BLUESCHISTS DISCOVERED EAST OF SAROS BAY IN THRACE

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INTRODUCTION

The area studied is situated in Thrace between Saros Bay and the town of Şarköy (Fig. 1). The oldest unit in the region is a tectonic melange of probable pre-Maastrichtian age. It outcrops in a narrow and elongate belt south of a major N70°E trending strike-slip fault (Fig. 1). The tectonic melange and pelagic limestones of probable Maastrichtian age, which are closely associated with the tectonic melange are overlain unconformably by the sedimentary rocks of Eocene-Oligocene age. Middle and Upper Miocene sediments rest in turn with an angular unconformity over the Eocene-Oligocene rocks. The youngest deposits in the area are river and marine terrace and alluvial deposits of Quaternary age.

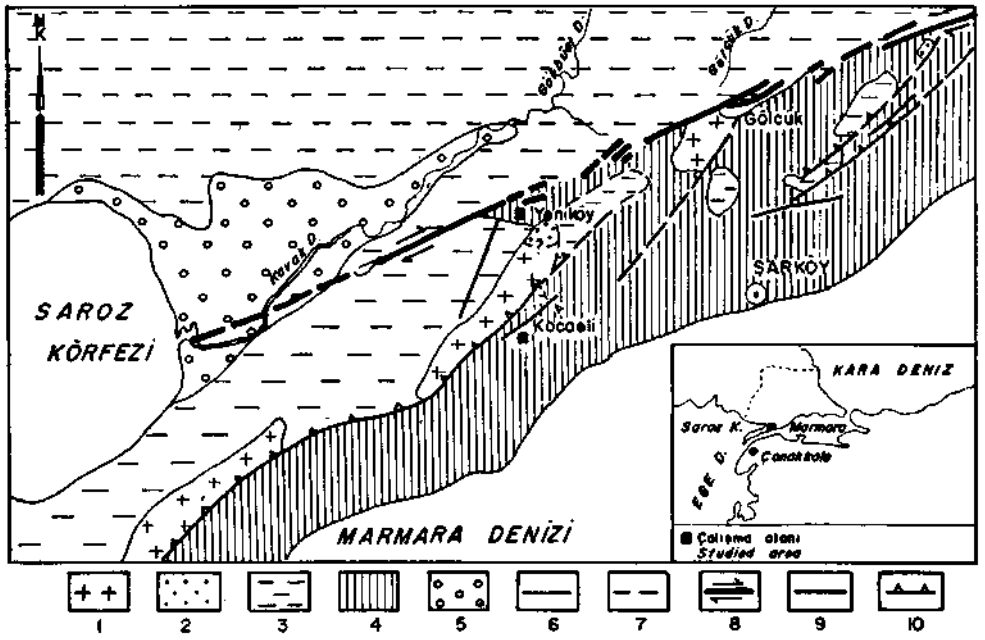

Fig. 1 - Simplified geological map of the region between the Saros Bay and Şarköy.
1 - Tectonic melange; 2 - Maastrichtian pelagic limestones; 3 - Eocene and Oligocene rocks; 4 - Upper Miocene deposits; 5 - Alluvium; 6 - Contact; 7 - Approximately placed contact; 8 - Strike-slip fault; 9 - Fault; 10 - Low angle reverse fault.

TECTONIC MELANGE

Tectonic melange consists of slices of serpentinite, dolerite, diorite, blueschist and recrystallised limestone. It does not have a matrix and the slices show tectonic contacts with each other. The presence of blueschist slices in this unit is not reported by the previous workers in the area (Druitt, 1961; Holmes, 1961; İlhan, 1961; 1963; Kellog, 1973; Saltık, 1974).

The tectonic melange is in contact with pink, greenish-grey Senonian (probable Maastrichtian) pelagic limestones east of Yeniköy. The nature of the contact cannot be clearly observed in the field. However, Saltık (1974) mentions that 11 km west of Gölcük near Yayaköy, Maastrichtian limestones lie unconformably over the tectonic melange. If his observation is correct, then the age of the tectonic melange must be pre-Maastrichtian.

