

Late Permian (Tatarian) Deposits In NW Anatolia: Paleogeographic Implications M. Cemal GONCUOGLU¹, Cengiz OKUYUCU² and Tania DIMITROVA³

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The Middle-Late Paleozoic in Zonguldak Terrane in NW Anatolia is characterized by Emsian-Tournaisian platform carbonates that grade into coal-bearing Namurian-Westphalian fluvial sediments. The youngest age obtained yet from this regressive series from the upper part of the Karadon Formation is Westphalian D. A greenish sandstone unit with shale and mudstone interlayers, barren of fossils, is followed by red clastics that were attributed to Stephanopermian. Previous data suggested that this succession was unconformably covered by red conglomerates (Cakraz Formation) of Triassic.

To the E of Ereğli, we recently discovered a >1000m-thick succession which is tentatively assigned as Alaplı Member of Cakraz Formation in Late Permian age (Fig. 1).

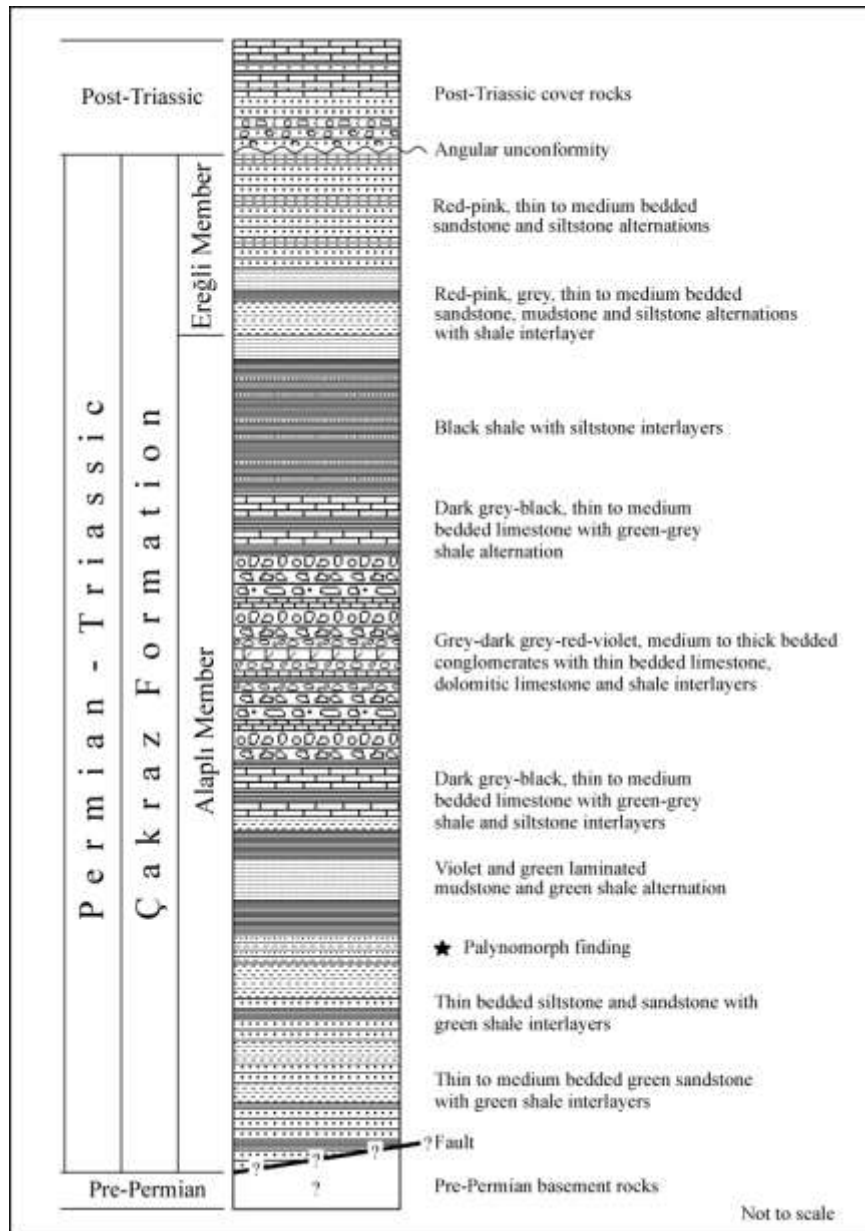


Figure 1- Generalized columnar section of the Late Permian (Tatarian) clastic rocks in Ereğli area.

The lowermost part includes greenish-gray siltstones and sandstones with thin black mudstones, very rich in plant remains. The middle part of the formation comprises an alternation of black shales and limestones with thick intervals of carbonate-cemented conglomerates and breccia. The upper part consists of black shales, laminated dark gray siltstones and mudstones with black dolomitic interlayers. The formation is transitional to red, pink and violet sandstones and conglomerates of the Cakraz Formation. Different samples from the unit yielded a miospore assemblage, both with Euromerican and Gondwanan elements (*Limitisporites lepidus* (Valts) Hart 1963, *Bisaccate*, *Cedruites* sp., *Lueckisporites* sp., *Illinites* sp., *Alisporites* sp., *Knoxisporites* sp., *Crucisaccites* sp. a Barker et al., 1991, *Sinulatisporites* cf. *sinensis* Gao 1991, *Striatodiplopinites noviaulensis* (Leschik) Foster 1979, *Lueckisporites nyakapendensis* Hart 1963, *Limitisporites* sp., *Gardenasporites* sp., *Illinites* cf. *unicus* Kosanke, *Alisporites ovatus* (Balme & Hennely) Jansonius, *Striatodiplopinites* sp., *Striatopodocarpites* sp., *Nuskisporites* sp., and *Protohaploxypinus* sp., *Hamiapollenites* sp., *Platisaccus papilionis* Potonie and Klaus, *Lueckisporites* Potonie and Klaus, *Vittatina costabilis* Wilson) indicative for Tatarian (Late Permian) age. The black shales and limestones in the upper part are rich in organic matter but lack any macro or microfossils. The pebbles of the conglomerates are mainly from the Devonian-Carboniferous Yılanlı Limestones.

A similar flora was recognized within an alternation of red-gray lensoidal sandstones and conglomerates with red-gray mudstones and sandstones in Camdag by Alisan and Derman (1992) and correlated with the fluvial and flood-plane sediments beneath the Lower Triassic marine sediments in the Kocaeli Peninsula. Rock units of the same age were reported from other Laurasian margin successions. E.g. the Targovishte Fm of the Balkan Terrane in NE Bulgaria (Yanev and Cassinis, 1994) is almost identical with the Eregli Fm in regard to lithostratigraphy and fossil content and is also unconformably overlain by Cakraz-type red clastic deposits. The Vetrino Fm. in SE Moesia with coeval influence of lagoonal intercalations also correlates with the NW Turkish successions.

Together with its correlatives, the Eregli succession is interpreted to be deposited in a lagoonal environment on an actively extending southern Laurasian margin at the end of Permian. The same time interval in southerly located Turkish terranes, however, is characterized by an oceanic basin (represented by Changhsingian radiolarian cherts and ocean island volcanism in the Karakaya Complex of the Sakarya Composite terrane, Goncuoglu et al, 2004) and platform margin carbonates (Anatolide-Tauride platform, Turhan et al, 2004), respectively. This puts news constraints on the paleogeographic distribution of the Late Paleozoic-Triassic terranes and the position and opening age of Paleotethys.

Key words: *Anoxia, Late Permian, NW Anatolia.*

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