Wetter und Klima aus einer Hand

Deutscher Wetterdienst

Gridded data products and interpolation technique utilized by the Global Precipitation Climatology Centre (GPCC)

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Gridded Data Products

Since 1989 the Global Precipitation Climatology Centre (GPCC) provides several gridded precipitation analysis products based on in situ rain gauge measurements. These products are public available at http://gpcc.dwd.de. Several data sources are utilized by the GPCC, e.g., SYNOP and CLIMAT reports received via GTS or from national meteorological and hydrological services and other global data collections. By an agreement with the data suppliers the GPCC offers no station (raw) data.

Near-Real-Time

Near-real-time products are the ‘First Guess’ (figure 1) and the ‘Monitoring Product’ (figure 2). While the ‘First Guess’ based only on SYNOP reports, the data base is extended by CLIMAT reports for the ‘Monitoring Product’. The main difference between both products is the enhanced quality control for the ‘Monitoring Product’ in comparison to the ‘First Guess’. The ‘Monitoring Product’ and ‘First Guess’ are available within 2 months or 3 to 5 days after the end of each month, respectively. We offer both products with 1°x1° spatial resolution, based on roughly 7.000 stations distributed globally.

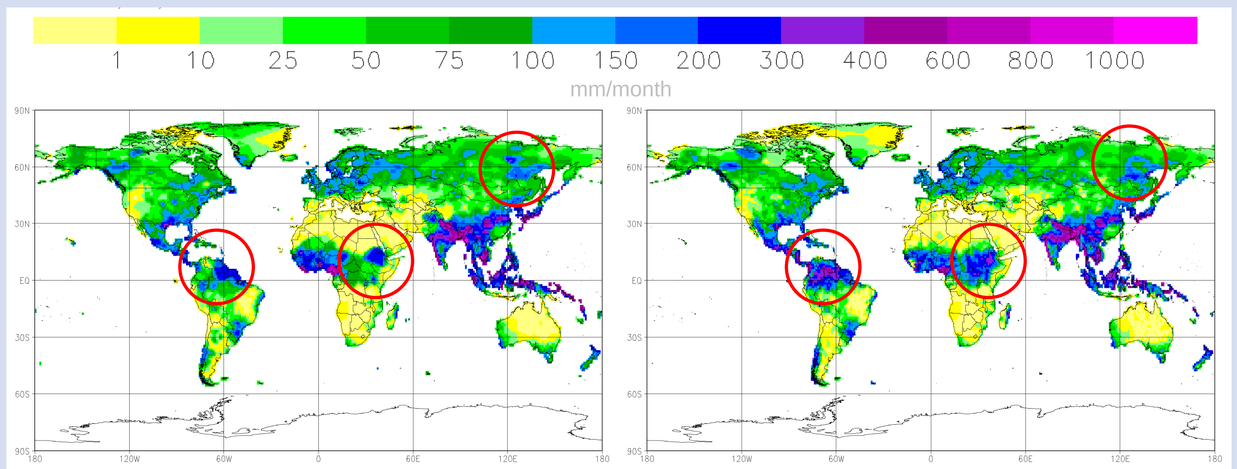

Figure 1: First Guess (July 2007)

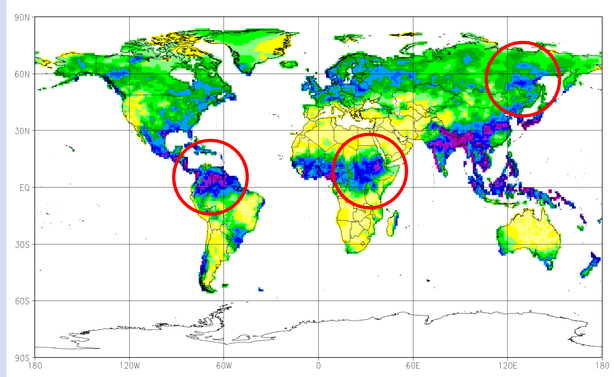

Figure 2: Monitoring Product (July 2007)

Figure 3: Full Data Reanalysis (V.4; July 2007)

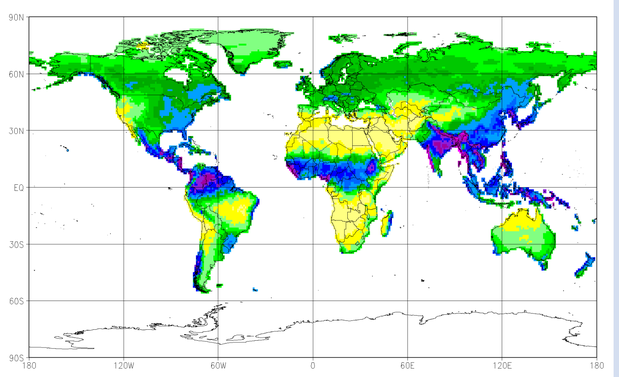

Figure 4: Climatology (July)

