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Role of resolution and of sub-grid parameterizations in modeling precipitation over the Euro-CORDEX domain with the Weather Research and Forecast model.

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We present a study of different configurations of the Weather Research and Forecast model for the Euro-CORDEX area with different microphysical, convective subgrid and planetary boundary layer parameterizations. The resolution of the experiments are $0.04°$, $0.11°$ and $0.44°$. Boundary conditions are provided by ERA-Interim re-analysis data. Monthly and daily statistics for the year 1979 are compared in order to determine the best configuration for reproducing precipitation climatology and precipitation statistics, particularly for the Alpine region. Our results show that while local precipitation patterns are well reproduced by the model, the model presents a positive bias in average annual precipitation. We find that a high model resolution (at least $0.04°$) and explicitly resolved convection are needed to properly represent the observed precipitation distributions.