



Supplement of

Laminated sediments in the Bering Sea reveal atmospheric teleconnections to Greenland climate on millennial to decadal timescales during the last deglaciation

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Supplement Fig. S1: XRF derived Ca/Ti counts of laminated INOPEX cores in the Bering Sea (see Table 1 for details) and core-core correlation. Laminated intervals of the early Holocene and the Bølling-Allerød are marked with gray bars. Ash layers are shown with brown bars. In cores SO202-12-3 and SO202-21-1 only the first part of the Bølling-Allerød seems to be laminated and the end of the Bølling-Allerød is indicated by a dashed line. The cores are

shown with increasing station number. The deepest core with laminations is SO202-12 with 2109 m water depth, while the shallowest core is SO202-17-1 with 1066 m water depth.

Supplement Table S1: Depth intervals of ¹⁴C age samples of core SO202-18-6 and the corresponding core depths of SO202-18-3. The depths were derived by the inter-core correlation, based on the appearances of the laminations and ash layers in both cores.

| Core depths of ¹⁴ C ages SO202-18-6 [cm] | Corresponding core depths SO202-18-3 [cm] | |
|---|---|--|
| 150-152.5 | 96 | |
| 170-172.5 | 111 | |
| 180-182.5 | 112 | |
| 240-242.5 | 152 | |
| 305-307.5 | 198 | |
| 364-366.5 | 230 | |
| 415-417.5 | 266 | |
| 432-434.5 | 273 | |
| 512-514.5 | 328 | |
| 592-594.5 | 393 | |
| 622-624.5 | 417 | |
| 650-652.5 | 444 | |
| 680-682.5 | 468 | |



Supplement Fig. S2: Smear slides of single laminae from core SO202-18-3. (a): Holocene biogenic lamina from 234.3 cm core depth. Marked (1) to (2) are sea ice related diatom species *Fragilariopsis cylindrus* and *F. oceanica* and (3) cold-water related species *Bacterosira bathyomphala*. Diatom counts revealed ca. 76% of sea ice related species. (b): Biogenic lamina from the Bølling at 686.8 cm core depth. In this slide ca. 63% of the counted diatom assemblage represent sea ice related species. (c): Terrigeneous lamina from the Bølling (623.9 cm core depth). This slide reveals only moderate preservation of diatoms, while the preservation in the biogenic laminae is good and ca. 35% of the counted diatom assemblage are sea ice related species. The scale in all images represents 20 μ m. Detailed results of diatom counts are given in supplement Table 2.

| Diatom species | SO202-18-3, | SO202-18-3, | SO202-18-3, |
|--------------------------------|-------------|-------------|-------------|
| | 234.3 cm | 686.8 cm | 623.9 cm |
| Actinoptychus senarius | | | 1 |
| Asteromphalus brookei | 1 | | |
| Bacterosira bathyomphala | 6 | 18 | 4 |
| Chaetoceros spp. (spores) | 46 | 36 | 47 |
| Chaetoceros spp. (vegetative) | | | 35 |
| Coscinodiscus marginatus | | 1 | 4 |
| Coscinodiscus radiatus | 2 | | |
| Coscinodiscus oculus-iridis | | | 1 |
| Delphineis surirella | | | 18 |
| Fragilariopsis cylindrus | 300 | 200 | 32 |
| Fragilariopsis oceanica | 22 | 55 | 68 |
| Fragilariopsis oceanica (long) | 13 | 11 | 2 |
| Navicula spp. | 1 | | |
| Neodenticula seminae | | 1 | 19 |
| Nitzschia spp. | 1 | | 3 |
| Odontella aurita | 1 | 2 | 1 |
| Paralia sulcata | | | 2 |
| Porosira glacialis | 17 | 67 | 8 |
| Thalassionema nitzschioides | 2 | | 8 |
| Thalassiosira antarcitca var. | 17 | 15 | 6 |
| borealis | | | |
| Thalassiosira antarcitca var. | | | 1 |
| borealis r.sp. | | | |
| Thalassiosira nordenskioeldii | | 2 | |
| Thalassiosira trifulta | | 2 | 4 |
| Thalassiosira spp. | 14 | 10 | 25 |

Supplement Table S2: Exemplary diatom counts of the smear slides (Fig. S2). Blue background and bold species names are sea-ice-related taxa (note high abundance).



Supplement Fig. S3: Biogenic opal mass accumulation rate (MAR, in red) and carbonate MAR in black of core SO202-18-3. The shaded sections mark the laminated units (TI-BLU1-5) that were derived by our correlation to the NGRIP record (see text for details). The dashed line indicates the disappearance of laminations in the Holocene. Higher biosiliceous productivity during the laminated units TI-BLU1-5 (marked by numbers 1-5) is indicated by higher biogenic opal MAR. Carbonate MAR shows the same trend as the biogenic opal MAR.