

Vertical diatom flux observed in sediment traps in the Arctic Ocean with special emphasis on *Melosira arctica*

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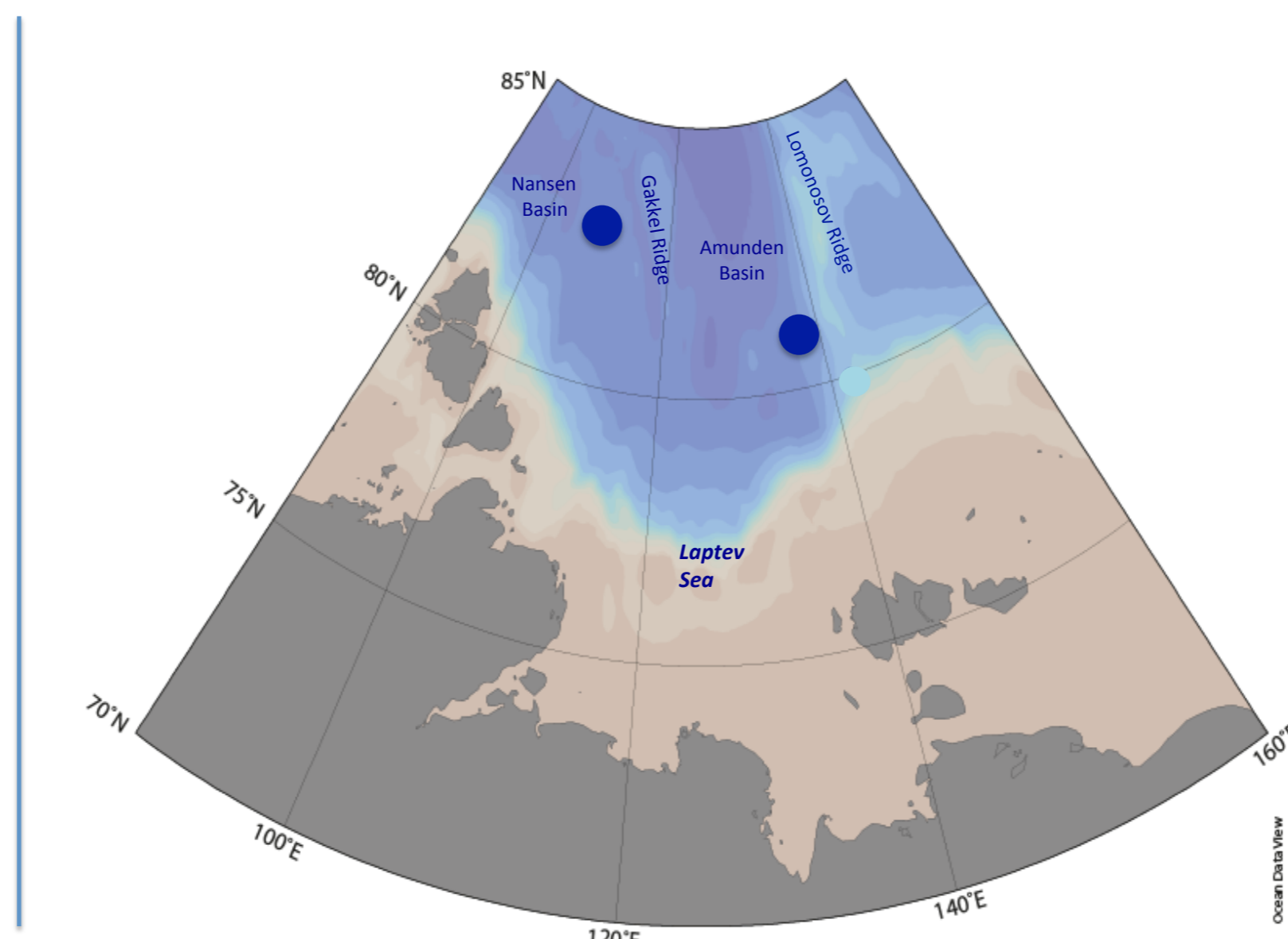
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Sampling



