Deutscher Wetterdienst
Wetter und Klima aus einer Hand

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

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Outline

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

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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 during import into data bank against background statistics and available data 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)
- comparison between data sources

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Current monthly 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

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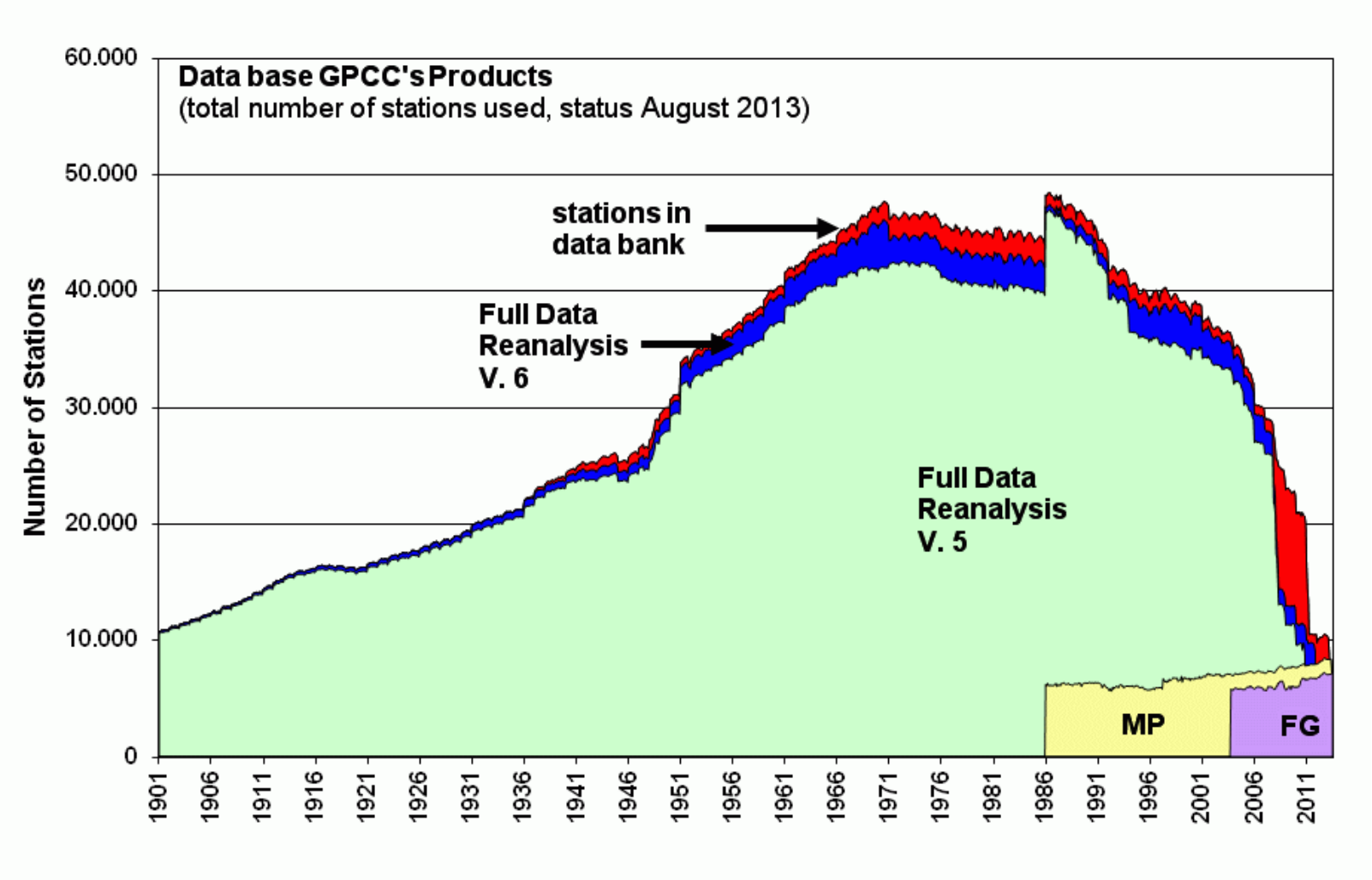
Applied number of stations for monthly GPCC products



