



Extremely cold events and sudden air temperature drops during winter season in the Czech Republic

Lenka Crhová (1), Anna Valeriánová (1), Eva Holtanová (1), Miloslav Müller (2), Marek Kašpar (2), and Martin Stříž (1)

(1) Czech Hydrometeorological Institute, Climatology, Prague, Czech Republic (lenka.crhova@chmi.cz), (2) Institute of Atmospheric Physics, Academy of Sciences, Prague, Czech Republic

Today a great attention is turned to analysis of extreme weather events and frequency of their occurrence under changing climate. In most cases, these studies are focused on extremely warm events in summer season. However, extremely low values of air temperature during winter can have serious impacts on many sectors as well (e.g. power engineering, transportation, industry, agriculture, human health).

Therefore, in present contribution we focus on extremely and abnormally cold air temperature events in winter season in the Czech Republic. Besides the seasonal extremes of minimum air temperature determined from station data, the standardized data with removed annual cycle are used as well. Distribution of extremely cold events over the season and the temporal evolution of frequency of occurrence during the period 1961-2010 are analyzed. Furthermore, the connection of cold events with extreme sudden temperature drops is studied. The extreme air temperature events and events of extreme sudden temperature drop are assessed using the Weather Extremity Index, which evaluates the extremity (based on return periods) and spatial extent of the meteorological extreme event of interest. The generalized extreme value distribution parameters are used to estimate return periods of daily temperature values. The work has been supported by the grant P209/11/1990 funded by the Czech Science Foundation.