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# Comparison of precipitation simulation performance by the CMIP3 and new CMIP5 models.

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The fifth phase of the Coupled Model Intercomparison Project (CMIP5) is the most recent coordinated experiment of global climate modeling. Compared to the third phase of the homonymous project (CMIP3) that was built on, CMIP5 involves a greater number of GCMs run at higher spatiotemporal resolutions with more complex components.
Here we use GCM data from both projects to test their efficiency of representing daily precipitation parameter with the use of a state of the art high resolution gridded global precipitation dataset for land areas and for the period 1960-2005. A simple and useful skill score (SS) metric based on the match of simulated and observed empirical pdfs was employed as a performance indicator, for the entire spectrum of the pdf (mean precipitation) and for the values exceeding the 95th percentile, here defined as extreme daily precipitation. Results are presented globally and regionally for 26 land regions that represent different climatic regimes, covering the total earth's land surface except for Antarctica. Compared to CMIP3 models, CMIP5 models perform better in simulating mean and extreme precipitation. A substantial improvement for extreme precipitation is observed over North Europe, Central and Eastern North America and North East Europe. Some models behave consistently better over some regions compared with others. Nevertheless, in both experiments there are clearly better models than others from a SS point of view. The derived skill score metrics can be used as weights for the construction of multi-model ensembles of global land area precipitation.