



The biotic affinity of N Iran during Carboniferous-Early Permian times: was N Iran in the peri-Gondwanan fringe?

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North Iran has always been considered of Gondwanan affinity for several reasons: its pre-Palaeozoic basement is thought to be related to the Pan-African orogenetic cycle, its Cambrian sedimentary rocks are similar to those occurring south of the Zagros suture. Similarly the region lacks Variscan deformation and is located south of the supposed position of the Palaeotethys suture.

Palaeontological evidence has been used in the past to suggest a Gondwanan affinity of Iran because Devonian stromatoporoids, rugose corals and brachiopods were considered to be similar to those of Armenia, Afghanistan and Karakorum. But in fact the Devonian Iranian biota has a cosmopolitan character and shares affinities with northern regions also, such as Western Europe and the Russian platform (Mistiaen et al. 2000). The same holds true for the Upper Devonian trilobite faunas from North and Central Iran which have been considered very similar both to Afghanistan and to Western Europe (Morzadec 2002).

Very recent data on the Permo-Carboniferous biota cast strong doubts on the Gondwanan affinity of North Iran, suggesting a palaeoequatorial affinity. Kalvoda (2002) stressed that Carboniferous foraminifers and corals from the Alborz Mountains have a North Palaeotethyan character. Leven & Gorgij (2006) showed that Upper Carboniferous-Lower Permian fusulinid assemblages of North and Central Iran are similar to East European and to Palaeotethyan (Carnic Alps, Fergana, Darvaz) assemblages. Mississippian crinoids from N Iran contain taxa most comparable to coeval

European and North American faunas (Webster et al. 2003). Studies in progress suggest that Mississippian brachiopods from North Iran have an Eurasian affinity and Mississippian palynomorphs are similar to Euroamerican assemblages.

The study of brachiopods and palynomorphs from the Lower Permian Dorud Formation of the Alborz Mountains (North Iran) shows that they have a south boreal or palaeoequatorial affinity (Urals, Russian Platform, Yukon Territory, Carnic Alps, Euriamerica). Furthermore, they are dramatically different from coeval – and well known – biota of Gondwana and its peripheral regions stretching from Western Australia, India, Karakorum, Central Afghanistan, Arabia, South and East Africa.

The palaeoequatorial affinity of North Iran biota can be explained if the block was located at low southern latitudes where it benefited of a warm equatorial surface currents gyre, which was confined to latitudes lower than 30° S due to the atmospheric perturbation caused by the Gondwanan glaciation. At the same time, the Gondwanan margin and its fringe at higher latitudes were affected by cold surface currents widely distributing cold biota toward the tropics. This is consistent also with palaeomagnetic data from the Middle Permian succession (Muttoni et al., this congress).

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