

## **River Network of Montenegro in GIS Database**

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### **Abstract**

Cartometric analysis of river network of Montenegro has a particular scientific and social value. In the geographic structure of every country, bodies of water are one of most important elements, both solitary and as a part of a whole. Almost every type of human enterprise is to some extent connected to rivers, their characteristics and processes. River network's importance is increasing by the day, thus establishing the need for a more detailed scientific research with a special focus on other structural elements within which it functions. Those elements are: basic characteristics of relief, characteristics of climate and certain hydrographical elements. A holistic theoretic and methodological approach to this problem is basis for understanding of importance of Montenegrin river network. The subject of this research is systematization and precise identification of river network structure in planimetric and hypsometric dimension by means of cartometry. This encompasses precise morphometric characterization, numerical representation, graphic illustration and documentation. These resources then allow for various analyses such as single water basin analysis, analysis of particular relations between single elements of a water basin of higher grade, classification of rivers by river and sea basin, relationships with other geographical elements, etc. Furthermore, this opens the possibility of extension of database in order to enable a systematic, continuous, scientific monitoring of relationships within geospace or some part of it.

Montenegrin river network was subject of investigation by various scientific papers, as well as national and international projects. Contributions were made by Montenegrin Institute of geological research, Hydrometeorological institute of Montenegro, Institute of Statistics, Institute for environmental protection and Ministry of agriculture, forestry and water management, all institutions whose scope of action is closely related to hydrographical objects. Also, several individuals have tackled hydrographical phenomena in Montenegro, most notable being: D. Dukić, Z. Bešić, R. Mihailović, B. Radojičić, M. Burić and M. Radulović. However, cartometric analysis of Montenegrin river network did not find itself as a primary subject of any of these research projects, but was rather an accompanying element, which makes data and research on this topic insufficient.

Noted facts illustrate the importance of precision cartometry of Montenegrin river network and creation of a suitable database. Data will be processed in GIS software which will enable its further use, as well as further development, analysis and maintenance. By establishing a GIS database, it will also be possible to extend this database so as to achieve a holistic geospatial database which will enable scientists and concerned parties to analyze relationships between various geospatial elements.

**Keywords:** river network, river basin, GIS, database, geospace