



Spatial analyses of the air temperature and thermal indices in the Tatra Mountains.

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The study presents spatial analyses of the characteristics of air temperature in the Tatra Mountains

which form the highest part of Carpathians with its top Gerlachovsky štít 2654 m a. s. l. The massif of

High Tatras is not large as it occupies only 790 km² with its main ridge only 26 km long. The area of

high Tatras belongs to two countries – Slovakia and Poland.

The database consisted of the records from 27 climatological stations situated either within the High

Tatra mountains territory or in a close vicinity covering the elevation range from 465 m a. s. l.

(climatological station in Červený Kláštor) to 2632 m a. s. l. represented by a peak station on

Lomnický štít. The available data from 16 Slovak and 11 Polish stations covered the period from 1991

to 2010. This was the warmest period since the beginning of the previous century in the region.

Following temperature parameters were subjected to the spatial analysis:

- mean annual air temperature,
- monthly mean air temperature in the warmest month (July) and in the coldest month (January),
- mean annual amplitude of the air temperature,
- average annual number of the frost days, ice days and average length of frost-free period,
- date of the start and the end of the growing season,
- average length of the growing season.

In a 100-year period (1911 – 2010) mean annual temperature increased by about 1 °C. The highest air

temperature at Lomnický štít station 19,3 °C occurred on 3. 8. 1998 and eight of ten maximum

values of air temperature at Lomnický štít were reached in the period from 1991 to 2010. The

absolute minimum of air temperature at Lomnický štít (-31,6 °C) was recorded on 13.1.1968. The

minimum air temperature in the period 1991 – 2010 is -25,4 °C (28. 2. 2015).