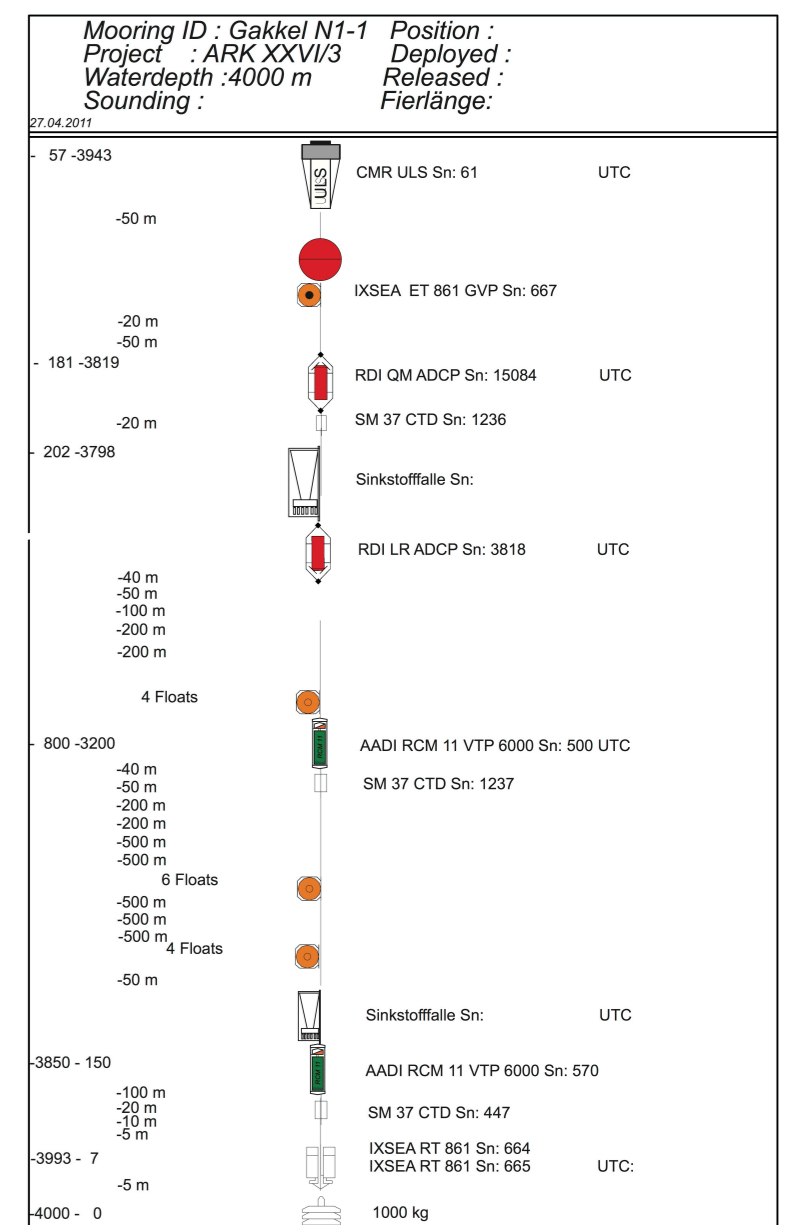
Traps

- > sampling area: 0.5 m²
- > sampling time: ~12 month (Sept-Aug)
- > sampling jars: 20, filled with sterile sea water + NaCl (psu 40) to avoid exchange of seawater
- > sample fixative: HgCl₂ 0.14%



Moorings

- > 2 moored sediment trap arrays were deployed
- > northern Laptev Sea at 150m and 1550m during 1995 -1996
- > Nansen Basin at 200m and 3800m during 2011-2012

