

# **Mapping Urban Areas for Educational Purposes – Concept and Redesign of City Maps in the «Swiss World Atlas»**

**Wenke Zimmermann, Lorenz Hurni**

ETH Zürich, Institute of Cartography and Geoinformation – Zurich, Switzerland

The well-established «Swiss World Atlas», which is the most used printed school atlas in Switzerland, has been fully updated to a new contemporary layout in 2017. The different map types are now unified in scale and cartographic design to ensure their comparability, and so are the city maps.

In previous editions the presentation of city maps varied in scales, design and levels of detail. Too many map features often crowded the map and complicated its comprehension. Furthermore the order of city maps did not follow a logical order with regard to the surrounding general maps and the map had been seldom updated.

These cartographic issues, outdated information and visual clutter, influence the student's awareness of dimension, historic and social importance, and characteristics of a city.

For the 2017 atlas edition the set of city maps have been revised. The workflow of data acquisition and preparation have been automated and simplified using GIS tools and graphic software. In addition to existing printed maps as foundation, open-source databases, repository of public authorities, satellite images and raster data have been used to digitalize each city map from scratch. Most of the shaded reliefs have been generated automatically using digital terrain models.

Most city maps of the new version have been kept and updated. Some new cities have been included because they have become more present in public awareness and politics. Others have been removed because they are not part of the geographic curriculum anymore.

The final city maps are consistent and follow the structure from small to large scale maps for each country. A fundamental change is the clearly arranged layout. City maps have the same size and scale, with a few exceptions. The colors and signatures are taken from a unique internal catalog, which supports their recognition across city maps. The legends are clearly structured and similar descriptions are used repetitively. Furthermore the unified font, chosen for the whole atlas, is easily readable.

The topographic basis in each city map is homogeneous: built-up areas, industry, green spaces, streets and rail network. Additionally some topics were chosen to characterize the city development or emphasize specific issues, e.g. urban growth and natural hazards.

Hence, while the presented maps are still complex, the consistent visualization better supports comparability when acquiring knowledge about urban processes.

The ability of students to include knowledge from other teaching subjects to the map and transferring the gained information back to the subject supports the interdisciplinary concept of the recently introduced geography curriculum on secondary school level in Switzerland («Lehrplan 21»). Nevertheless a critical evaluation of the new concept and design of the city maps needs to be discussed.

In this contribution we present a hands-on survey with the help of geography school classes. One group of students has to fulfill specific tasks to interpret and analyze the updated city maps, whereas the other group works with the former versions. The tasks focus on estimating the city size, population density, and economic activities. The empirical results of the survey allow to draw conclusions about the enriched thematic content, the graphical improvements, and the comprehension of the complex map structure.

Subsequently general explanations for the set of city maps can be derived to understand how the changes influence the student's comprehension of urban areas. Finally these findings allow valuable improvements for future editions in the «Swiss World Atlas».

Keywords: City Map, Swiss World Atlas, Atlas Cartography, School Atlas