

Palaeomagnetism of Mesozoic volcanic Rocks in Sicily

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It has been suggested that the boundary between the African and European plates probably crosses Sicily [MCKENZIE 1972]. The plate contact might follow the E-W alignment of earthquakes focii in NE Sicily and the NNE-SSW alignment of earthquakes in Western Sicily [BARBERI *et al.* 1973]. The two plates probably collided in Miocene time [BARBERI *et al.* 1974]. Considering this hypotheses a Palaeomagnetic study was carried out on Mesozoic volcanic rocks in western Sicily with the following locations : Site 1 Monte Bonifato; site 2-5 Custonaci; site 6 Vicari; site 7,8 Giuliana; site 9 Piano del Leone. Most of these volcanic rocks are probably of Middle Jurassic age [FLORIDIA 1954], those near Custonaci are of Cretaceous age [VIANELLI 1968].

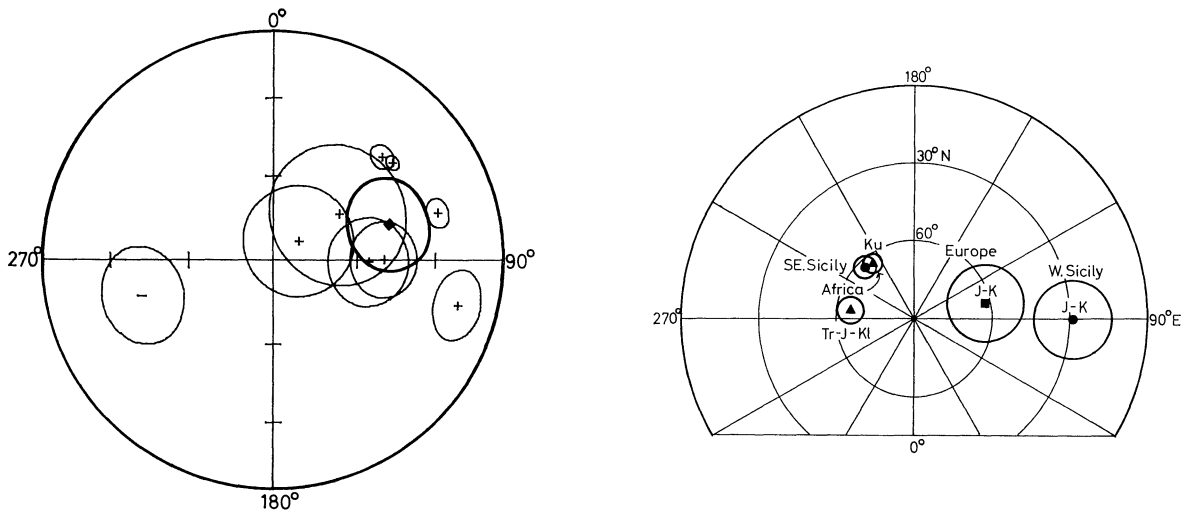


FIG. 1. — Site mean directions of remanent magnetization with their respective circles of confidence after AF cleaning (+ normal, — reversed), and mean of all sites (◆) for volcanic rocks from W. Sicily.

FIG. 2. — Mesozoic pole positions for "stable" Europe, Africa, SE. Sicily, and W. Sicily. Tr Triassic, J Jurassic, K Cretaceous, l Lower, u Upper.

From each site about 10 samples were collected. All samples were subjected to AF-cleaning with fields between 100 and 300 Oe according to results from AF demagnetization of test samples.

After a bedding correction has been applied in some cases 8 sites have normal polarity and one (site 1) has reserved polarity. The mean directions with their respective circles of confidence are given in Fig. 1. No systematic difference between directions from Cretaceous and Middle Jurassic rocks was detected. Giving unit weight to each site direction the overall mean direction for all sites is $D = 72.9^\circ$,

$i = 45.9^\circ$ with $A_{95} = 15.7^\circ$. This yields a pole position at 29.1° N 89.6° E with $A_{95} = 15.5^\circ$. This pole position is completely different from the Upper Cretaceous pole position for SE Sicily (derived from volcanic rocks at Capo Passero, SCHULT 1973, BARBERI *et al.* 1974) which is at 62.5° N 224° E with $A_{95} = 4.3^\circ$, and also completely different from the mean Triassic - Jurassic - Lower Cretaceous pole for Africa (65° N, 262° E) (see Fig. 2). On the other hand the Upper Cretaceous pole position for SE Sicily agrees with the Upper Cretaceous pole position for Africa (63.5° N 218° E) indicating that SE Sicily is a part of the African plate whereas western Sicily is not. — The Jurassic — Cretaceous pole position for western Sicily may be compared with the Jurassic — Cretaceous pole of “ stable ” Europe at 62° N 102° E with $A_{95} = 14.5^\circ$ recently compiled by SCHWEITZER [1975]. Both pole positions are relatively near together and this might be regarded as a tentative confirmation that W. Sicily is part of the European plate.

Assuming a clockwise rotation of about 30° since Cretaceous times for western Sicily with respect to “ stable ” Europe yields an agreement of both pole positions (53° N 107° E for W Sicily before rotation). This should be regarded only as a suggestion which should be proved with more data.

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