DIATOM SUCCESSION IN BOTTOM AND PLATELET ICE IN A COASTAL AREA OF TERRA NOVA BAY, ROSS SEA, ANTARCTICA.

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Pack ice is one of the largest ecosystems on the earth and is considered to be an extreme and highly variable environment. It is typically inhabited by diatoms that grow both within and underneath the sea ice thickness.

During austral spring 1999, we investigated the variations of total phytoplankton biomass and the diatom succession by sampling the bottom and platelet ice every 3 days for three weeks at a station in Terra Nova Bay, Ross Sea (Antarctica).

At the beginning of the sampling, in the bottom-ice chlorophyll *a* (Chl*a*) was 1.30 µg/l, while diatom abundance was 2.20 x 10^6 cells l^{-1}. In the platelet ice, biomass was 90.00 µg l^{-1} Chl*a* while cell abundance was 1.20 x 10^7 cells l^{-1}. Planktonic species (*Fragilariopsis* spp.) dominated in both ice types, while benthic species (e.g. *Berkeleya adeliensis*, *Amphiprora kufferathii*, *Navicula* spp, *Nitzschia* spp.) represented ca. 40 and 35 % of the assemblages in the bottom and platelet-ice layers, respectively.

Over the days biomass values increased up to 432 µg l^{-1} Chl*a* and the benthic species *Amphiprora kufferathii* and *Nitzschia* spp. became dominant (< up to 72% , 2.6 x 10^7 cells l^{-1}) in the bottom-ice. In the platelet ice, Chl*a* increased up 382 µg l^{-1} and *Fragilariopsis* spp. represented the bulk of the diatom biomass (79%), with *F. cylindrus* as the most abundant species (6.6 x 10^7 cells l^{-1}). The benthic species also increased (< 2.1 x 10^7 cells l^{-1}), but their relative contribution decrease down to 21 %.

In conclusion, diatom assemblages showed a different temporal pattern in the bottom and platelet ice, probably in relation with changes in the structure of the two ice types. While the planktonic species could have been trapped in the ice in the previous season and eventually seed microalgal blooms in the water column during the ice melting, the origin and the role of the benthic ice-diatoms still needs to be clarified.