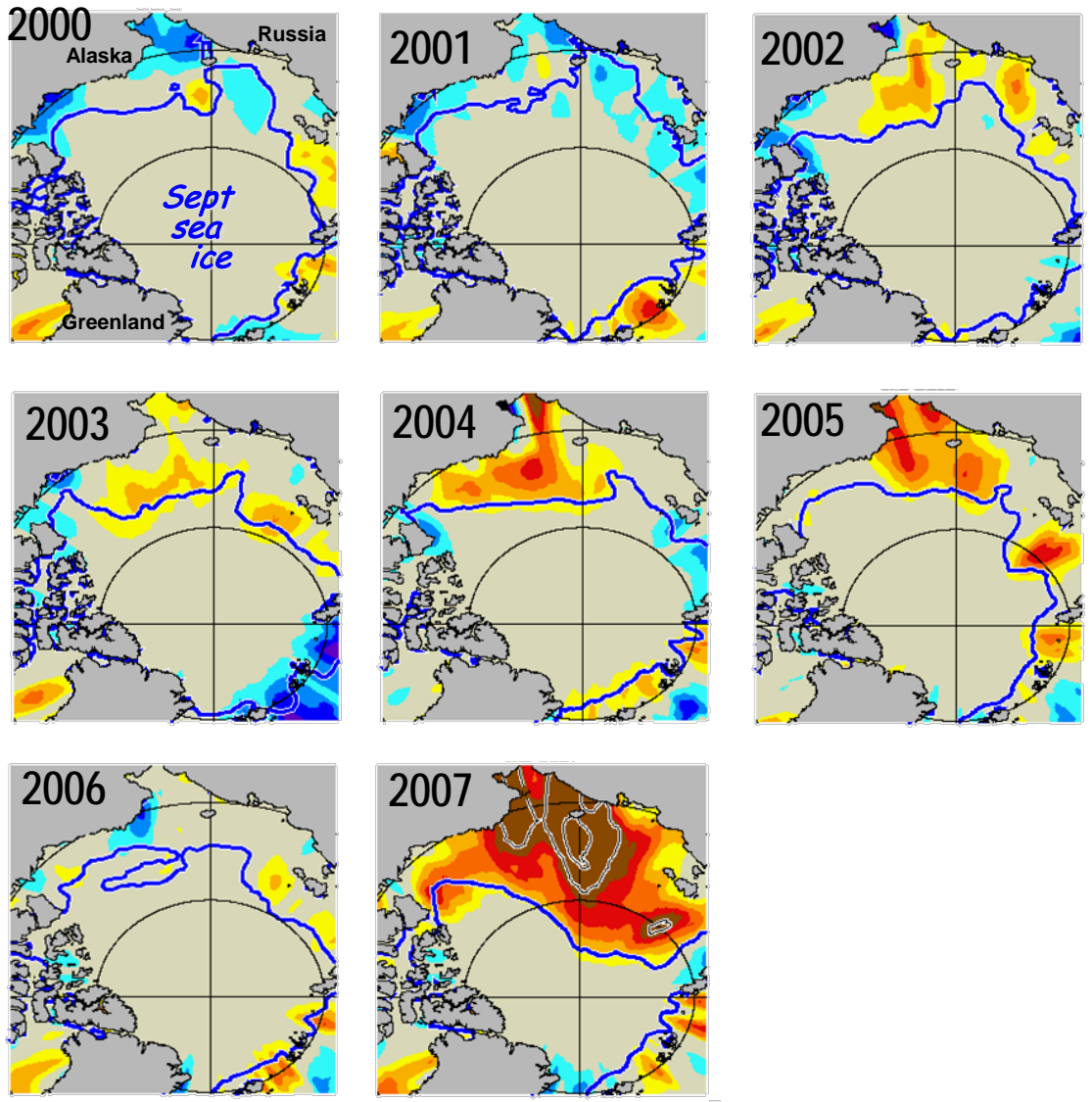
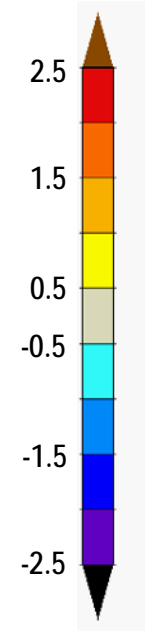


Ice Retreat → Ocean Warming

Ice Retreat → Ocean Warming



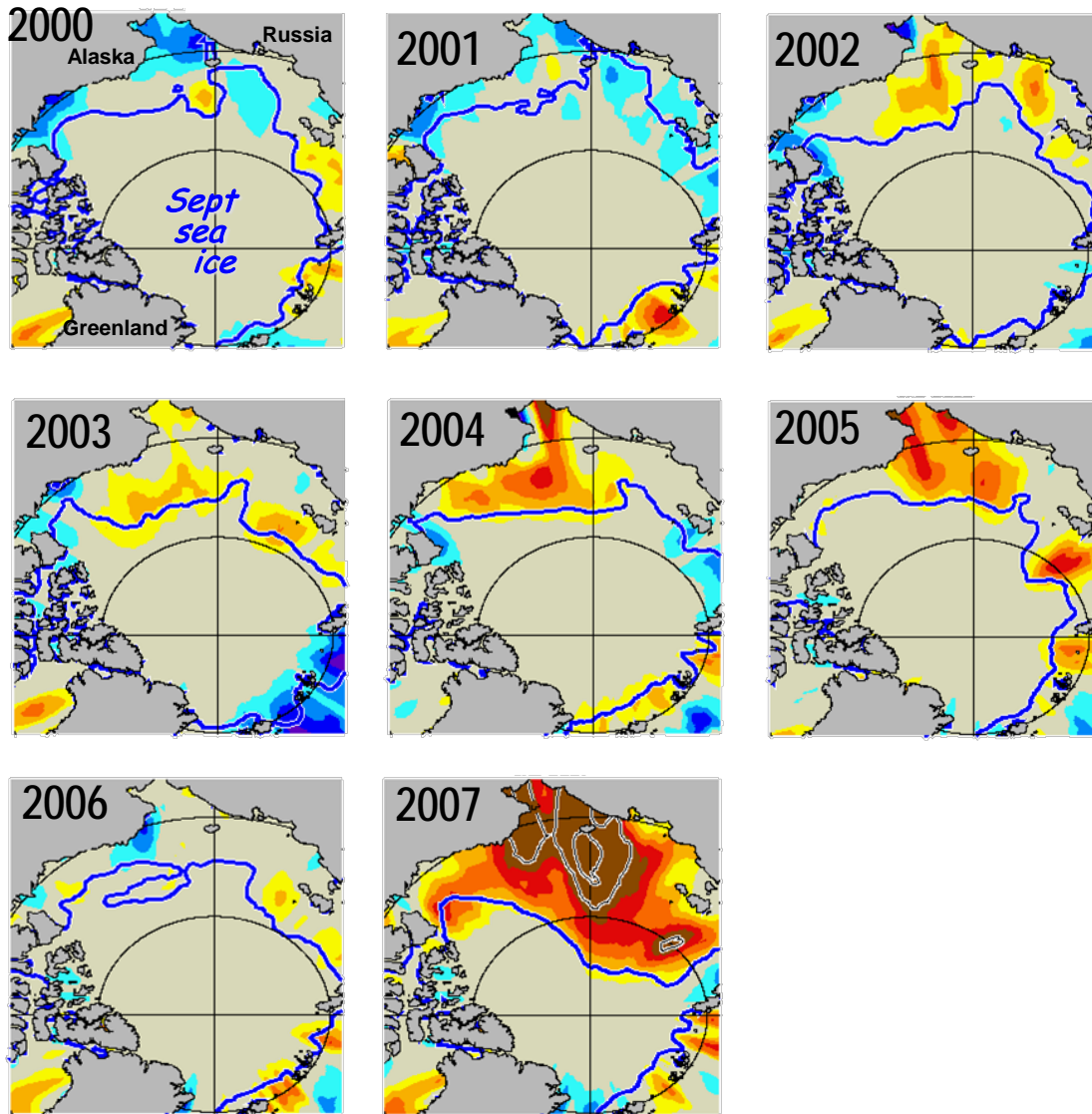
from Steele et al., GRL 2008



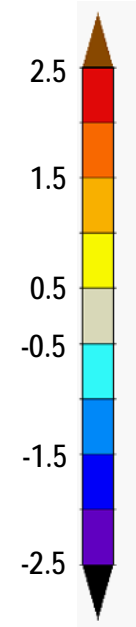
Sea Surface Temperature (°C)

