

Poster.1: . **Analyses of added value for heavy rain fall and strong wind in convection-permitting climate simulations over Germany**

<sup>1</sup>Michael Haller, <sup>1</sup>Susanne Brienen, <sup>1</sup>Harald Rybka, <sup>1</sup>Stéphane Haussler, <sup>1</sup>Jennifer Brauch and <sup>1</sup>Barbara Früh  
<sup>1</sup>*Deutscher Wetterdienst, Offenbach, Germany*

**contact:** michael.haller@dwd.de

**Abstract**

The overall progressing climate change affects processes on all horizontal scales, from the global to the local scale. For the local climate, the impact of climate change is more heterogeneous due to small-scale features. In the project “BMDV - Network of experts: Adapting transport infrastructure to climate change and extreme weather events”, we address the needs of our project partners for high spatial and temporal resolved climate model data by performing convection-permitting climate simulations with the regional climate model COSMO-CLM 5.0. The domain is centred over Germany on a 3 km grid. The simulations were dynamically downscaled from MIROC-MIROC5 GCM data and they were performed for 30-year time slices (historical from 1971-2000, future from 2031-2060 and 2071-2100 with scenario RCP 8.5). An additional evaluation run (“HoKliSim-De”) was performed for the time range of 1971 to 2019, driven by ERA-40 with a two-way nesting for 1971 to 1978 and with direct downscaling of ERA5 from 1979 onwards. For our analyses, we use observation data with daily and hourly resolution. A focus of our analyses is the quantification of the added value from the high resolution in comparison to the forcing model data concerning extreme events like heavy rain fall and strong winds. Further analyses of return levels for extreme precipitation using the peak-over-threshold method have also been performed. Results of these analyses will be presented.