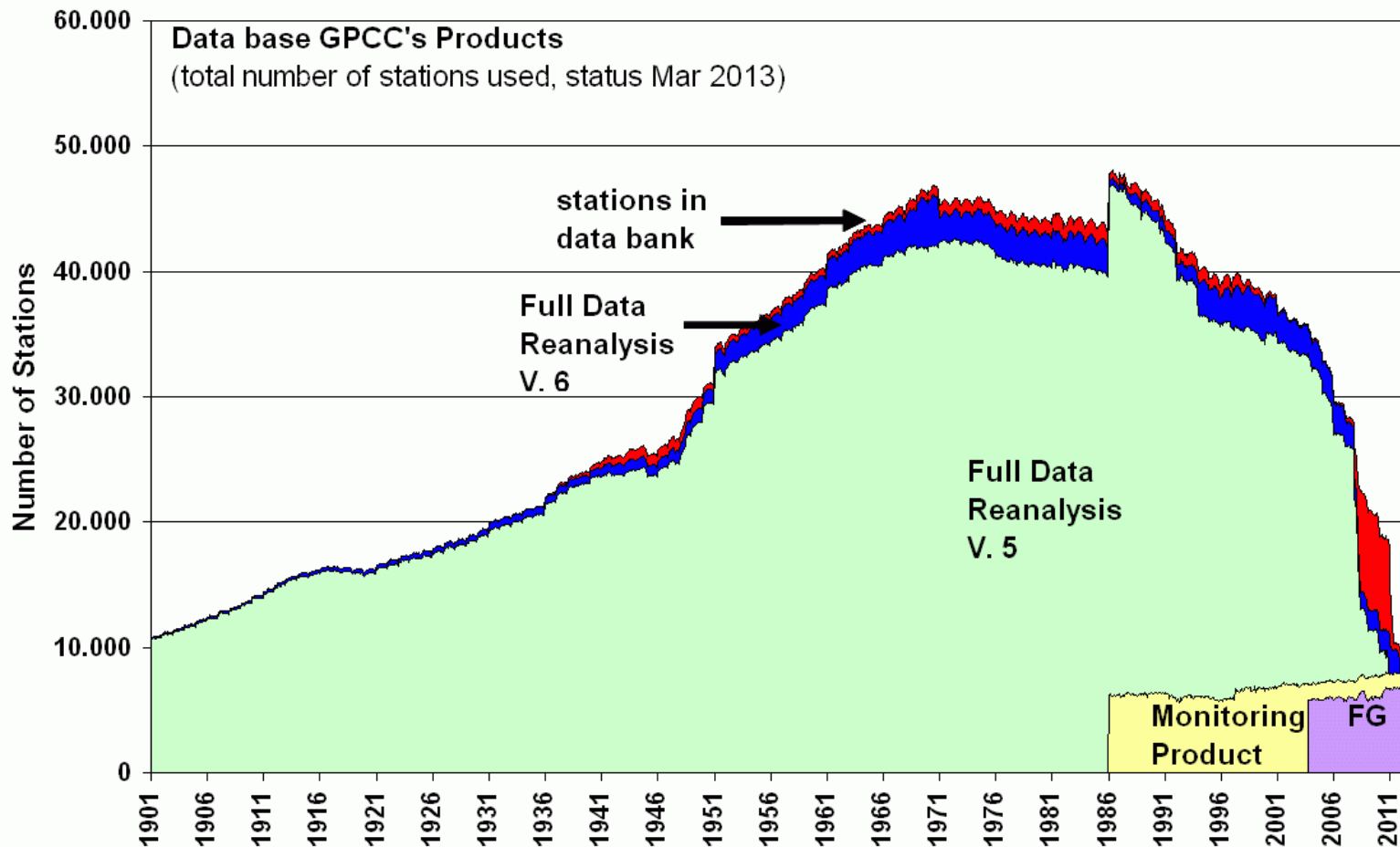
GPCC Quality Control

- data stored in relational data bank in source specific slots
- data checked before import into data bank against background statistics and available data from other sources in order to correct or eliminate
 - wrong precipitation data (coding errors, factor-10-errors, conversion errors...)
 - wrong station metadata (location and confusion with other stations)

