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VARIABILITY IN DISTRIBUTION OF PLANKTIC FORAMINIFERA AND DIATOMS IN THE SEDIMENTS FROM THE INDIAN SECTOR OF SOUTHERN OCEAN AND ITS RELATION TO THE MODERN AND PAST ENVIRONMENTAL CHANGES

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Several sediment cores were collected between 28° and 56° South latitudes in the austral summer of 2004 during the first multidisciplinary scientific expedition to the Southern Ocean by India. Representative core-top samples were studied in detail to ascertain the modern variation in distribution of planktic foraminifera and diatoms. The relationship of these microfossils with the changing nutrient availability, and other physicochemical parameters prevalent in the frontal regimes in Southern Ocean reveals a close association in the study region. Planktic foraminifera being excellent hydrographers are ideal recorders for the upper ocean changes and shows clear variations in distribution with respect to the water properties. A total of 18 planktic foraminiferal species have been encountered of which *Gg. bulloides*, *Gg rubescens*, *Gs.ruber*, *Gr(G) inflata*, *Gr(T) trancatulinoides*, *N. pachyderma* (sinistral and dextral forms), *Ga. glutinata* and *Ge. calida* dominate the population. The assemblages becomes near monospecific towards the Polar Front with dominating sinistral form of *N. pachyderma*. On the other hand, 24 diatom species were identified dominated by six species namely *Fragilariopsis kerguelensis, Thalassionema nitzschioides, Thalassiothrix spp., Thalassiosira lentiginosa, Eucampia antarctica,* and *Dactyliosolen antarcticus.* Although both *F. kerguelensis* and *T. nitzchioides* show similar distributional pattern, *F. kerguelensis* is more abundant and shows increasing trend with decreasing sea surface temperature. The spatial distribution of most of the diatoms in surface sediments of Southern Ocean is observed to be well correlated with the nitrate to phosphate ratio. Further, remarkable changes in the abundance and distribution of certain diatom species during the past glacial-interglacial cycle underline their utility to trace subtle changes in Southern Ocean biogeochemistry.