

**SELENIUM DISTRIBUTION IN THE AUSTRALIAN SECTOR OF THE SOUTHERN OCEAN**

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Selenium is an essential micronutrient but its role in oceanic biology is relatively unknown. Whilst this essentiality has been shown in laboratory work for some marine phytoplankton species, the concentration, chemical species and incorporation methods are unknown.

There have been few comprehensive oceanic Se studies and this work is the first study to sample waters throughout the water column on a transect from subtropical waters to the Antarctic. Samples were analysed on-board for Se<sup>4</sup> and for Se<sup>6</sup> and total Se on return to the shore-based laboratory.

Total concentrations of Se are commonly below 100 ng l<sup>-1</sup> (1.25 nM) in the open ocean. The inorganic Se species (Se<sup>4</sup> and Se<sup>6</sup>) are persistent throughout the water column. The organic Se species are typically found only in the upper layers of the ocean. The organic species are often the result of biological activity.

The profiles for the inorganic Se present a nutrient-like profile, showing low levels in the surface waters and increase with depth due to regeneration. Variations in the inorganic concentrations were seen due to different water masses. The organic Se species were seen in the surface layers but did not persist at depth.

This study is the first major study of Se concentrations and distributions in the Southern Ocean. As this study was part of a larger oceanographic study there is extensive data to provide a greater understanding of the role of Se in the ocean and the role it may play in biological activity.