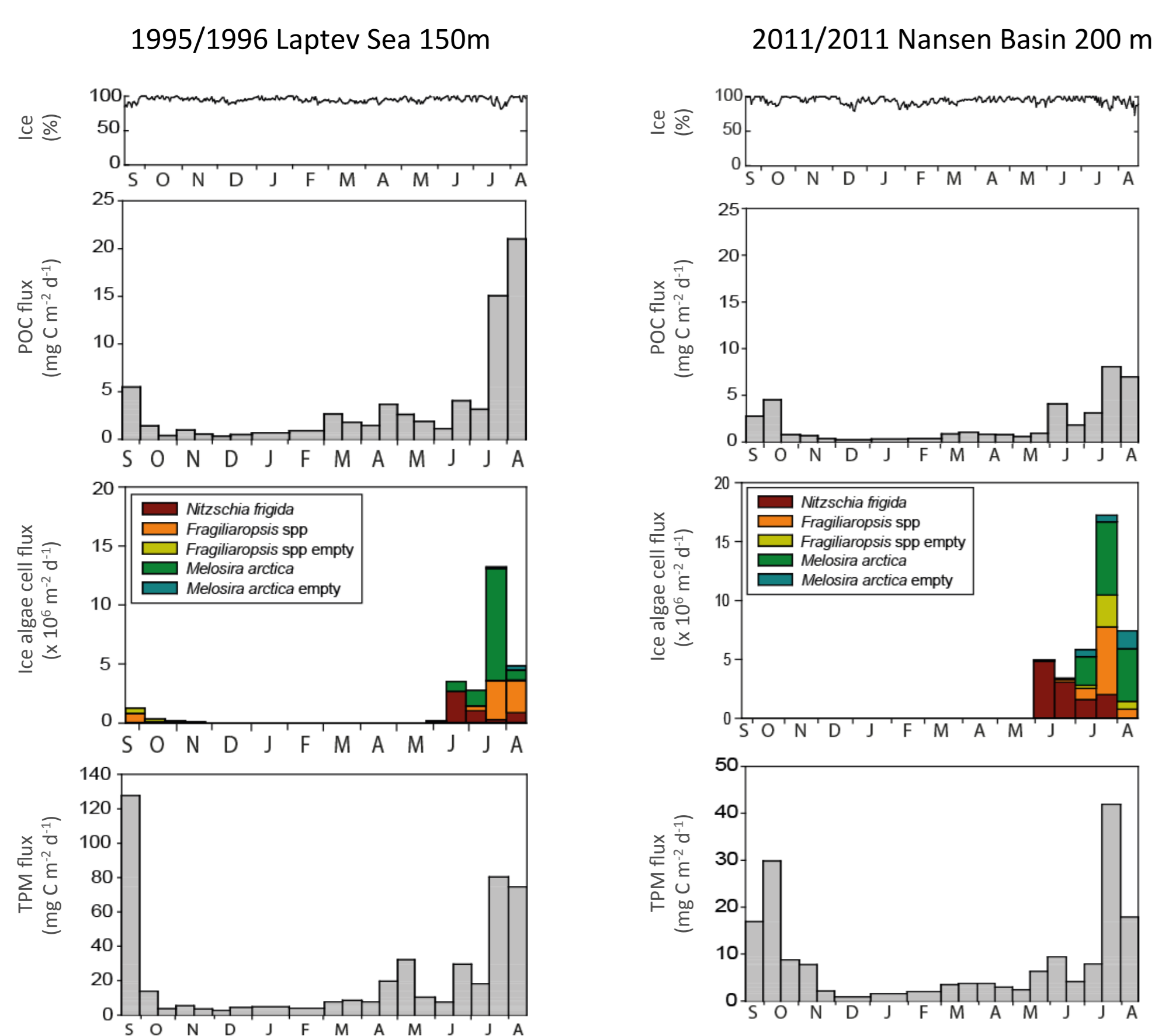


Conclusions

- *Melosira arctica* dominates the flux of sea ice related diatoms in the central Arctic Ocean
- The progressively earlier ice melt affected the export fluxes of biogenic matter more than the ice related algal species in the region

