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Tectono-sedimentary evolution Late Paleocene to Eocene aged sequences, Karabük basin, Western Pontides, Turkey

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The study area is situated on the Intra-Pontide Suture Zone between İstanbul and Sakarya continents, the Paleogene aged (Late Paleocene to Eocene) intermountain basin divided into three sub-basins (Eflani, Karabük and Ovacık from north to south) under N-S compressional regime. The basement unit called Ulus Formation (Early Cretaceous) is composed of flysch-type sediments with various sized magmatic and metamorphic blocks. Continental clastic (Kışlaköy Formation) covers the Ulus Formation unconformably in the Ovacık sub-basin during Upper Paleocene, the sub-basins were changing shelf areas (LST: Lowstand System Tract) through PETM (Paleocene-Eocene Thermal Maximum) event, which gave rise to neritic carbonates deposition as first phase (Safranbolu Formation) during Lower Eocene. The Safranbolu Formation consists mainly of boudinage-cylinders such as the carbonate structure and locally is replaced by re-sedimented pebbles to blocks reflecting ongoing compressional regime, and benthic foraminifer's content indicate Early Eocene (Cuisian) age. HST prograded (Highstand System Tract) level in Middle Eocene and turbiditic sandstone and marl alteration were deposited (Karabük Formation) in all sub-basins. Because of the continuation of the N-S direction compression in the Western Pontide, while the deep marine sedimentation persisted in the northern and southern areas (Eflani and Ovacık sub-basins), the clastic facies (Çerçen member of Karabük Formation) were deposited under the continental conditions because of the uplift in the Karabük sub-basin. Due to MECO (Middle Eocene Climatic Optimum) event on the world scale, HST was occurred again and shallow water was re-flooded in the Karabük sub-basin (second phase). As a result of these flooding events, open platform carbonates (Soğanlı Formation), which was followed by evaporites (Pürçükören Formation) and closed platform deposit such as barren limestone-dolomite-marl (Akçapınar Formation). After these deposition, the Karagöl thrust fault was developed in the E-W direction under ongoing N-S compressional regime. Alluvial-fluvial units (Boyalı Formation) with E-W trending were deposited in the developing areas in front of this thrust fault. As a result; the studied sub-basins were developed at the regional scale under N-S compressional tectonic regime. In addition, two phases sedimentary sequences (superimposed) were deposited due to (PETM and MECO) paleoclimatic events in these sub-basins.

Key words: Karabük basin, intermountain basin, superimposed deposits, Karagöl thrust fault, Karabük fault

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