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Diagenesis and very low-grade metamorphism of Paleozoic-early Mesozoic rocks from Southeastern Anatolian Autochton in the Diyarbakı r and Amanos regions, Turkey

Ö. Bozkaya (1), H.Yalçı n (1), H. Kozlu (2)

(1) Cumhuriyet University, Dept. Geological Engineering TR-58140 Sivas, Turkey

(bozkaya@cumhuriyet.edu.tr / Phone: +90-346-2191010)

(2) Nigde sokak, 18/1, Dikmen, Ankara, Turkey

In this work, textural and mineralogical characteristics of the (meta-)clastic and carbonate rocks such as mineral abundances and assemblages, crystallochemistry of phyllosilicates from Southeastern Anatolian Autochthon were investigated. In this context, thin-section petrography and XRD studies were carried out on the 258 samples for two regions taken from as the measured sections. In the Diyarbakı r area, Paleozoic-Early Mesozoic clastic-carbonate rocks commonly contain calcite, dolomite, quartz, feldspar, goethite and phyllosilicate minerals (kaolinite, I-S, illite, glauconite), and rare gypsum, jarosite, hematite and gibbsite. The percentages of quartz and feldspar increase in Silurian-Devonian, whereas particularly dolomite in Permian-Triassic. Gibbsite, jarosite and gypsum are found in Devonian-Triassic units. Kaolinite is relatively abundant in Devonian-Permian, while I-S in Devonian-Triassic formations. In the Amanos area, Precambrian-Triassic metaclastic and metacarbonate rocks consist mainly of calcite, dolomite, quartz, feldspar, goethite and phyllosilicate (illite, chlorite, kaolinite, paragonite, NaK mica, smectite, I-C, C-V and C-S) minerals. Quartz and feldspar contents reach maximum quantities in lower parts of Cambrian, calcite in Devonian-Triassic, dolomite in middle parts of Cambrian. Illite is abundantly detected in all units, whereas chlorite in Cambrian and Devonian, minor amount of kaolinite in lower-middle parts of Cambrian, I-C in lower parts of Cambrian and Ordovician, C-V in Ordovician and Devonian, and C-S in Cambrian formations are observed. Parago-

nite and NaK mica are only determined in Ordovician and partly Devonian units. In the Diyarbakı r area, illite contents of R1 and R3 I-S are in the ranges of 85-95 %. The amounts of early diagenetic illites ($\Delta^{\circ}2\theta$ = 1.01-1.44) $1M_d \pm 2M_1)$ increase in Silurian-Devonian. $1M$ glauconites are of characteristic for Triassic. b values of illites and R3 I-S (9.002-9.040 Å, mean 9.022 Å) represent dioctahedral composition with high Fe+Mg components (0.33-0.64, mean 0.50). In the Amanoslar area, $2M_1$, $1M$ ve $1M_d$ illites and *IIb* chlorites have anchi-epimetamorphic grade ($\Delta^{\circ}2\theta$ = 0.16-0.40). $2M_1$ is found in all units, but $1M$ in Cambrian-Ordovician; $1M_d$ in Devonian. Mean b values of illites are 9.018-9.031 and 8.995-9.006 for Precambrian-Early Ordovician and Middle-Late Ordovician-Triassic, respectively. Based on mineralogical composition and degrees of diagenesis/metamorphism; Devonian-Triassic part of the Southeast Anatolian Autochthon show important variations with respect to those of Diyarbakı r and Amanos regions. Moreover, all units from Diyarbakı r area and only Lower Paleozoic units from Amanos area are similar to Eastern Taurus Para-Autochthon (Geyikdağı Unit); but Devonian-Triassic units in the Amanos area are fairly different from autochthonous and allocthonous units of the Taurus Belt.