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Characteristics of marine to aeolian sediments in the Carnuntum wine growing area, Austria

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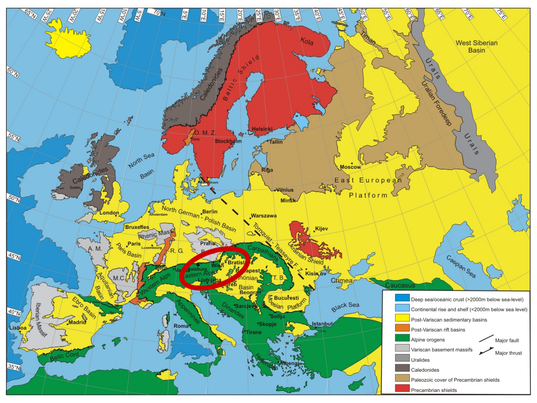
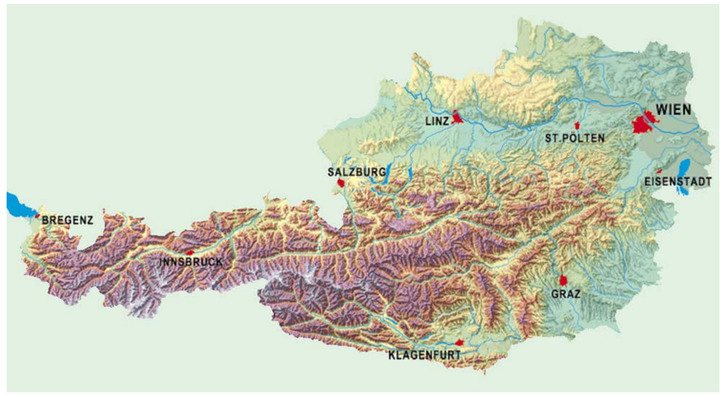
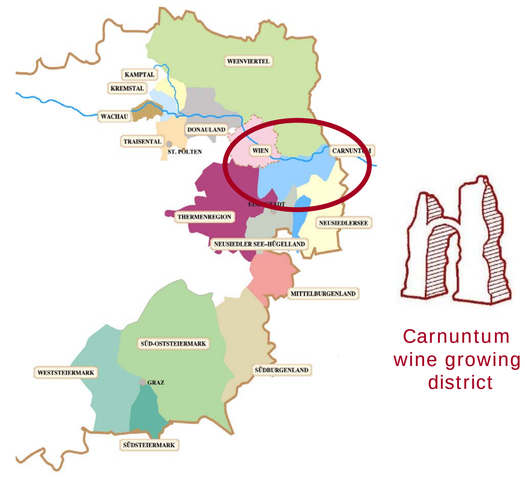
introduction

Austria is a small, landlocked republic in the center of Europe. The mostly mountainous country covers an area of 83,871 km² and has 8,420,900 inhabitants.



Situated between the 46°20‘ and 49° N parallels, Austria lies near the northern border of the winegrowing belt of the northern hemisphere.





Carnuntum wine growing district

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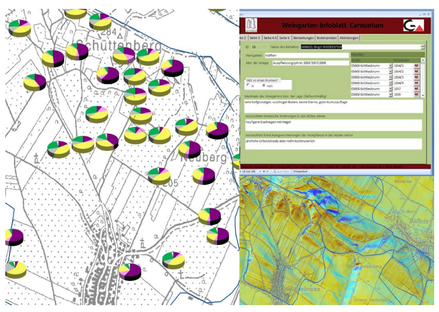
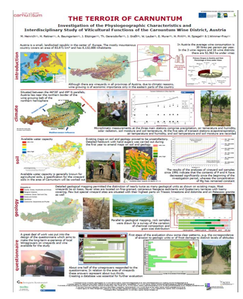
Although there are vineyards in all provinces of Austria, due to climatic reasons, winegrowing is of economic importance only in the eastern parts of the country where the region of Carnuntum with its 910 ha under vine represents a prominent area.

