Annual cycle of biogenic matter exported on the Chukchi Sea continental shelf: 2015-2016

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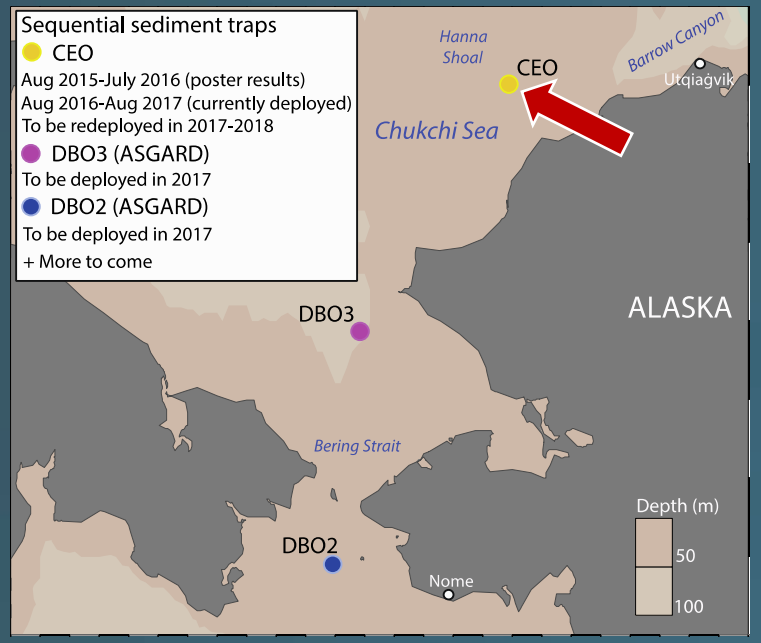
Continuous biological and biogeochemical measurements in the Pacific Arctic Ocean using sequential sediment traps deployed at the Chukchi Ecosystem Observatory (CEO)

Collection of sinking material over annual cycles to track biological and biogeochemical processes occurring when *in situ* sampling is not possible