Anomalies of summer (JAS),
relative to 1982-2007 mean
daily NOAA OI.v2

Ice Retreat → Ocean Warming



from Steele et al., GRL 2008



Sea Surface Temperature (°C)

Anomalies of summer (JAS),
relative to 1982-2007 mean
daily NOAA OI.v2

Local solar + advection
Steele et al. JGR (2010)

Update...

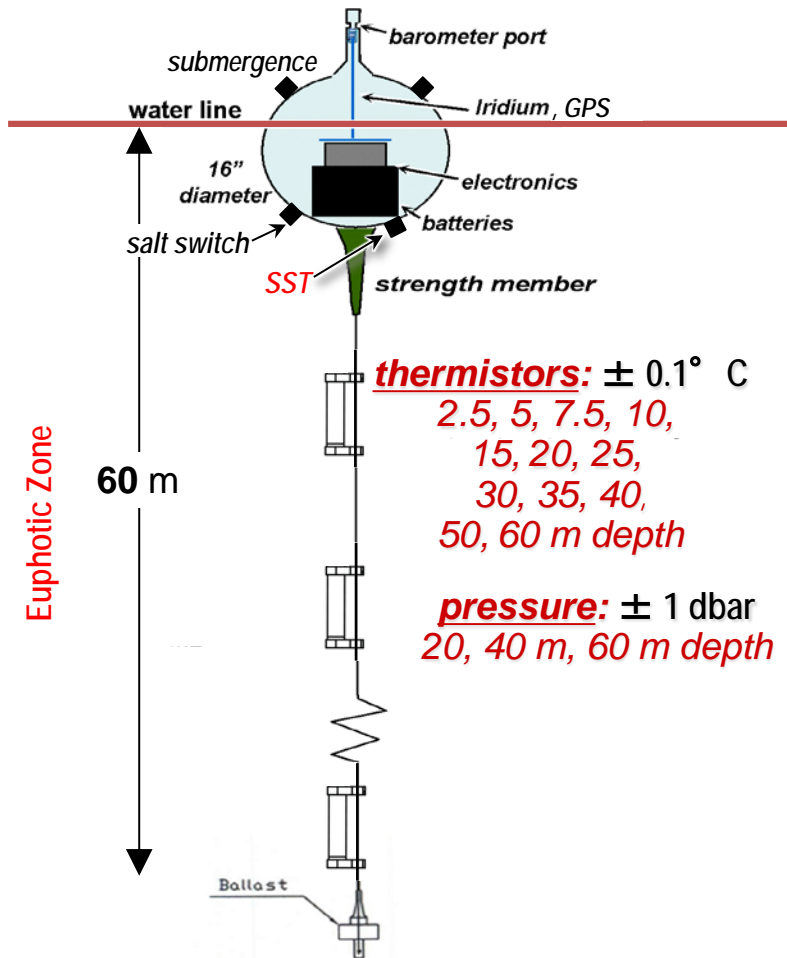


UpTempO & Warm buoys

PIs: M. Steele, I. Rigor

PIs: V. Hill, B. Light, M. Steele

Upper Temperature of the polar Oceans

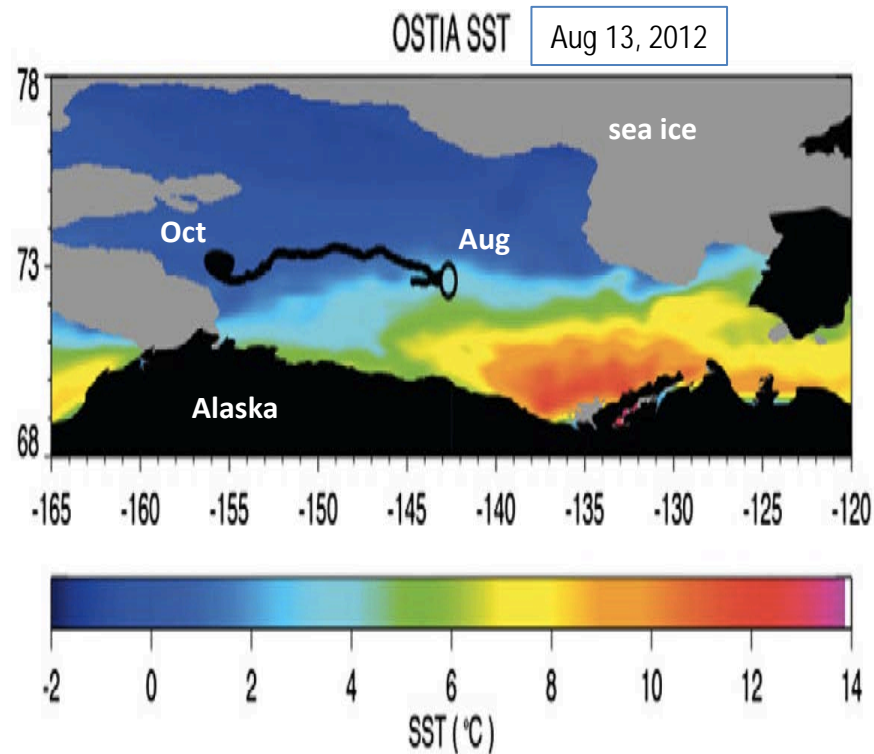
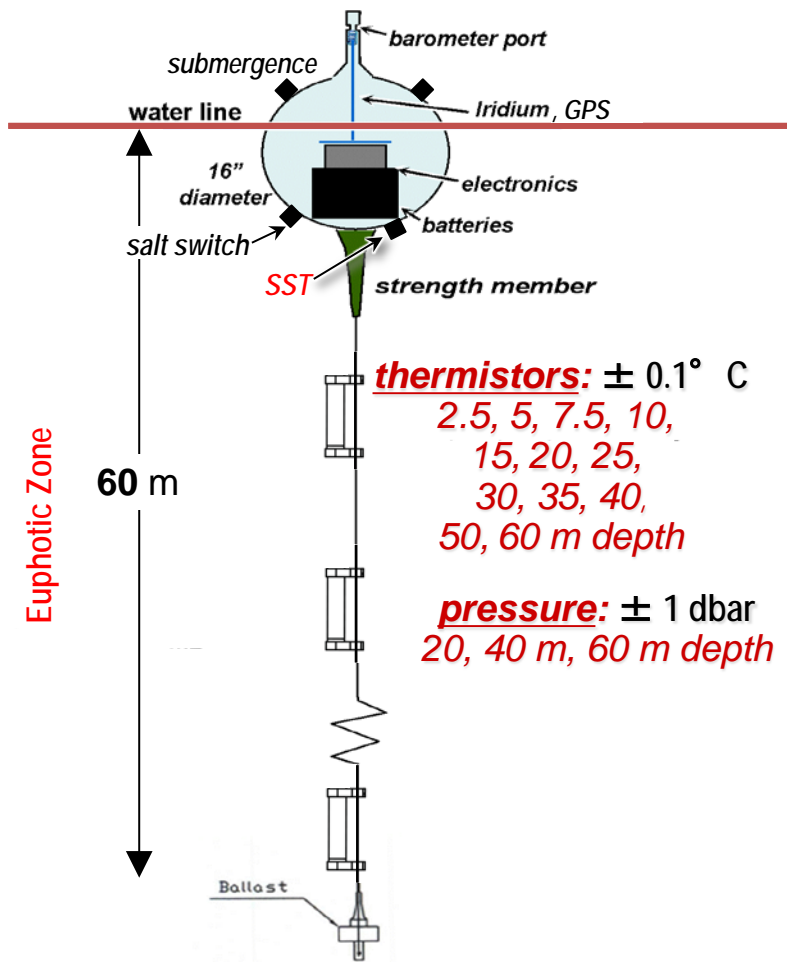


