



## Supplement of

## The importance of horizontal model resolution on simulated precipitation in Europe – from global to regional models

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## **Supplement**



Figure S1. Probability of different daily annual precipitation intensities in the CMIP6 (green dotted lines and shading), PRIMAVERA (orange dashed-dotted lines and shading), CORDEX low resolution (red dashed lines and shading) and CORDEX high resolution (blue dashed lines and shading) ensembles for Scandinavia (SC, top left), mid-Europe (ME, top right), the Alps (AL, bottom left) and the Mediterranean (MD, bottom right). Coloured shadings represent the 5-95 percentile range in respective ensemble. Black solid lines are E-OBS observations ( $0.1^\circ$  resolution). All data has been interpolated to a common  $2 \times 2^\circ$  degrees grid.







Figure S3. Probability of DJF (left column) and JJA (right column) daily precipitation intensities in the CMIP6 (green dotted lines and shading), PRIMAVERA (orange dashed-dotted lines and shading), CORDEX LR (EUR-44, red dashed lines and shading) and CORDEX HR (EUR-11, blue dashed lines and shading) ensembles for Scandinavia (SC). Colored shadings represent the 5-95 percentile range in respective ensemble. Black solid line is E-OBS observations (0.1° resolution), grey solid line is NGCD observations. The lower panels show differences with respect to NGCD observations.



Figure S4. Maximum one day precipitation (Rx1day (mm day<sup>-1</sup>)) in the Alps (AL, first column), Scandinavia (SC, second column), the Iberian Peninsula (IP, third column) and mid-Europe (ME, fourth column) for individual models in the CMIP5 (brown), CMIP6 (red), PRIMAVERA LR (orange), PRIMAVERA HR (light blue), CORDEX LR (green) and CORDEX HR (purple) ensembles as well as E-OBS at 28 (grey) and 11 km (black). Boxes mark the 25<sup>th</sup> and 75<sup>th</sup> percentile, with the median inside; whiskers go from the 10<sup>th</sup> to the 90<sup>th</sup> percentile. Top row: winter (DJF), bottom row: summer (JJA).



Figure S5. The number of precipitation days (RR1 (days year<sup>-1</sup>)) for AL (first row), SC (Second row), IP (third row), ME (fourth row). Left column: model data on their original grids, centre column: all data regridded to 0.5°×0.5° grid, right column: all data regridded to 2°×2° grid. For explanation of colours see Fig. Sa.



Figure S6. Same as Figure S4 but for the number of days with precipitation amount over 20 mm (R20mm (days year-1)).



Figure S7. Same as Figure S4 but for the simple precipitation intensity index (SDII (mm day<sup>-1</sup>)).