

ABSTRACT OF THE THESIS

ŠANDOVÁ MILADA: THE AIR TEMPERATURE ANOMALIES IN THE CZECH REPUBLIC

This thesis presents the spatial distribution of air temperature anomalies in the Czech Republic for three climatological periods: 1851-1900, 1901-1950 and 1961-1990. Main stationary factors influencing climate in the Czech Republic are latitude, longitude and altitude. Therefore the temperature gradient, which was calculated by multidimensional linear stepwise regressions analysis, was expressed in a degree of latitude, longitude or hundred meters of altitude. The gradient was specified as monthly, seasonal and annual means of each period.

The aim of the M. S. thesis was to determine areas with negative or positive anomaly and to explain the causes of the anomaly. For this purpose a method of deprivation of the stationary factors and their influences was developed. To avoid altitude influence, the monthly and annual temperature means were converted to sea level temperature. Afterwards, the gradients of average monthly and annual air temperature were used to avoid the latitude and longitude influence. The anomaly represents the deviation of the average value determined from values, which were deprived of geographical location. Resultant values were processed by Inverse Distance Weighted interpolation in the Geographical Information System (GIS) environment.

The main result of this work is representation of spatial distribution of air temperature anomalies through map visualizations. The anomalies in the areas detected on the maps can be caused by orography, dynamical factors (air circulation, prevailing air flow and its character) and microclimate.

In the Czech Republic, there are some zones with negative or positive anomalies. The zones of positive anomalies are in the South Moravia, in the region of Osoblaha, Moravskoslezské Beskydy Mountains, city of Ústí nad Labem, city of Prague and Šumava mountains. The negative anomalies appear the western Bohemia, the region of Liberec, Broumov and the other.

Key words: air temperature anomaly – air temperature gradient - climatology of Czech Republic - spatial variability