



Microevolution in planktonic foraminifera: a morphometric study in the *Globorotalia menardii* plexus

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The morphological variability of the tropical to subtropical planktonic foraminifer *Globorotalia menardii* during the past 8 Million years was studied at Caribbean DSDP Site 502A and at eastern Equatorial Pacific DSDP Site 503A. The goal was to investigate, whether oceanwide isolation of populations due to the formation of the Isthmus of Panama had a measurable influence on the shells of these planktonic organisms. Computer aided morphometry has shown a considerable size evolution of menardiiform globorotalias, especially during and after the final phase of isthmus formation. During the Pliocene menardiiform globorotalias like *G. limbata* and *G. multicamerata* evolved by cladogenesis and morphological divergence from the main stock of *Globorotalia menardii*. These extinct descendents occurred slightly earlier in the Eastern Equatorial Pacific than in the Caribbean Sea showing diachroneity of their first appearances. During the Pleistocene *G. menardii* developed two slightly different morphological trends: Firstly, a Caribbean form with more inflated and delicate shells in keel view, which is considered to represent *G. menardii cultrata*. Secondly, a form which occurs at both sides of the Central American landbridge with less strongly inflated shells when seen in keel view, and the shells being more robust shells due to stronger calcite secretion. This second form is considered to represent *G. menardii menardii*. Because of the late splitting event leading to these two forms it is suggested to distinguish *G. menardii menardii* and *G. menardii cultrata* only to specimens not older than about 0.4 Ma. It is concluded that fine-scale morphological changes observed in planktonic foraminifera more strongly reflect a response to varying paleoceanography and paleoenvironment than previously thought.