

Abstract

This thesis deals with the extreme daily temperature range (DTR) during the period 1961-2007 for the extended winter season, based on an analysis of the daily series from 49 climatological stations in the Czech Republic. The aim of the research was to find the frequency of the extreme DTR in the individual months and describe the effect of the sunshine, the snow cover and the altitude on the magnitude of the extreme DTR. Moreover, the work focused on the identification of typical synoptic situations, during the days with extreme DTR. During the study period, 1746 days with extreme DTR were detected at least at one climatological station. The extreme DTR occurred most often in March in the anticyclonic situations. During the days with strong wind, the eastern flow direction prevailed anticyclonic situations whereas the western direction prevailed cyclonic situations. The highest values of the extreme DTR generally occurred in the lowlands since the magnitude of extreme DTR decreased with increasing altitude. In general, the values of extreme DTR were reduced (by 0,2 °C on average) during the days with snow cover. Cloud cover had a similar effect, the mean difference of extreme DTR between cloudy days (defined as days with sunshine duration less than 1 h/day) and sunny days was 0,5 °C. The acquired knowledge in the thesis might be used in the agrometeorology (e.g. selecting a crop which is suitable for a given habitat), and also operational weather forecast (i.e. Biometeorological forecast).

Keywords: air temperature, altitude, Czech Republic, daily temperature range (DTR), synoptic situation