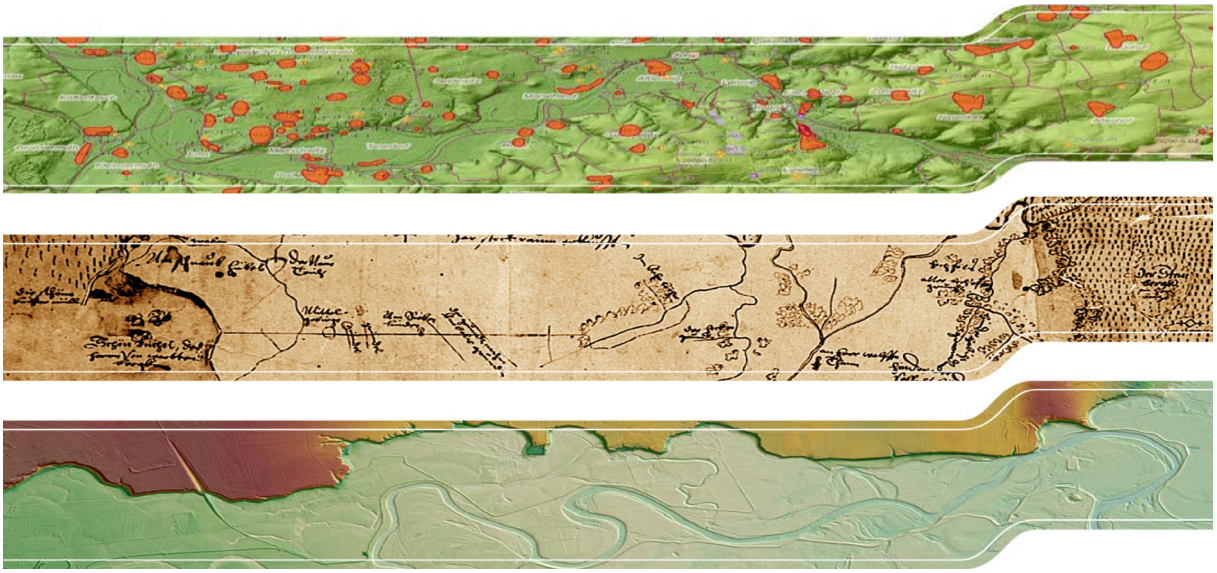
Monuments and More – Archaeological Geodata in Saxony



Content

Key Words: **archaeology, geodata, digital maps, Saxony.**

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1 Motivation

The information system of the Archaeological Heritage Office Saxony was developed with the aim of recording, storing and presenting archaeological data from Saxony. Because of their geographic reference these information are managed with a geographic information system (GIS) in cooperation with a powerful database.