http://mather.sfos.uaf.edu/~seth/CEO/

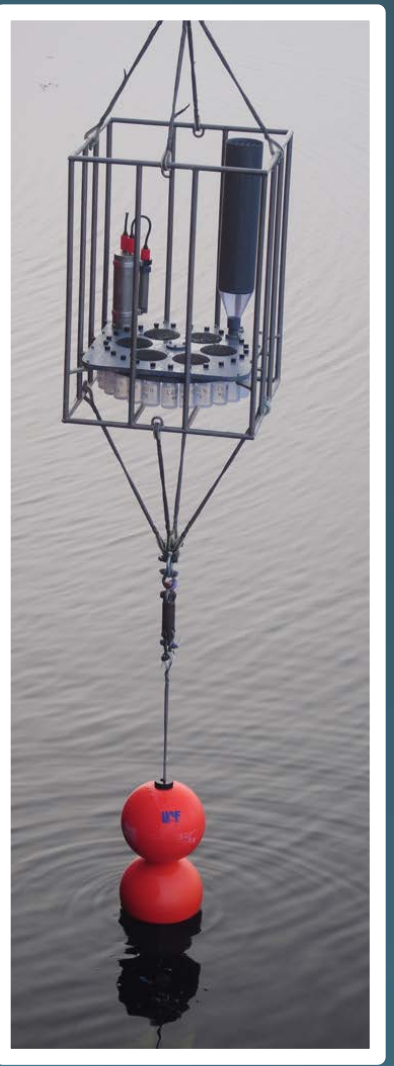
Sediment trap deployment



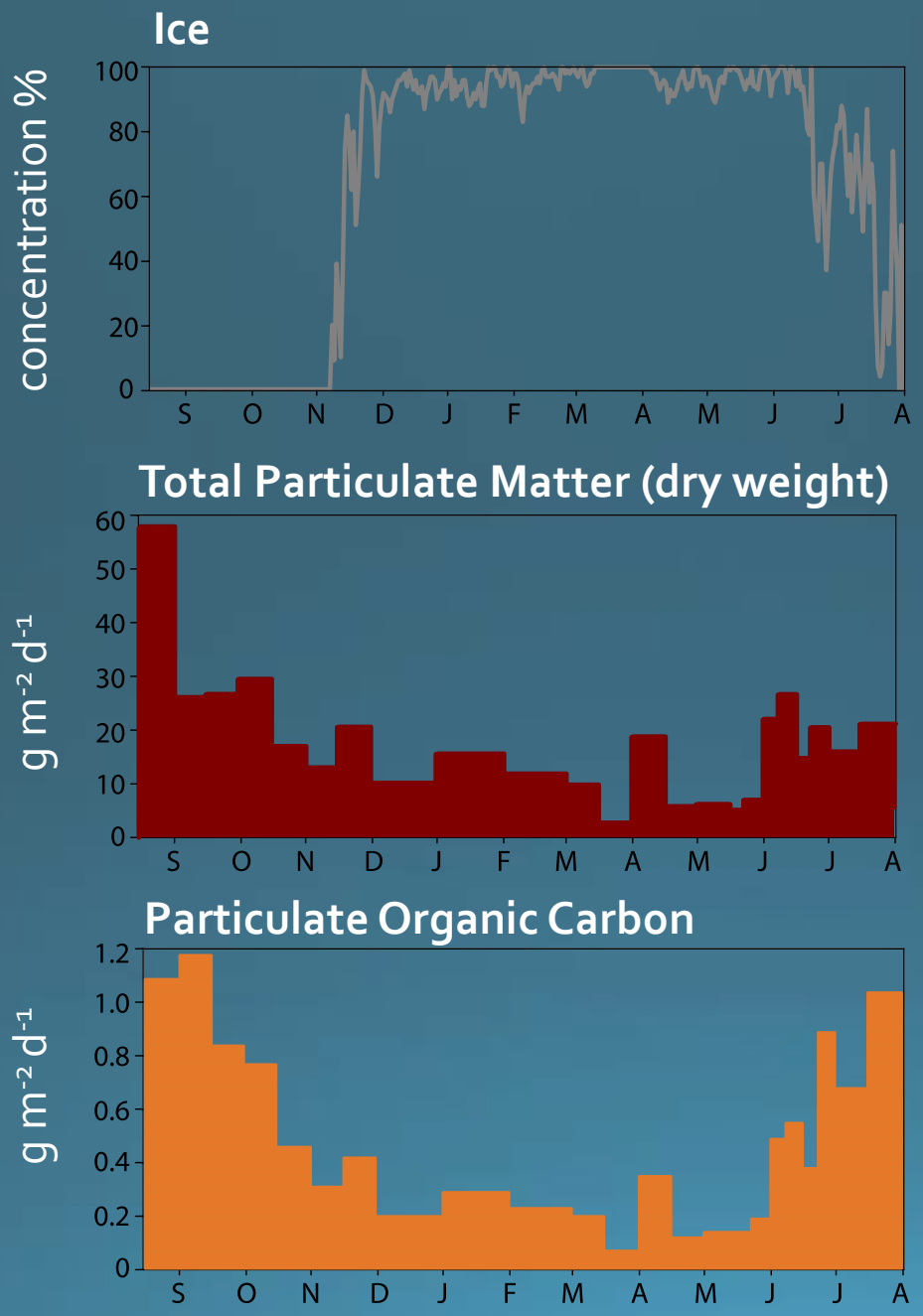
CEO sequential sediment trap	
Water depth	45 m
Trap depth	37 m
Sampling period	Aug 16 2015 - Jul 31 2016

Second deployment from Aug 10 2016 to Aug 1 2017 failed = sediment trap motor unit is under examination in Germany

