

CORRECTION OF SYNOPTIC PRECIPITATION OBSERVATIONS DUE TO SYSTEMATIC MEASURING ERRORS WITH SPECIAL REGARD TO PRECIPITATION PHASES

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Precipitation analyses based on conventional observations, like the operational precipitation analyses of GPCC, have to be corrected regarding systematic measuring errors of the gauges, mainly caused by wind influence and evaporation losses. A crucial point is the determination of the phase of a precipitation event, because the correction factors for liquid and solid precipitation differ significantly. Differences between the gauged precipitation and the true precipitation amount are largest during snowfall and heavy wind.

A recently developed on-event correction method of the systematic measuring error on a daily basis was transferred from regional to global applications. Using the reported present weather, an analysis based on more than 600 000 global synoptic data from 16 winter months was done, which made it possible to relate air temperature and dew point temperature to the probable distribution of liquid, solid and mixed precipitation phase. Based on these informations, synoptic precipitation observations can be corrected regarding systematic measuring errors, which makes the estimation of extreme precipitation events more reliable. This will be exemplarily demonstrated at EGS 25th GA based on recent precipitation events