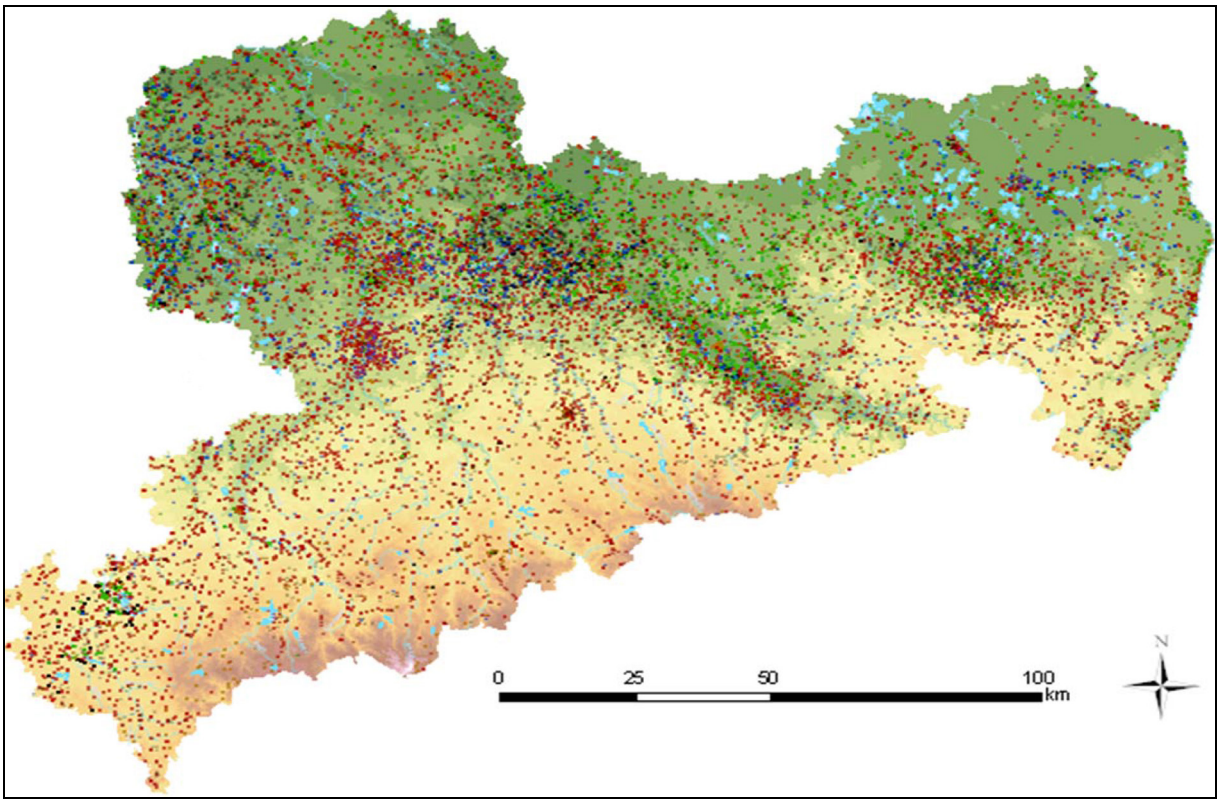

Figure 1 – Overview map of archaeological sites in Saxony.

2 Geodata for Archaeological Purposes

2.1 Sites, Monuments and More

The current structure of archaeological spatial data is the result of more than 20 years' experience. It contains archaeological survey areas, archaeological sites and monument areas:

- **Archaeological survey areas** are areas that were surveyed with archaeological methods, not regarding any results and so rated as archaeological neutral.
- **Archaeological sites** are areas that yielded archaeological knowledge in an archaeological positive or negative sense:
    - **Positive sites** are areas where traces of human life were detected, with proven extent and independent of the current preservation status. Find spots (not invasive surveyed) and excavation sites (invasive surveyed) belong to positive sites.
    - **Negative sites** are intensive surveyed areas without any traces of human life.
- **Monument areas** indicate a supposed extent of on-site preserved traces of human life, representing heritage protection as stated by law.

Figure 2 – Survey areas (yellow) with excavations (violet) and single find spot (orange).

Figure 3 – Ensemble of monuments at the river Elbe.

2.2 Base Maps and Thematic Maps

Geographic base maps mostly come from the surveying department of Saxony, but also by other providers, often as geo-data service via internet. Please see attachment for a short overview.

2.3 Queryable Geodata

Based on this combination of spatial and attributive data many different kinds of queries are possible. You can easily create thematic maps, e.g. with find spots of special epochs or with activity sites of a given year. Of course the issues of heritage protection are of central interest.

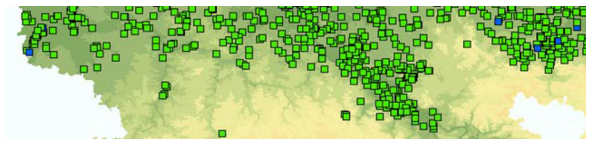

Figure 4 – Selection of Bronze Age burials and elevation levels.

Figure 5 – Selection of excavations in the year 2000 and overview map.

2.4 Historic Maps

There are two important historic map sets in Saxony, "Meilenblätter" (mile sheets) from about 1800 and "Ur-Oeder" (primal Oeder) from about 1600. Both have been used for archaeological research for a long time, and in the pre-digital era copying machine and light table where the most important tools to gain new information from them.

