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100 Jahre nach Eduard Suess

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Stratigraphy of non- and marginal-marine Neogene formations along the northern margin of the Styrian Basin (SE Austria)

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Neogene sediments at the northern limits of the Styrian Basin are known for a long time, however, their stratigraphic allocation remains challenging until now. Bad exposures, rapid lateral and vertical facies changes as well as profound erosional and tectonic events render lithostratigraphic correlations – at least in part – tentative. Additionally, biostratigraphic (mainly mammal and mollusc faunas) and geochronologic (volcanic ashes) tie points are rare in these marginal basin areas, where alluvial to lacustrine deposits predominate. Here the state of knowledge of the most important formations on the geological map sheets GÖK 163 (Voitsberg) & GÖK 164 (Graz) is reviewed and their principal lithology, depositional environment and chronostratigraphic position outlined:

Köflach-Voitsberg Fm.: pelite and sand, lignite, some volcanoclastic interlayers; limnic-fluvial; Ottnangian (based on biostratigraphy (mammals), magnetostratigraphy and geochronology).

Eggenberg Fm.: reddish limestone/dolomite breccia and residual soil; talus deposits, paleosols; Karpatian–Badenian, ?Pannonian (based on lithostratigraphy).

Stiwoll Fm.: limestone conglomerate; fluvial; ?Karpatian (based on lithostratigraphy).

Stallhofen Fm.: coarse gravel and volcanoclastics; fluvial, partly volcanoclastic; Early Badenian–Early Sarmatian (based on lithostratigraphy, supported by geochronology).

Rein Fm.: pelite–sand with lignite, limestone and volcanoclastic interlayers; limnic, subordinately fluvial; Early Badenian (based on lithostratigraphy; supported by biostratigraphy (molluscs)).

Mantscha Fm.: pelites with some lignite and limestone interlayers; limnic (-fluvial); ?Badenian/Sarmatian boundary (based on lithostratigraphy).

Rollsdorf Fm.: pelite and fine sand, some gravel, limestone and lignite interlayers; marginal marine; Early Sarmatian (based on biostratigraphy (ostracods, foraminifers, molluscs)).

Gratkorn Fm.: coarse gravel/conglomerate, some sand and paleosol intercalations; fluvial; “Middle” Sarmatian (based on litho- and biostratigraphy (molluscs, vertebrates)).

Gleisdorf Fm. (on GÖK 164): pelite and gravel-sand-pelite alternations with rare oolitic limestone intercalations; limnic and marginal marine with some fluvial influence; Late Sarmatian (based on bio- (rare ostracods, foraminifers and molluscs) and lithostratigraphy).

Kleinsemmering Fm.: alternations of pelite and fine sand, some lignite and marl/marlstone interlayers; limnic–fluvial–deltaic; (at least in part) Early Pannonian (based on lithostratigraphy and biostratigraphy (rare ostracods and molluscs)).

Ries Fm.: Quartz-dominated gravel with sand interlayers; fluvial; Early Pannonian (based on lithostratigraphy).