➔ non-utilized stations loaded after last product release

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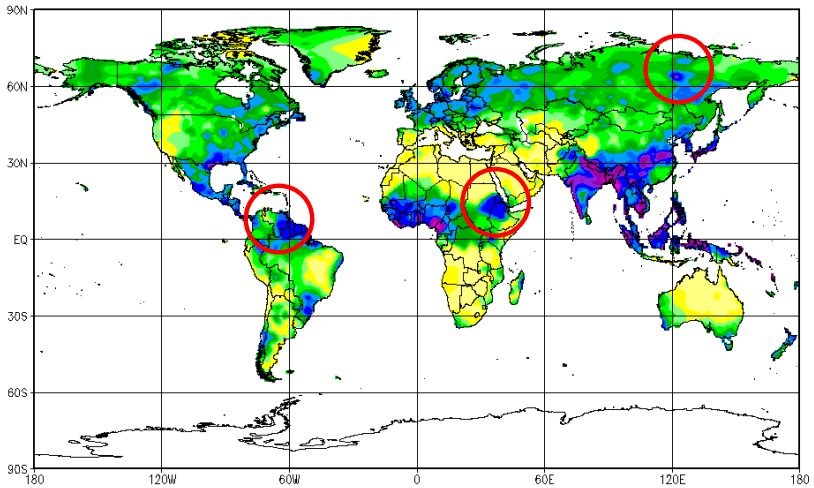
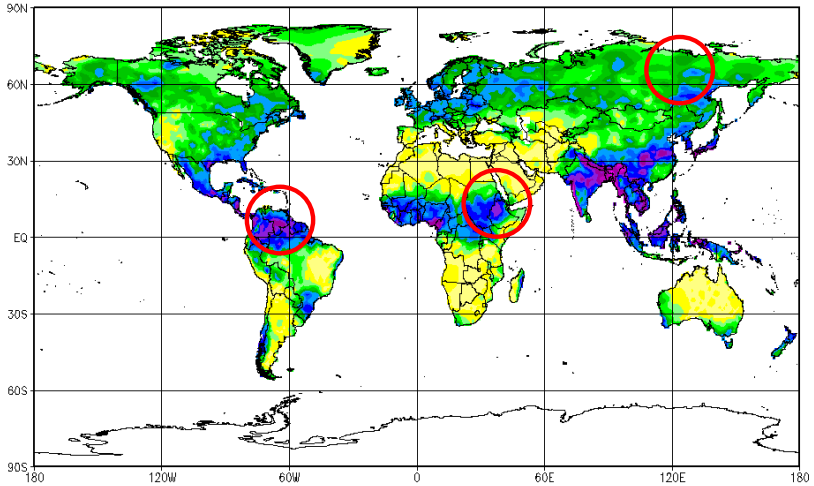
Comparison of monthly GPCC Products