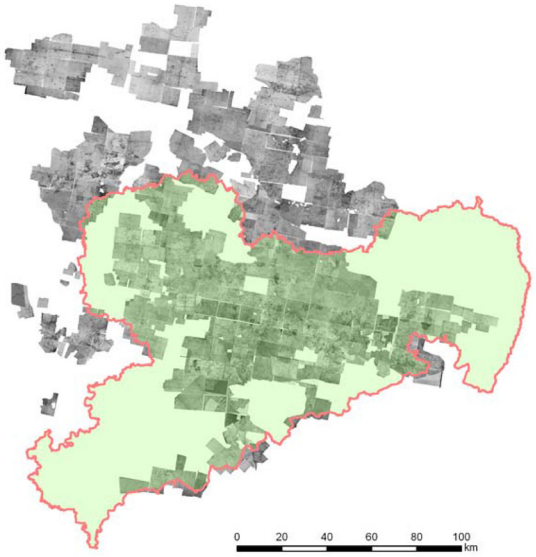

Figure 6 – Overview of georeferenced historic map set “Ur-Oeder” and the region of Saxony.

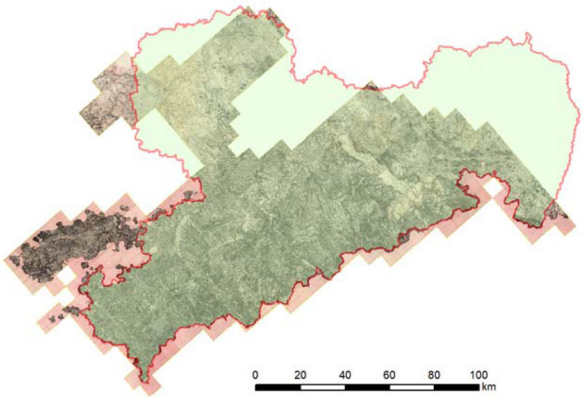

Figure 7 – Overview of georeferenced historic map set “Meilenblätter” and the region of Saxony.

“Meilenblätter” and “Ur-Oeder” were first digitally scanned in 1998 by an initiative of the Archaeological Heritage Office in Saxony. The "Meilenblätter" were georeferenced in 2003, "Ur-Oeder" followed suit in 2009, both performed by the Archaeological Heritage Office in Saxony. While the old scans have qualitative

limitations, because they are based on photocopies of the map sets, there exist new, high resolution data sets of "Meilenblätter" and “Ur-Oeder” now.

2.5 Assisting Information

But besides this geo-data may support expansion of knowledge, so grave mounds, walls and hollow-ways could often be found easier and better using digital elevation models at the computer than going into the open country.

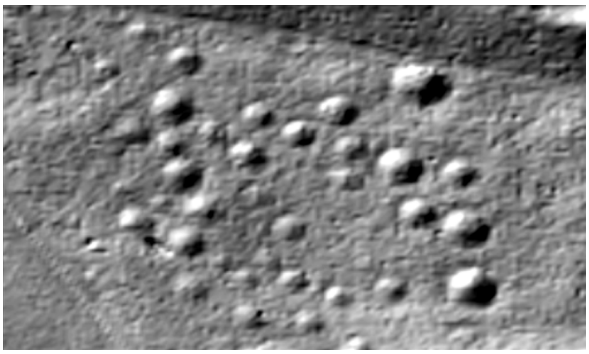

Figure 8 – Hillshades of grave mounds at Rosenfeld.

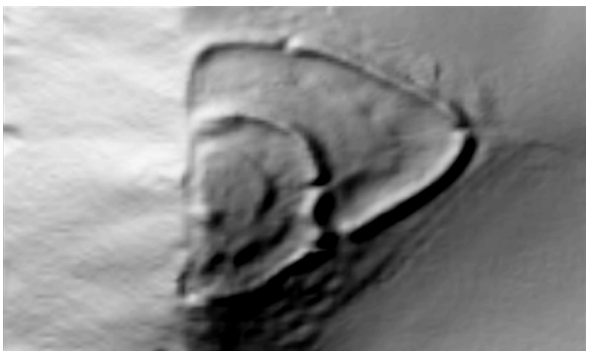

Figure 9 – Hillshades of walls at Lastau.