Current GPCC products

- First Guess Product
 - based on SYNOP data, automated QC
 - available within 3 to 5 days after the end of each month
- Monitoring Product (Version 4)
 - based on CLIMAT and SYNOP data, enhanced QC
 - available within two months after the analyzed month
- Climatology (Version 2011)
 - based on about 67200 stations
 - target reference period 1951 – 2000, stations with at least 10 years of data
 - background climatology for GPCC products
- Full Data Reanalysis (Version 6)
 - uses same stations as Climatology
 - available from 1901 to 2010

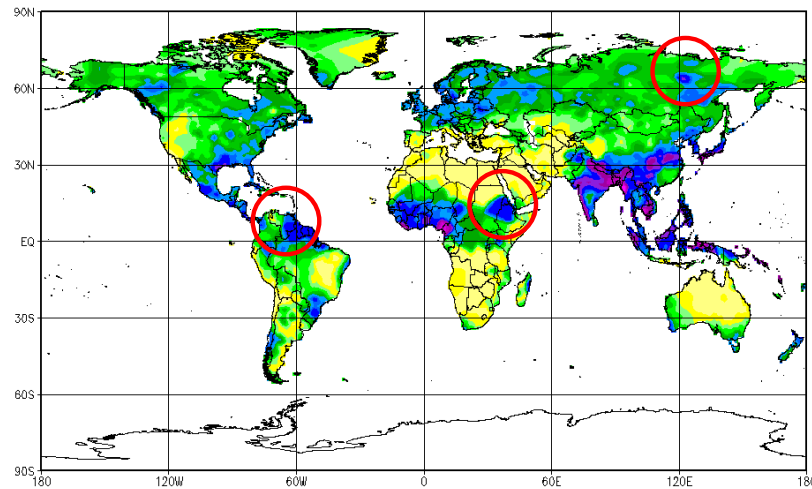
Applied number of stations for GPCC products



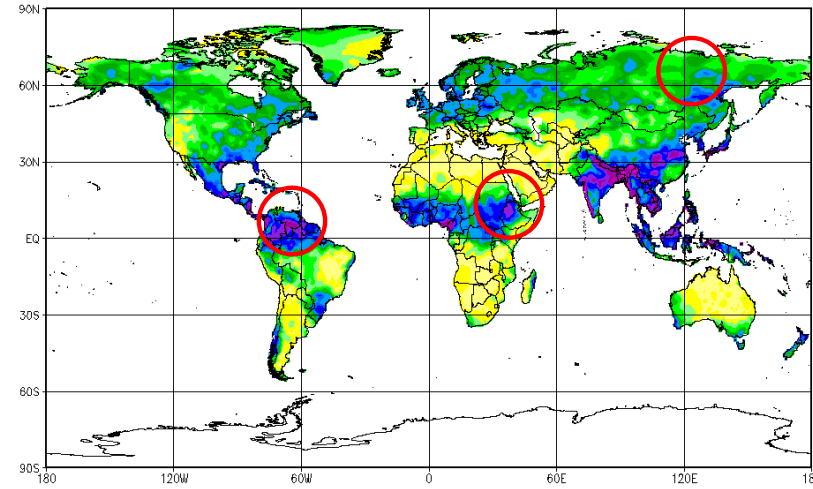
- non-utilized stations loaded after last product release

