



A global precipitation observation data set at daily resolution for the evaluation of decadal predictions

Marloes Gutenstein-Penning de Vries, Andreas Becker, Felix Dietzsch, Marc Schröder, Thomas Spanghel, and Markus Ziese

Deutscher Wetterdienst, Offenbach, Germany

Within the framework of the German project MiKlip ("Mittelfristige Klimaprognosen", i.e. medium-range climate predictions) a global climate forecast system on the decadal time scale is being set up for operational application. For the assessment of model skill, a global precipitation data set is developed within the MiKlip sub-project DAPAGLOCO (Daily Precipitation Analysis for the validation of Global medium-range Climate predictions Operationalized). The data set combines gridded, land-based rain gauge measurements (GPCC) with HOAPS satellite observations over ocean, and is provided at 1 and 2.5 degrees (global) and 0.5 degrees (Europe only) resolution. Daily data are available from 1988 up to 2015.

The performance of decadal climate models is evaluated with respect to DAPAGLOCO directly by assessing skill scores computed from the precipitation data. Although a lot can be learned from such comparisons of mean precipitation levels, a closer look at extremes can reveal underlying processes. Hence, indices that characterize extremes, ETCCDI (Expert Team on Climate Change and Detection Indices), are computed from model and observation data sets and used for model evaluation. These indices allow for the evaluation of precipitation extremes, their spatial and temporal distribution as well as for the duration of dry and wet spells, average precipitation amounts and percentiles on global scale.

We here present the new DAPAGLOCO precipitation data set and apply it for the evaluation of decadal predictions by the MPI-ESM (Max Planck Institute - Earth System Model). A comparison of ETCCDI from modeled and measured data are shown, as well as the statistical skill scores computed from these data sets.