



Sedimentary petrological investigation of Paleogene forearc-interarc deposits in Adapazarı -Bolu region (Western Blacksea, Turkey)

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The study area is located at Adapazarı -Bolu region (Western Black Sea, Turkey). The epiclastic and volcanoclastic rocks belonging to Late Paleogene-Eocene Kusuri Formation crops out at Western Black Sea region and is subdivided into three levels as; lower, middle, upper levels. While lower level consists of deep marine turbidites, conglomerates, sandstones and shales, middle level is composed of lithic tuffs, tuff breccias, volcanoclastics, sandstones, siltstones and pyroclastics originated from volcanic eruption. Upper level includes an alternation of sandstone, claystone and calcarenites, deposited in shallow sea conditions.

Due to northward subduction of Northern branch of Neotethys beneath the Pontides in Late Cretaceous, an accretionary prism, an arc volcanism and a forearc basin were developed on Pontides. The center region of this basin was filled with turbidites, conglomerates, sandstones, shales and formed the lower level of the deposit. The activity of Late Cretaceous arc volcanism advanced through the south and evaluated another arc volcanism at the accretionary prism in Eocene, caused to the basin to be located between these two arcs. The volcanoclastics and pyroclastics rocks belonging to middle level and shallow marine epiclastic rocks belonging to upper level were deposited in this basin. In this period, the basin become more shallow from west to east and south to north. The volcanoclastic and pyroclastic rocks of middle level fed from the Eocene arc volcanism and shallow marine sandstone, claystone and calcarenite of upper level is composed of materials from all the units exposed before Lutetian.

The textural studies on 40 thin sections of sandstones indicate, they are moderately sorted, rounded-poorly rounded, carbonate cemented, sub matured, fine-very fine sand

sized rocks. According to C-M distribution and Qda-Md and F1-F2 functions, these clastics are in fluxoturbidite character. The mineral components of the rocks have similarities on both levels, while the percentage of metamorphic rock fragments decreases and the percentage of sedimentary rock fragments increases from the lower level to upper level.

Presence of 6 heavy minerals (%12 amphibole, %8 apatite, %6 epidote, %4 zircon, %3 rutile, %1 garnet) obtained from clastic rocks reveal the acidic plutonic, highly metamorphosed and recycled sedimentary rocks in the provenance area and those rocks were transported the deposition area during Eocene. Together with plate tectonic research, it can be concluded that these rocks were originated from recycled orogenic source.

As a consequence, Eocene sedimentary sequence in the study area were derived from the rocks that were formed with subduction of the Northern branch of Neotethys beneath the Pontides during Late Cretaceous-Eocene.