the study



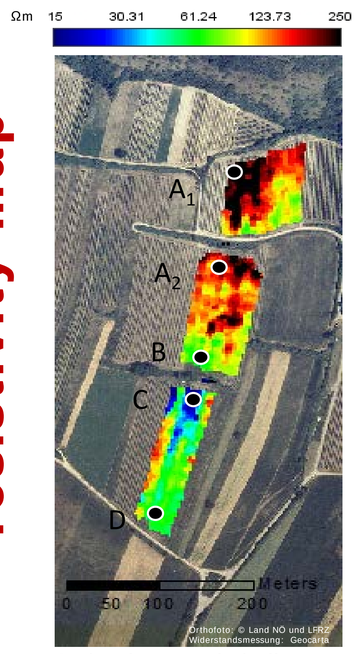
For the first time in Austria, in this area an interdisciplinary study on the geo-environmental characteristics (climate, soil physics, soil chemistry with focus on nutrient availability, geology) with particular regard to wine-growing was initiated, making intensive use of multiple analyses as well as of GIS and geodata analysis tools. Additionally, winegrowers of the region were asked to complete a questionnaire about their vineyard settings, their experiences and their traditional know-how.

This poster focuses on the grain size distribution as an important factor for wine-growing.



For further information:
Heinrich, M. et al. (2010): The Terroir of Carnuntum Investigation of the Physiogeographic Characteristics and Interdisciplinary Study of Viticultural Functions of the Carnuntum Wine District, Austria.- pp.72-75, Proceedings VIII International Terroir Congress June 1th 18th, 2010 Soave (VR) Italy

resistivity map



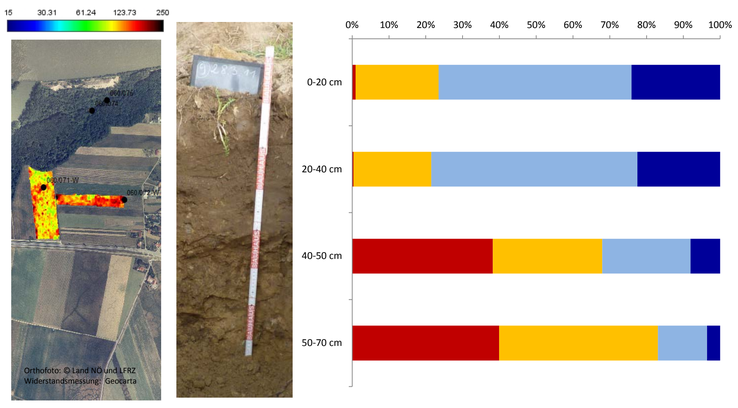
Orthophoto and shallow resistivity map

Resistivity measurements (Geocarta) give insight into the shallow resistivity distribution (in Ωm) at three different dephts.

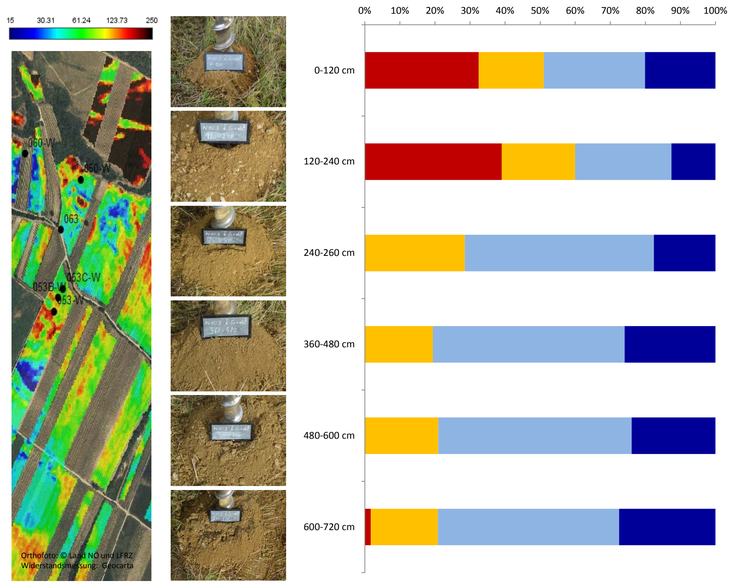
Since the shallow resistivity distribution depends on parameters as clay content, water content and texture, the results – among other things - allow conclusions of moisture distribution as well as of grain size distribution.

These measurements allow a spatial differentiation of geological units as well as a differentiation of the vertical sequences and thus are an important support for the geological mapping of unconsolidated rocks.

In the following examples of shallow resistivity maps blue colours indicate fine grained sediments whereas red and black colours might indicate coarse grained areas.



