

Satellite Atlas of the Czech Republic

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Abstract

The atlas completing remains in the shadow among the activities of other cartographic branches including the development of new methodologies, technologies and results presentations. That is why the goals of the project are as it follows: the conceptual analysis of the satellite atlas as a whole and also of its parts, the proposal and selection of technological background available (hardware and software) and applicable under the Czech conditions (both for atlas completing in the hard copy and electronic versions), the completing of a list of dispoible remote sensing data and information, and the desing of all individual parts of the "Satellite Atlas of the Czech Republic", including graphics and verbal explanations. The knowledge about the financial costs necessary for completing of the satellite atlas is also an interesting experience could be published.

1. INTRODUCTION

Former Czechoslovakia was one of countries with the best tradion in the atlas cartography. The consequence of atlases originated on the territory of Czechoslovakia is counted among to the world best atlas production and it has influences in many cases the practice of atlas completing abroad. The "National Atlas of Czechoslovakia" (published in 1930s and in 1960s), the "Military Geographical Atlas" (two editions in 1960s and 1970s) and Slovak national "Atlas of the Slovak Socialist Republic" (1980) attracted a special attention in the world. However, many progressive ideas and technological inovations originated in the Czech lands, the Czech Republic is one of small number of countries not having a national atlas. It is an extraordinary exception among developed countries where our republic wants to be counted.

New trends have been developed in the present atlas creation in the world were only partially accepted by the last Czechoslovak atlases such as the "Atlas of Population and Housing" (1987) and the "Atlas of the Environment and Health of the Population of the ČSFR" (1992). generally at the present time, the recess from the application of traditional cartographical product such as common maps, cartograms and images is typical on the one hand. On the other hand, both the 3D models, 2D models - profiles are used much more then before. Much bigger space in the latest atlases is given to verbal explanations and pictures (photos) substituing on some sense the traditional map legends.

2. BASIC DATA ON PROJECT

Present state overview

The completing of the national, regional and local (e.g. urban) atlases using by remotely sensed data became a certain art of fashion in many developed countries (e.g. Germany, Austria, United Kingdom, U.S.A., Japan). Examples of proceeded remotely sensed data are a standard part of new atlases in our country as well a s abroad.

Here it is possible to distiguish basically two main groups of remote sensing atlases here:

Atlases - regional catalogues of false colour composites (atlas consists of a set colour images with the same quality of data presentation and data processing for the area concerned; topographic maps of the whole territory or of small areas selected are added exceptionally only), (e.g. Sperling, Strung, 1970; Heuseler, edit., 1974; Kijenko, Koval, 1987; Banks, 1989).

Atlases - methodological catalogues of variable or purpose oriented remotely sensed data processing (those atlases usually do not cover any standard territory, they follow the idea to show of suitable examples how to process data to get relevant results, these results are accompanied usually with thematic maps)(e.g. Bodechtel, Gierloff- Emden, 1970; Oledzki, edit., 1988; Brachet, d'Allest, edit., 1989).

Both the atlases will serve the much broader publics then the present textbooks do. The deeper conceptual project

preparation is typical for the methodological atlases of remote sensing. They want to present as selected advantages of methods applied as their utilizing under special condition. The regional remote sensing atlases remain still relatively poor in ideas. An application and utilizing of these atlases depends on the user only and the user was not taught how to use the data stored in the atlas.

There was not completed any similar product in the Czech Republic, neither in the group of regional, nor in the group of methodological atlases, although the Czech atlas cartography and experience reached here is one of the best in the world.

Content explanation and project goals

The project follows the idea of preparation of a new conceptual approach to the creation of the Satellite atlas of the Czech Republic, which will utilize the advantages of previous territorial and methodological atlases. This experience could be usefully developed under the present Czech conditions.

The Czech Republic is without any traditional representative national atlas. Although the idea of completing of a national atlas of the Czech republic is still not dead, the satellite atlas is a completely different product from the view point of conception, content and purpose. Besides the informative and representative functions, the satellite atlas prefers the methodological and inspirative aspects and at the same time it advertises new technologies of latest territorial data acquisition and processing. In the past the Academy of Sciences of the Czech Republic was the basic institution responsible for the intellectual, and partially also for the technical development of remote sensing. If the satellite atlas will represent the Czech Republic as a country supporting the scientific progress and as a country reaching top results, it is necessary to develop a new conceptual approach for an advanced satellite atlas completing. Only afterwards it will be possible to solve this task successfully.

That is why the **goals of the broader atlas project** are as it follows:

- Conceptual analysis of the satellite atlas as a whole and also of its parts in the light of the latest and expected trends of scientific and technological development, both in regard to the features of the Czech territory.
- Proposal and defence of selected technological background applicable under the Czech conditions (both in the hard copy and digital versions).
- Design of example parts of the satellite atlas, including graphics and verbal explanations.
- Completing of a list of disponible remote sensing data, technologies and information applicable for the completing of the satellite atlas of the Czech Republic.
- Detection of financial costs necessary for completing of the satellite atlas.
- Completing of verbal and graphic documentation related to the proposed satellite atlas of the Czech Republic.
- Completing of the author original of the atlas for following redaction and printing operations.

