



Changes to rainfall spatial properties at warmer temperatures observed from weather radar data

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The relationship between air temperature and the spatial characteristics of rainfall at the storm and convective rain cell scales were analyzed using estimates from a long weather radar records over Mediterranean and semiarid regions. The peak intensity of individual convective rain cells was found to increase with temperature, but at a lower rate than the scaling expected from the Clausius-Clapeyron relation, while the area of the individual convective rain cells slightly decreases. At the storm scale, the areal convective rainfall was found to increase with warmer temperatures, whereas the areal non-convective rainfall and the storm-wide area decrease. This suggests an enhanced moisture convergence from the storm-wide extent toward the convective rain cells. Results indicate a reduction in the total rainfall amounts and an increased heterogeneity of the spatial structure of the storm rainfall at warmer temperatures.