

Age determinations of volcanic rocks from the Neogene of Turkey

by

F.-J. ECKHARDT, C. BESANG, W. HARRE, H. KREUZER and P. MÜLLER

During the last years 48 effusive rocks and pyroclastic rocks from the Turkish Neogene have been dated by the radiometric K/Ar-method through minerals and total rock determinations.

The stratigraphic application and discussion of these data yields an absolute chronology for the continental Neogene in the Mediterranean area for the first time. The data cover the range from the Miocene to the upper Pliocene :

1. Sediments of Upper Pliocene age (Akca-typpoll) are bedded on a Dacite of 3,76 Ma.
2. Volcanic rocks of different localities correlated to sediments of Vallesian age (*lower Pliocene*) give radiometric data between 7,9 - 10,2 Ma.
3. Different rocks of "uppermost *Miocene*" give 11,1 - 11,6 Ma. (Vertebrates of Yuri Eskihisar).
4. Within the Miocene volcanic rocks in correlation the sediments of the lower Sekkoy-beds give ages of 17,3 Ma.

The data obtained can be good correlated with those of the Paratethys.

There are little differences to the radiometric ages from the Tethys region.

The application of the measurements to the problems of Volcanology and Petrology yield for the different regions investigated (Afyon, Konya, Karaman, Hasan Dag and Melendiz Dag) the times of volcanic activities.

1. We could determine a shifting of the pyroclastic volcanism of NE (11,5 Ma) to SW (8,6 Ma) in the area south of Konya. The volcanic domes of this area (Andesites, Dacites, Rhyodacites) do not follow this scheme (3,8 - 11,9 Ma).

2. The Andesites and Dacites of the Kara Dag region near Karaman yield a range of the volcanic activities between 3,21 and 1,13 Ma.

3. A few measurements of volcanic rocks from the region south of Afyon give ages of 8,6 - 14,8 Ma.

4. Radiometric age determinations of Andesites from the Hasan Dag and the Melendiz Dag (near Aksaray) show an age of 13,7 Ma for the lowest Andesite and 5,35 Ma for the covering ignimbrite.

Normally Biotites have a content of more than 7 % K. In the Biotites from the rocks of the Turkish Neogene less than 7 % K are common (sometimes less than 5,5 %). We could prove high contents of gases in these Biotites. This rises up the problem of the accuracy of such data. On the other hand TR-analyses and measurements of Amphiboles from the same rock match satisfactorily with the data obtained from Biotites.

References

- BECKER-PLATEN (J.D.), BENDA (L.), ECKHARDT (F.-J.) & SICKENBERG (O.). — *Proc. VIth Congress of the Regional Committee on Mediterranean Neogene Stratigraphy*, Bratislava 1975, S. 299-302.
- BESANG (C.), ECKHARDT (F.-J.), HARRE (W.), KREUZER (H.) & MÜLLER (P.). — Radiometrische Altersbestimmungen an neogenen Eruptivgesteinen der Türkei. — *Geologisches Jahrbuch, B*, im Druck.

*
* *

Rapp. Comm. int. Mer Médit., 23, 4a, pp. 211-213, 1 fig., (1975).

Tethys Gliederung	Pollenbilder	Standardprofil, Türkei	Vertebraten-Faunengruppen	Vertebraten Gliederung	Altersgleiche Faunen	Euxinische Becken				
Calabrium			Yukarı Söğütönü	Villafranchium ⁺ 4 oder 5	Kvabebi	Aktschagylun				
Astium / Piacentium			Gülyazı	Villafranchium ⁺ 1 und 2						
Zancleum			Dinar- Akçaköy	Ruscinium						
Messinium			Amasya	Turolium			Euxinische Becken			
			Kınık							
			Garkın	Vallesium						
Tortonium			Kayadibi (9.2)				Küçük Çekmece			
			Eşme- Akçaköy (10.2)	Sevastopol						
Serravallium			Eskihsar				Turgut-Schichten	Yeni Eskihsar (11.1)	Ober Miozän	Bjelometscheskaja
				Sofça						
	Çandır	("Sarmatium" und "Badenium")								
	Paşalar									

⁺sensu AZZAROLI (1958)

TABELLE KORRELATION DER TÜRKISCHEN VERTEBRATEN-FAUNENGRUPPEN UND POLLENBILDER MIT STUFEN VON TETHYS UND PARATETHYS

Discussion générale

Montadert : Il existe 3 hypothèses expliquant la structure de la ride Méditerranéenne.

— **Drs. Finetti-Morelli** : structure interne relativement simple liée à l'arc hellénique avec chevauchements au front et au milieu. Les évaporites messiniennes existent sur la ride.

— **Dr. Muller** : Cette structure est liée à une nappe de glissement pratiquement jusqu'en surface, similaire à celle décrite au front de l'arc de Calabre sous le cône de Messine.

— **Drs. Biju-Duval, Montadert, Letouzey et al.** : Il existe des évaporites sur cette structure. Elle peut être liée à une nappe de glissement mais dont l'âge est plus ancien que celui de l'arc de Calabre. Des accidents chevauchant récents existent. Ces divergences s'expliquent par les difficultés rencontrées par la sismique réflexion dans ces régions.

*
* *