UpTempO & Warm buoys

PIs: M. Steele, I. Rigor

PIs: V. Hill, B. Light, M. Steele

Upper Temperature of the polar Oceans



L4 SST validations

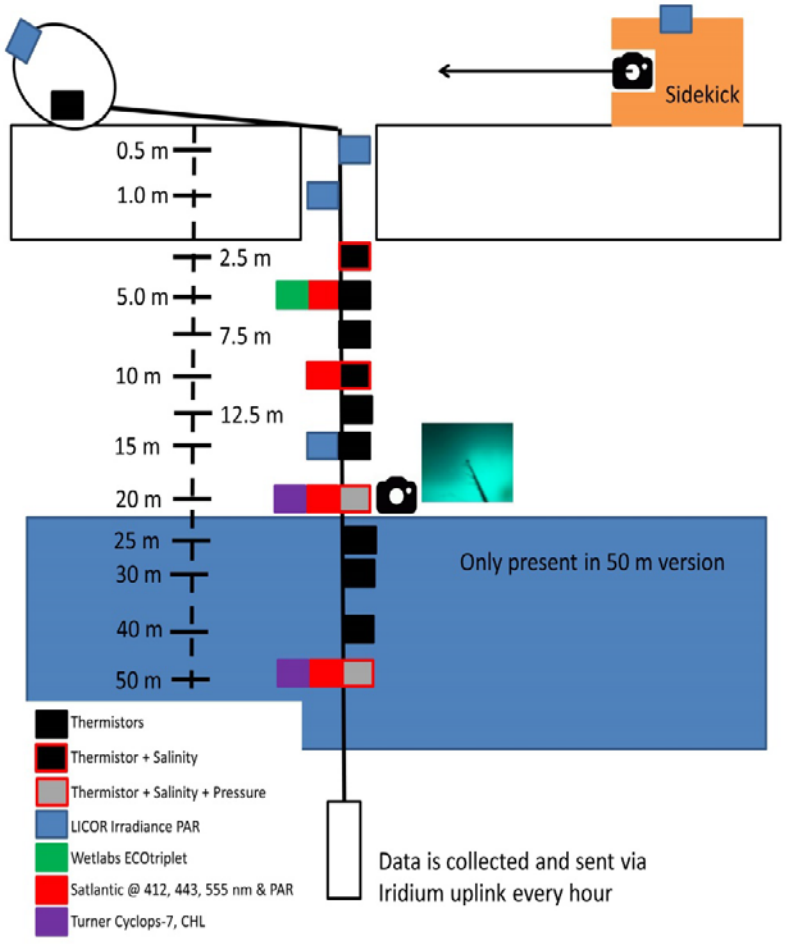
Best: OISST ("Reynolds"), CMC, GMPE

UpTempO & Warm buoys

PIs: M. Steele, I. Rigor

PIs: V. Hill, B. Light, M. Steele

Warming & irRadiance Measurements

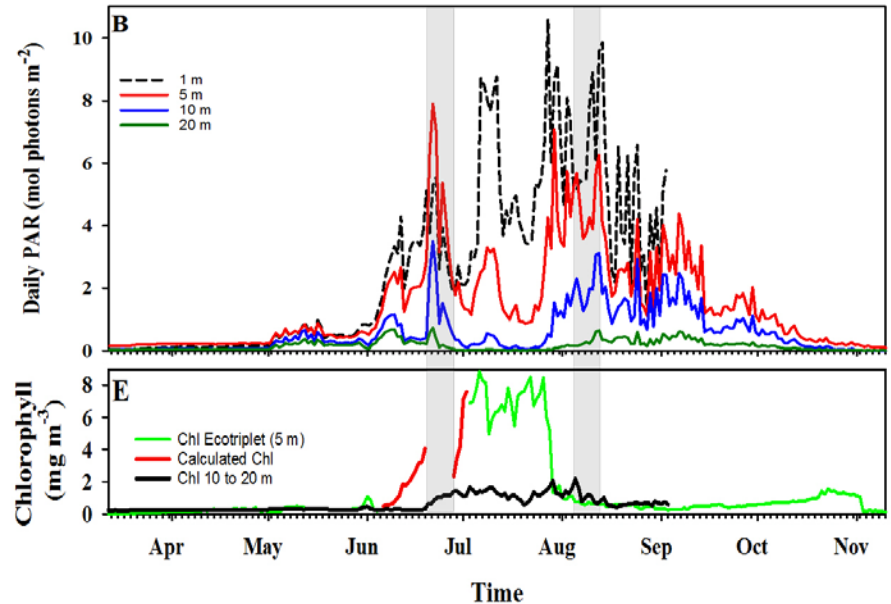
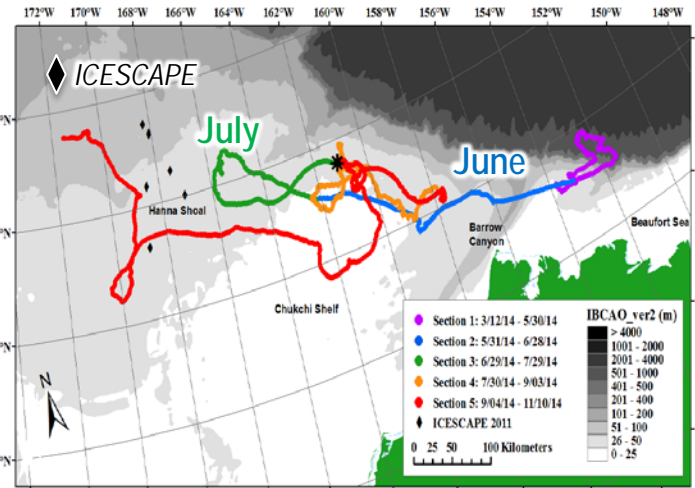
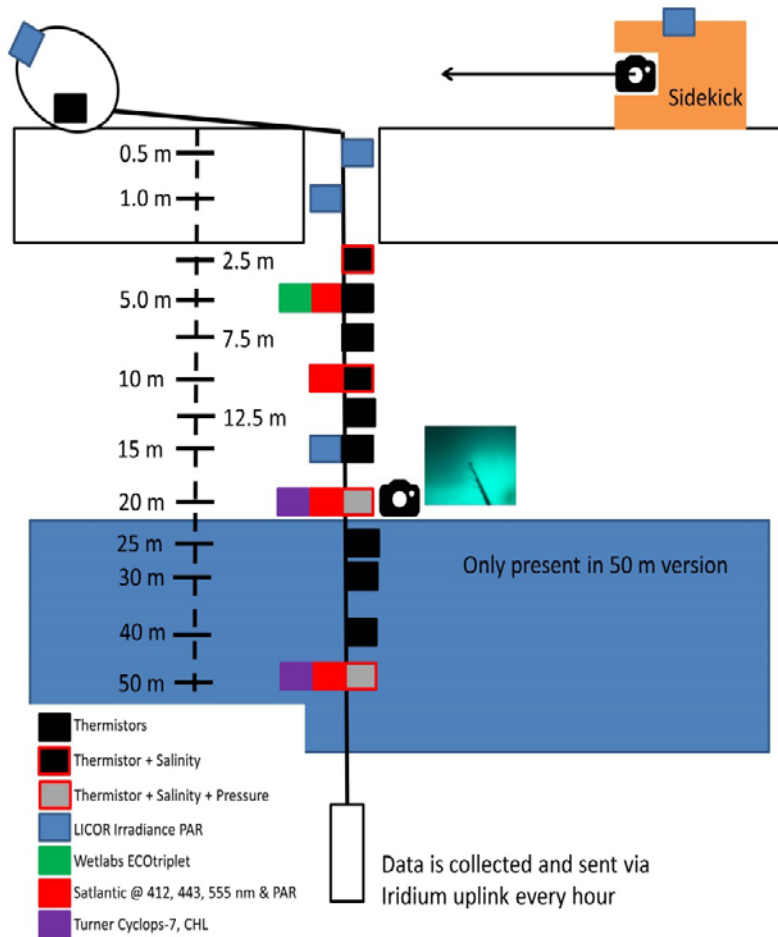


