Climate projections over Poland. Assessment of bias-corrected EURO-CORDEX simulations

Summary
Simulations of one historical period (1971-2000) and two future horizons (2021-2050 and 2071-2100) assuming two representative concentration pathways (RCP4.5 and RCP8.5) were produced. They consist of projected daily mean, minimum and maximum air temperatures and precipitation totals of nine EURO-CORDEX regional climate model outputs bias corrected to a 5 km × 5 km grid.

1. Overall significant warming
Based on the multimodel ensemble mean or the individual simulations, climate projections show an overall warming in all parts of Poland and in all seasons.

2. Uncertain increase in precipitation
Based on the multi-model ensemble mean, climate projections show an overall uncertain increase in precipitation overall Poland except mountainous areas in the south where a decrease is also expected. However, individual model simulations showed a considerable discrepancy between the simulations suggesting large uncertainty in the projections.

3. Underestimated warming!
When confronted to empirical-statistical downscaling of the full CMIP5 multi-model ensemble, results show that - both methods agree well on the temperature increase based on same samples of used GCMs, - ESD suggest that DD underestimate both the ensemble mean and the spread of possible temperature outlooks.

4. References