

VALIDATION OF SATELLITE-BASED GLOBAL PRECIPITATION ANALYSES OF THE GPCP USING BIAS-CORRECTED RAINGAUGE DATA OF BALTEX AS REFERENCE

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A new experimental product of the WCRP Global Precipitation Climatology Project (GPCP) provides daily precipitation data on 1° by 1° gridcells (Adler et al., 1999). This product, called GPCP-1DD, primarily is a combination of SSM/I, IR, and TOVS satellite data. The daily results are scaled using the GPCC Monitoring Product which is based on worldwide 7000 raingauges, but on monthly observations only. Therefor, validation of the GPCP-1DD product is still required on a daily basis.

The Baltic Sea Experiment (BALTEX) provides an excellent data set for this purpose with daily precipitation data observed at about 4,000 raingauge stations in 14 countries within the Baltic Sea Drainage Basin. Raingauge-based precipitation analyses used for verification of remote sensing or model results need to be corrected with regard to systematic gauge measuring errors caused by wind influences and evaporation losses. An new correction method based on information from synoptic weather records has been developed for the instrument types used in the countries located around the Baltic Sea and has been applied. Both, corrected and uncorrected raingauge data have been analyzed on the GPCP 1° by 1° grid using an ordinary Kriging technique.

Time-series of the daily precipitation being area-averaged for the entire Baltic Sea Drainage Basin using all gridcells sufficiently covered by raingauge data. The comparison of the area-means derived from raw raingauge data (dotted line) and such being corrected (solid line) emphasizes the necessity of the correction for systematic gauge measuring errors especially for the cold season. The comparison of the satellite-based GPCP-1DD results with the Baltex raingauge data analyses: Large overestimation by the GPCP-1DD mostly occurs during short episodes or individual days, while underestimation is more spread over longer periods. The monthly bias seems to be quite low, especially during the winter season, overestimates are compensated by underestimates.

Additional evaluation of the comparison results incl. grid-related statistics and discussion of the deviations over selected sub-regions within the entire Baltex Area as well as the analysis of individual episodes are currently in preparation.

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