UpTempO & Warm buoys

PIs: M. Steele, I. Rigor

PIs: V. Hill, B. Light, M. Steele

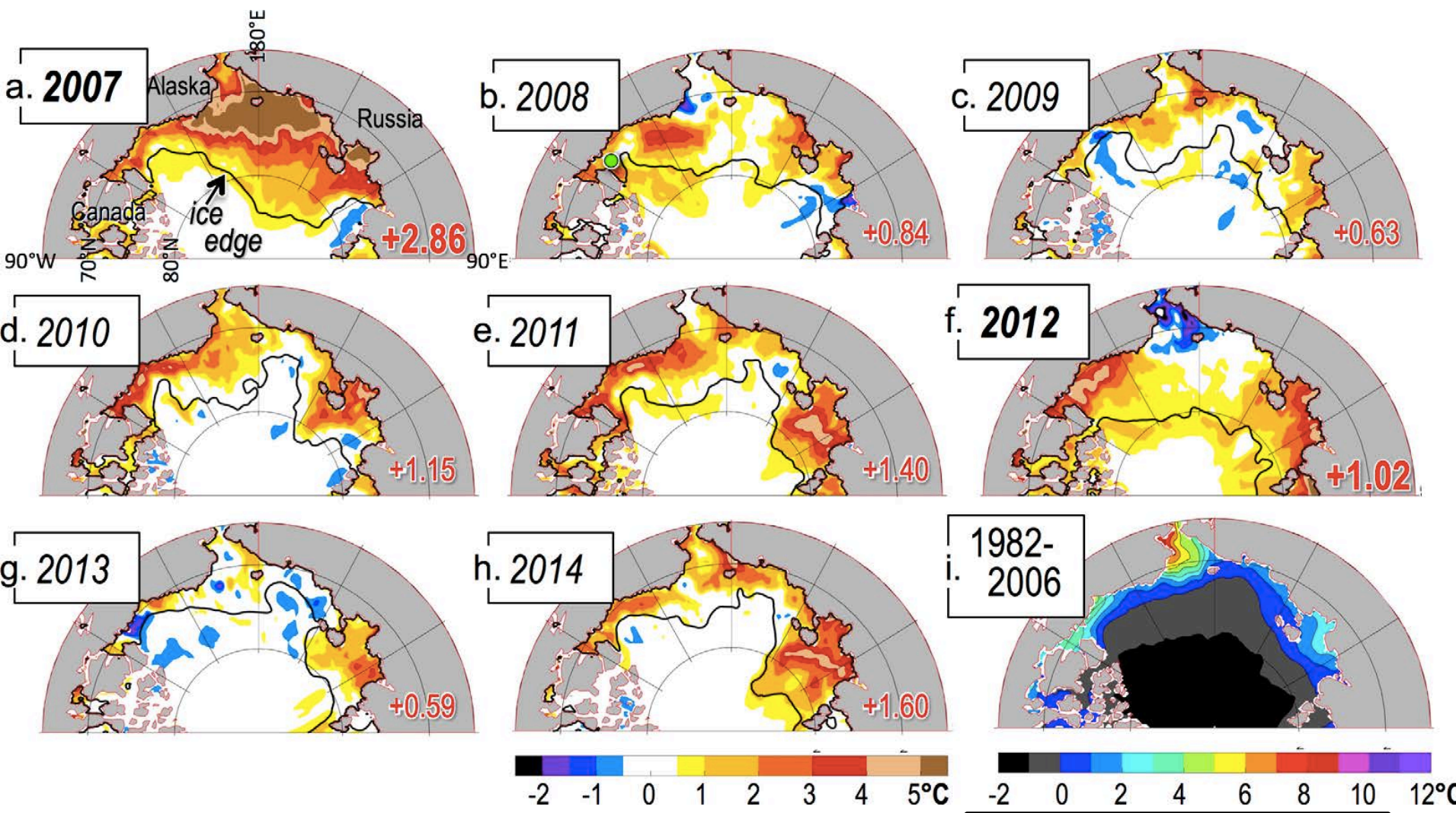
Warming & irRadiance Measurements



SST update!



Steele & Dickinson (JGR, 2016)