Results

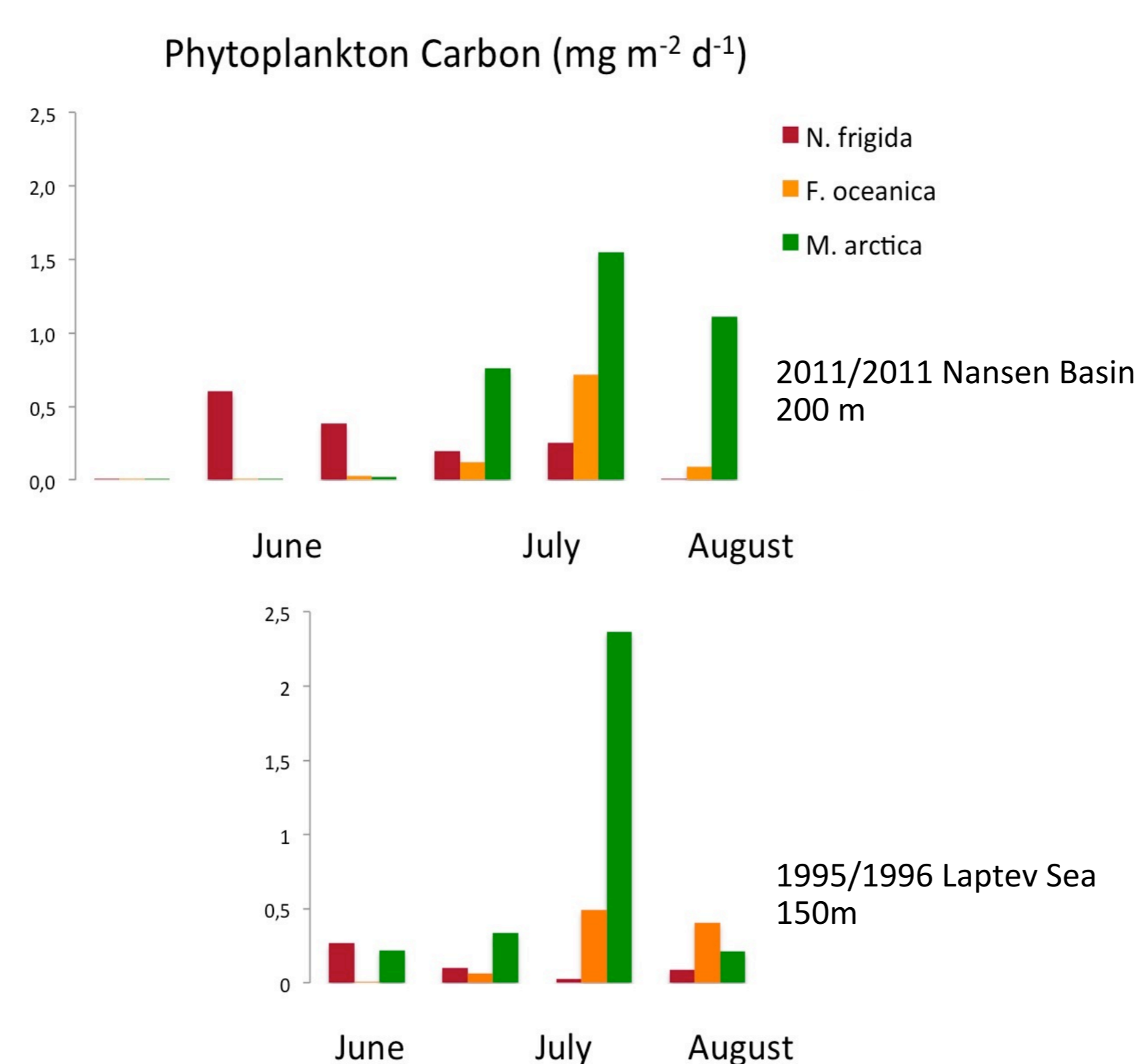
Vertical particle flux



Sedimentation pattern of total matter & particulate organic carbon (TPM & POC) and numbers of dominating ice algal species

- The ice cover was almost 100% during both investigations
- Vertical flux of organic matter was lower in the Nansen Basin than in the northern Laptev Sea
- The higher flux in the Laptev Sea most probably reflects the input of nutrients from the Lena River