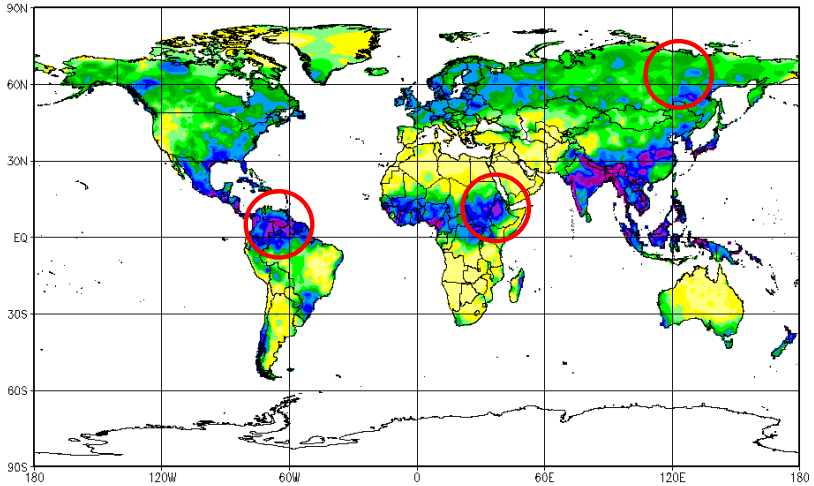
First Guess Product, July 2007



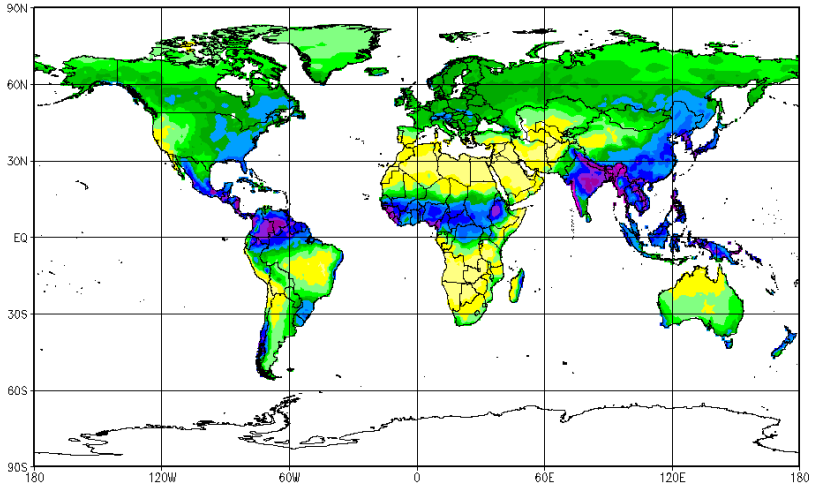
Monitoring Product, July 2007



Full Data Reanalysis (V.6), July 2007



Climatology, July



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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
- description of data set published in **Schamm et al., 2013, Earth System Science Data Discussion, doi: 10.5194/essdd-6-435-2013**