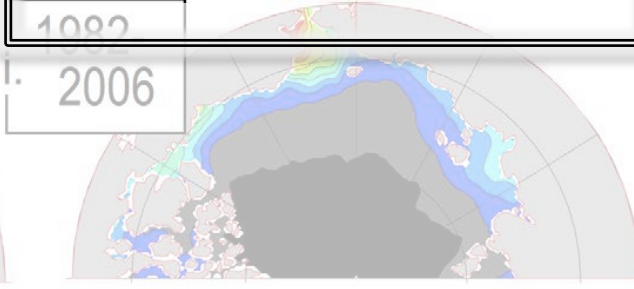
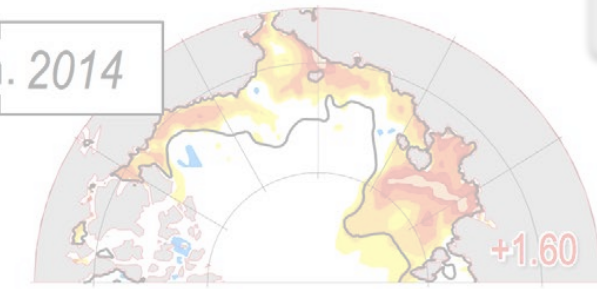
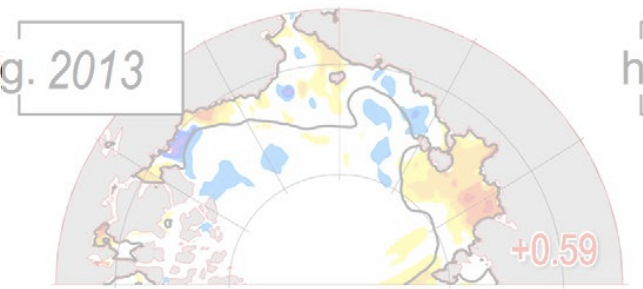
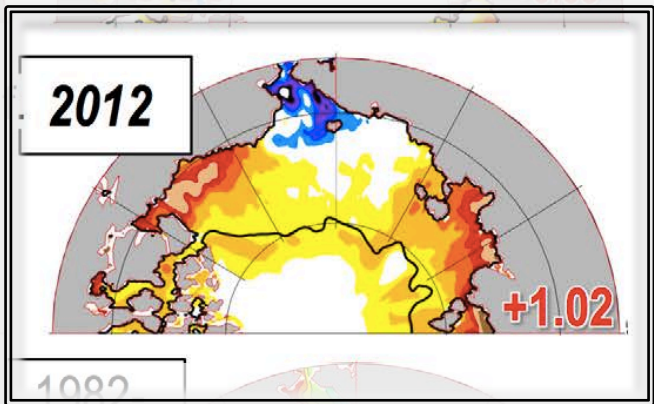
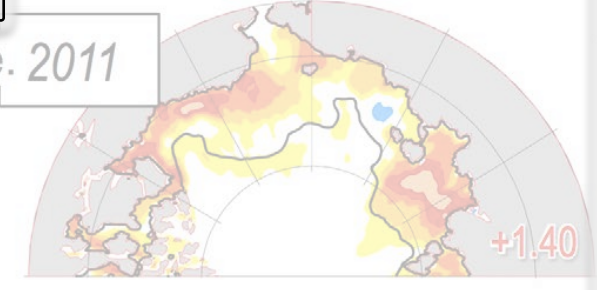
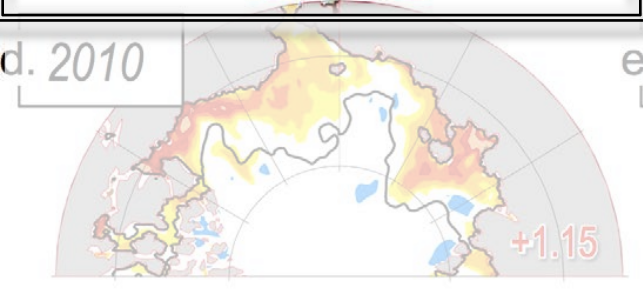
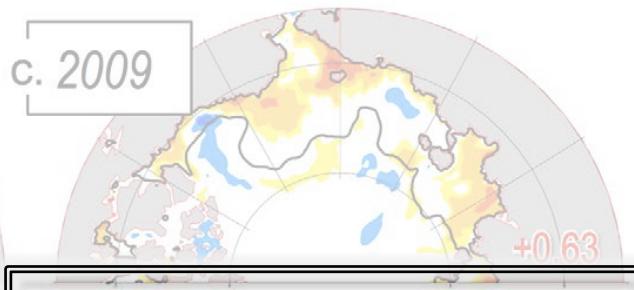
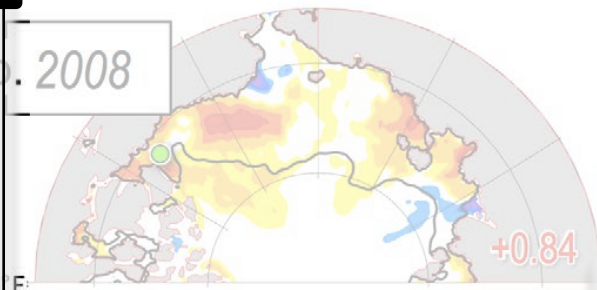
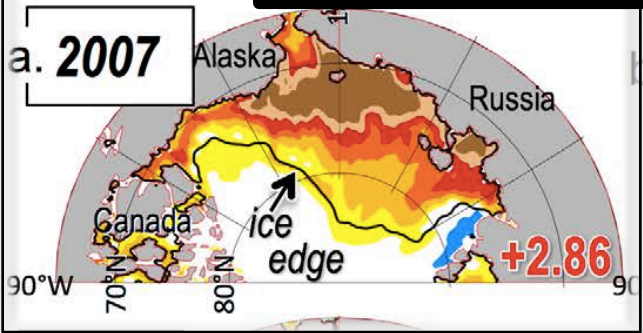
SST: Aug/Sept dOISST (AVHRR only)
Ice edge: 15% concentration (NASA Team1)

Mostly warm

SST update!

~ 3 times warmer!

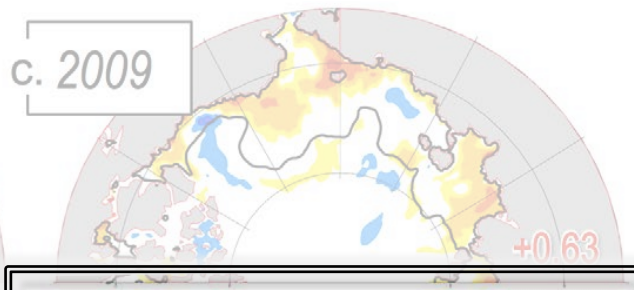
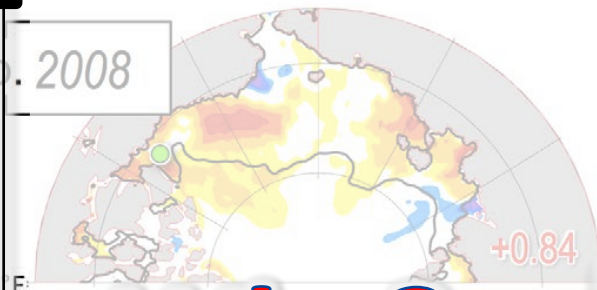
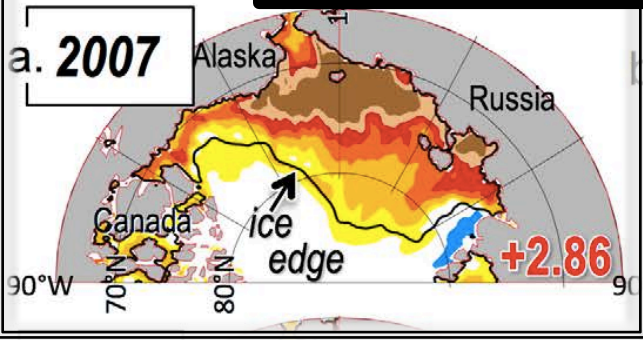
Steele & Dickinson (2016)



