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Hourly precipitation extremes versus temperature in Europe

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For several European countries the relation between the observed daily mean temperature and daily maximum of 1-hour precipitation intensity is investigated, with special emphasis on extreme precipitation. The observations are from meteorological stations in The Netherlands, Germany, Spain and Norway. The data are from 1920 and upward, with most data from after 1980. For each of these four countries the 75th en 90th percentiles of the precipitation intensity increases with temperature by about 7% per degree, and thus scales with the saturation water vapor concentration as governed by the Clausius-Clapeyron relation. For the 99th and 99.9th percentiles for The Netherlands, Germany, and Spain, but not for Norway, the precipitation intensity increases faster, up to two times as fast, than expected from this relation.