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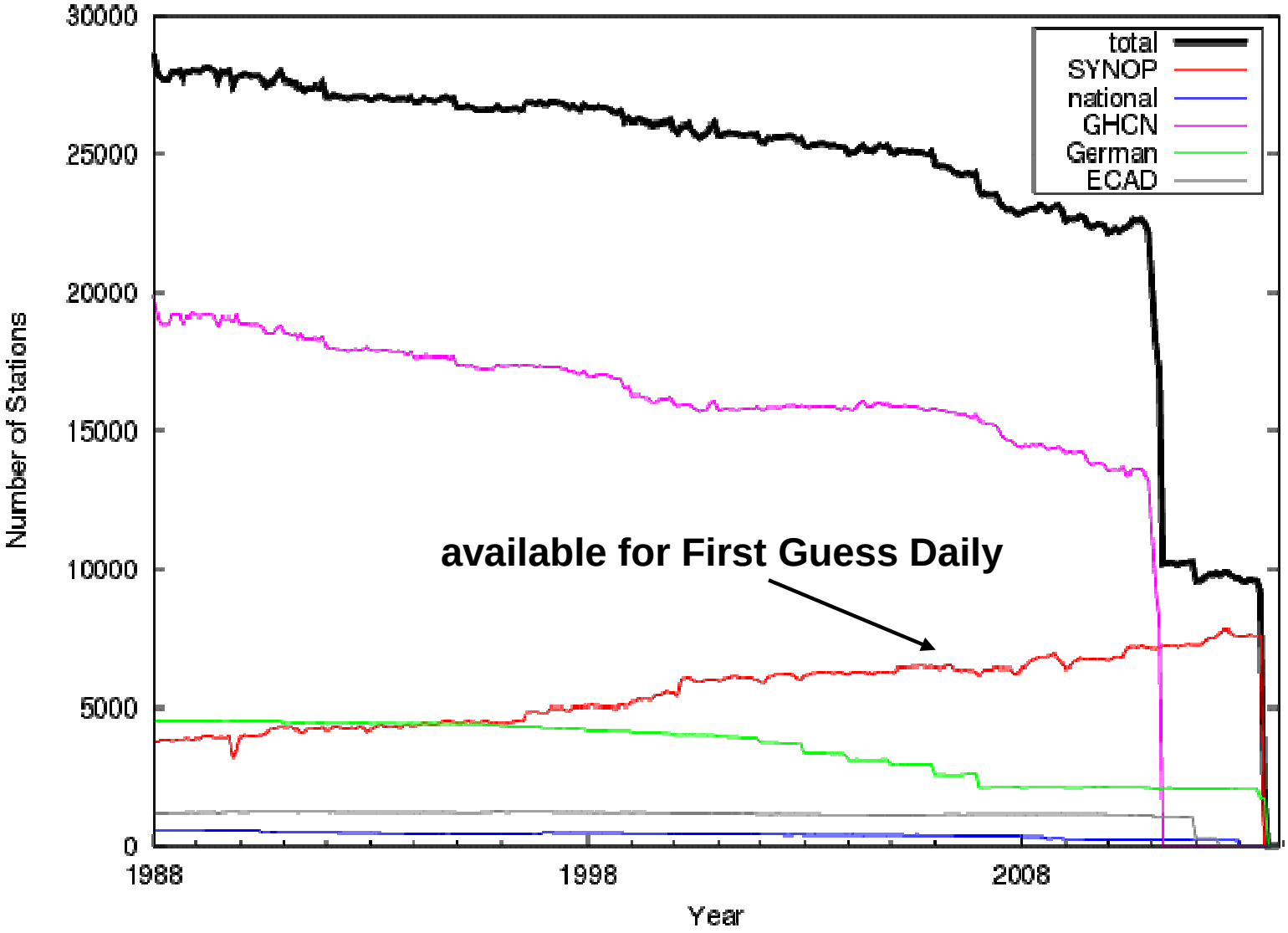
Availability of Daily Data