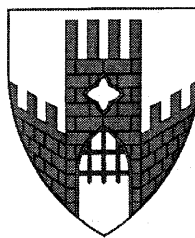
3. PROPOSED APPROACH

The completing of a new satellite atlas conception consists of definition of the content extension and quality. From the quantitative viewpoint, the main goal is to get a qualified judgement how many remote sensing products can be shown in the atlas. This decision-making includes the selection of image scales, resolution, etc. The project research team posses original digital satellite data. This fact is very favourable for the experiment-making with image (and map) scales, with the page size and with other graphic documentation. As a product of the experiment-making, variants of image processing and presentation are expected, including sets of different page sizes, image scales, internal atlas structure, variable territory covering, allocation and form of accompanying topographic/thematic maps and interpretation keys-tables

The aspect of the atlas content has to deal with the efficiency of a compromise solution of the choice between the overview and detail in the data processing and information presentation. A consequence of atlas chapters will depend on its destination for the application among broad publics. The beginning of the atlas should be based on the processing of data with low resolution and results should be shown using by simpler forms. The following chapters have to be more and more detail, exact and objective. This fact has to be verified experimentally both by completing of examples from individual chapters and by asking publics (possible users) by questionnaires. At the same time, the areas to be shown in the atlas will be selected in regard to cover the national territory equably with methodological or instructive examples of satellite image processing. This question could be solved with the help of consultances with regional specialists and among potential professional users.

The atlas arrangement aims at providing comprehensive basic information about character of the territory in the Czech republic as it is possible to find and demonstrate by means of remote sensing methods and by cartographical means of expression. The introductory section of the atlas contains satellite images at the scale of 1:1 000 000, which have been processed to show a picture of the Czech Republic at viewing it from the space in different seasons of the year and from some specific viewpoints. Territories of all districts are introduced on colour double-pages by means of a blow-up made from Landsat TM image at the district border (at the scale of 1:100 000) along with coats of arms of individual towns, and municipalities in the district and a short text about basic natural, economic and social features. The following double-page concerns some characteristics of the given district, represented by demonstrations of some purpose processing of remote sensing data (e.g. from viewpoints of the environment, agriculture, nature protection, forestry, water management, etc.). This part is usually combined with a thematic map as well as with aerial and surface photographs of the given localities. The image documentation is supplemented with explanatory text in Czech and English languages.