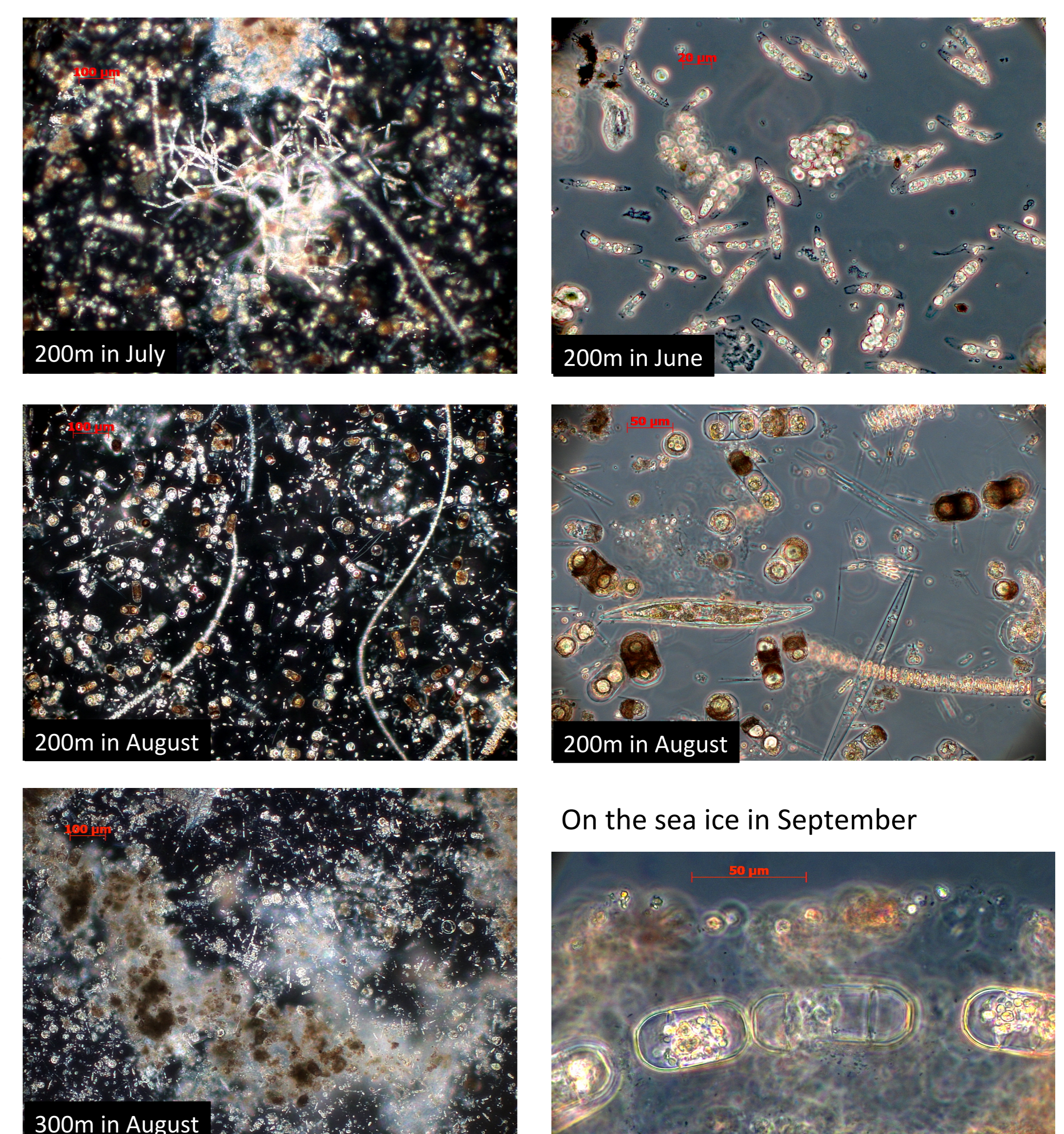
Diatom flux



Sedimentation pattern of calculated phytoplankton carbon of the dominating (>90%) diatoms in the summer month

- Sea ice related diatoms prevailed
- *Melosira arctica* dominated diatom flux in abundances & biomass, long chains were observed during the month of July, later very short chains mainly consisting of resting spores were present
- In the deep trap in the Nansen Basin more slimy *Melosira* aggregates were found
- Other common large diatom species were *Nitzschia frigida* & *Fragilariopsis* spp. *Nitzschia frigida* cells sinking predominantly as single cells early in the year (June)
- Less abundant were *Navicula*, *Pseudo-nitzschia*, *Pleurosigma*, *Gyrosigma* & *Haslea* species

Photographs from trap material



On the sea ice in September

