



## **An investigation into the spatial variability of air temperature field: Lithuania's case**

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The analysis of air temperature field in Lithuania is important not only as regards the knowledge of Lithuanian climate, but also from the practical point of view, for example, establishing long-term weather and climate forecasts and dealing with the issues of climatic regionalism. Changes of air temperature in Lithuania can be described by spatial deviations of air temperature. Spatial deviations have been analysed to identify the regularities of the distribution of air temperature in the territory.

The objective of the work was to establish the monthly structure of air temperature field during the years 1971–2006 in Lithuania. To this end, the standard spatial deviation was calculated. It has been established that its lowest values are typical of the summer when the minimal temperature gradients are present, and the highest values prevail in winter when the temperature gradients are the highest. The chronological analysis of the standard spatial deviation for January revealed a decreasing whereas for July and August an increasing tendency.

The synchronicity of air temperature fluctuations in various regions of Lithuania was investigated by the method of spatial correlation. A strong correlation was identified between data on the average monthly air temperature from meteorological stations (MS) in Lithuania: the correlation coefficient was higher than 0.7, showing that the fluctuations of air temperature in Lithuania are synchronic. The weakest correlation was identified at the meteorological stations located at the seaside, in Eastern and Southern Lithuania. Applying the method of cluster analysis, it was established that the data of air temperature are most similar at the stations located in regions with similar geographical conditions and when the distance between the stations is small.

The temperature field is not uniform in May, June, September and December. Analysis of the reasons for uneven temperature field formation has proven that most often it was determined by downstreams of large-scale troughs and ridges. In 39% of all the analysed cases, Lithuania is crossed by a zero isotach when the direction of the transport is changing. In 73% of all the analysed cases, zonal and meridional wind was getting stronger.