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**Intraspecific variation in Recent populations of  
*Globigerinoides ruber* from the eastern Indian Ocean:  
Evidence from test morphology and geochemistry**

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*Globigerinoides ruber* is the most frequently studied planktonic foraminifera, it being a key species used for paleoceanographic reconstruction based on calcite Mg/Ca and  $\delta^{18}\text{O}$  geochemistry. However, modern populations of *G. ruber* display considerable morphological variation which some earlier studies have divided into several distinct morphotypes (Parker, 1962. *Micropaleontology*, 8, 219-254; Hecht, 1974. *Journal Palaeontology*, 48, 1217-1234). Recent molecular-genetic have further suggested that these morphotypes of *G. ruber* might reflect its phenotypic variation and to also be associated with difference in text composition (Darling *et al.*, 1999. *Paleoceanography*, 14: 3-21; Wang, 2000. *Palaeogeogr. Palaeoclimatol. Palaeoecol.*, 161, 381-394; Steinke *et al.*, 2005. *Geocham. Geophys. Geosyst.*, 6, Q11005).

We have analysed *G. ruber* populations from multiple deep sea core-tops collected in the Eastern Indian Ocean. Detailed test morphometry coupled with individual test geochemistry determined by laser ablation ICPMS were used to assess morphotype subdivisions. We found particular morphometric parameters (i.e. primary aperture aspect-ratio, depth of test sutures) to have specific latitudinal distributions and thus possibly reflect biogeographical specification of *G. ruber* phenotypes. Other parameters (i.e. relative height of test trochospire, shape of the last chamber) on the other hand display gradational changes across the *G. ruber* population. Estimated calcification temperatures, derived from measured test Mg/Ca compositions, of low and high aspect ratio trochospire tests of *G. ruber* shows significant correlation with seasonal variation in water mass structure. This relationship suggests that some variation in *G. ruber* morphology occurs in response to environmental changes.