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Application of Gridded Analysis Products provided by the Global Precipitation Climatology Centre (GPCC) to estimate Trends and Interpolation Schemes

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Since its start in 1989 the Global Precipitation Climatology Centre (GPCC) performs global analyses of monthly precipitation for the earth's land-surface on the basis of in-situ measurements. Meanwhile, the data set has continuously grown both in temporal coverage (original start of the evaluation period was 1986), as well as extent and quality of the underlying data base. The high spatio-temporal variability of precipitation requires a high density of measurement data. Core data of the GPCC are data provided from national meteorological and hydrological services as well as data from global and regional collections. Additionally WMO-GTS data (SYNOP reports, CLIMAT messages) were used primary for near-real-time products.

By the end of 2011 new versions of the 'Climatology (Version 2011)' and 'Full Data Reanalysis' (V.6, period 1901 - 2010) have been released, based on roughly 3000 stations more than the former version. Whereas the station density of the Full Data Reanalysis is not constant over time and the applied data were not tested for homogeneity, trends can also estimated from this product. Trends calculated using the method from Sen et al. (1968) will be shown. Also investigations displaying the influence of the selected period on the estimated trend will be demonstrated.

Normals depend on the applied reference period. On basis of the GPCC data base comparisons of normals based on four overlapping reference periods will be shown and their influence on calculated trends and anomalies.

The large data base of the GPCC is used to investigate the quality of different interpolation schemes, a modified SPHEREMAP, ordinary Kriging and arithmetic mean. This will be done for monthly as well as daily precipitation amounts. Also modifications to optimize the interpolation schemes will be shown.