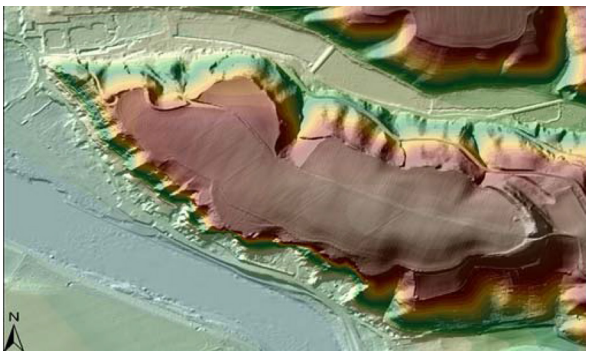

Figure 10 – Coloured hillshades of ancient fortification (Seußlitz).

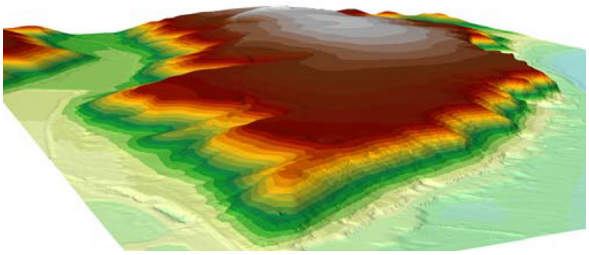

Figure 11 – 3D-views from TIN (ancient fortification Seußlitz).

Ancient roads are important components of the cultural heritage. Preserved remains have to be protected as monuments. But the documentation is often insufficient, because historical sources frequently deliver only topological features without specific route descriptions.The evaluation of ancient maps without GIS is hard and tricky. On-site prospection of terrain is expensive and time consuming. But modern GIS technology and high resolution remote sensing data brought a change. Ancient maps can be georeferenced with reasonable effort and evaluation of remote sensing data (DTM, DOP, CIR) replaces on-site prospection. Prepared in this way it is possible to prospect even large regions from one’s desk with reasonable effort. In this manner long distances of ancient roads were studied and identified as part of the Via Regia.