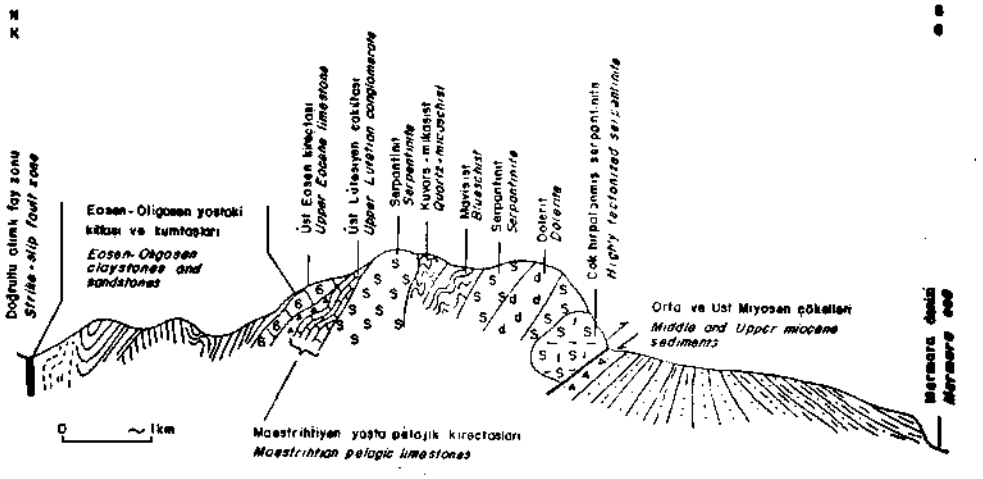

Fig. 2 - Cross-section passing through Yeniköy and Kocaali, west of Şarköy.

PETROGRAPHY

Brief descriptions of rocks in the tectonic melange with blueschist mineral assemblages are given below:

Glaucophane-lawsonite schist. — A fine-grained metabasic rock with an oriented metamorphic fabric. Small (0.05-0.1 mm long) pale to dark blue prismatic sodic amphibole and idioblastic tabular crystals of lawsonite make up 80-90 % of the rock. Apart from these two major minerals, there are small amounts of pale green to colourless, anhedral sodic pyroxene, phengite and sphene.

Metadolerite. — The rock exhibits an incipient metamorphism. The magmatic texture and most of the primary magmatic minerals are well preserved. Augite, yellowish-brown hornblende and minor biotite represent the primary magmatic phases. 0.5 to 1 mm long prismatic hornblendes are partialy replaced by colourless actinolite and pale blue sodic amphibole. Augites show replacement by sodic pyroxene along veins and fractures. Pale blue sodic amphibole is also forming along the rims of augite crystals. Aggregates of lawsonite, albite and chlorite have pseudomorphed the primary magmatic plagioclase. Lawsonite occurs as very small (0.02-0.05 mm long) tabular crystals closely

associated with albite and colourless aggregates of chlorite. Epidote forms large crystal aggregates. The accessory mineral ilmenite is largely replaced by sphene.

Metachert (?) . —Although the rock does not have typical blueschist minerals, it is closely associated in the field with the glaucophane-lawsonite schist. It consists largely of quartz (80-90 % of the mode) with minor phengite, stilpnomelane, chlorite and magnetite. The presence of the iron and manganese rich mineral stilpnomelane suggests that the rock could have originally been a chert.

DISCUSSION

Blueschists described in this paper are similar to the Northwest Turkish blueschists both in terms of mineral paragencsis and type of metamorphism (Çoğulu, 1967; Okay, 1981). An important feature of the Northwest Turkish blueschists is the prograde nature of metamorphism. The retrograde greenschist facies metamorphism which is seen in virtually all the blueschist belts of the world, is rarely observed in Northwest Turkey. The blueschists from Thrace also do not show any retrograde greenschist facies metamorphism; the blueschist mineral paragenesis are completely preserved.

The described blueschist metadolerites from Thrace can be compared with the lawsonite zone blueschists of Northwest Turkey (Çoğulu, 1967; Okay, 1980a). The preservation of the magmatic texture, the abundance of lawsonite and scarcity of sodic amphibole are the typical features of the lawsonite zone blueschists. The described glaucophane-lawsonite schist on the other hand can be correlated with the glaucophane-lawsonite zone blueschist of Çoğulu ,(1967) and Okay (1980b). These similarities suggest that blueschists east of Saros Bay may form a continuation of the Norht-west Turkish blueschist belt.

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