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Long-term trends and variability of daily minimum and maximum air temperatures in Latvia

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A significant increase in the mean valueas of air temperature near the surface of the Earth has been reported worldwide indicating that the climate is changing. For practical purposes and for humans' everyday life, daily mean temperature is not as important as daily maximum and minimum temperatures as well as their amplitude.
This study investigated long-term trends and variability in Latvia's extreme temperatures and diurnal temperature range (DTR) using meteorological data from 10 meteorological stations for the period 1925-2012 and from station Riga-University for the period 1883-2012. The long-term trends of changes were calculated by using the Mann-Kendall test. The shift in variance under conditions of atmospheric warming was investigated. The marked increasing tendency has been identified for annual mean minumum and maximum temperatures and DTR from the beginning of the 20 th century. Trends in DTR differ seasonally. In general the analysis revealed a significant increase in the diurnal temperature range in the warm season and no significant changes or sligth decreasing tendency in cold season. The interannual variance of both maximum and minimum daily temperatures has decreased over the course of the 20th century despite the strong warming that has been observed in the intervening period. However, some seasonal differences were found for the changes of maximum and minimum temperature variances: most of the stations show a significant increase of extreme temperature variance in the warm season, especially for minimum temperature. The variances of annual diurnal temperature range show a significant increasing tendency in 8 of 10 observation stations with spatial and monthly differences. Our results support the hypothesis that temperature has become more variable as global temperature has increased during the 20th century.