Earth System
Dynamics

Discussions

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Interactive comment on "Development and prospects of the regional MiKlip decadal prediction system over Europe: Predictive skill, added value of regionalization and ensemble size dependency" *by* Mark Reyers et al.

Anonymous Referee #1

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General comments This is a very good study that focuses on the potential merits of regional downscaling decadal climate predictions over Europe. Specifically, the MiKlip prediction system studied uses the low resolution MPI global decadal hindcast ensemble at T63 resolution and dynamically downscales these hindcasts over Europe using the COSMO-CLM model at 0.22° horizontal resolution. Two 10 member ensemble regional hindcasts of 5 start dates are examined and verified against observational analyses of surface temperature, precipitation and low level wind using three different skill metrics, MSESS, CRPSS and ACC. The authors examine these metrics to answer

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the following questions: is there potential for skillful regional predictions in Europe? Does regional downscaling provide added value? and How does the skill of these predictions depend on ensemble size? The first two questions are answered affirmatively and for the last question ensemble size stabilizes the skill metrics MSESS and CRPSS at ten members but ACC skill depends on ensemble size beyond ten members. The manuscript meets all the criteria for publication and needs only minor changes.

Specific comments The manuscript could be improved in two ways that would increase the significance of the work. First, although there are significantly large regions in Europe where the skill of the initialized hindcasts is positive, there is also a large region in central Europe where the skill is negative. This is particularly true of the MSESS of temperature. Since the reference is forecast is an uninitialized ensemble of 20th century simulations this raises the question as to the reason for this negative skill. The answer or some speculation to how it arises should be included in the article. In a similar vein, the authors do not include in their discussion any metrics that use The observed climatological distribution as the reference forecast, so that skill is measured solely using comparison with observations.

Technical corrections

Pg 2 Yaeger et al should be Yeager et al Pg 8 stronger scattered should be more strongly scattered

Interactive comment on Earth Syst. Dynam. Discuss., https://doi.org/10.5194/esd-2017-70, 2017.

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