G2-P16

CARBON AND NITROGEN PRODUCTIONS OF PHYTOPLANKTON IN THE CANADA BASIN IN 2009

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The Joint Ocean Ice Study (JOIS) program provided the opportunity to measure the carbon and nitrogen productions of phytoplankton in the Canada Basin from mid September to mid October in 2009. The productivity measurements were conducted at six different light depths of 11 stations, using a ^{13}C-^{15}N dual isotope tracer. Carbon production integrated over the euphotic zone from six light depths ranged from 0.147 to 1.259 mg C m^{-2} h^{-1}, with a mean of 0.599 mg C m^{-2} h^{-1}. This range is much lower than that reported in previous studies. Low in situ light levels, depleted nitrate concentration, and low biomass of phytoplankton during the cruise period might lead to the lower carbon production in the Canada Basin in 2009. Total nitrogen production ranged from 0.231 to 0.726 mg N m^{-2} h^{-1}, with a mean of 0.486 mg N m^{-2} h^{-1}. Ammonium uptake rates were higher than nitrate uptake rates at all depths. The overall low *f*-ratio indicates that total production of phytoplankton is considerably fueled by regenerated nutrients such as ammonium in the Canada Basin in 2009.