Comparison of monthly GPCC Products

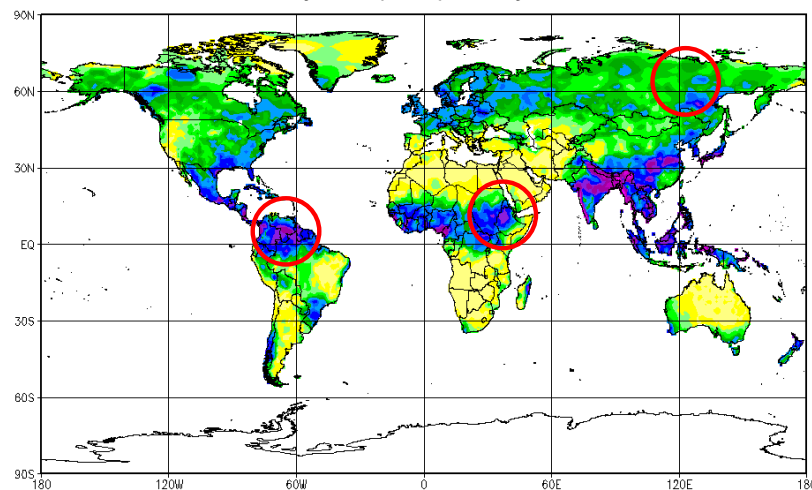
First Guess Product, July 2007



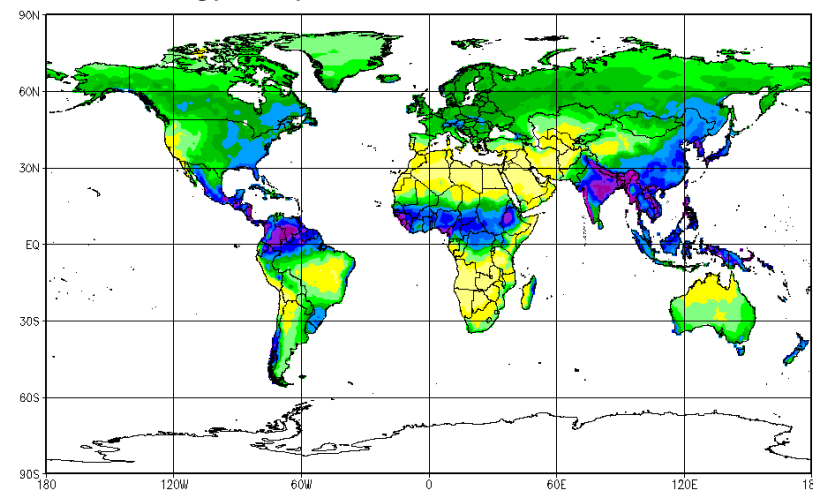
Monitoring Product, July 2007



Full Data Reanalysis (V.6), July 2007



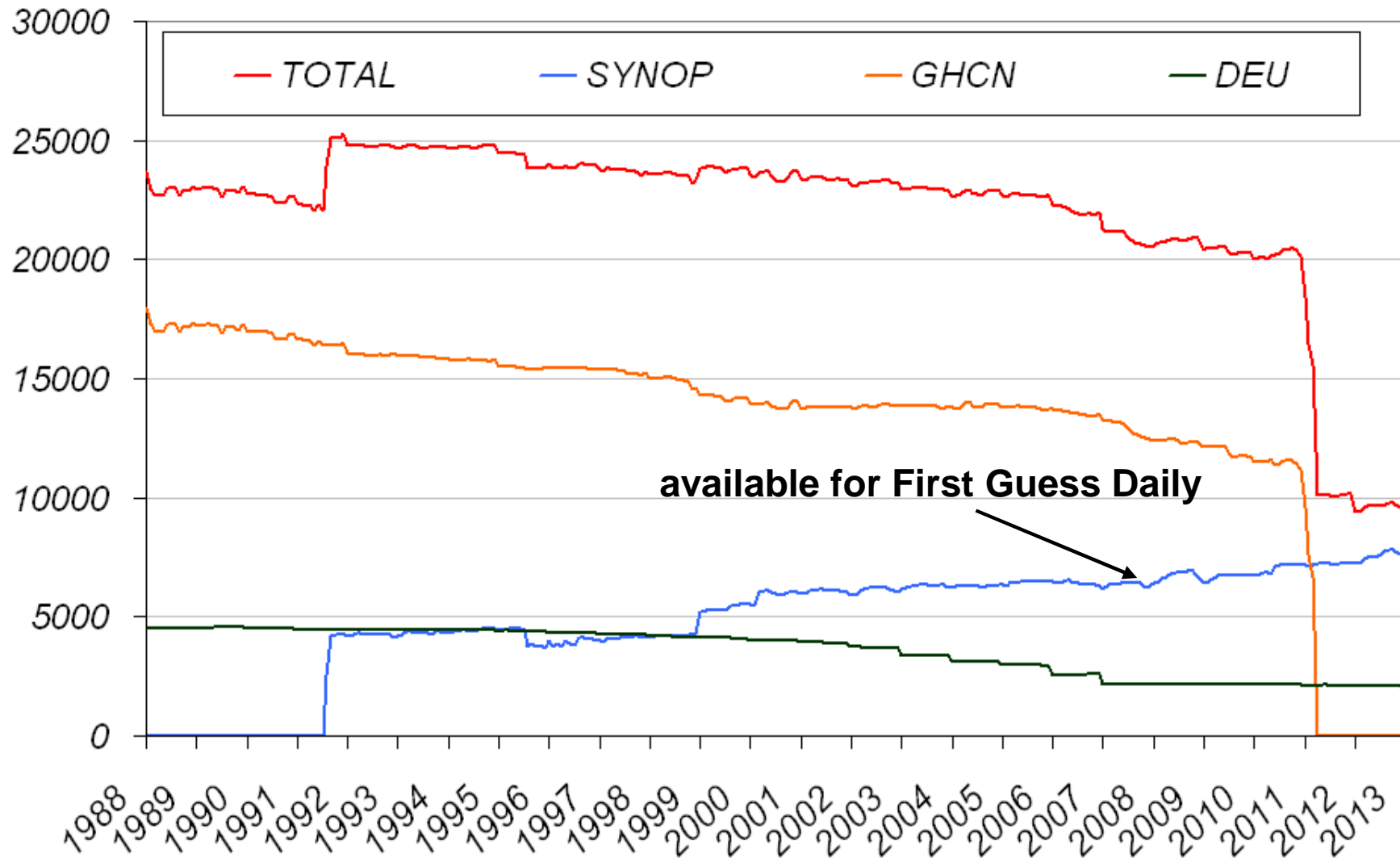
