

Preliminary Polar Wander Path of Central Iran

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In 1973, 1974 and 1975 three palaeomagnetic sampling trips were made in Central Iran including the Lut Block for a determination of the polar wander path of Central Iran. This area is believed to be a fragment of Gondwanaland according to paleogeographic evidence and evidence from reconstruction of the Indian Ocean compiled by Förster (1974, 1975) and also according to various geological aspects summarized by Stöcklin (1974). First palaeomagnetic measurements in Central Iran have been published by Becker, Förster and Soffel (1973) showing that the Infracambrian rocks and iron ores of the Bafq region in Central Iran yield similar virtual geomagnetic pole positions as rocks of comparable age from India.

During the three sampling trips between 1973 and 1975 80 localities have been sampled covering rocks from all formations between Quaternary and Infracambrian. The samples (predominantly magmatic rocks and red sandstones) were taken in areas with well known geology and stratigraphy.

The preliminary results presented here originate exclusively from magmatic rocks fulfilling the following criteria:

a) NRM is well grouped and far away from the present geomagnetic field direction in the sampling area (negligible viscous remanent magnetization due to the present field),

b) very good stability of remanence during alternating field demagnetization,

c) the rocks are fresh, unweathered and unaffected by metamorphism,

d) tectonic corrections are unambiguous.

The results in terms of mean virtual geomagnetic pole (VGP) positions for various formations are shown in Fig. 1 and listed in Table 1 using a scheme of presentation introduced by McElhinny (1973). The polar wander paths of Stable Europe, Russian Platform, Africa, Arabia and India are also shown according to McElhinny (1973). The similarity of the polar wander paths of India

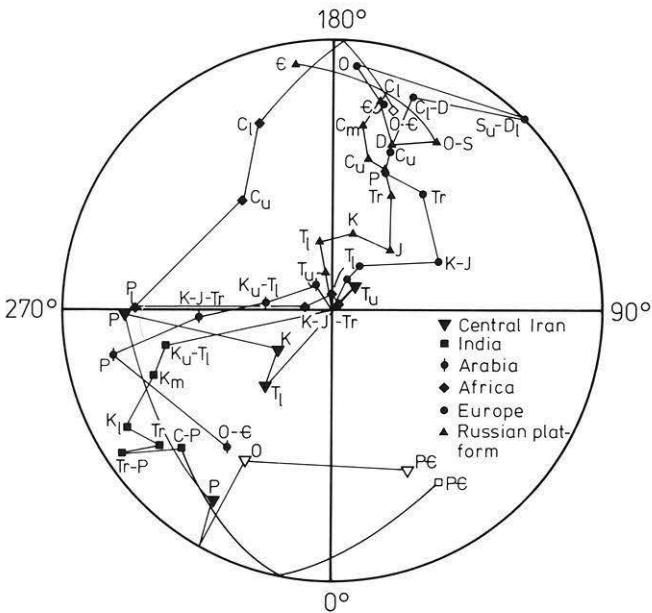


Fig. 1. Polar wander paths of Stable Europe, Russian Platform, Africa, Arabia and India according to McElhinny (1973) together with a preliminary polar wander path of Central Iran (equal area projection)

Table 1. Summary of virtual geomagnetic pole (VGP) positions of Central Iran

Period	N	K	A_{95}	VGP: Lat.	Long.
Upper Tertiary	2	—	—	80.6° N	140.3° E
Lower Tertiary	4	40.4	11.0°	59.5° N	318.9° E
Lower to Upper Cretaceous	3	58.1	10.6°	69.2° N	305.1° E
Permian (possibly Upper Permian)	1	—	—	24.4° N	271.4° E
Permian (possibly Middle and Lower Permian)	2	31.1	17.8°	18.8° N	327.9° E
Ordovician	3	—	—	36.3° S	330.5° E
Infracambrian	11	5.5	22.0°	35.7° S	26.5° E

and Central Iran is obvious. This preliminary palaeomagnetic result therefore supports the idea that Central Iran is a former part of Gondwanaland. The difference for the VGP positions for Lower to Upper Cretaceous and Lower Tertiary between India and Central Iran, both of which are sufficiently well defined, indicates that Central Iran had a much northerly position at that time than India. A former position of Central Iran East of Arabia is compatible with the palaeomagnetic data. The VGP positions for the Mesozoic and Paleozoic of Central Iran are too sparse to allow any detailed reconstructions for these time intervals.

The more complicated palaeomagnetic and rockmagnetic measurements on the remaining samples (red sandstones and other magmatic rocks) in order to improve the Polar Wander Path of Central Iran are presently being made.

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