

Phytoplankton chemotaxonomy in the Atlantic sector of the Southern Ocean during late summer 2009

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Abstract

A chemotaxonomic investigation of surface phytoplankton was undertaken on a research cruise to the Atlantic sector of the Southern Ocean during late austral summer 2009. Based on pigment signatures, several distinct regions emerged that were delineated by physical features. CHEMTAX analysis of high performance liquid chromatography (HPLC) pigment data indicated that diatoms generally dominated communities south of the Antarctic Polar Front (APF), particularly in regions of elevated biomass where chlorophyll-a (chl-a) was 41.5 mg l⁻¹ and diatoms comprised 480% of biomass. Pigment signatures representative of haptophytes-8, indicative of *Phaeocystis antarctica*, were dominant near the ice shelf. Chl-a concentrations were 0.2–0.6 mg l⁻¹ between the APF and the Subtropical Front (STF) and outputs suggested that chlorophytes, haptophytes-8 and haptophyte-6, in the form of coccolithophores, were the major constituents. Very low chl-a levels (<0.2 mg l⁻¹) were observed north of the STF and the prokaryotes *Synechococcus* spp. and *Prochlorococcus* spp. were the dominant groups in these oligotrophic waters.