



Applied geological and cultural aspects of Leitha Limestone in Roman times (Middle Miocene, Eastern Austria)

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Describing the Middle Miocene Leitha Limestone and its related lithologic and stratigraphic units in the context of the criteria proposed for 'Global Heritage Stone Resource' (B. COOPER, 2015, Spec. Publ. Geol. Soc. London, 407) many new data from the project 'Stone Monuments and Stone Quarrying in the Carnuntum - Vindobona Area' (Austrian Science Fund, P 26368-G21, G. KREMER) are added.

The project combines archaeological and geological methods and interpretations. Since its introduction EGU 2015, important new insights have become apparent. Geologically, the project area of Carnuntum and Vindobona and their hinterlands is situated in the Southern Vienna Basin and the adjacent Pannonian Basin. The geoarchaeological research aim was the thorough investigation of the regionally quarried Roman ornamental and building stones consisting of Miocene rocks, and their potential provenance areas. High resolution airborne laser scanning (ALS) topographic data, historical topographic maps and other geological sources were used to locate quarries in the relevant lithologies. One part of the study was the detailed investigation of a huge amount of specifically selected archaeological stone objects, like altars or steles. Therefore a customized, sedimentpetrologically based, hierarchical lithotype classification was developed for a macroscopical grouping of the stone objects but likewise open for analyzed field samples. Next focus was the lithological documentation of the potential source areas and quarries. Selected quarries were sampled for their lithological and stratigraphical properties and studied with regard to their quarry layout and searched for indicative extraction tool marks. Their combination into local scale quarry regions and higher ranked quarry provinces evolved accordingly.

The lithological properties of the quarry samples mirror the lithotype classification established from the investigation of the stone monuments, linking archaeological stone objects with potential source areas. Lithotypes No I consist of limestone varieties dominated by coralline algae. Algae rare lithotypes No II comprise lumachelle-, ooid- and further calcarenites, and lithotypes of No III unite various breccias/conglomerates as well as siliciclastic sandstones. The facies of Leitha Limestones are mainly, but according to regional facies variations, not only, found within No I lithotypes. Each lithotype shows its specific regional distribution. Although in many cases it is very difficult to connect the lithology of an archaeological stone object with a specific source area, this limitation might be overcome by the archaeological data of the object itself, its provenance or its relationship with other objects. The importance of the quarrying regions is reflected in the quantitative assessment of the used lithotypes within the first centuries AD.