



Micropaleontological constraints of the timing of the Northern Rifian marine gateway

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The extraordinary event of the Messinian Salinity Crisis (MSC, 5.97 – 5.33 Ma) in which about 6% of the World's Salt got deposited in the Mediterranean was mainly caused by the changes in Atlantic-Mediterranean connections at that time. One connection is suggested to be the Rifian Gateway that used to flow through the north of Morocco. This was split up into a southern branch and a northern one. Although some papers have been published about the closure of the south Riffian corridor little is known about the northern part, but it is suggested to have stayed open well into the Messinian.

The age of the northern strand of the Rifian Corridor was relying on biostratigraphic analysis of the marine sediments carried out during the 80s (Wernli, 1988). These sediments were all assigned to an undifferentiated Tortonian-Messinian marine zone (M5-6), which spans 11.6 – 5.3 Ma, but does not allow more accurate age subdivisions.

In this biostratigraphical study we want to refine the previously inferred age to more accurate time interval. We applied a modern planktonic foraminiferal taxonomic concept to better date the marine successions in the intramontane basins of Arbaa de Taourirt, Boured, Dhar Souk and Taounate, located in the corridor. Approximately 130 samples from these sections were subjected to a semi-quantitative and qualitative analysis of the planktonic foraminiferal assemblage. Based on this assemblage, changes in coiling direction of keeled and unkeeled globorotaliids, presence or absence of marker species, higher resolution ages are assigned to these sediments. Our results suggest that the northern Rifian Corridor was already closed during the Messinian stage. This recommends new limits on the possible gateway(s) during the MSC, although it cannot be excluded that the youngest part of the marine succession has been removed by erosion.