

Czech Linguistic Maps – Implementation of Geovisualization Portal

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Keywords: dialects, interdisciplinary research, interpolation, map application

Abstract:

Czech dialects are gradually disappearing. Due to several factors, individual words as well as entire groups of words disappear from everyday speech. This article describes the concept, the development process, and the outputs of the unique online portal for various purposes of Czech dialects. The workflow is based on interdisciplinary research cooperation between the Department of Dialectology, Czech Language Institute, Czech Academy of Sciences and the Department of Geoinformatics, Faculty of Science, Palacký University Olomouc.

The decline and disappearance of dialects is an unavoidable process. People with a genuine interest in their mother tongue often watch with concern as the language of their parents and grandparents fades into oblivion. How should one act, then? How can this problem be addressed? Dialects need to be recorded, described, scientifically processed and preserved as a form of unique intangible heritage for future generations. One of the most powerful methods for representing these spatial-oriented dialectological records is a map.

Dialectologists historically provided research datasets from primary field-research for specific places only. On the other hand, a complex dataset covering the phenomenon's occurrence for the whole region/country is required for the spatial visualization of both analogue and digital maps. Therefore, besides the visualization purposes, the crucial aim of the project entitled "Dialects of the Czech Language Interactively – Documentation and Accessibility of the Disappearing Language Heritage as integral parts of regional identities" was to develop an algorithm for "interpolation" of research datasets. Basically, the Inverse Distance Weighting (IDW) algorithm was used first, but the algorithm had to be extended for linguistics data. The concept is based on the multi-variable, open and web-based solution which allows customizing the interpolation calculation according to several parameters: barriers such as rivers or years; radius; angle; distance; overlay; IDW parameters; method of calculation; and finally weight of each parameter). We developed a unique online interface that allows data processing via an internet platform. A spatial overview of the calculated dialects area is available when the interpolation process is launched. Spatial data could be saved and downloaded in GeoJSON format. Finally, spatial visualizations of all generated datasets and dialect maps are available on interactive geoportals shown at Figure 1.

Generated GeoJSON files serve as an input for non-interactive cartographic visualization as well. After simple import into GIS software is possible to create a linguistic map (Figure 2) within a few steps. The advantage of semi-automatic calculation of existing linguistic datasets into spatial layers means big improvement in this field of study. Till now, Czech linguistic maps were manually with the huge subjective approach of creators without any systematic access. The article will describe the methodology and algorithmic approach focusing on cartographic and geoinformatics aspects, including automatic generating of color ranges, cartographic projection, visualization issues, etc.

