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Monthly scale in spatial analyses of trends in heating and cooling demands in Croatia

Lidija Cvitan and Renata Sokol Jurković
Meteorological and hydrological service, Research and development division, Zagreb, Croatia (cvitan@cirus.dhz.hr)

Seasonal trends in heating and cooling degree-days (HDD and CDD), as well as in number of heating and cooling days (HD and CD), determined for three threshold values each, over the whole heating (May-September) and cooling (May-September) seasons revealed a great spatial diversity over Croatia in the period 1901-2008. Respectable diversities were detected among the trends for three main climate regions (continental, maritime and mountainous) as well as between the trends for the locations with similar climate. Monthly scale in trend analyses helped in better understanding of seasonal spatial trend diversities.

Monthly HDD and HD trends show the greatest spatial differences for period October - December inside Adriatic area, and for period January - April inside continental part of Croatia. In the period October - December it is the consequence of the stronger warming influence of the sea (sea is warmer than in the later part of heating season) and stronger sea influence on islands than on the coast. In the period January - April, everywhere in the mainland pronounced is a strong influence of the surrounding land that is warming up faster than sea.

Spatial differences in monthly CDD trends are of similar type for all three temperature thresholds and three climate regions over the whole cooling season. The greatest differences are mainly between mountainous and Adriatic regions in the period June-August. On the other hand, spatial diversity in monthly CD trends is significantly dependent upon the temperature threshold. For each threshold the greatest spatial difference occurs in different part of season or the differences are similar over the whole season.