

**NEW CORRELATION POSSIBILITIES BETWEEN THE TITHONIAN AND VOLGIAN
SUBSTAGES: BIOGEOGRAPHIC AND TECTONIC IMPLICATIONS**

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Lower and Middle Volgian sections, more continuous and expanded than in the classic areas of the Russian Platform, are provided by the Paluki Formation of Central Poland, where the following biostratigraphic units can be distinguished: the Eudoxus Zone, and the Autissiodorensis Zone, with the Fallax Subzone at the top, in the highest Kimmeridgian; the Klimovi, Sokolovi and Pseudoscythica Zones, as well as the Tenuicostata Zone (not recognized in Russia), in the Lower Volgian; and the Scythicus Zone, with the Quenstedti, Scythicus, Regularis and Zarájskensis Horizons, in the lowest Middle Volgian. The latter horizon is followed by Purbeck-type sediments, which are overlain by marine sediments of Late Berriasian age. The Late Kimmeridgian to Middle Volgian ammonites of central Poland (monographed in papers by Kutek & Zeiss, 1974; Kutek, 1994; and Kutek & Zeiss, 1997) permit to reconstruct a phyletic lineage which, starting with the Submediterranean group of *Discosphinctoides stenocyclus-roubyanus* in the Eudoxus Zone, gave rise to the following Subboreal succession of ammonites in cratonic regions of Poland and the Russian Platform: *Discosphinctoides subborealis* and *Sarmatisphinctes* in the Autissiodorensis Zone, *Ilowaiskya* and *Pseudovirgatites* in the Lower Volgian, and *Zaráiskites* in the Scythicus Zone.

Several scattered occurrences of Tethyan ammonites in cratonic Poland, and of Subboreal ones in Franconia and the Carpathian-Balkan area, permit to establish a new correlation of the Volgian with the Tithonian, according to which the top of the Sokolovi Zone corresponds to a level situated but slightly beneath the base of the Middle Tithonian, and the base of the Middle Volgian roughly corresponds to the base of the Upper Tithonian. The Regularis Horizon corresponds to an interval located fairly high in the Upper Tithonian, within the Calpionellid Zone A.

Subboreal ammonite faunas developed in central and northern Poland in the latest Kimmeridgian and in the Volgian, but intermittent occurrences of Tethyan ammonites (chiefly Haploceratacea) are recorded up to the Sokolovi Zone in the Lower Volgian. This can be explained evoking a filtering effect of a belt of shallow-water carbonates of the Stramberk type, developed along the Carpathian margin of the Tethys. Significantly, a southward spread of Subboreal ammonites in the latest Early and earliest Middle Volgian (latest Middle and early Late Tithonian) is testified by occurrences of *Ilowaiskya*, *Pseudovirgatites*, *Zaráiskites* and *Isterites*, associated with *Buchia* at some localities, in the Polish Carpathians, and in Slovakia, Bulgaria, Hungary, Moravia, Austria and Franconia.

In central Poland, a transgressive-regressive sequence ranging from the Upper Kimmeridgian (Eudoxus Zone) to the Middle Berriasian, is formed by marine sediments and the overlying Purbeck-type sediments. The base of the latter sediments is situated within the Zarájskensis Horizon, providing circumstantial evidence for a late Tithonian uplift of the Meta-Carpathian Arch (a zone of lesser subsidence and intermittent uplift, that separated the Central European Basin from the basins of the Carpathian domain in the Permian, Mesozoic and Cenozoic). A sequence boundary can be recognized within the Eudoxus Zone, and a higher-order sequence boundary at the base of the Middle Volgian. No sequence boundary corresponds to the Kimmeridgian/Volgian junction. A special problem is connected with the latest Kimmeridgian to Tithonian sediments developed in cratonic regions of south-eastern Poland and the western Ukraine, which provide evidence for a rifting phase, and are largely synchronous with the Stramberk shallow-water carbonates, and the carbonate flysch of the Cieszyn Beds, of the Northern Outer Carpathians.

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