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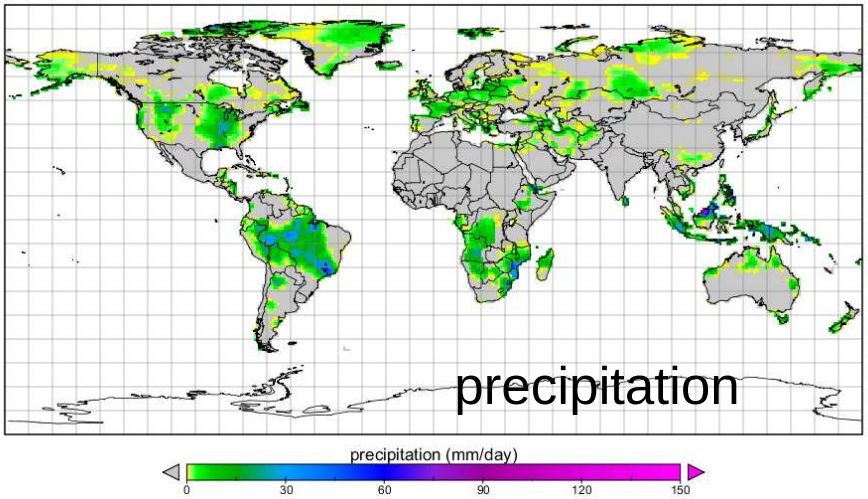
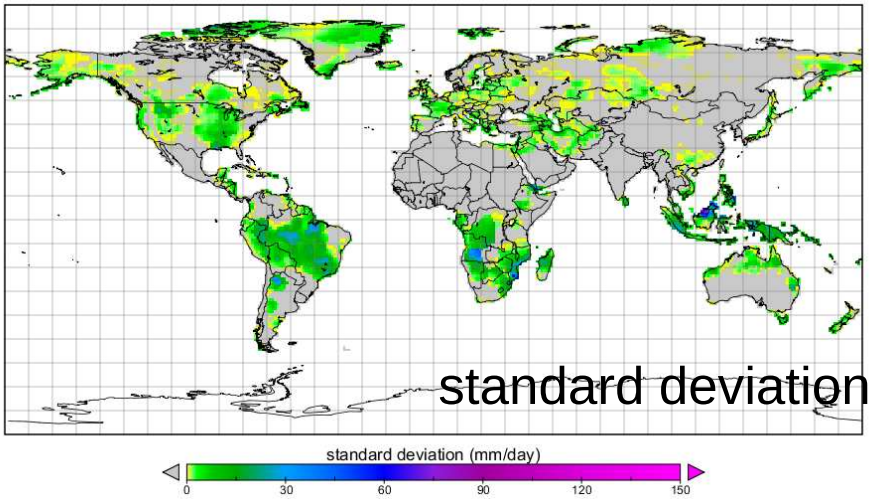
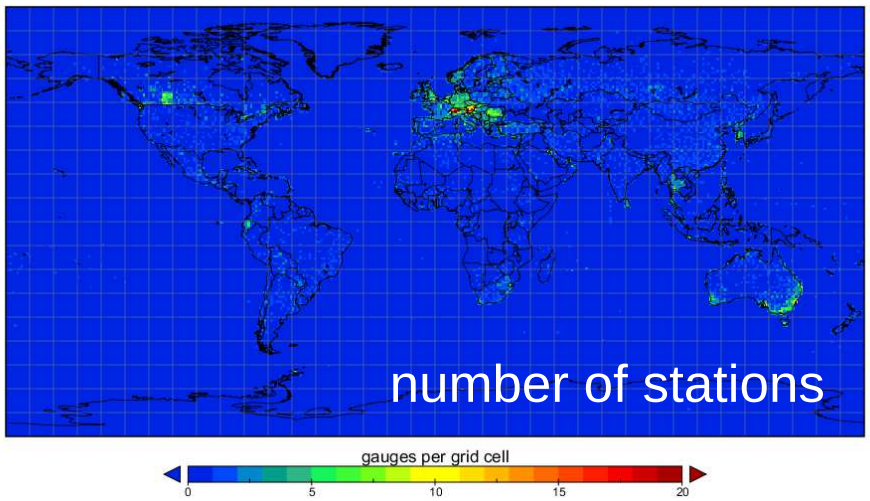
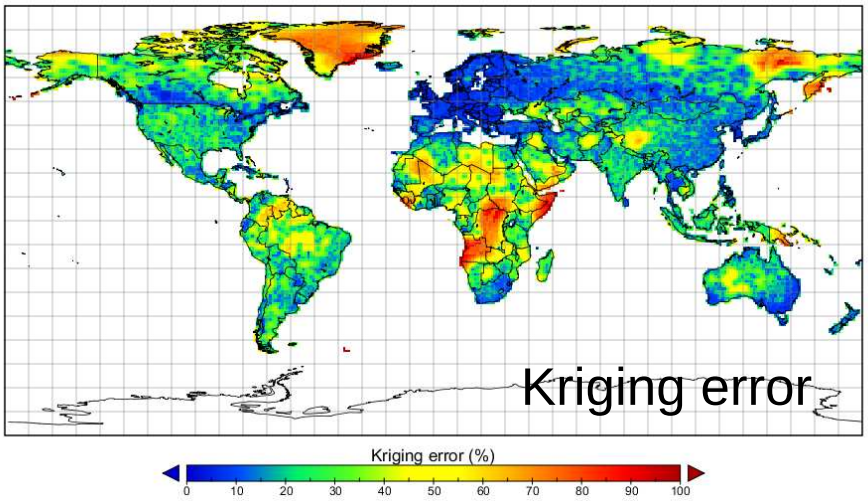
Example First Guess Daily; 2013-01-10









