

PROBLEMS OF THE THEORY OF ATLAS MAPPING

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Annotation. In cartography, despite the use of digital technologies, methods of creating cartographic images continue to develop on the basis of representations of traditional cartography. Explanation of the nature of the cartographic image and editorial and technical documents are based on the terminology of industries, the data and classifications of which are displayed on the maps. In this paper, a systematic approach is used to consider the problems of Atlas mapping, which are associated with the definition of the basic concepts and concepts underlying the study of the structure of the Atlas; research and identification of the main types of atlases, the establishment of the structure of their content and the nature of the created information; performing a systematic analysis of the links of the cartographic image at different levels of generalization of the content of the Atlas. These problems do not cover all the problems of building the content of the Atlas, but their solution will describe the cartographic side of building the content of the Atlas, different from other disciplines, the data of which are processed, interpreted by methods of these disciplines and visualized by means of cartography. Therefore, the assessment of the content of atlases is still limited to the significance and novelty of the topic. While the basic concept of the Atlas, as a cartographic work, is to display the links within and between the levels of generalization of the cartographic image.

Key words: atlases, Atlas mapping, terminology, types of Atlas structures, system analysis, levels of aggregation, connection, geographical Atlas, thematic Atlas, a complex Atlas.

REFERENCES

1. Alyautdinov, A. R., Lur'e, I. K., & Ushakova, L. A. (2016). The basic principles of geographic information resources. *Izvestiya vuzov. Geodeziya i aerofotos'emka* [Izvestiya vuzov. Geodesy and Aerophotography], 5, 123–128 [in Russian].
2. Kasimov, N. S., Kotlyakov, V. M., Kotova, T. V., & Tikunov, V. S. (2012). Thematic and Atlas mapping: current state and prospects. *Geodeziya i kartografiya* [Geodesy and Cartography], 11, 40-47 [in Russian].
3. Savinyh, V. P., Majorov, A. A., Bugaevskij, Yu. L., Vereshchaka, T. V., & Bilibina, N. A. (2015). The main features and traditions Atlas cartography: modernity and the future. *Izvestiya vuzov. Geodeziya i aerofotos'emka* [Izvestiya vuzov. Geodesy and Aerophotography], 5, 61–66 [in Russian].
4. Bugaevskij, Yu. L., & Vereshchaka, T. V. (2017). Creation of the Atlas: modern trends and problems of cartographic production, education, quality of the created works. *Izvestiya vuzov. Geodeziya i aerofotos'emka* [Izvestiya vuzov. Geodesy and Aerophotography], 4, 57–61 [in Russian].

5. Krylov, S. A., Zagrebin, G. I., Dvornikov, A. V., Loginov, D. S., & Fokin, I. E. (2018). Theoretical bases of automation of Atlas mapping processes. *Izvestiya vuzov. Geodeziya i aerofotos'emka* [Izvestiya vuzov. Geodesy and Aerophotography], 3, 283–293 [in Russian].
6. Lisickij, D. V. (2013). Prospects for the development of cartography: from the system of "Digital Earth" to the system of virtual geo-reality. *Vestnik SGGA* [Vestnik SSGA], 2(22), 8–16 [in Russian].
7. Lisickij, D. V. (2016). Cartography in the information age: new challenges and opportunities. *Geografiya i prirodnye resursy* [Geography and Natural Resources], 4, 22–29 [in Russian].
8. Beshencev, A. N. (2018) Scientific basis of information concept of cartographic research method. *Vestnik SGUGiT* [Vestnik SSUGT], 24(1), 85–110 [in Russian].
9. Nyrcov, M. V., & Nyrcova, T. P. (2016). Big data in cartography, smart mapping: the future or technological change. *Izvestiya vuzov. Geodeziya i aerofotos'emka* [Izvestiya vuzov. Geodesy and Aerophotography], 5, 42–45 [in Russian].
10. Yankelevich, S. S., Radchenko, L. K., & Antonov, E. S. (2018). From a multi-purpose map resource to a smart map. *Vestnik SGUGiT* [Vestnik SSUGT], 24(1), 142–155 [in Russian].
11. Makarenko, A. A., Moiseeva, V. S., & Tolstyh, S. Yu. (2012). On the issue of cartographic design. *Geodeziya i kartografiya* [Geodesy and Cartography], 8, 30–32 [in Russian].
12. *Geodeziya, kartografiya, topografiya, fotogrammetriya, geoinformatsionnye sistemy, prostranstvennye dannye. Spravochnik standartnykh (normativnykh) terminov* [Geodesy, cartography, topography, photogrammetry, geographic information systems, strange data. Reference standard (normative) terms]. (2015). V. G. Pleshkov, & G. G. Pobedinsky (Eds.), (2nd ed.). Moscow: Prospekt Publ., 672 p. [in Russian].
13. Atlas mapping: traditions and innovations. (2015). In *Sbornik materialov X nauchnoy konferentsii po tematicheskoy kartografii* [Proceedings of the X Scientific Conference on Thematic Cartography]. Irkutsk: Geography CO RAN Publ., 228 p. [in Russian].
14. Bashlavin V. A., Vojnova V. V. (1957). Editorial preparation of reference General geographic atlases, *Trudy CNIIGAiK* [Proceedings CNIIGAiK], 115, 72 p. [in Russian].
15. Field, K. (2018). *Cartography*. Esri Press, 550 p.
16. Dyshlyuk, S. S., Nikolaeva, O. N., & Romashova, L. A. (2015). On the issue of formalization of the process of creating thematic maps in the GIS environment. *Vestnik SGUGiT* [Vestnik SSUGT], 2(30), 78–85 [in Russian].
17. Volkova, V. N., & Denisov, A. A. (2006). *Teoriya system* [Systems theory]. Moscow: Vysshaya shkola Publ., 511 p. [in Russian].
18. Vozenilek, V. (2019). Atlases and Systems Theory within Systematic Cartography. *29th International Cartographic Conference (ICC 2019): Abstracts of the International Cartographic Association*, 1. Tokyo, Japan.
19. Kraak, M.-YA., & Ormeling, F. (2005). *Kartografiya: vizualizatsiya geoprostranstvennykh danniykh* [Mapping: visualization of geospatial data]. Moscow: Nauchnyy mir Publ., 325 p. [in Russian].
20. Makarenko, A. A., & Zagrebin, G. I. (2017). Principles of the Atlas structure. *Izvestiya vuzov. Geodeziya i aerofotos'emka* [Izvestiya vuzov. Geodesy and Aerophotography], 2, 63–66 [in Russian].

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