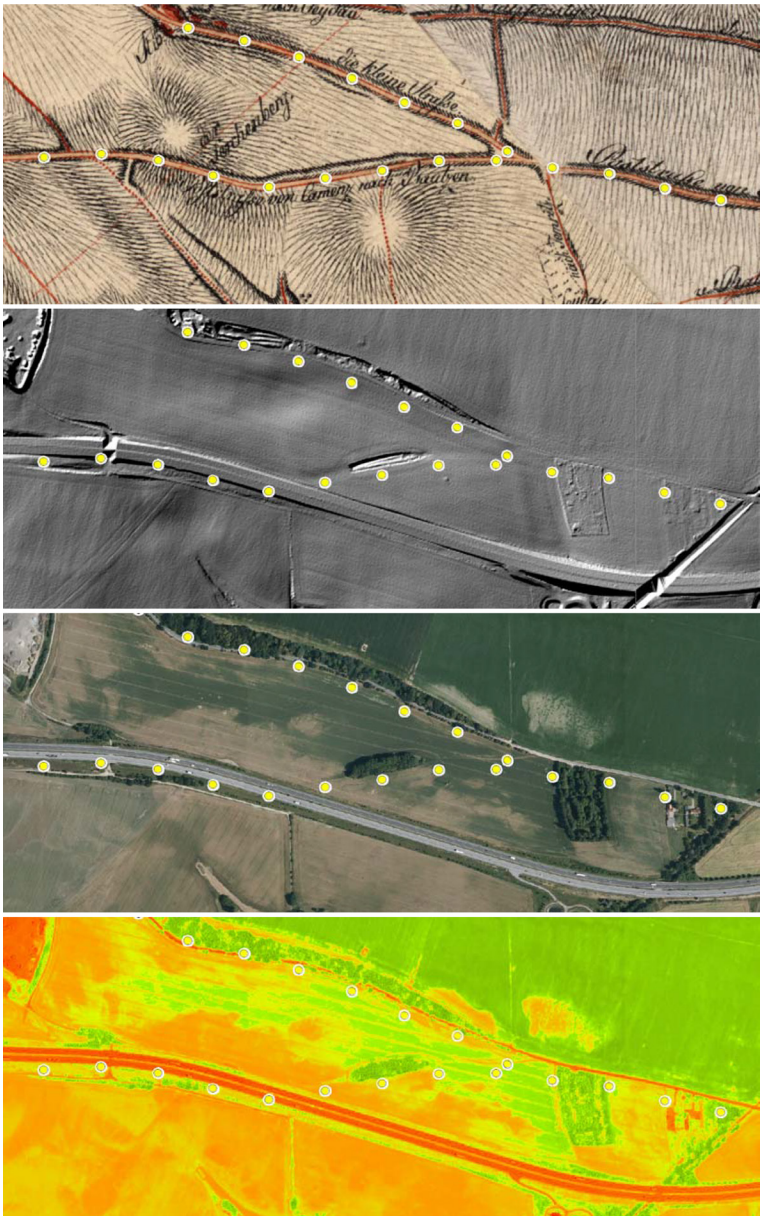

Figure 12 – Post road Kamenz – Bautzen, west of Seidau (Bautzen): „Meilenblätter“, hillshades, orthophoto and vegetation index.

3 Résumé

As combination of modern GIS and database technologies the archaeological information system became an essential companion for archaeological heritage protection and research. Geographic data supports almost all fields of archaeological work, from prospective field work to the archiving of results.

4 References

Archaeological geodata, [internal data], © Staatsbetrieb Landesamt für Archäologie Sachsen

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ATKIS-DOP (RGB) – digital orthophoto, [online as geographic data service], Available: http://www.landesvermessung.sachsen.de/ ias/basiskarte4/ service/ SRV4ADV_P_DOPRGB/ WMSFREE_TK/ wmsservice

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TK25/RD25 topographc map 1: 25000, [internal data], © Staatsbetrieb Geobasisinformation und Vermessung Sachsen

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Ur-Oeder – historic map, acquired 1586-1607 by Matthias Oeder [internal data], © Hauptstaatsarchiv Dresden

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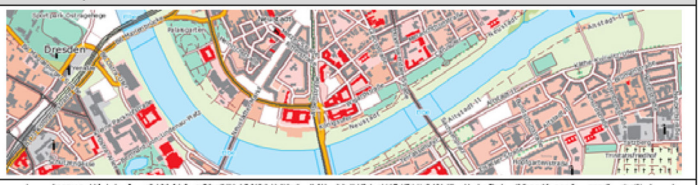
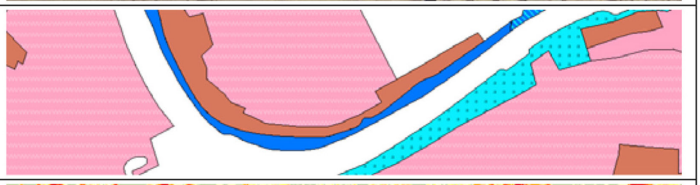
Attachement: Examples of geodata web services

Title	Description	©	Example
TOP.SN	topographic basemap	GeoSN	
Verwaltungs-gliederung	districts	GeoSN	
DOP-RGB	orthophotos, true colour	GeoSN	
DOP-CIR	orthophotos, coloured infrared	GeoSN	
DTM	digital terrain model, shaded relief	GeoSN	
Messtisch-blätter	Historic topographic map (about 1900)	GeoSN	
Meilenblätter	Historic topographic map (about 1900)	Staatsbibliothek zu Berlin – Preußischer Kulturbesitz, HTW Dresden	
Ur-Oeder	Historic topographic map (about 1900)	Hauptstaatsarchiv Dresden, LfA	
Bodenkarte	Soil map (overviev)	LfULG SN	
Erosions-gefährdung	Danger of erosion	LfULG SN