

**EFFECTS OF THE COLLAPSE OF THE LARSEN ICE SHELF (ANTARTCTICA) ON PHYTOPLANKTON GROWTH**

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During austral summer 1995 part of the Larsen Ice Shelf (Larsen A) in the northwestern Weddell Sea collapsed. As a consequence, a new ice-free area of the ocean was exposed to the exchanges of gases with the atmosphere. Under adequate light and mixing conditions this newly coastal area could represent an area of intense biological production. Here we present data obtained from a series of oceanographic stations carried out during December 1996 on board the Argentinean Icebreaker "A.R.A. Almirante Irizar" in the vicinities of the area, for which no historical data are available. Conductivity-Temperature-Depth profiles, chlorophyll a, species composition, nutrients, pH and alkalinity were measured at 14 stations. Primary production was calculated on the basis of nutrient consumption. Partial pressure of CO<sub>2</sub> (pCO<sub>2</sub>) in seawater was further calculated and related to the above parameters. The water masses found in the upper 100 m are typical from the Weddell Sea continental shelf, with temperatures near and below the freezing point. A high nutrient (PO<sub>4</sub><sup>3-</sup>: 1.80 and NO<sub>3</sub><sup>-</sup>: 27.64 μmol) water mass was found at 160-200 m depth. High Chl a concentrations (13.33 mg m<sup>-3</sup>) were measured. The dominant phytoplankton species were *Nitzschia* sp., *Navicula* sp. and *Phaeocystis antarctica*. Nutrients distributions showed a good correlation with Chl a (R<sup>2</sup> = 0.5611). The average N:P ratio was 11.4 which is similar to the Redfield ratio (16) and suggested an intense biological activity. Mean production for the whole area was 10.15 ± 5.30 g C m<sup>-3</sup> day<sup>-1</sup> varying between 13.83 ± 5.06 and 4.44 ± 2.52 g C m<sup>-3</sup> day<sup>-1</sup> for station and showed a good correlation with diatoms abundance (R<sup>2</sup> = 0.587) and pCO<sub>2</sub> distribution (R<sup>2</sup> = 0.6255). However, the total production (TC) per day and integrated across the water column and varied from 411.66 to 120.83 g C m<sup>-2</sup> day<sup>-1</sup>, pCO<sub>2</sub> values in the upper mixed layer were between 305.3 μatm and 334.7 μatm and the average was 322.14 ± 15.22 μatm, while the atmospheric value was 358.25 μatm. It is suggested that new production is high after a collapse event, when phytoplankton growth is enhanced by a transient reduction of vertical mixing. As long as stability and light conditions are favourable, high production in these areas might partially compensate the negative effect of increasing atmospheric CO<sub>2</sub> through seawater pCO<sub>2</sub> consumption.