



Spatial and temporal variability of extreme Temperature in Northeastern Spain

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Climate impact studies are more profoundly associated with changes in intensity and frequency of extreme events rather than changes in mean values. Long-term changes and spatial variability of extreme temperature were investigated in Northeastern Spain based on a daily dataset of 128 quality controlled and homogenized series spanning the period from 1960 to 2006. Extreme temperature was defined in terms of 20 indices recommended by the World Meteorological Organization. These indices included, for example, cold nights (TN10), warm nights (TN90), cold days (TX10), total number of frost days, intra-annual extreme temperature range and Diurnal temperature range. The magnitude of the trends and their statistical significance were determined using the nonparametric Kendall' tau test at the 95% level of significance. A clear positive trend was exhibited across the region for summer days (SU25), warm days (TX90), and tropical nights (TR20). This closely matches the general observed warming trend of daily maximum temperature. Conversely, a negative trend was marked for ice days, cold days, cold nights and the Diurnal temperature range.

Key words: temperature extremes, daily temperature, climate variability, trend analysis, Spain.