Subproject: Photosynthetic and photoprotective characteristics of ice algae, sinking algae and under-ice phytoplankton during spring

Actual field dates: 26 April – 5 June
Field site: Qikiqtarjuaq, eastern Baffin Island, Nunavut, Canada (67°28.7'N, 63°47.5'W)
Number of man-days in the field: 41

Summary:
Every two days, bottom ice algae, phytoplankton and sinking algae were collected at the ice camp (67°28.7'N, 63°47.5'W). In total, 13 experiments were realized with ice algae to determine their photoprotective abilities: 8 experiments with algae collected at a thin snow cover (< 15 cm) and 6 with algae at a thick snow cover (> 20cm). During these experiments, samples for chlorophyll a, particulate absorbance, HPLC, nutrients, POC, pico and nanophytoplankton abundance were collected. In addition, measurements of photosynthetic parameters with a Pulse-Amplitude Modulation (PAM) were realized on the bottom ice algae collected at both snow covers, at three depths in the water column (underneath the ice, 2m and 5m) and in two fresh sediment traps (2 and 25m). The spring melt period was delayed due to the repeated snow falls and we were not able to implement the light experiments during the major release of ice algae in the water column as expected. However, we obtained the photosynthetic parameters of ice algae, phytoplankton and sinking algae until mid-June. These high sampling will improve our knowledge of the photosynthetic properties and photoprotective abilities of ice algae, sinking algae and under-ice phytoplankton during the spring in the Arctic.

Figure 1

Figure 2

Figure 3

Photos:
Fig.1: Ice Camp near Qikiqtarjuak, Nunavut, Canada . Credit: Virginie Galindo
Fig. 2: Sampling of an ice core with ice algae. Credit: Virginie Galindo
Fig. 3: Set-up of light experiments for ice algae. Credit: Virginie Galindo

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