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Comparison First Guess Daily and E-OBS

	GPCC First Guess Daily	**E-OBS V.8**
area	global	Europe & Mediterranean
resolution	1°x1° regular	0.25°; 0.5° regular; 0.22°; 0.44° rotated
input data	GTS-SYNOP	several sources, incl. GTS
provided data	➔ precipitation total ➔ kriging error ➔ standard deviation ➔ gauges per grid cell	➔ precipitation total ➔ standard deviation
time series	non-blended data	blended data ➔ re-gridded to GPCC grid

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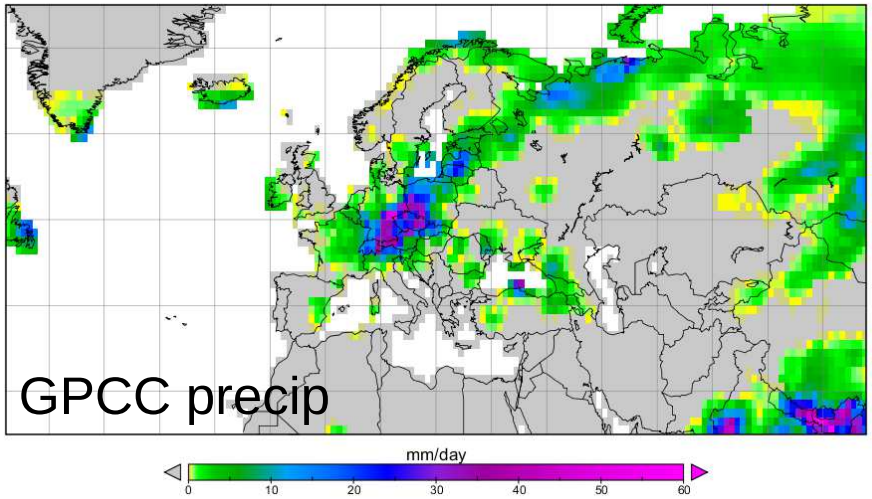
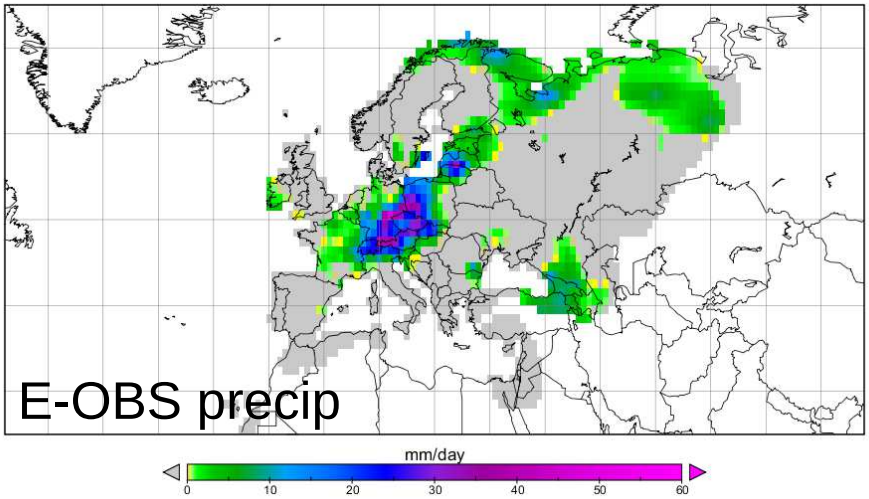
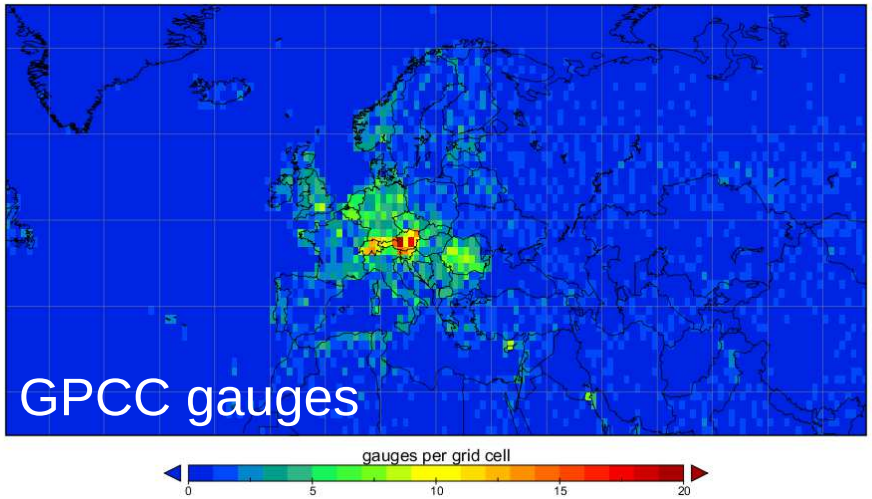
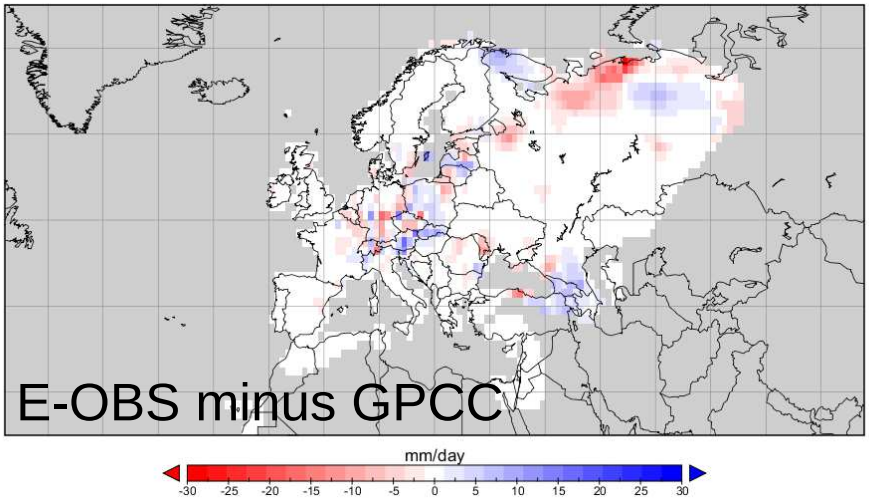
Comparison First Guess Daily and E-OBS V.8; 2010-7-23









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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 months
- 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

