

Variability of sea-surface conditions along the west Greenland margin over the Holocene

Estelle Allan (1), Anne de Vernal (1), Marit-Solveig Seidenkrantz (2), and Marie-Michèle Ouellet-Bernier (1)

(1) Centre de recherche sur la dynamique du système Terre (Geotop) Université du Québec à Montréal, Montréal, Québec, Canada, (2) Centre for Past Climate Studies, Arctic Research Centre, and iClimate, Department of Geoscience, Aarhus University, Aarhus, Denmark

Marine sedimentary cores were collected off western Greenland margins to reconstruct changes in sea-surface conditions during the Holocene and to document the climate-ocean-ice dynamics. In the south, close to Nuuk in eastern Labrador Sea, core SA13-ST3-20G provided records with a centennial resolution over the last 12,000 years. North of Davis Strait, in the eastern Baffin Bay, core MSM343300 from Disko Bugt permitted to document changes through the last 10,000 years in complement to other Baffin Bay records (cf. Gibb et al. *the Holocene* 2015). The dinocyst assemblages provided information on past sea-surface conditions, including temperature (SST), salinity and sea ice based on modern analogue technique. Both cores recorded significant changes throughout the Holocene. At regional scale, during the early Holocene, a change from harsh conditions with dense sea-ice cover to interglacial conditions occurred in two steps: at ca. 10 ka BP significant decrease of heterotrophic taxa (*Islandinium minutum* and *Brigantedinium* spp.) and the occurrence of phototrophic taxa (*Pentapharsodinium dalei*, *Spiniferites* spp. *Operculodinium centrocarpum*), corresponds to an increase of summer SST and a decrease of the sea ice cover; after 7.5 ka BP, the establishment of full interglacial conditions both south and north of Davis Strait is marked by maximum percentages of phototrophic taxa and the occurrence of *Nematosphaeropsis labyrinthus* in dinocyst assemblages, which corresponds to onset of minimum sea ice, optimum SST and salinity. Optimal conditions persisted until about 2.5 ka BP south of Davis Strait and 1.5 ka BP in the Disko Bugt. The change towards more unstable conditions during the Late Holocene is notably marked by decrease in the percentages of *Pentapharsodinium dalei* and increase of *Islandinium cezare*. It corresponds to spreading of sea ice and successive cooling pulses. The changes towards harsher and more unstable conditions seem to coincide with the disappearance of the Saqqaq culture at about 3 ka BP and to the gap of human occupation in western Greenland, which was recorded from about 2 to 1 ka BP between the Dorset and the Norse settlements.