Terrace gravel underlying loess/loam and chernozem



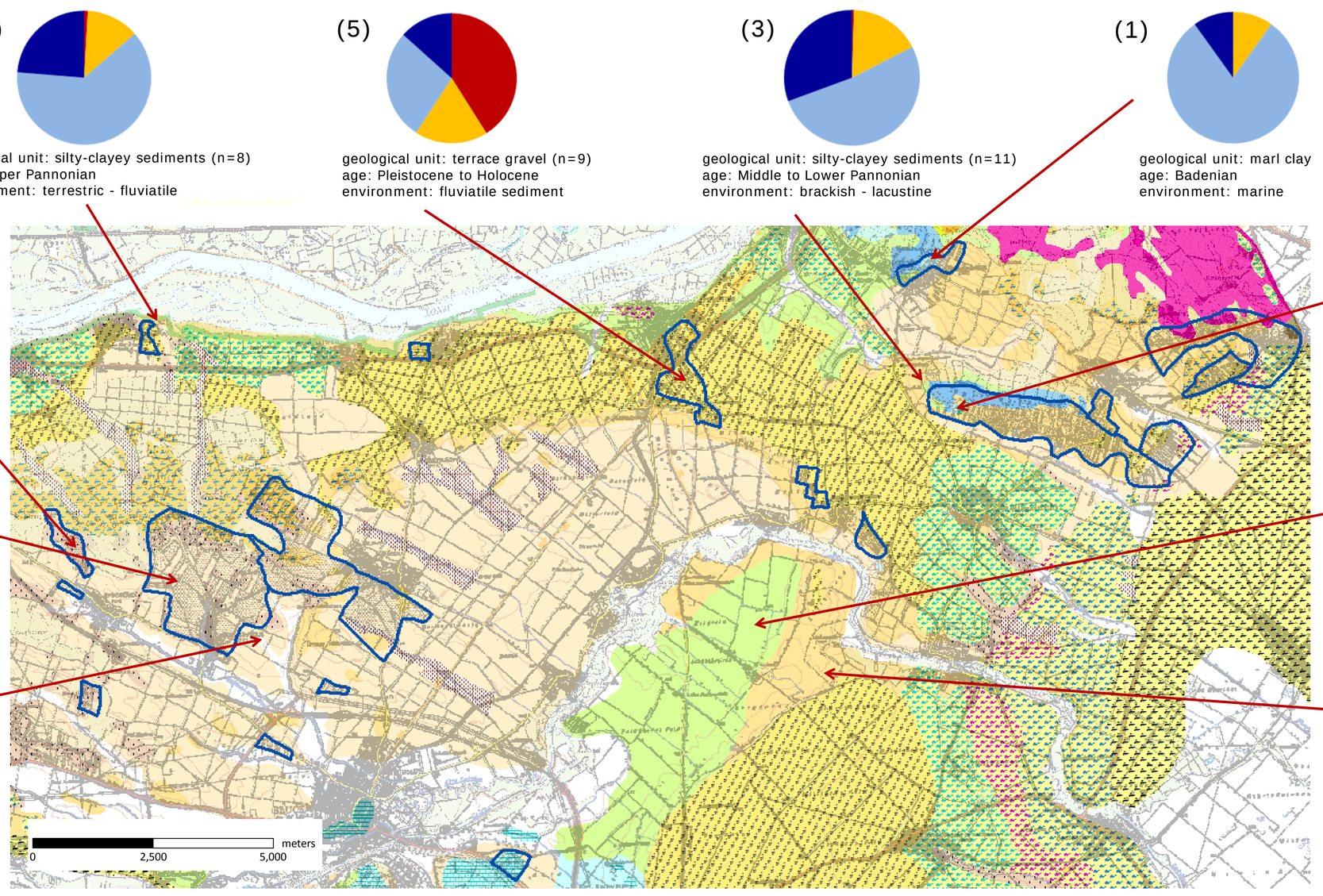
Upper Pannonian sediments with gravely cover

gravel sand silt clay

geological setting and grain size distrubtion

The Carnuntum wine district is located at the eastern margin of the Vienna Basin, a 200 km long pull-apart basin at the transition zone between the Eastern Alps and the Western Carpathians.

The sediments of the area comprise a stratigraphic range of more than 20 million years, from early Miocene up to Holocene.



Within this period they give evidence of a development from a tropical sea (1, 2) to a brackish lake (3) and shallow fluvial systems (4, 5) up to aeolian sediments (6).

The pie charts display examples of typical grain size distributions of the most important stratigraphic units of the geological map of Lower Austria 1:200,000 (Schnabel, W. (ed.), 2002).

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