



The Palmer Drought index: Comparing index values from ENSEMBLES models and observations.

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The Palmer Drought Severity Index (PDSI) was developed, in the middle of the 20th century, to help US farmers and agricultural support agencies deal with the effects of droughts. It has since been further developed in order to be applicable elsewhere - and we apply the so-called Self-Calibrated PDSI (sc-PDSI) to the regional climate model collection from the EU-financed ENSEMBLES project in order to understand the role that regional climate models (RCMs) may play in drought investigations in Europe. We calculate the sc-PDSI for 14 models, and the model mean, and compare it to the observed values in 23 European regions, using the recently published drought catalogue by Lloyd-Hughes et al. (2010). We find that most models have skill, in the statistical sense, to explain observed drought in the period 1961 to 2000. The best models are the ETHZ CLM and CHMI ALADIN models. We also find that some regions pose great difficulties for almost all models - these are typically small mountainous regions in the central or eastern parts of Europe. We also offer a discussion of how the insights we have gathered from these observationally forced models are challenged by the next step - that of using the sc-PDSI, or some other measure of drought severity - in models of the future, such as scenario-based model runs.