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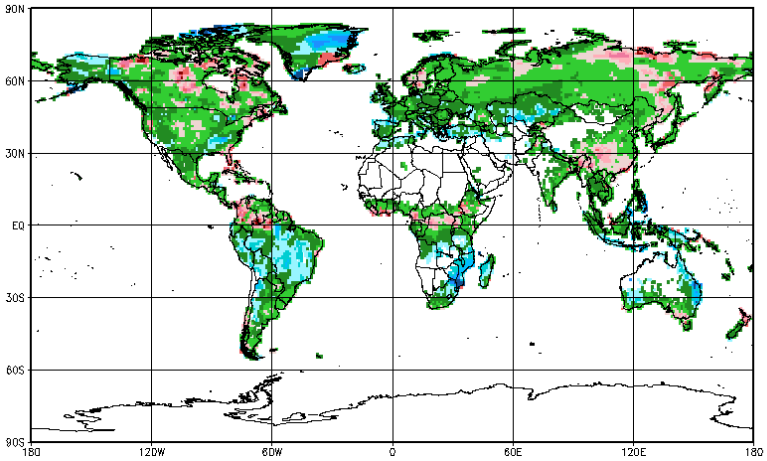
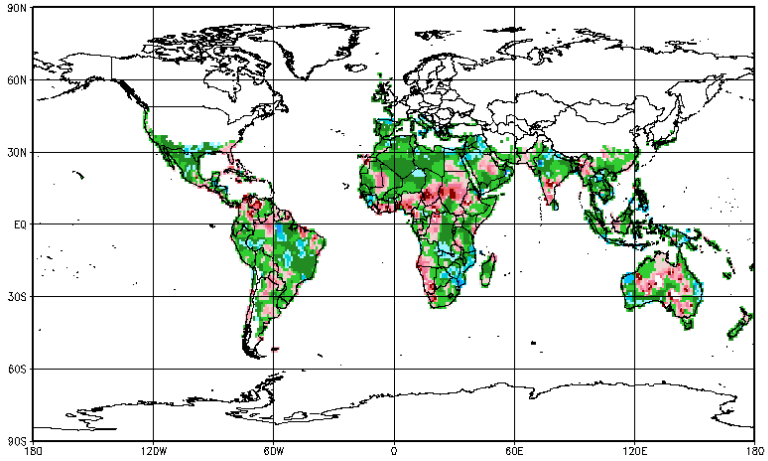
Example GPCC drought index, January 2013, 1 Month



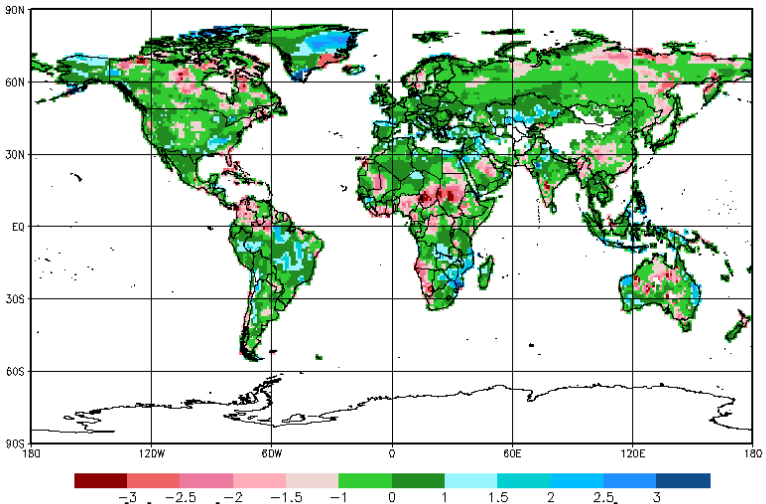
SPI-DWD

+



SPEI

=>



GPCC_DI

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Conclusion & Outlook

- First Guess Daily is operational since April 2013
  - based on SYNOP-reports, automated quality control
  - interpolation of relative values applying ordinary block Kriging
  - release together with First Guess Product
  - doi: 10.5676/DWD_GPCC/FG_D_100
- 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
  - doi: 10.5676/DWD_GPCC/DI_M_100

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Conclusion & Outlook

- three 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
  - Schamm et al., 2013 published in ESSDD, reference paper for First Guess Daily
- new products released as netCDF-files instead of ASCII-files
- new version of Full Data Reanalysis, Climatology and Monitoring Product scheduled for 3rd quarter 2014
- release of Full Data Daily planed for summer 2014, covers 1988 to 2008, also new combined analysis with HOAPS (land and ocean surface)
- new product Interpolation Test Data Set (ITD): data set to compare GPCC interpolation with open input data, release in 2014

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