

Particulate inorganic carbon in the Pacific sector of the Southern Ocean: Satellite measurements versus coccolithophore estimates

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We have compared particulate inorganic carbon (PIC) derived from satellite data to *in situ* coccolithophore-based estimates in two latitudinal transects of the Pacific sector of the Southern Ocean (separated in time and space) in non-bloom conditions. *In situ* and satellite-derived PIC show good agreement in the Subantarctic and Polar Front zones in both transects, but they differ to the south of the Polar Front. We attribute this mismatch to the high abundance of small opal particles in the Antarctic zone. *Gephyrocapsa huxleyi* (also known as *Emiliana huxleyi*) is the dominant species in the study area and almost the only species found in the southern part of both transects south of the Subantarctic Front. Using morphometric analyses, we found that different morphotypes of this species, i.e., type A (morphogroup A) and types B, B/C-C, and O (morphogroup B), show only minor latitudinal differences in size, mass, and degree of calcification. It is mainly the dominant morphogroup B that contributes to the coccolithophore PIC content in surface waters. Satellite products are an invaluable tool to estimate global PIC, but these should be combined with field samples whenever possible to validate remote sensing-derived PIC.