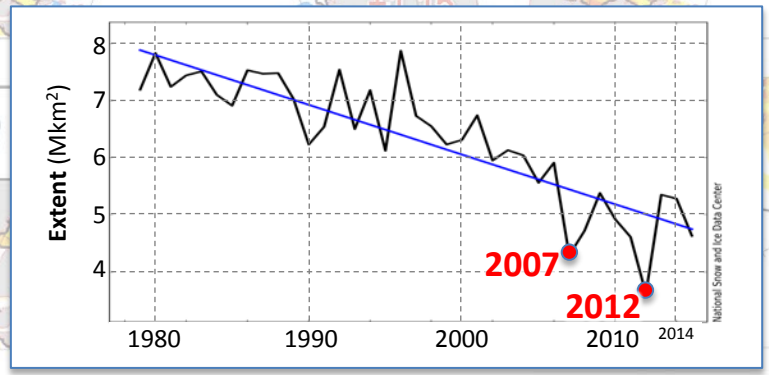
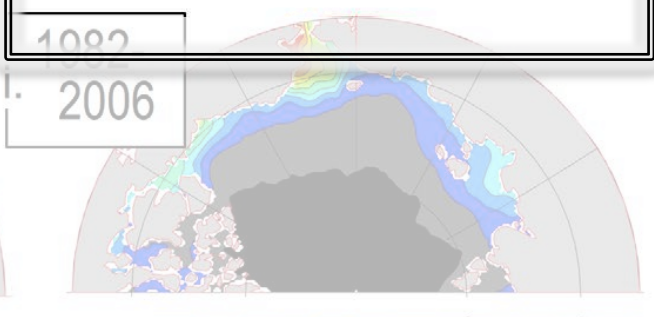
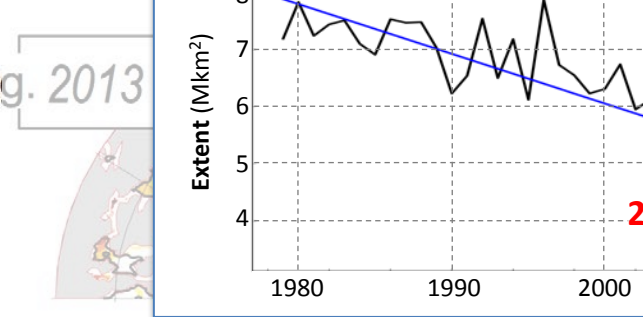
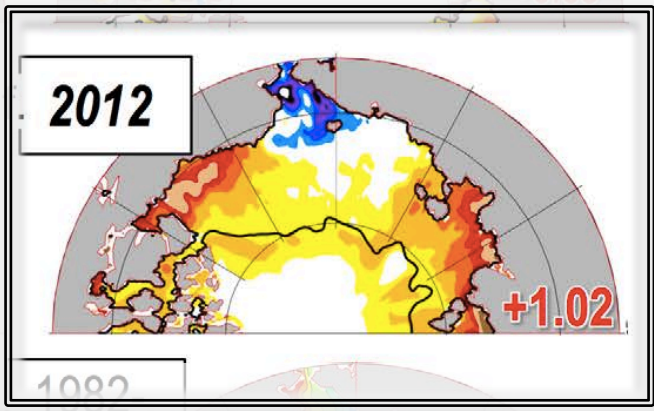
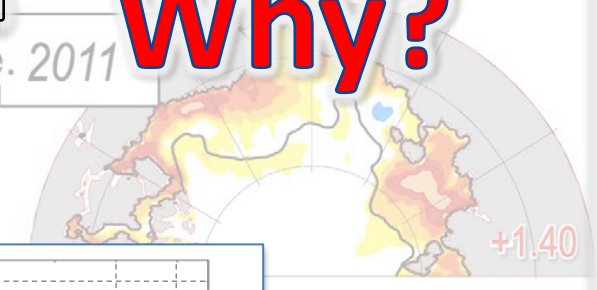
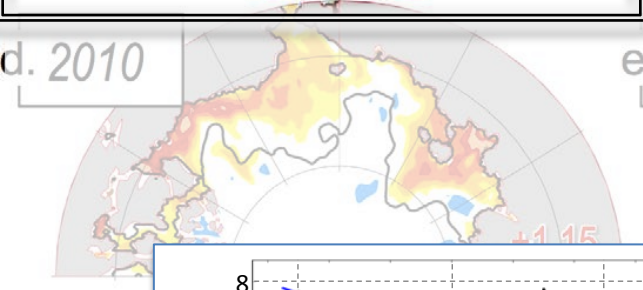
SST update!

~ 3 times warmer!

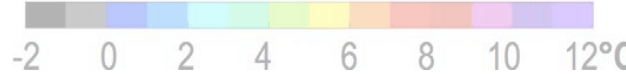
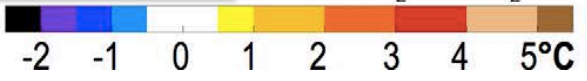
Steele & Dickinson (2016)



Why?

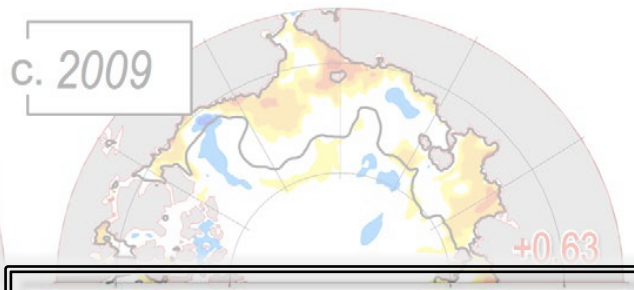
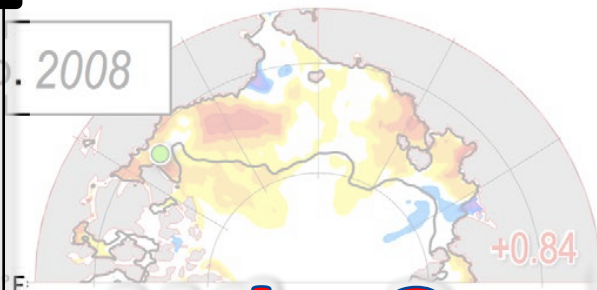
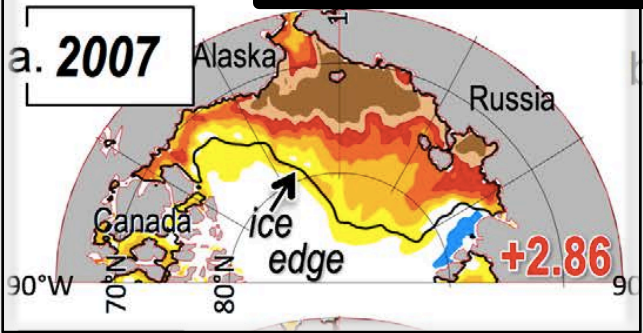


(NOAA's dOISST = AVHRR + in situ)



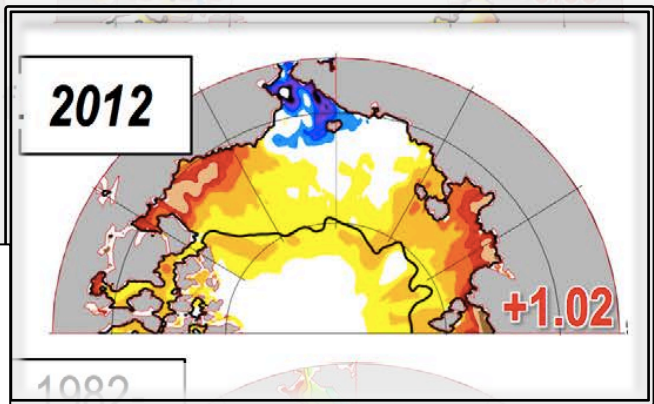
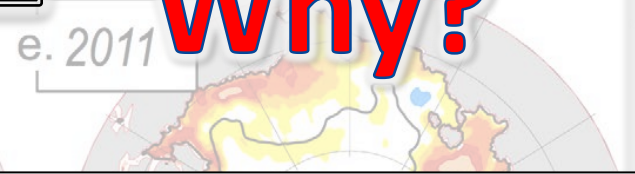
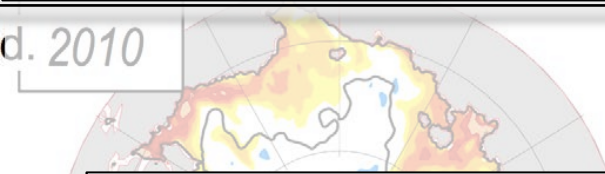
SST update!