Climatology, July



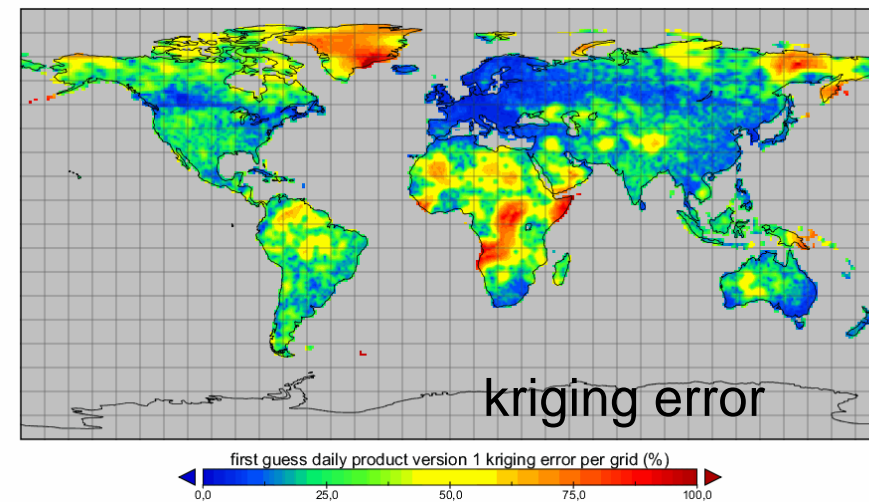
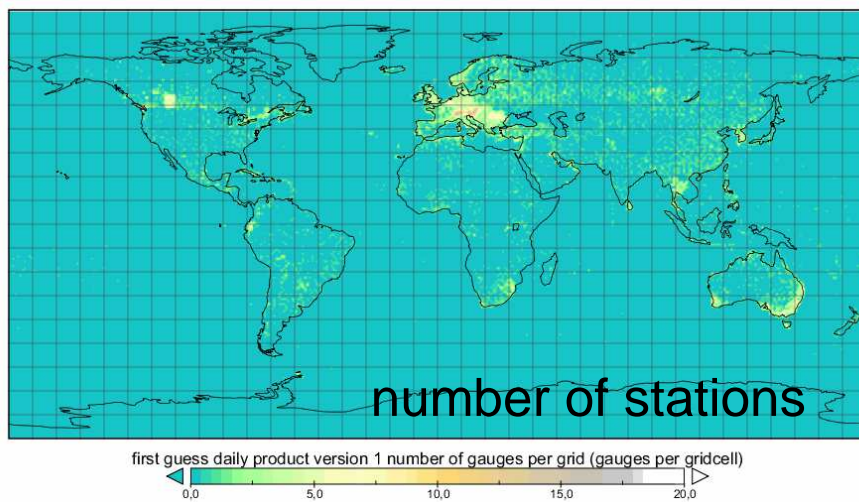
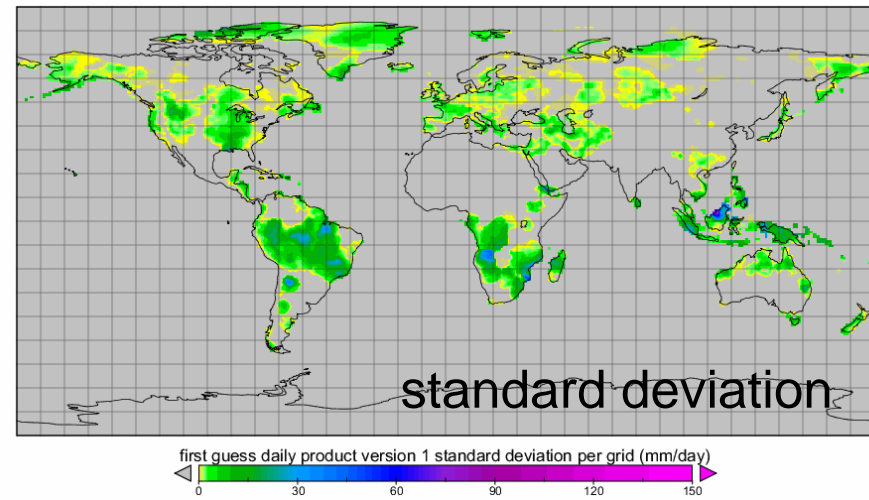
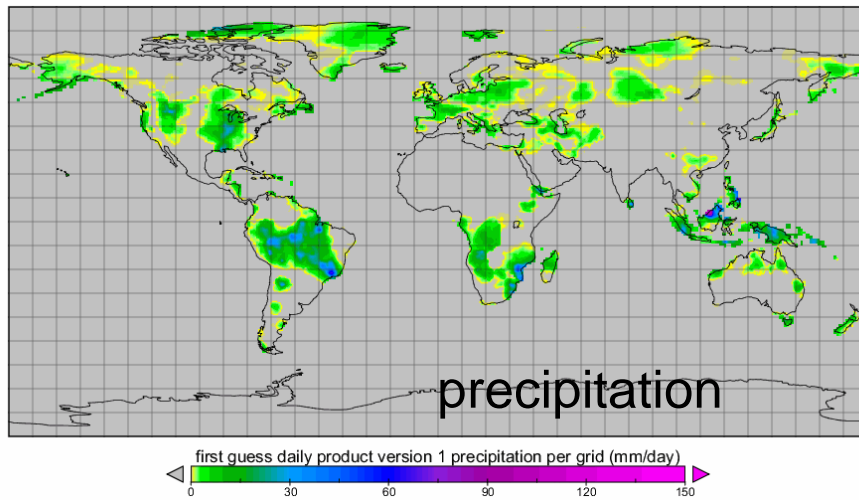
New Products getting operational: First Guess Daily

