

IRON IN WATERS OF THE WESTERN BELLINGSHAUSEN SEA DURING SIMBA

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During the SIMBA (Sea Ice Mass Balance in the Antarctic) ice drift station on board R/V *Nathaniel B. Palmer* (cruise NBP0709) from Sept. 1 – Nov. 1, 2007, five vertical dissolved iron (DFe) profiles from surface to bottom were obtained in the western Bellingshausen Sea along the continental slope (water depths 1680-3050m) and in the close vicinity of Peter I Island (water depth 1000m). Measurements were done by a novel isotope dilution multi-collector ICP-MS technique. We observed smooth nutrient type DFe profiles, which increased from 0.6-0.7 nM to 1.1-1.2 nM in deep water in function of distance to the continental shelf and water depth. Near-bottom enrichment up to 1.6 nM may originate from diagenetic iron diffusion and/or sediment resuspension. Iron in the upper 250m was patchier (0.2-1.1 nM), especially at one station in the wake of an iceberg that approached the ship to 500m. Near Peter I Island there was 10 nM DFe in the upper 200m and 2-3 nM until the seafloor. We surmise that not only the numerous icebergs and melting sea ice are significant pelagic iron sources in this region to support primary productivity, but also continental and island shelves.