

# Analysis of watercourses on Aretin's map of the Bohemian Kingdom from 1619

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## Abstract:

Aretin's map of the Bohemian Kingdom from 1619 (*Regni Bohemiae nova et exacta descriptio*) is one of the oldest cartographic works of Bohemia. The paper presents the results of a complex content and cartometric analysis of watercourses, which the author carried out on the first edition of the map from 1619 and on its three further editions from 1632, 1665 and before 1747.

The study of the content of the old Aretin's map of the Bohemian Kingdom was already carried out in the first half of the twentieth century by Karel Kuchař and František Roubík. In their work, they focused on the analysis of the overall topography of the map and, with the computational possibilities of their time, set the approximate scale of the map at 1 : 504 000. They also pointed out certain differences in the drawing of watercourses between the various editions of this old map, especially in the case of the watercourses of eastern Bohemia. However, the watercourses on Aretin's map were only mentioned in their publications as part of the overall analysis.

The research, the results of which are presented in this paper, was focused on all the watercourses, water areas and related structures plotted on Aretin's map of the Bohemian Kingdom. The changes in the depiction of watercourses over the four editions of Aretin's map and the differences in topography with respect to the present were examined. Analyses of map features and toponyms related to watercourses were included. Content and comparative analysis was used to identify rivers, streams and ponds on all four editions of the map. A total of 121 watercourses were identified, of which 41 were described (in all editions), as well as 17 water areas, including 2 described lakes (Bethlehem, Jordan) and 2 described springs (Elbe, Morava).

It was confirmed the finding of previous research that with each edition of the Aretin's map of Bohemia there was a change in the drawing of watercourses. It was also determined that some rivers were incorrectly described. For example, the upper reaches of the Jizera River were confused with the Kamenice River. Some watercourses were even missing descriptions. These were, for example, the Berounka River and the Jevišovka River. The author found that the shape of some rivers had been changed over several hundred years, mostly by human activity. For example, the Svrátka River. Other errors in the drawing of rivers could have been caused by confusion with other rivers.

The cartometric analysis was focused on determining the accuracy of the drawing of the watercourses and the locations through which the watercourses flow. The greatest inaccuracy was found in the town of Jihlava, which is situated on the river of the same name. This analysis was performed in MapAnalyst software. All identified watercourses were then vectorized and visualized. A new map scale of 1 : 540 000 was also determined.