

Development of a Regional Atlas Series and Interactive Web Atlas in Georgia

Guliza (Guliko) Liparteliani ^a, Manana Kurtubadze ^b, Roman Kumladze ^{a,*},
Nato Sologhashvili ^a, Sophio Khorbaladze ^a, Gvantsa Tsirgvava ^a, Anna Sherozia ^a, Salome
Nikoleishvili ^a

^a Vakhushti Bagrationi Institute of Geography of Ivane Javakhishvili Tbilisi State University, Tbilisi, Georgia, Guliza (Guliko) Liparteliani – Guliko.liparteliani@tsu.ge, Roman Kumladze – Roman.kumladze@tsu.ge, Nato Sologhashvili – sologhashvili.nato@gmail.com, Sophio Khorbaladze – sofikhorbaladze@gmail.com, Gvantsa Tsirgvava – gvtsirgvava@gmail.com, Anna Sherozia – sherozia.ani97@gmail.com, Salome Nikoleishvili – nikoleishvili.salo@gmail.com

^b Independent Cartographer, Manana Kurtubadze – m.kurtubadze@gmail.com

* Corresponding author

Keywords: Atlas Cartography; Regional Atlas; Interactive Web Atlas; Web Cartography; Thematic Cartography; Cartographic Design

Abstract:

The rapid development of web technologies and advances in Geographic Information Systems (GIS) have significantly transformed modern cartography, increasing the demand for interactive, multifunctional, and web-accessible cartographic products. In this context, traditional printed atlases are gradually being supplemented and partially replaced by web-based cartographic platforms, which provide not only visualization but also opportunities for spatial data analysis.

The Vakhushti Bagrationi Institute of Geography at Ivane Javakhishvili Tbilisi State University has a long-standing tradition and extensive experience in producing cartographic outputs, including national atlases and thematic maps. However, these atlases have predominantly been published in printed form. In the contemporary digital era, web cartographic services have gained greater popularity than paper maps, offering enhanced interactivity and functionality, and fostering increased public engagement with spatial information.

Since 2018, the Institute has been developing a unified concept and format for a series of regional atlases covering the 12 regions of Georgia (Figure 1). The first regional atlas, dedicated to the Kakheti region, was published in 2025. In parallel, work on the Kvemo Kartli regional atlas began in 2022, supported by a fundamental research grant from the Shota Rustaveli National Science Foundation of Georgia. This project aims not only to produce a printed atlas following a unified cartographic design but also to develop an interactive web atlas, enabling users to explore the region's natural resources and socio-economic potential in a comprehensive and remote manner. Notably, this initiative represents one of the first steps in Georgia towards transitioning from traditional paper-based cartography to digital and web-based mapping.

The atlas development process began with the creation of a digital layout, defining the thematic structure and unified visual standards. Base geographic layers were prepared using GIS software (ArcGIS Pro and ArcMap), ensuring data harmonization for both print and web versions. For the printed atlas, cartographic materials were further processed in Adobe Illustrator to achieve high-quality graphic design and visual consistency.

For the web atlas, both base geographic layers and diverse thematic datasets were developed. Data harmonization and standardization were conducted to integrate information from multiple sources. The datasets were subsequently converted into web-compatible formats (e.g., GeoJSON) and optimized for efficient performance in an online environment. Particular attention was given to attribute data structuring and geodatabase organization.

As a result, an interactive web atlas was developed, allowing users to explore the Kvemo Kartli region through multi-scale mapping, dynamic pop-up windows, flexible layer management, and varying levels of data detail. The platform functions not only as an informational resource but also as an analytical tool.

In conclusion, the developed web atlas represents a significant step towards the modernization of cartography in Georgia. It establishes an effective link between traditional academic cartography and contemporary digital technologies, while also providing a foundation for the development of similar platforms for other regions. Furthermore, this approach facilitates the integration of Georgia's geospatial data into the international digital landscape and enhances its scientific and practical applicability.

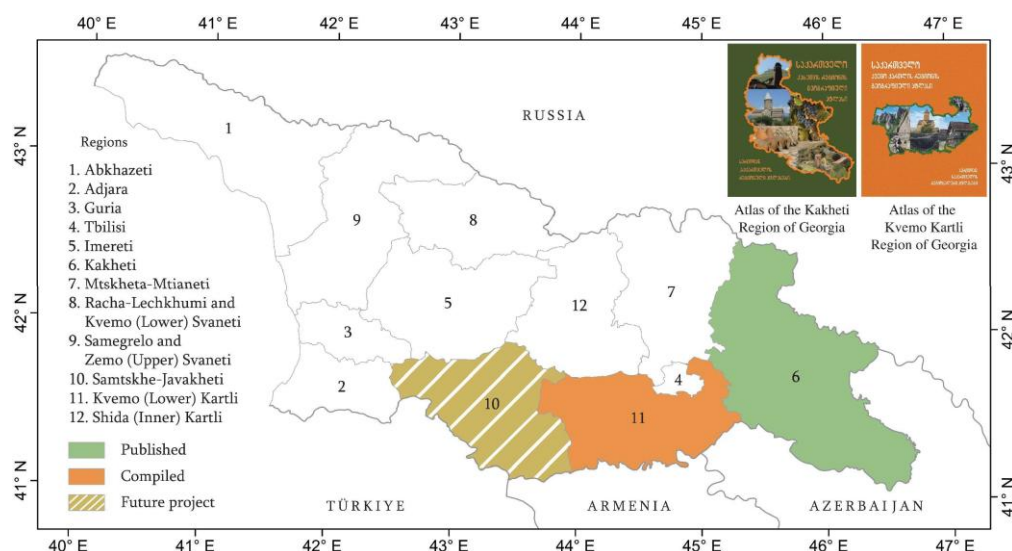


Figure 1. Series of Regional Atlases of Georgia.