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Global daily precipitation analysis for the validation of medium-range climate predictions (DAPACLIP)

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The Federal Ministry of Education and Research in Germany funds the research programme “Mittelfristige Klimaprognosen” (MiKlip) with the aim to create a model system that can provide reliable forecasts on climate and weather, including extreme weather events. It is of central importance for the development process of the MiKlip system to validate the decadal prediction system based upon data and processes during the development stages. An essential part of the evaluation procedure will be the application of satellite derived datasets to assess the the aspired model system with respect to atmospheric water cycle components including clouds and related changes in the radiation budget.
Within the MiKlip DAPACLIP project new precipitation products suitable for the evaluation of the MiKlip prediction system are developed in close contact with the modelling community. These new datasets will be used to evaluate precipitation from global and regional decadal MiKlip hindcasts on a daily time scale, including the statistical analysis of extreme precipitation events.
The DAPACLIP dataset covers a time period of 21 years from 1988 to 2008. It is available in 1° and 2.5° resolution for global coverage as well as in 0.5° resolution for the European domain. The dataset consists of a combination of an in-situ based precipitation analysis of the Global Precipitation Climatology Centre (GPCC) and a new version of the satellite-derived Hamburg Ocean Atmospheric Parameters and fluxes from Satellite Data (HOAPS) precipitation analysis over ocean surfaces.
We compare the observation dataset to different satellite and gauge based daily precipitation products. Further we analyze the dataset against reanalysis data. For the evaluation of the MiKlip prediction system, indices of the Expert Team on Climate Change and Detection Indices (ETCCDI) will be used to show climatological characteristics of the dataset itself as well as differences and biases to the modeled climate projections. These indices allow for reproduction of precipitation climatology features as intensity and frequency, e.g. drought and wet spells, and parameters of the statistical distribution, e.g. percentile values.