Miocene reference section for the coastal parts of West Anatolia

by Orhan Kaya

with 13 figures

Abstract. The most complete and representative Miocene composite reference section of west Anatolia is exposed on the coastal parts, particularly in the Izmir Bay area. In the herein proposed Miocene Coastal province of west Anatolia, NNE- to N-trending basin-range type of structure was formed concurrent with sedimentation and volcanism during the early Miocene to early late Miocene times. The structure comprises four broad composite elements, from west to east: Karaburun-Lesvos uplift (range), Foça depression (basin), Yamanlar uplift, and Akhisar depression. The Foça depression is consequent to earliest Miocene breakup; and during its early history it was an axial element for this part of west Anatolia. The Akhisar depression started to form concurrent with the Yamanlar uplift by middle Miocene and assumed its extensively low structural level by early late Miocene.

The basin-fill of the Foça depression is composed of lacustrine and fluvialite carbonate and clastic rocks interlayered and intertongued with volcanic rocks on different scales. It shows a shoesterig shape increasing in thickness from east to west and from south to north. The rock sequence is interrupted by a major period of volcanic quiescence and erosion occurring between about 16.2–11 m. y. ago.

Intermediate and silicic rocks predominate and constitute bimodal assemblages with less abundant basaltic rocks. Stratigraphic relations and available radiometric dates indicate two intermediate (about 21.5 m. y. and between about 18.5–16.7 m. y.), and two silicic assemblages (about 19.2 m. y. and 12.5–11.3 m. y.).

1 Introduction

Regional north-northeast- to north-trending lithologic, structural, paleomorphological and Recent topographic trends are dominant in western Anatolia. They are expressed in the pre-Miocene and most conspicuously in the Miocene rocks on the 1 : 500,000 geologic map produced by M. t. a. (1964). Philippson (1918), Arpat & Bingöl (1969), Brinkmann et al. (1972), Borsi et al. (1972) and several other workers recognized the Neogene sedimentation, volcanism and deformation to have been controlled by north-northeast-to north-trending “grabén tectonics”. Lüttig & Steffens (1976) regard the middle