

Earth Syst. Dynam. Discuss., author comment AC1
<https://doi.org/10.5194/esd-2021-49-AC1>, 2021
© Author(s) 2021. This work is distributed under
the Creative Commons Attribution 4.0 License.

Reply on RC1

Matthias Gröger et al.

Author comment on "Atmospheric rivers in CMIP5 climate ensembles downscaled with a high-resolution regional climate model" by Matthias Gröger et al., Earth Syst. Dynam. Discuss., <https://doi.org/10.5194/esd-2021-49-AC1>, 2021

Dear Reviewer,

thank you very much for reviewing our manuscript and for this important comment. Indeed we employed detection algorithm developed by the Laver et al., 2013. This was done to achieve best as possible comparability with existing literature that analyzed atmospheric rivers in a variety of climate and reanalysis data sets with different spatial resolution. However, you mention an important aspect when directly comparing data sets of different resolution since the spatial noise may be different. In our manuscript this applies to comparison between ERA-I data (0.75°) and the regional model data (0.22°). We fully agree this should be discussed more prominently in the context of the compared climatologies and statistics in the validation part. Hence, we will include a paragraph on this in a potential revised version.

With persistence we basically mean "duration", i.e. when the algorithm detects an algorithm for less than 18 consecutive hours, then these time steps are not retained and the atmospheric river is no longer classified as such (following basically Lavers et al (2012, 2013). We will revise the description on AR detection in a revised version to be more comprehensive.

Again thank you very much for your providing us this important comment.

Best regards.

On behalf of the authors

Matthias Gröger