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Trends in daily minimum and maximum temperatures in Catalonia (NE Spain) along the 1950-2004 recording period

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A detailed analysis of time trends of daily minimum and maximum temperatures in Catalonia (NE Spain) permits identifying some interesting features of the evolution of the thermometric regime along the years 1950-2004. Database consists of daily minimum and maximum temperatures recorded at 27 meteorological stations distributed throughout Catalonia. Trend magnitudes are given by slopes derived from linear regression of the temperature time series. A slope estimation based on Kendall's tau method is also obtained. The statistical significances at 95% and 99% confidence levels are established using Mann-Kendall and Kendall-tau tests. As a general feature, almost all of the stations depict significant trends of daily minimum and/or maximum temperature for a large number of days of the year, with a clear predominance of positive trends. Specifically, 20 out of 27 stations exhibit much more positive than negative trends of the daily minimum temperature, positive trends sometimes affecting nearly 200 days of the year. Similarly, 18 out of 27 stations show much more positive than negative trends of the daily maximum temperature, positive trends sometimes affecting now as much as 300 days of the year. Another interesting feature is the existence of brief spells of the year (middle of March, end of May–beginning of June, second half of August) for which a remarkable number of stations depict positive trends of minimum and maximum temperature. Conversely, no spell of the year with a remarkable number of stations showing negative trends has been detected. The estimated trend magnitudes sometimes imply changes of $\pm$2–3 $^{\circ}$C for the whole recording period.