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The Spatial Distribution of Biological Scatterers by ADCP Backscattered Signal near the South Shetland Islands and Elephant Island in 1992 Austral Summer

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ABSTRACT. Current observations, using a 153.6-kHz Acoustic Doppler Current Profiler (ADCP), were performed around the South Shetland Islands and Elephant Island over a duration of 15 days in austral summer 1997 (26 Jan.-9 Feb.) in order to understand the current structure near the Antarctic Peninsula. The ADCP recorded both the current component, based on Doppler effect by scatterer, and also the backscattered echo intensity at 4 beams due to biological scatterers comprised mainly of zooplankton. Combining these data with the simultaneous ADCP current profilers can lead to an interpretation of the spatial and temporal distribution patterns of zooplankton. The main purpose of this study was to calculate absolute volume backscattering strength (*Sv*) by applying sonar parameters that received echo intensity, transmission loss, absorption coefficient, sound speed, and temperature conversion factors, *et al.* Under the assumption that the scatterers were predominately krill, the *Sv* was calculated at 4 layers (15-50 m, 50-100 m, 100-150 m and 150-200 m) over the upper 200 m at each station so as to estimate the spatial distribution of the zooplankton. The diurnal migration pattern of zooplankton was shown using a vertical profile on the observation date.

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