~ 3 times warmer!



Steele & Dickinson (2016)

Why?



Short answer:

Early 2007 retreat vs. **late 2012** retreat
(June/July) (Aug/Sept)



SST "phenology"

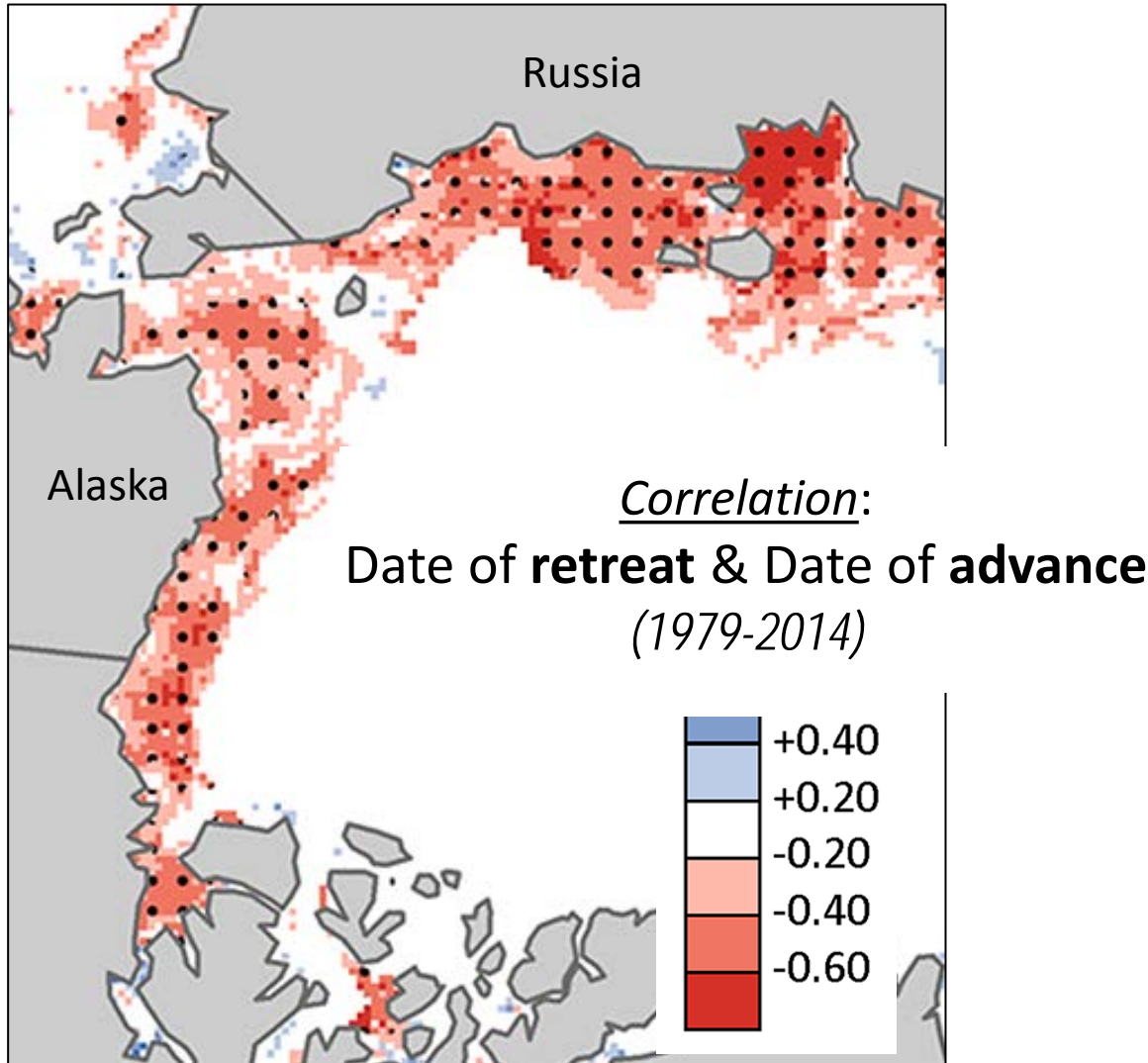


...not all ice retreat warms the ocean!

Predicting fall **advance** using spring/summer **retreat**

Stroeve et al. (GRL, 2016)

also: EBW et al. (2011)

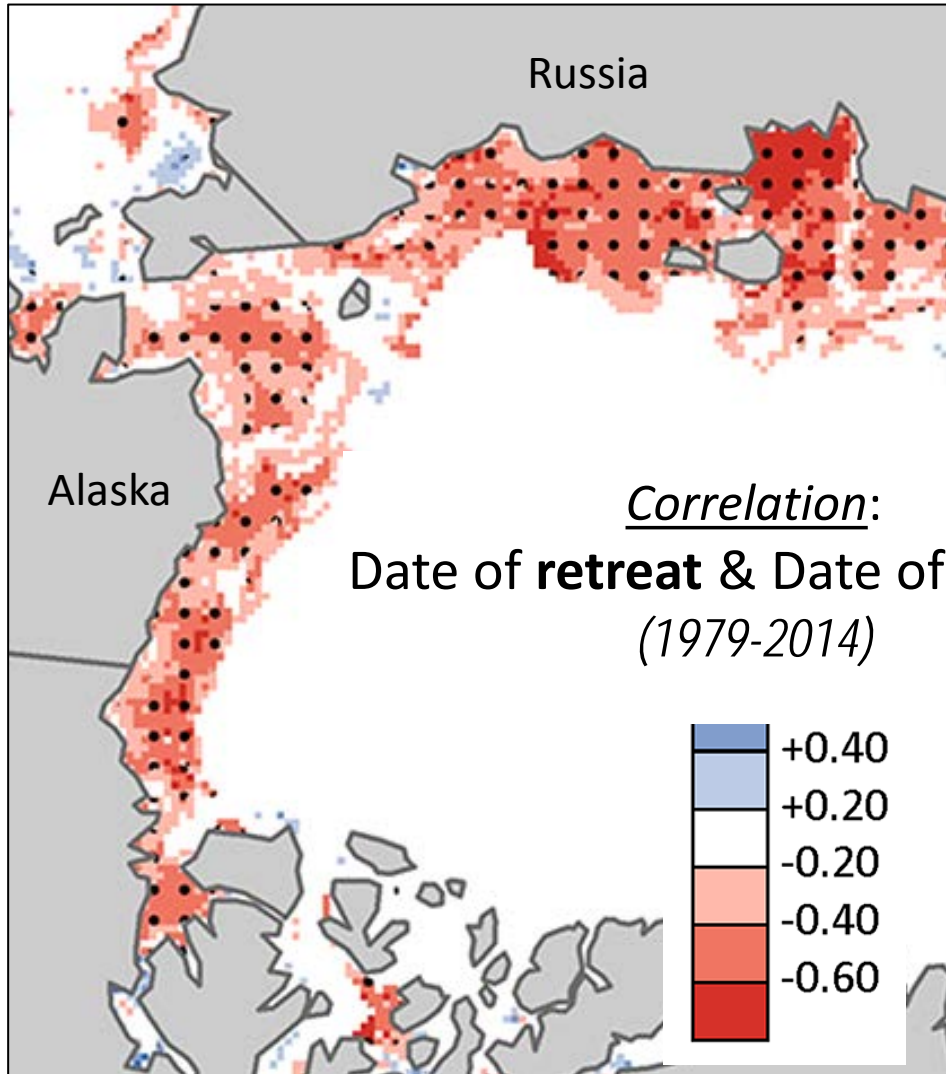


Predicting fall **advance** using spring/summer **retreat**

Stroeve et al. (GRL, 2016)

e.g.:

