



Quantifying Differences between Present and Future Weather Types

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The evaluation of different climate models' projections is the basis for a probabilistic impact assessment of climate change taking place in many regions of the world. We propose an original evaluation of the climate models through a weather typing approach. Such approaches have become common before a downscaling procedure of climate model output to a regional scale. The main underlying assumption is that the weather types are essentially the same in the training and the simulation periods, only the frequency of their occurrence might change. To verify this assumption, we define weather types for several models from the IPCC models database for a training period. Those are then compared to a) weather types obtained from future simulations from the same models and b) to weather types obtained in the same manner for reanalyses (NCEP/ERA40) for the same time period. On the one hand such an analysis provides means to test the validity of the assumption of weather patterns remaining constant between present and future climate (a). On the other hand the potential for reproducing reanalysis patterns in present climate can be quantified and compared (b). This evaluation of different models can not only be used to verify the main underlying assumption but also to select appropriate climate models for a downscaling procedure and a subsequent probabilistic impact assessment of changing precipitation patterns in several regions of the world.