

Contractional tectonics in the Muráň Nappe of Callovian age, Western Carpathians (Slovakia)

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Numerous models try to explain the tectonic and paleogeographic controversies of the Silicicum in the Inner Western Carpathians, but none of them accounts the structural and facies relationships with satisfaction. The composition of the tectonic outliers, their diagenetic/thermal overprint, and their emplacement structures belong to the open questions in the geodynamic evolution of the Western Carpathians. On the official geological map the Silicicum of the Muráň plateau mirrors a continuous shallow-marine carbonate platform evolution from the Anisian to the Rhaetian. Locally, open-marine carbonates of the Early Jurassic occur. Our new data from the western Muráň plateau contrasts clearly the actual concept to interpret the Silicicum as a unified superunit: the Silicicum on Mt. Červená exist in two depositional settings with differences in the facies zones and stratigraphic ranges. Older sediments from the detached middle continental shelf rest on younger ones that formed the proximal shelf, separated by a Callovian thrust fault.

The (overlying) thrust nappe consists of a latest Ladinian - Early Carnian sedimentary sequence: Forereef limestones from the Wetterstein carbonate platform margin characterize the lowermost depositional sequence of this nappe outlier. Increased slope highs reduced the rate in the platform progradation and led to a retrogradation in reddish siliciclastic to silicified mud lenses and collapse breccia deposits. Sponges, microbes and other reef-builders of the reef core are only poorly preserved. Beyond the end-Wetterstein platform sea-level drop a new platform established on the continental slope and shed shallow-water debris in the open-marine setting (= Leckkogel Formation).

The (parautochthonous) carbonate basement consists of a ?latest Norian - Callovian sedimentary sequence: Open lagoonal to backreef sediments from the Dachstein carbonate platform characterize the lowermost depositional sequence of the Late Triassic proximal shelf. After the emergence of the Dachstein platform and a sea-level rise in the late Hettangian deepened the paleoenvironment (= Hierlatz Limestones), and a pelagic carbonate platform formed upsection (= Adnet Formation). Exposures of Middle Jurassic sediments are so far not well studied. The parautochthonous sequence on Mt. Červená ends with Callovian radiolarites deposited in a restricted paleoenvironment. Previous publications on Silicicum outliers confirm the Callovian age, but the interpretation is modified now (Dumitrică and Mello, 1982; Sýkora and Ožvoldová, 1996).

Our results show that the Middle-Late Jurassic contractional tectonics affected also the Muráň unit of the Silicicum, and substantiate the interpretation of the Silicicum as single nappe (Gawlick et al., 2002). Early and Middle Triassic series of the Muráň nappe remain enigmatic in their paleogeographic position. Albian-Aptian tectonics caused the emplacement of the Silicicum on the underlying Veporicum.

References:

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