

## CHARACTERISTICS OF OCEANIC STRUCTURE ALONG 75°E IN THE SOUTHERN OCEAN (EXTENDED ABSTRACT)

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It has been said that future studies of the Southern Ocean will integrate the relation between the physical environment based on the circumpolar structure, and the distribution of biological communities (DEACON, 1982). The circumpolar distribution of *Euphausia superba* can be said to depend on the circumpolar oceanic structure which constitutes the physical environment (NAGANOBU and HIRANO, 1982).

However, the north-south gradient of the environmental elements is different at each meridian, and the oceanic structure is also different in the Atlantic Ocean sector, in the Indian Ocean sector, and in the Pacific Ocean sector.

Research in the Indian Ocean sector was planned to reveal the distribution pattern of biological communities centered on *Euphausia superba* along the 75°E from the Ant-

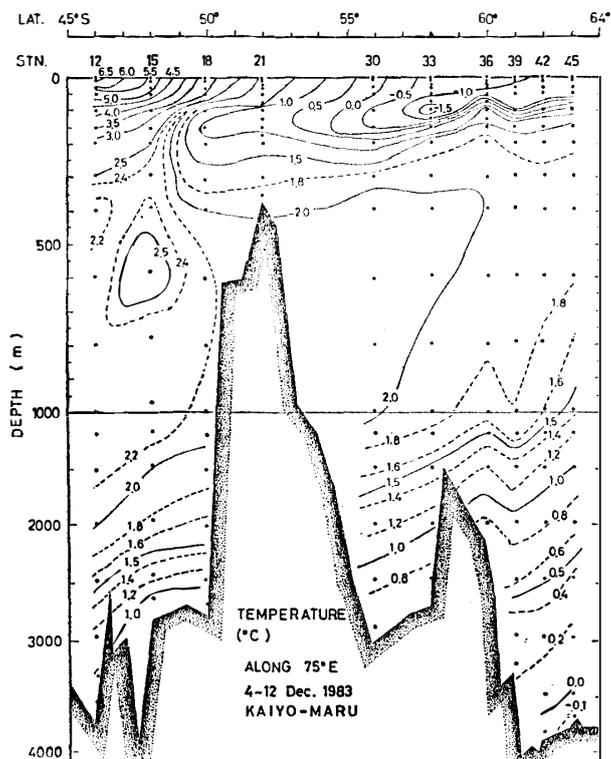


Fig. 1a. Vertical distribution of water temperature between 45 and 64°S, along 75°E.

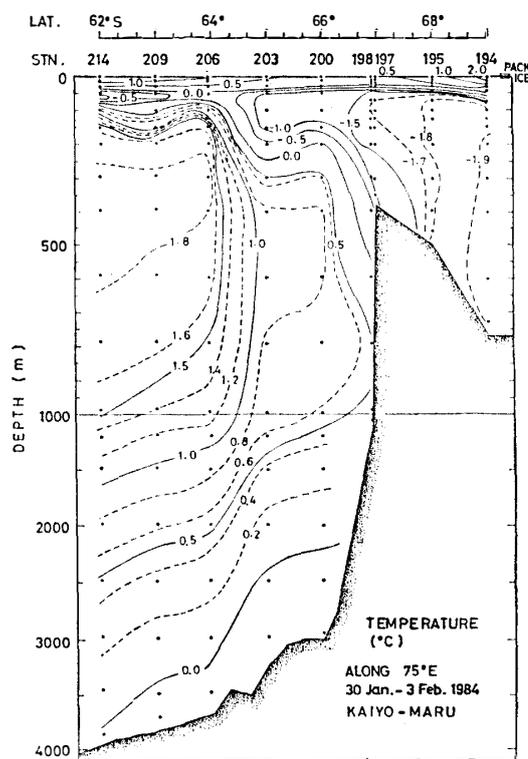


Fig. 1b. Vertical distribution of water temperature between 62 and 69°S, along 75°E.

