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Trends in temperature parameters used for recent heating energy assessment in Zagreb (Croatia)

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Recent Croatian plans for heating energy consumption are mainly based on calculations of two temperature parameters - heating degree-day and number of heating days, over the period 1961-1990. Calculations are based on the base temperature of 20˚C that represents the desired indoor temperature and on the three values (10˚C, 12˚C and 15˚C) for base temperature that represents the daily mean outside temperature below which heating is demanded. This presentation shows some results for the period 1961-1990 that are important for energetic and economic decision makers' research for Zagreb (capital of Croatia). Additionally, for Zagreb are shown the evolutions of both parameters from 1901 to 2005. Trends and average yearly changes are calculated over 1901-2005, 1901-2000 and 1961-2005. They are determined for the whole heating season (October-April) as well as for each month over the season separately. Statistical significances of the trends are tested using the non-parametric Mann - Kendal tau test. The results obtained indicated that the demands for the fuel for heating are decreasing in Zagreb. Namely, the number of heating days as well as heating degree-day have decreasing trend over the heating season and over the most of the months. For the whole heating season statistically significant decreasing trends in both parameters are detected for all included base temperatures for daily mean outside temperatures over the period 1901-2005, only for the base temperature of 15˚C over the period 1901-2000 and only for the base temperature of 12˚C over the period 1961-2005. Moreover statistically significant were also seasonal decreasing trends in heating degree-days for base temperatures of 10˚C and 15˚C over the period 1961-2005 as well as the seasonal decreasing trend in number of heating days for the base temperature of 12˚C over the period 1901-2000.