



Towards constraining extreme temperature projections of the CMIP5 ensemble

Martha-Marie Vogel, René Orth, and Sonia Isabelle Seneviratne
ETH Zürich, Switzerland (martha.vogel@env.ethz.ch)

The frequency and intensity of heat waves is expected to change in future in response to global warming. Given the severe impacts of heat waves on ecosystems and society it is important to understand how and where they will intensify. Projections of extreme hot temperatures in the IPCC AR5 model ensemble show large uncertainties for projected changes of extreme temperatures in particular in Central Europe. In this region land-atmosphere coupling can contribute substantially to the development of heat waves. This coupling is also subject to change in future, while model projections display considerable spread. In this work we link projections of changes in extreme temperatures and of changes in land-atmosphere interactions with a particular focus on Central Europe. Uncertainties in projected extreme temperatures can be partly explained by different projected changes of the interplay between latent heat and temperature as well as soil moisture. Given the considerable uncertainty in land-atmosphere coupling representation already in the current climate, we furthermore employ observational data sets to constrain the model ensemble, and consequently the extreme temperature projections.