- **Early** retreat
 - **Warm** ocean
- **Late** advance

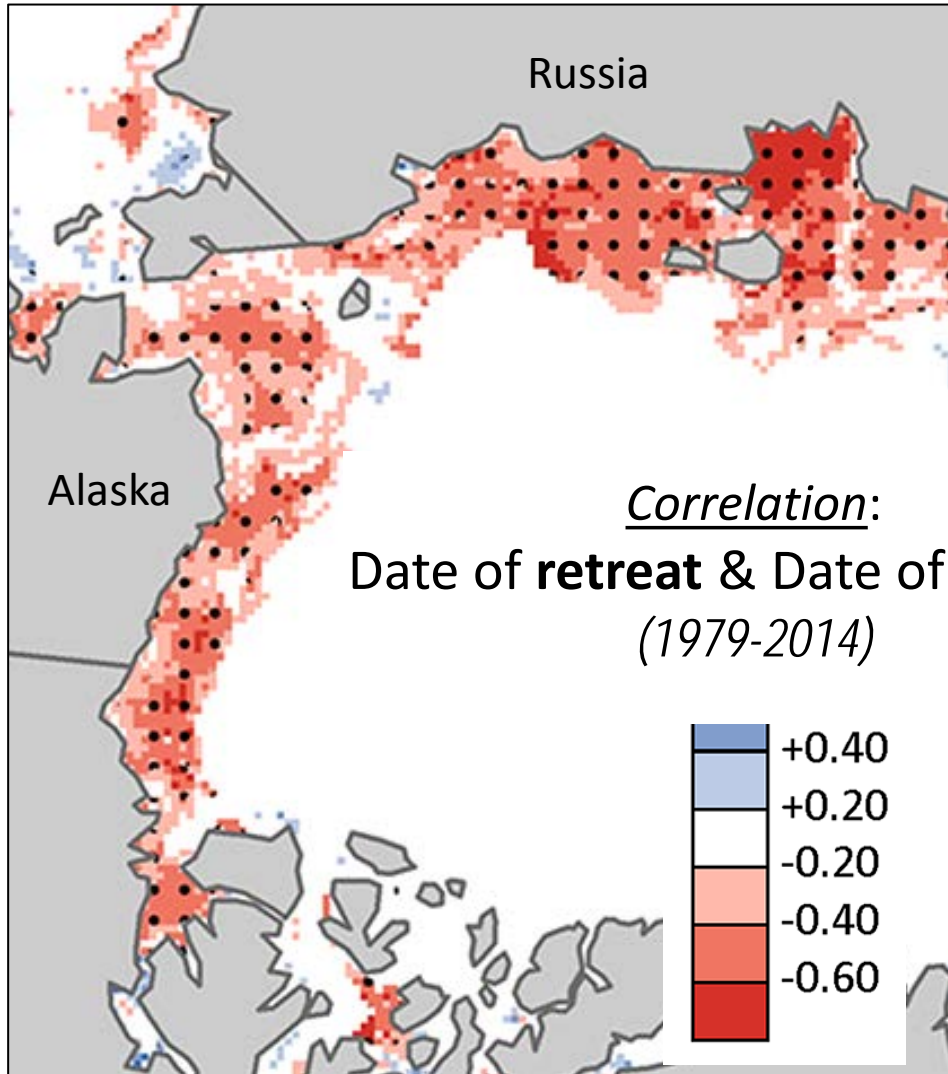


Predicting fall **advance** using spring/summer **retreat**

Stroeve et al. (GRL, 2016)

e.g.:

- **Early** retreat
 - **Warm** ocean ← not necessarily!
- **Late** advance



Pretty good...

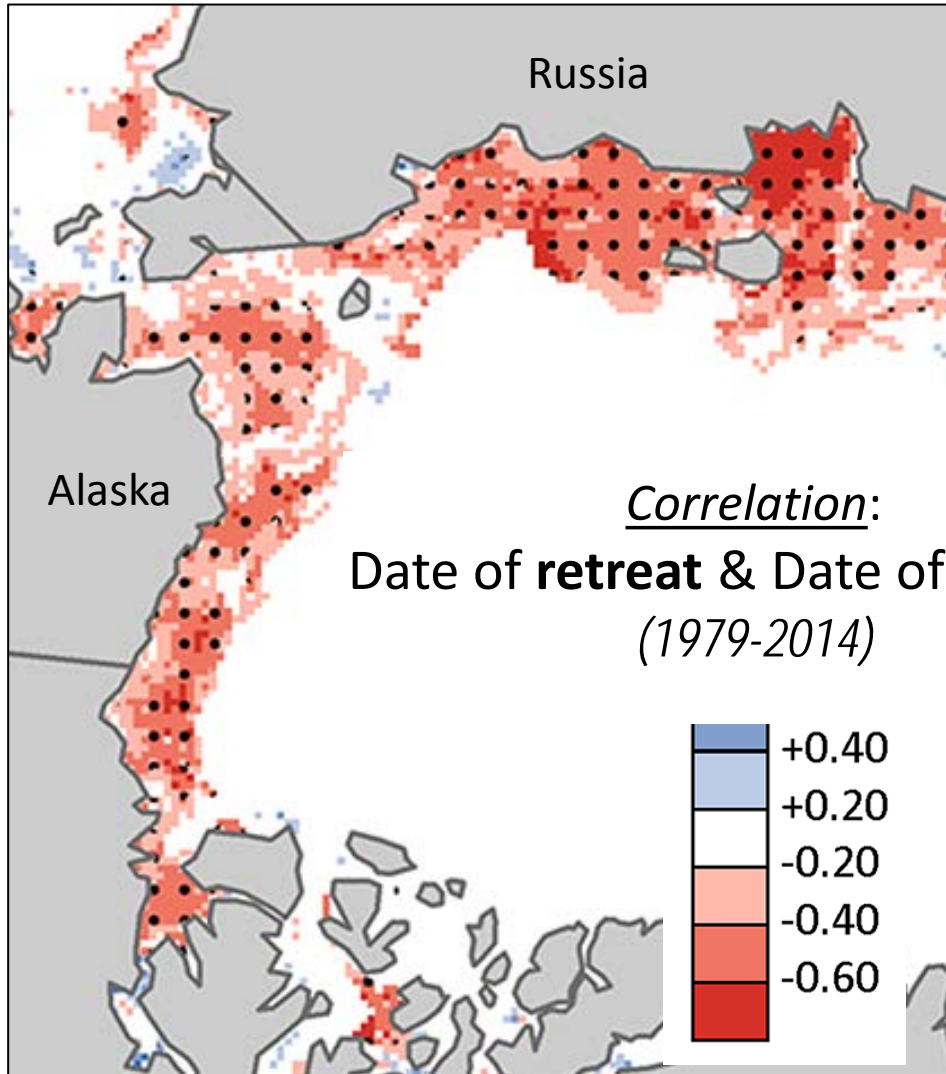


Predicting fall **advance** using spring/summer **retreat**

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e.g.:

- **Early retreat**
- **Warm ocean** ← not necessarily!
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Sea Ice Prediction Network
(SIPN) Phase 2
2018-2021

New foci:

- AK Arctic
- Ocean's role