Sinking particulate matter collected at intervals ranging from 1 week to 1 month

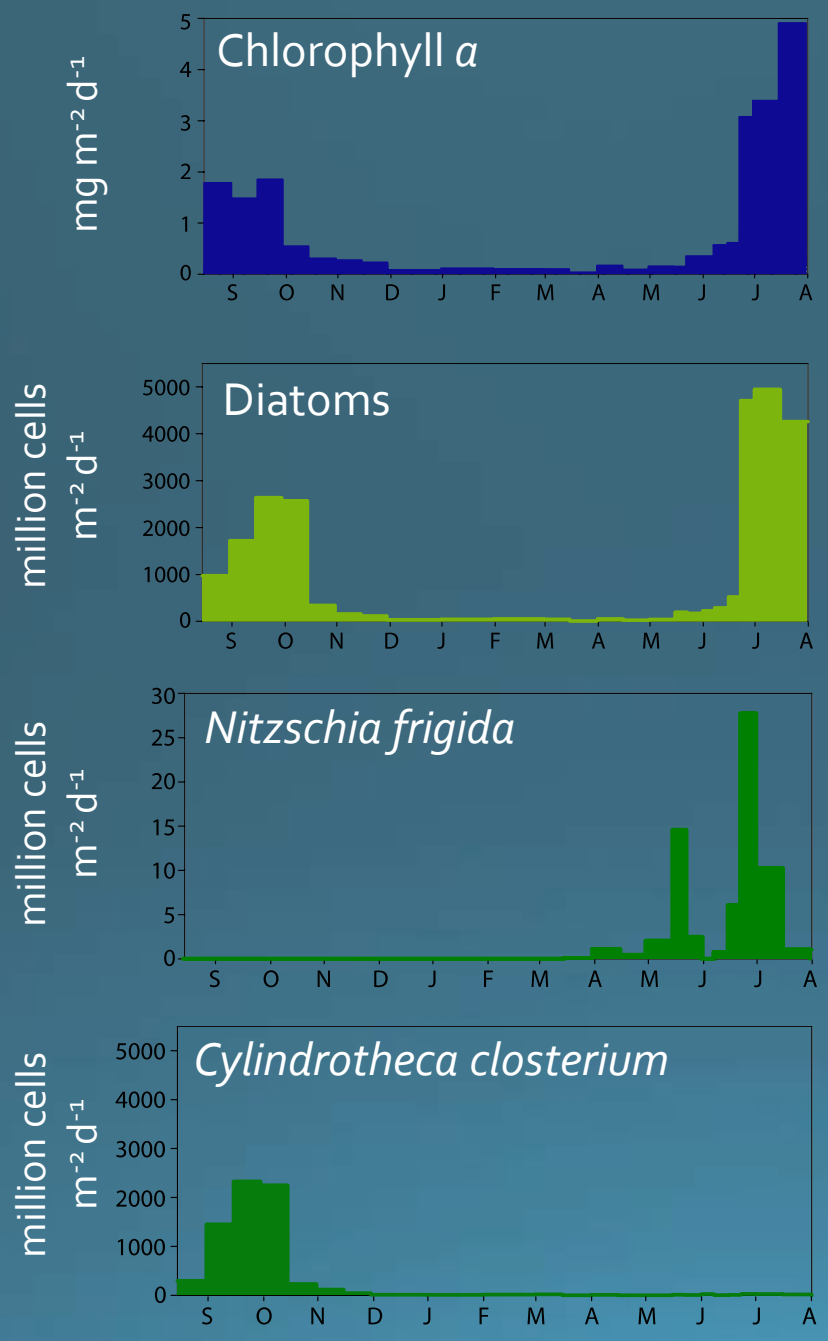


Ice and particulate matter



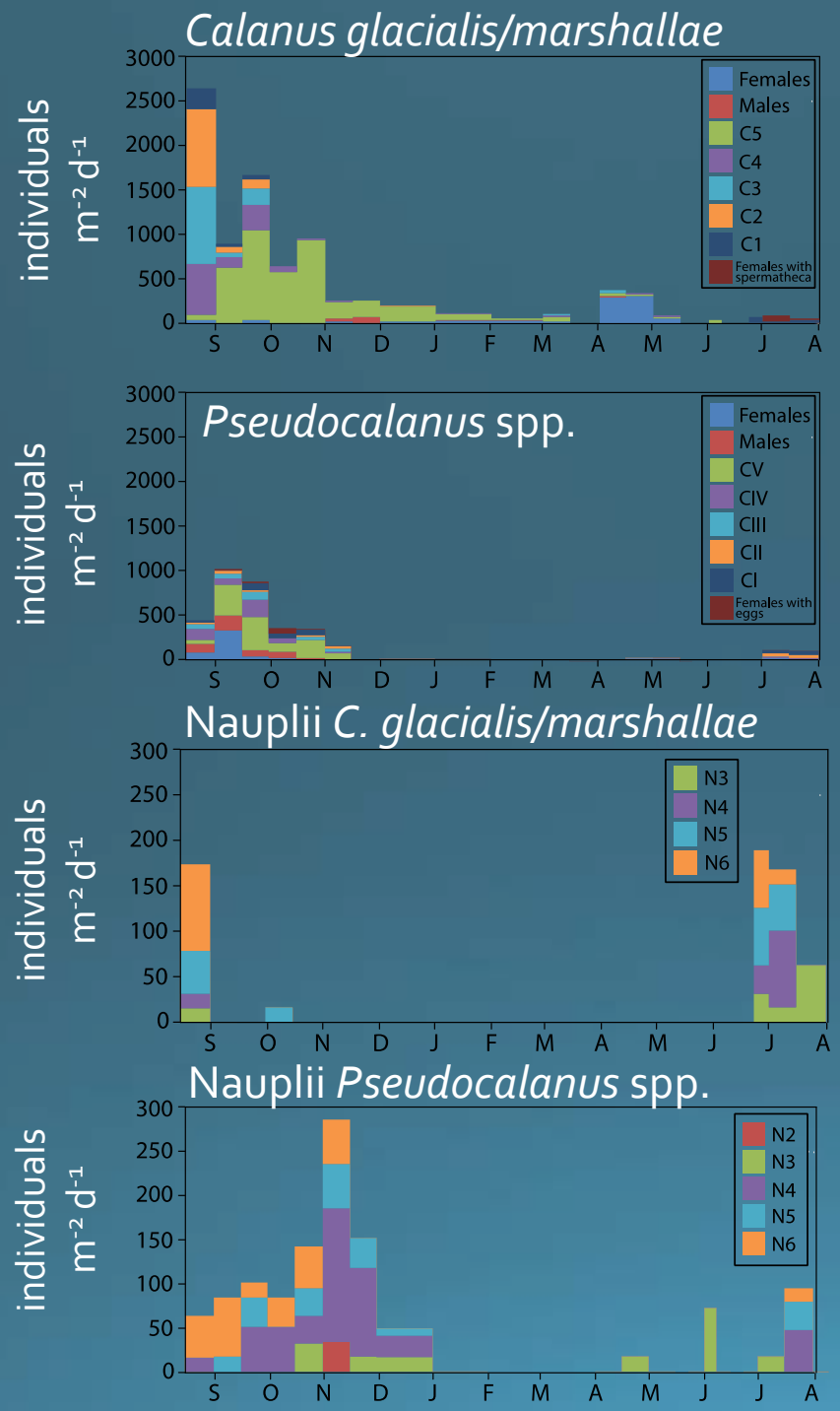
- Enhanced total particulate matter and particulate organic carbon fluxes during the open water period = absence of ice associated with fall storms led to resuspension on the shallow shelf
- High POC fluxes during biologically productive periods (fall and spring)

