



Spatio-temporal distribution of dissolved inorganic carbon in the Scotian Shelf Region of the Northwestern Atlantic

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Relative to their surface areas, the coastal oceans are the sites of a disproportionately large fraction of ocean productivity. The Scotian Shelf is a biologically productive coastal region, strongly influenced by the outflow of the Gulf of St. Lawrence and acting as an annual source for atmospheric CO₂. As part of the Atlantic Zone Monitoring Program (AZMP), dissolved inorganic carbon (DIC), total alkalinity, and surface pCO₂ measurements were made throughout the Scotian Shelf region in 2007. A shelf-wide assessment of the spatio-temporal variability of the inorganic carbon system was made relying on observations made in April and September in the region. Between these periods, biological production results in a significant drawdown of inorganic nutrients and DIC in the surface mixed-layer, while hydrographic controls also influence seasonal changes in surface DIC. Net community production over the spring and summer seasons was estimated on the basis of DIC and nutrient data collected in the Scotian Shelf region.