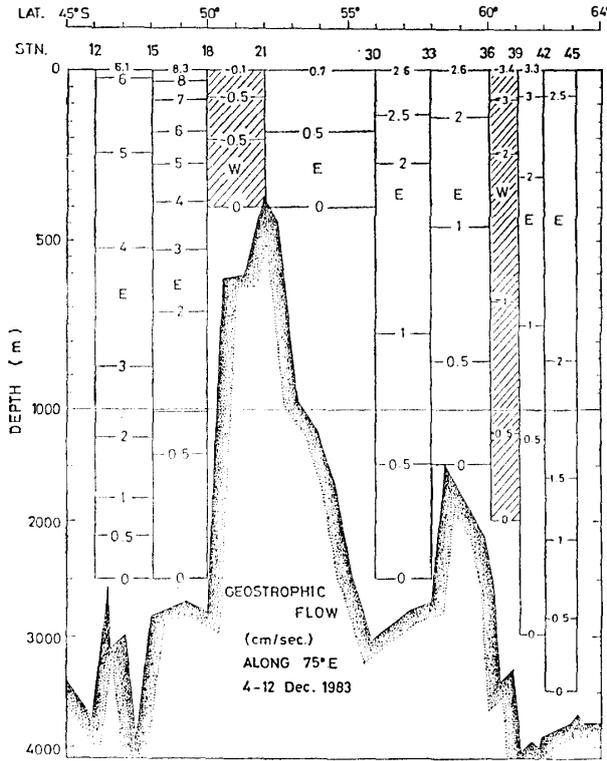


Fig. 2a. Geostrophic flow between 45 and 64° S, along 75° E.

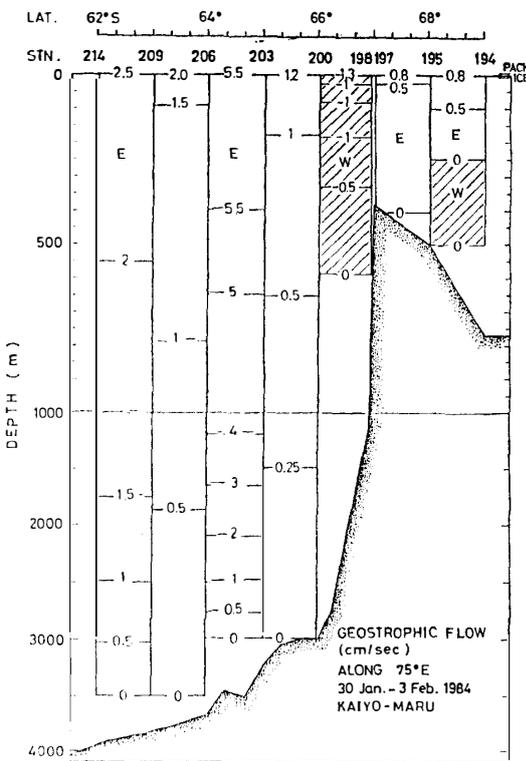


Fig. 2b. Geostrophic flow between 62 and 69° S, along 75° E.

arctic Convergence to the Antarctic Divergence, and the Antarctic continental shelf, by observing the oceanic structure almost to the sea bottom.

In the survey conducted between December 1983 and February 1984 during the SIBEX voyage of the KAIYO MARU (Japan Fisheries Agency), Nansen castings and sampling of biological organisms were carried out between 46°S and the ice edge. This report deals with the oceanic structure.

Figure 1a shows the vertical distribution of water temperature between 45 and 64°S in December 1983. The sinking of Antarctic surface water with the minimum of  $-1.53^{\circ}\text{C}$  (at 100 m, Stn. 33) towards Stn. 18 is to be seen, and the Antarctic Convergence is located between Stn. 15 to 21.

Figure 1b shows the vertical distribution of water temperature observed in January–February 1983 when the pack ice retreated to 69°S on the continental shelf. A developed thermocline was observed at a depth about 50 m, and from 62–69°S the layer of cold subsurface water ( $-0.25 \sim -1.97^{\circ}\text{C}$ ) deepened from 50 to 600 m. The Antarctic Divergence was observed at about 64°S.

Figures 2a and 2b show the East-West component of the geostrophic flow during the respective two periods and the prevailing eastward flow with a maximum of 8.3 cm/s. A weak westward flow was observed near Hard Island at about 52°S, and on the shallow continental shelf.

A future study plan is to compare the oceanic structure (including the correlation with the distribution of biological communities) with other meridians.

## References

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