Phytoplankton



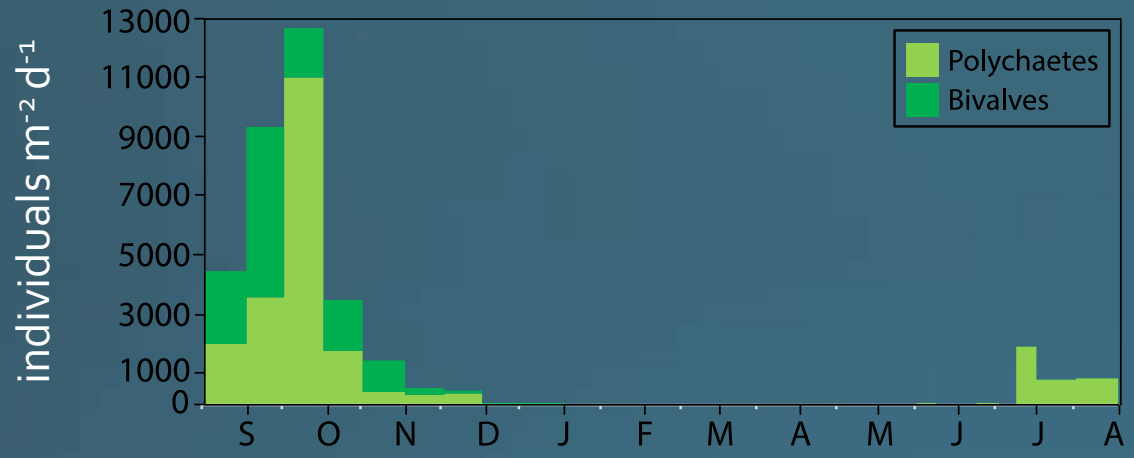
- High chl *a* and diatom fluxes from August to October and in June and July = high primary productivity in the absence of ice and during ice melt
- Peaks in fluxes of the ice algae *Nitzschia frigida* reflect ice algae release due to snow melt in May and June
- Elevated fluxes of the benthic-planktonic diatom *Cylindrotheca closterium* during fall = rapid growth during and following mixing events in shallow waters

