

Interactive comment on “European climate change at global mean temperature increases of 1.5 and 2 °C above pre-industrial conditions as simulated by the EURO-CORDEX regional climate models” by Erik Kjellström et al.

Anonymous Referee #2

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The authors investigated the climate changes over European region at 1.5C and 2C warming under RCP8.5 scenario mainly based on the EURO-CORDEX regional climate models simulations. The possible changes in seasonal mean temperature, precipitation and surface wind at different warming target were described and compared to those from the corresponding driving global climate models. This work is timely, and may be useful for the coming IPCC special report. My comments are as follows. (1) After I read through the whole manuscript, it is not clear to me whether it is beneficial for Europe to control the warming target to 1.5°C rather than 2°C. In the manuscript,

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the authors always talked about the possible climate changes at different warming target, but how about the corresponding differences between 1.5C and 2C warming? The authors showed the differences in Fig.4 and 5, but they didn't discuss them. For example, are there any differences statistically significant (the model agreements do not mean the statistical significance)? (2) In Fig.8 and 9, the authors compared the results under 1.5C and 2C warming derived from regional climate models and global climate models. Is it possible to show us the differences between the 1.5C and 2C warming from different models? (3) The authors mainly focused on the seasonal mean changes, and the changes in precipitation and wind are quite uncertain. How about the changes in extreme events (precipitation and wind)? The manuscript could be more interesting if the authors included some analysis on the changes in extreme climate events, and discuss whether the 0.5C less warming could reduce significantly the extreme climate events in European region, based on the regional climate models with high resolution. Minor comments: (4) Figure 2 and 3: why is there no result from WRF (IPSL)? (5) L15-20: “attenuation of amplification of” should be “attenuation or amplification of” (6) In the abstract, you should mention that this study focus on climate changes at different warming target under RCP8.5 scenario. The scenario information is very important, since the conclusions may be scenario-dependent.

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