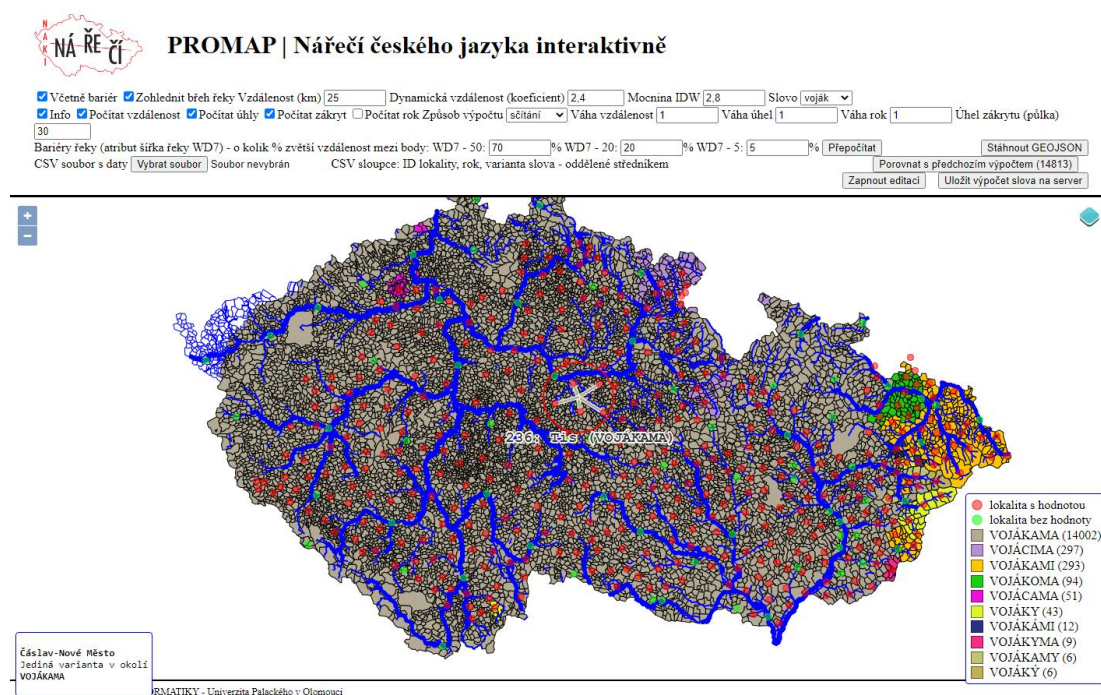


Figure 1. Calculation and interpolation of dialects area within online environment

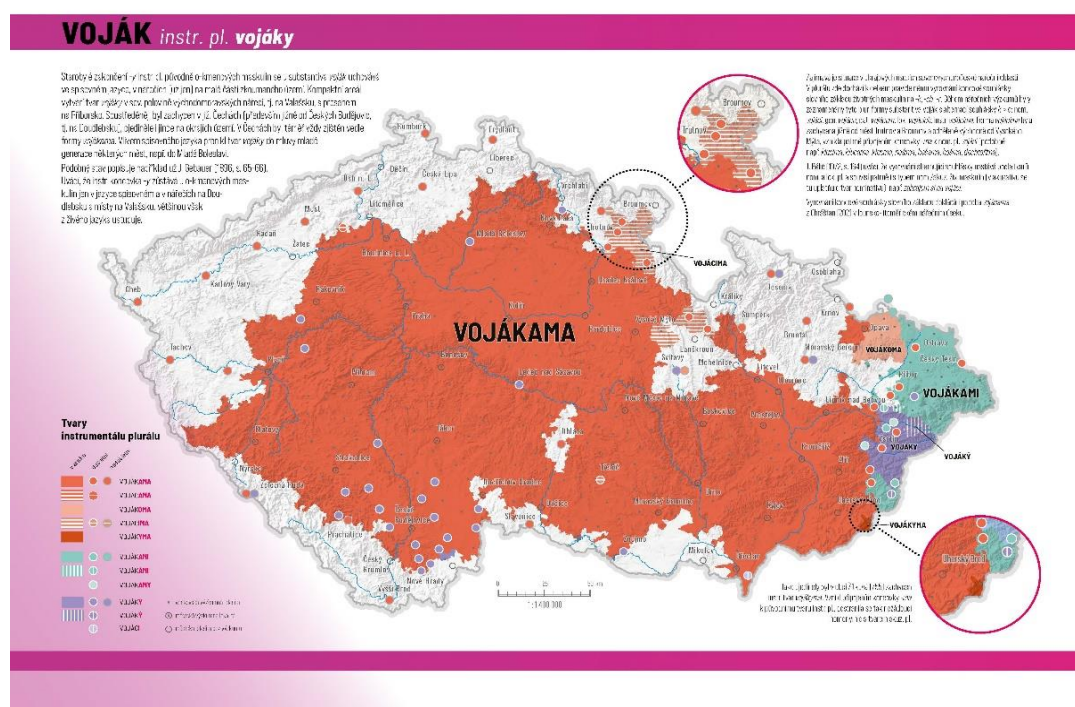


Figure 2. Example of a map composition created from the generated GeoJSON file

Acknowledgements

The article was created under the project No. DG20P02OVV029 “Nářečí českého jazyka interaktivně. Dokumentace a zpřístupnění mizejícího jazykového dědictví jako integrální součásti regionálních identit” (Dialects of the Czech Language Interactively. Documentation and Accessibility of the Disappearing Language Heritage as integral parts of regional identities). Support provider: Ministry of Culture, Czech Rep., NAKI II Program.