Copepods



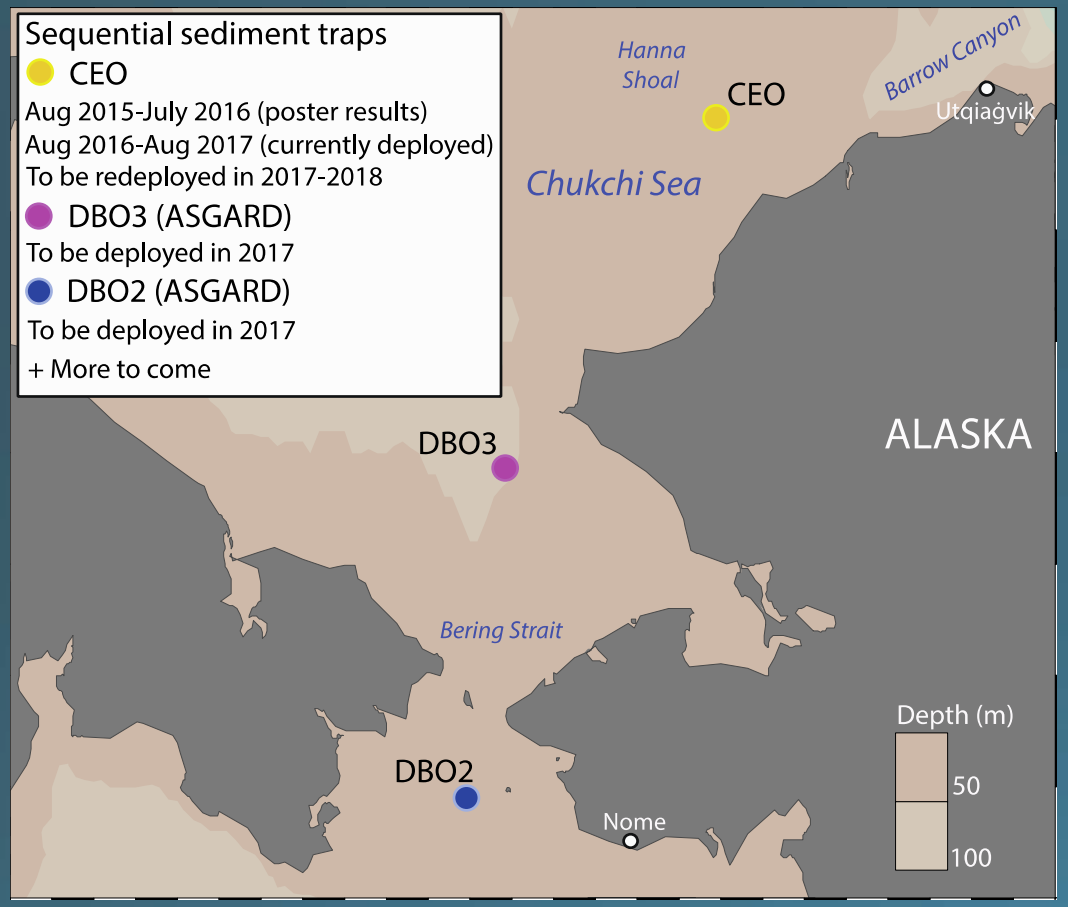
- *Calanus glacialis/marshallae* transitioned from a dominance of young copepodites C1, C2, C3 and C4 to overwintering C5 during fall
- The presence of nauplii at the onset of the spring bloom at the end of June followed the observation of *C. glacialis/marshallae* females in April when ice algae were first released
- *Pseudocalanus* spp. nauplii, in contrast to *Calanus,* were present at the end of summer and during fall = less dependent on the spring bloom

Meroplankton



- Large abundance of early stages polychaetes and bivalves in the water column during fall

Ongoing and upcoming deployments



- Currently in the water: DBO2 and DBO3 (ASGARD) = recovery summer 2018
- Redeployments summer 2018: DBO2, DBO3 and CEO