- analysis of daily precipitation totals
- based on SYNOP reports with automated QC (like First Guess Product)
- day corresponding to climatological day
- interpolated with ordinary block kriging
- relative values are interpolated – fraction of daily total in relation to monthly total
- only stations with monthly total are used (at least 70% data coverage)
- released together with First Guess Product
- analysis from January 2009 until present
- netCDF-files containing total precipitation, standard deviation regarding Yamamoto (2000), kriging error and number of stations

Availability of Daily Data



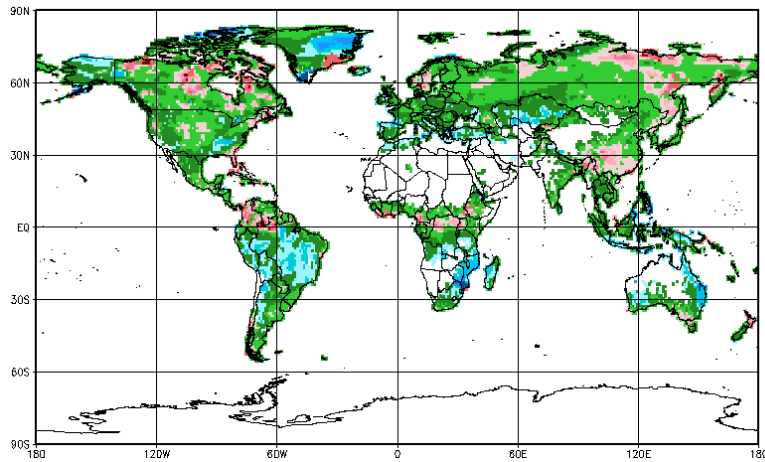
Example First Guess Daily; January, 10th, 2013



