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The EURADCLIM gauge-adjusted radar precipitation dataset

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EURADCLIM is a publicly available climatological dataset of 1-h and 24-h precipitation accumulations covering Europe at a 2-km grid over the period 2013 –2022. It is based on the surface rain rate composites from the EUMETNET programme OPERA. Algorithms are applied to remove remaining non-meteorological echoes as much as possible. The 1-h accumulations are merged with rain gauge accumulations from the European Climate Assessment & Dataset (ECA&D). Details on the employed datasets and algorithms are presented. The quality and shortcomings of EURADCLIM version 2 (https://doi.org/10.21944/ymrk-mr24) are assessed by comparisons to (independent) rain gauge data and are presented by means of scatter density plots, a spatial verification, and case studies. EURADCLIM clearly has a higher quality than the original OPERA product. The potential of EURADCLIM for deriving a pan-European precipitation climatology is shown.

EURADCLIM could serve as a reference dataset for precipitation estimates from opportunistic sensing. We demonstrate this by comparing a merged dataset based on radar (the OPERA product) and rain gauge data from personal weather stations (PWSs) over Europe to version 1 of EURADCLIM. The results show a better agreement of the merged dataset with the EURADCLIM ground truth than the version without PWS data, thus highlighting the potential of crowdsourced rain gauge data for improving radar precipitation products.

Finally, the newest findings from research and development on EURADCLIM are presented including what can be expected from version 3.

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