Non-Real-Time

Non-real-time products are the ‘Full Data Reanalysis’ (figure 3), ‘VASClimO’ and ‘Climatology’ (figure 4). These products are based on additional station data, which are provided by national meteorological and hydrological services or other data collections, e.g., GHCN, CRU or FAO. When the ‘Climatology’ and ‘Full Data Reanalysis’ are recalculated after significant extensions of the data base, ‘VASClimO’ will be replaced by a new homogenized product (‘HOMPRA’, see below). The non-real-time products are available with spatial resolutions of 0.5°, 1.0° and 2.5°. The ‘Full Data Reanalysis’ cover the period 1901 to 2008 (see below) and the climatology is focused on 1951 to 2000.

New Products – coming soon

First Guess Daily

The calculation of daily precipitation amounts based on SYNOP reports will restart in 2011. An example is shown in figure 5. We plan to release daily products together with the ‘First Guess’ 3 to 5 days after the end of each month.

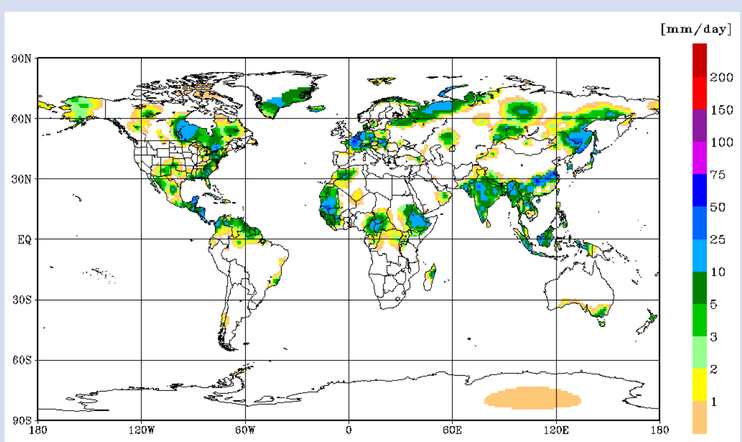

Figure 5: Calculated daily precipitation amount for August 15th, 2010.

HOMPRA

A new homogenized precipitation analysis (HOMPRA) shall be released within 2011. It will replace VASClimO and cover the period 1951 to 2005.

Full Data Reanalysis Version 5

Because of a most recent significant extension of the data base a new version of the ‘Full Data Reanalysis’ will be calculated. This new version (figure 6) extends the time period from 1901 till 2009. The underlying climatology is derived from data of roughly 64.000 stations that went through an enhanced quality control. The new version will be completed within the next weeks and released afterwards.

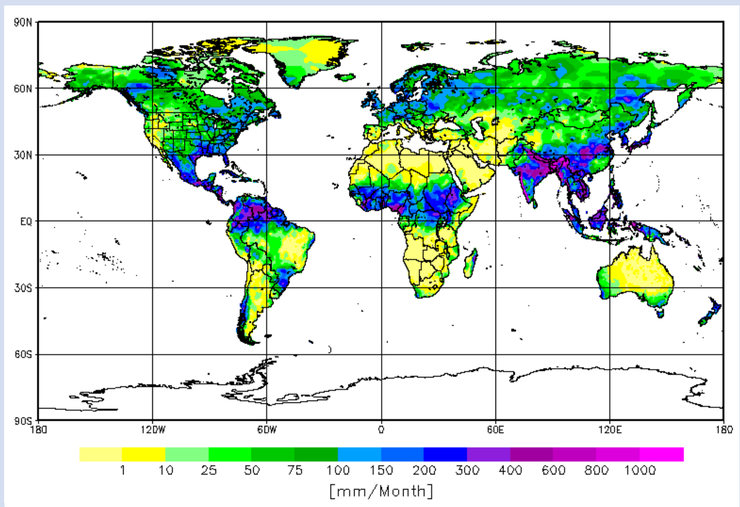

Figure 6: Full Data Reanalysis (V.5 β2; July 2007; 0.5° resolution)

Interpolation Technique

It is common for all products that the station data received by GPCC are interpolated to a regular grid. In doing so the SPHEREMAP method (Willmott et al., 1985) is applied as interpolation technique. This technique combines a weighting of range and direction on a sphere.

Since 2008 interpolations are performed as anomaly analysis on basis of the climatology. After interpolation of anomalies the interpolated field is added to the background field. This method allows for an increased quality in comparison to the interpolation of absolute values.

See also

You get more information regarding data base and quality control from the companion poster ‘*Recent development of GPCC’s data base and quality-control in preparation of new gridded global precipitation analyses’*, Schneider et al.

References:

Willmott, C.J., C.M. Rowe and W.D. Philpot, 1985: Small-scale climate maps: A sensitivity analysis of some common assumptions associated with grid-point interpolation and contouring. *American Cartographer* 12(1), 5-16.

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