New Products getting operational: GPCC drought index

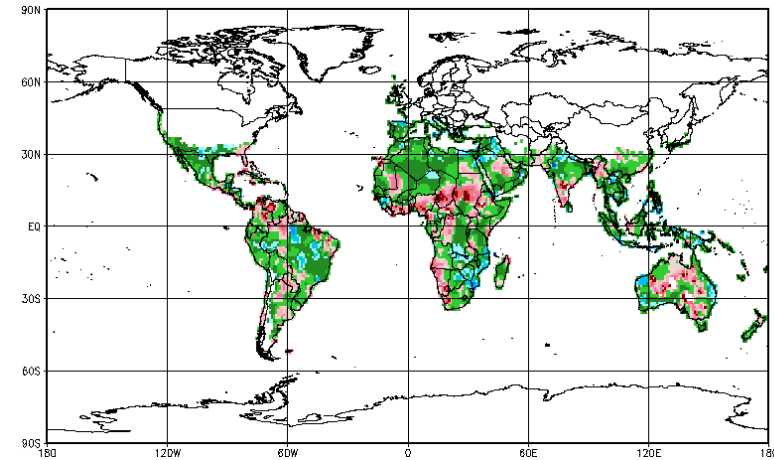
- GPCC_DI: gridded drought index with nearly global coverage
- combination of SPI-DWD and SPEI
- precipitation data from GPCC; First Guess Product
- monthly mean temperature from CPC
- uses mean of SPI-DWD and SPEI, if both can be calculated, otherwise the one which can be computed
- parameters derived from Full Data Reanalysis V.6, period 1961-1990
- several averaging intervals: 1, 3, 6, 9, 12, 24 and 48 month
- using gridded fields, no interpolations → areas with no data possible
- analysis from January 2013 until present
- provided as netCDF-files
- updated 10 to 13 days after each month

Example GPCC drought index, January 2013, 1 Month



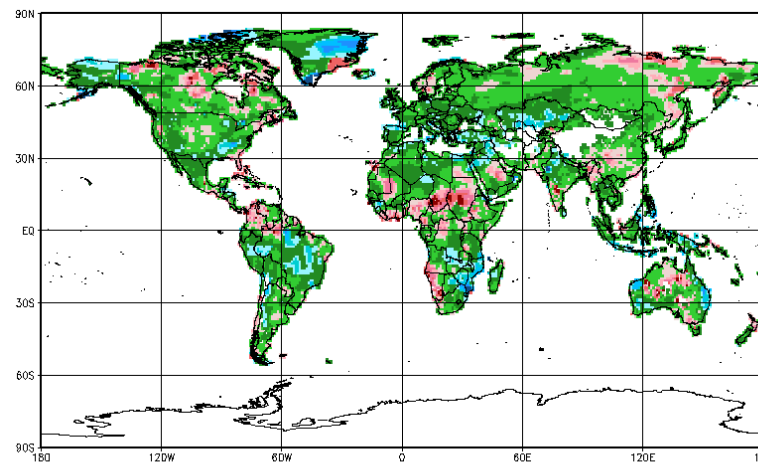
SPI-DWD

+

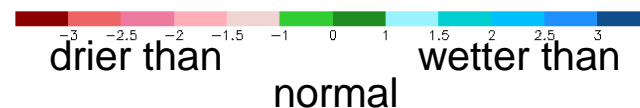


SPEI

=>



GPCC_DI



Conclusion & Outlook

- First Guess Daily is operational since April 2013
 - based on SYNOP-reports, automated quality control
 - interpolation of relative values applying ordinary kriging
 - release together with First Guess Product
- GPCC drought index is operational since April 2013
 - combination of SPI-DWD and SPEI
 - using data from GPCC and CPC
 - release 10 to 13 days after the end of each month
- two new GPCC reference publications:
 - Becker et al., 2013, published in ESSD, reference paper for GPCC products
 - Schneider et al., 2013, published in TAAC, climatology and global water cycle
- new products released as netCDF-files instead of ASCII-files