



Complementary geophysical investigations revealing camouflaged tectonic structures in the Northern Burgenland (Austria)

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Two isolated outcrops mapped as Leithakalk formation (limestone of Badenium age, Lower Miocene) surrounded by Lower Pannonian siltstone and claystone (of Upper Miocene age) north of the village “Schützen am Gebirge” have been investigated using different geophysical methods. Both limestone outcrops mapped do not exceed 500 x 400 metres in size. They are situated between the Leithagebirge in the North and the Ruster Höhenzug in the South, which belong to the Lower Austroalpine comprising gneisses and slightly metamorphosed Paleozoic to Mesozoic formations.

High resolution multielectrode geoelectric sections crossing the Leithakalk formation of an old quarry near Schützen village and of a small hill about one kilometre to the North revealed domelike textures of relatively high resistivity ($> 100 \Omega\text{m}$) down to a depth of about 20 metres overlain by very low resistivity beds ($< 30 \Omega\text{m}$).

One 2500 m long, less resolution multielectrode geoelectric section down to a depth of 40 metres resulted in a similar distribution of high- and low resistivity textures, more clearly imaging a syncline-like texture of low resistivity beds between high resistivity domes in the North and in the South.

The NW-SE trending seismic section revealed a continuous reflector leading from the near surface down to a depth of 70 m matching the high resistivity texture of the geoelectric sections. The surface layers showed seismic velocities up to 2000 m/s and the basement over 3000 m/s. The seismic reflection and seismic refraction tomography

resulted anticline and syncline structures. Thus the mapped isolated tectonic slices south of the Leithagebirge can be interpreted as two (faulted) anticline-like structures of Leithakalk and its Paleozoic to Mesozoic basement situated north and south of an asymmetric syncline comprising Lower Pannonian beds.

Despite this very clear geologic interpretation of syncline and anticline structures in the geophysical sections, their geodynamic interpretation is still quite difficult. Although slightly folded Pannonian formations with axes paralleling the Leithagebirge in ENE direction can be expected according to the regional trend in the Lake Neusiedl region, no direct continuation of the above described tectonic structures can be derived from the geologic map 1:50.000, published in 1986, neither to the Southwest nor to the Northeast. Therefore we conclude that the structures investigated along the isolated outcrops of Leithakalk formation north of Schützen are very local ones. They probably are the result of local compression and uplift between the Leithagebirge in the North and the Ruster Höhenzug in the South. Despite good outcrops with slickensides are missing in the surroundings for studying the stress regime, we establish the working hypothesis of local folding of Miocene formations in Plio-Pleistocene times, and subsequent faulting and uplifting of tectonic slices in a compression regime favourable along strike slip faults paralleling the horst of the Leithagebirge.