



Climate projections for Poland using two downscaling strategies

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Projected changes of temperature and precipitation in Poland were assessed based on downscaled values of CMIP5 climate model projections following two strategies: empirical statistical downscaling (esd) and dynamical downscaling (dd). The esd method was applied to a large ensemble of climate models (108 for RCP4.5), while the more computationally expensive dd was limited to a smaller ensemble (9 RCM/GCM combinations).

Considering the same ensemble of models, the downscaled temperature values from dd and esd are in excellent agreement. However, results suggested that the ensemble size and selection of climate models have a significant impact on the strength and range of projected climate change. Nevertheless, independent of ensemble selection or downscaling strategy, climate projections show a significant warming in all parts of Poland and in all seasons.

For precipitation, there is a considerable discrepancy between the results of the dd and esd approach which imposes a large uncertainty on the precipitation projections for Poland.