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Radiolarian distribution and the late pleistocene history of the Southeastern Indian Ocean

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Abstract

A factor analysis, of radiolarian assemblages in 36 trigger-core tops from the Southeast Indian Ocean (between latitudes 40° to 65° S and longitudes 80° to 120° E) gives three temperature-related factors and one related primarily to near-bottom processes. A paleoecologic equation was written relating the surface factor values to the present-day observed sea-surface temperatures for summer and winter. By means of a regression technique, paleotemperatures were estimated at the level of the last glacial maximum (18, 000 years B.P.) in five *Eltanin* cores and for the last 600, 000 years in core E45-74. The average temperature difference along a longitudinal transect of cores crossing the Antarctic Convergence was 2.2° colder 18, 000 years ago than today. The estimated sea-surface paleotemperatures in E45-74 showed high correlations with radiolarian species diversity indices, the Subantarctic and Antarctic factor values, percent of CaCO₃,

$\delta^{13}\text{O}$, number of radiolarian fragments and percent *Antarctissa strelkovi*. Based on paleotemperatures and factor values down this core, it is estimated that the Antarctic Convergence was displaced northward to the position of E45-74 six times in the last 600,000 years.



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