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On the fall 2010 enhancements of the Global Precipitation Climatology Centres (GPCCs) data sets

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Precipitation is meanwhile a top listed parameter on the WMO GCOS list of 44 essential climate variables (ECV). This is easily justified by its crucial role to sustain any form of life on earth as major source of fresh water, its major impact on weather, climate, climate change and related issues of society's adaption to the latter. Finally its occurrence is highly variable in space and time thus bearing the potential to trigger major flood and draught related disasters. 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. The effort was inaugurated as part of the Global Precipitation Climatology Project of the WMO World Climate Research Program (WCRP).

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 number of stations involved in the related data base has approximately doubled in the past 8 years by trespassing the 40, 60 and 80k thresholds in 2002, 2006 and 2010. Core data source of the GPCC analyses are the data from station networks operated by the National Meteorological Services worldwide; data deliveries have been received from ca. 190 countries. The GPCC integrates also other global precipitation data collections (i.e. FAO, CRU and GHCN), as well as regional data sets. Currently the Africa data set from S. Nicholson (Univ. Tallahassee) is integrated. As a result of these efforts the GPCC holds the worldwide largest and most comprehensive collection of precipitation data, which is continuously updated and extended.

Due to the high spatial-temporal variability of precipitation, even its global analysis requires this high number of stations to provide for a sufficient density of measurement data on almost any place on the globe. The acquired data sets are pre-checked, reformatted and then imported into a relational data base, where they are archived separately in source specific slots, thus allowing an intercomparison of data from the different sources. Any time new data sets are imported to the data base the metadata in the input data set are compared to those already available in the data base. In case of discrepancies (e.g. deviating coordinates), external geographical sources of information are utilized to decide whether a correction of the metadata in the data base is required or not, thus resulting in a perpetual improvement of the station meta data.

Five prerequisites to reach and sustain the GPCC service level have remained valid as follows:
1. An utmost care taken for the integrity and quality of the data
2. State-of-the-art methods applied for the data interpolation on regular grids
3. Derived products that are tailored to the manifold needs of the broad user community
4. An open ear to the community with regard to product and method enhancements
5. An efficient, successful and sustained data acquisition process supported by WMO

The presentation shall examine most recent GPCC activities addressing the first three requirements. We will also present an example application to illustrate the potential of the GPCC products by a first assessment of the strong 2010 La Nina season that has apparently caused severe weather patterns world wide, including the flood disasters in Pakistan and Wuhan, China. In doing so the capability of the GPCC visualizer, a user friendly web interface to the GPCC data base (available from http://orias.dwd.de/GPCC/GPCC_Visualizer), shall be demonstrated for its potential to support such kind of global hydro-climatology assessments.