Okres **VYŠKOV** District



Rousínov



Ivanovice na Hané



Bučovice

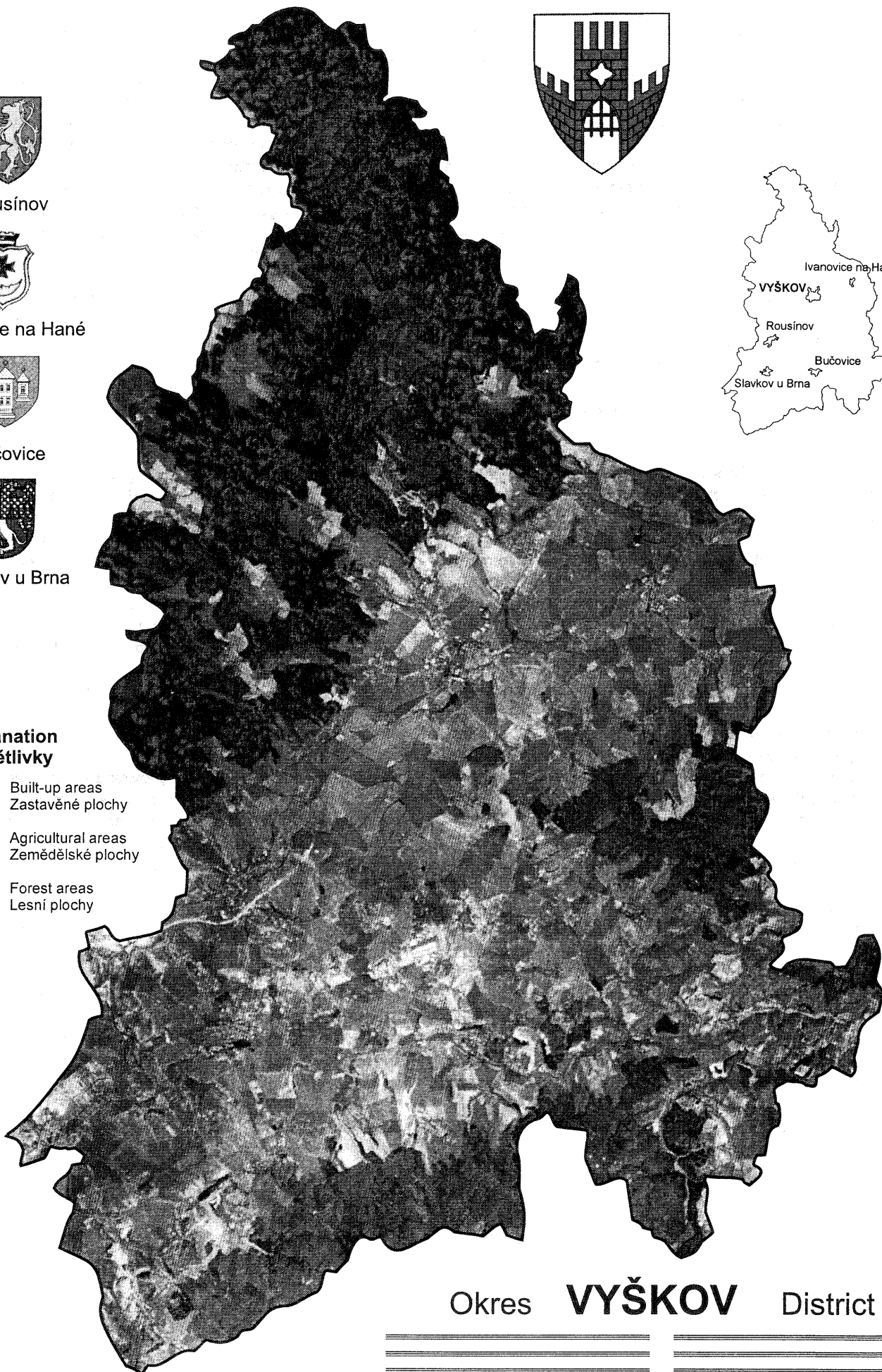


Slavkov u Brna



Explanation
Vysvětlivky

-  Built-up areas
Zastavěné plochy
-  Agricultural areas
Zemědělské plochy
-  Forest areas
Lesní plochy



Okres **VYŠKOV** District

The completing of publication is based on the definition of the atlas extension and structure, on the processing technology selection and on the choice of forms for results presentation. To reach a unified view of the atlas, the main products (images, cartograms) will originate from one data source only and one result presentation way will be applied only (small scale for the entire country, medium scale for individual regions, e.g. districts). The large scale thematic processing results, their products will be presented using by wider choice of original data sources, processing methods and presentation graphics (e.g. 3D models). Experiments with processing/presentation technologies will lead to the completing of variants for the final selection of examples to be used in the atlas.

The knowledge reached during the atlas completing will be also presented in scientific reports with examples of atlas chapters and examples of computer graphic selected for the digital version of the atlas. Such reports will be useful to attract the attention of the broad publics.

4. ORIGINAL SCIENTIFIC CONTRIBUTION

The atlas completing remains in the shadow among the activities of other cartographic branches including the development of new methodologies, technologies and results presentations. Many known atlases regard less on their regional or thematic destination seem to be completed "ad hoc" (atlas consists of parts available for authors in the time of completing). The national, regional, school and other atlases are structuralized conservatively and innovations in the atlas creation are very rare. A practical experience with the satellite atlas compilation is very limited. Although the satellite atlas is not an example of a traditional geographic atlas, the experience got during the project completing could be applied here as well. The finished examples of atlas parts and software for the manipulation the atlas digital version will be original.

An other original result the project would be the set of selected areas on the territory of the Czech Republic interesting and methodologically inspiring in regard to the remote sensing application. The overview about the available technology, data and experience on remote sensing in the Czech Republic would be understood as an innovative product.

The evaluation of opinions of broad and scientific publics on the proposed atlas could be accepted as an important instrument for authors of different atlases, not for the satellite atlas ones only.

5. AVAILABLE CONDITIONS OF PROJECT COMPLETING

Technical background

The main hardware, software and data necessary for the project completing are available at every participating institution. They are as it follows:

Hardware and software for remote sensing and cartography: digital Image Processing System PCI Canada: software EASI/PACE.

Information background and data:

- available satellite images: Landsat TM, SPOT and KFA-1000 satellite images,
- topographic and thematic maps: at medium and small scales.

Personal background

The project team consists of experienced specialists from the area of remote sensing (digital image processing) and cartography. The team disposes suitable data and technical means.

The above mentioned project originated on the base of previous knowledge and experience reached both by analysis of similar accessible atlases and personal participation in related projects in the country and abroad.

6. CONCLUSION

A further co-operation with other groups and individuals is welcome and will be opened in regard to the project completing requirements (consultances and co-operations, experience and data exchange, contracts for specialized services (e.g. with ČÚOP - Prague, ÚTIA AV ČR - Prague, ÚHÚL - Brandýs nad Labem, DGS Company-Prague, GISAT, Foresta, etc.).

Because of present lack of an official financial support for the project "Satellite Atlas of the Czech Republic", the atlas content is intended to be published partially in a consequence of "district chapters". Some kind of sponsorships from local/district/national bodies is expected. The foundation "Atlas" was established in 1995 to manage the relationships with the publics.

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