

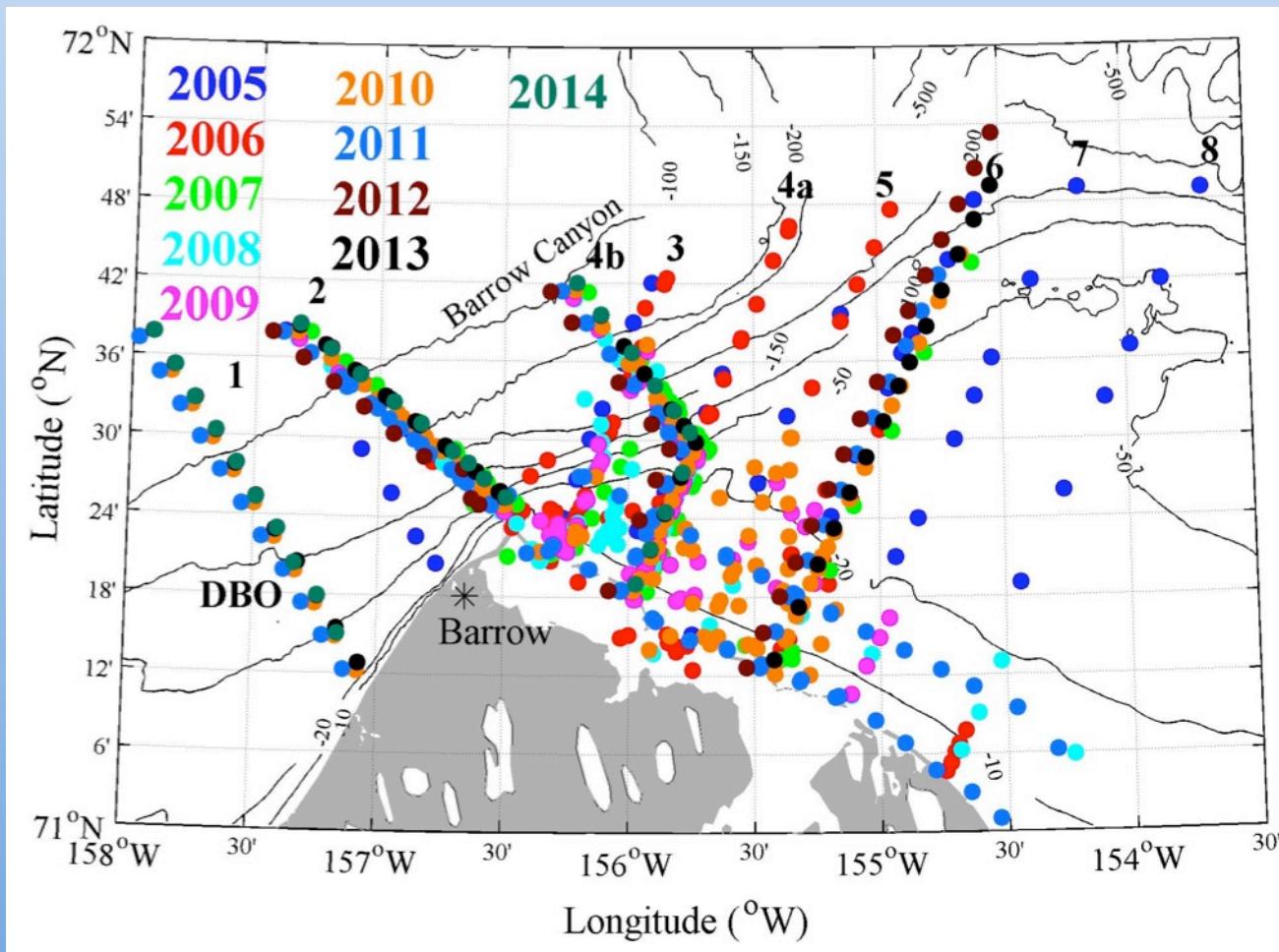
Plankton on “Almost DBO”

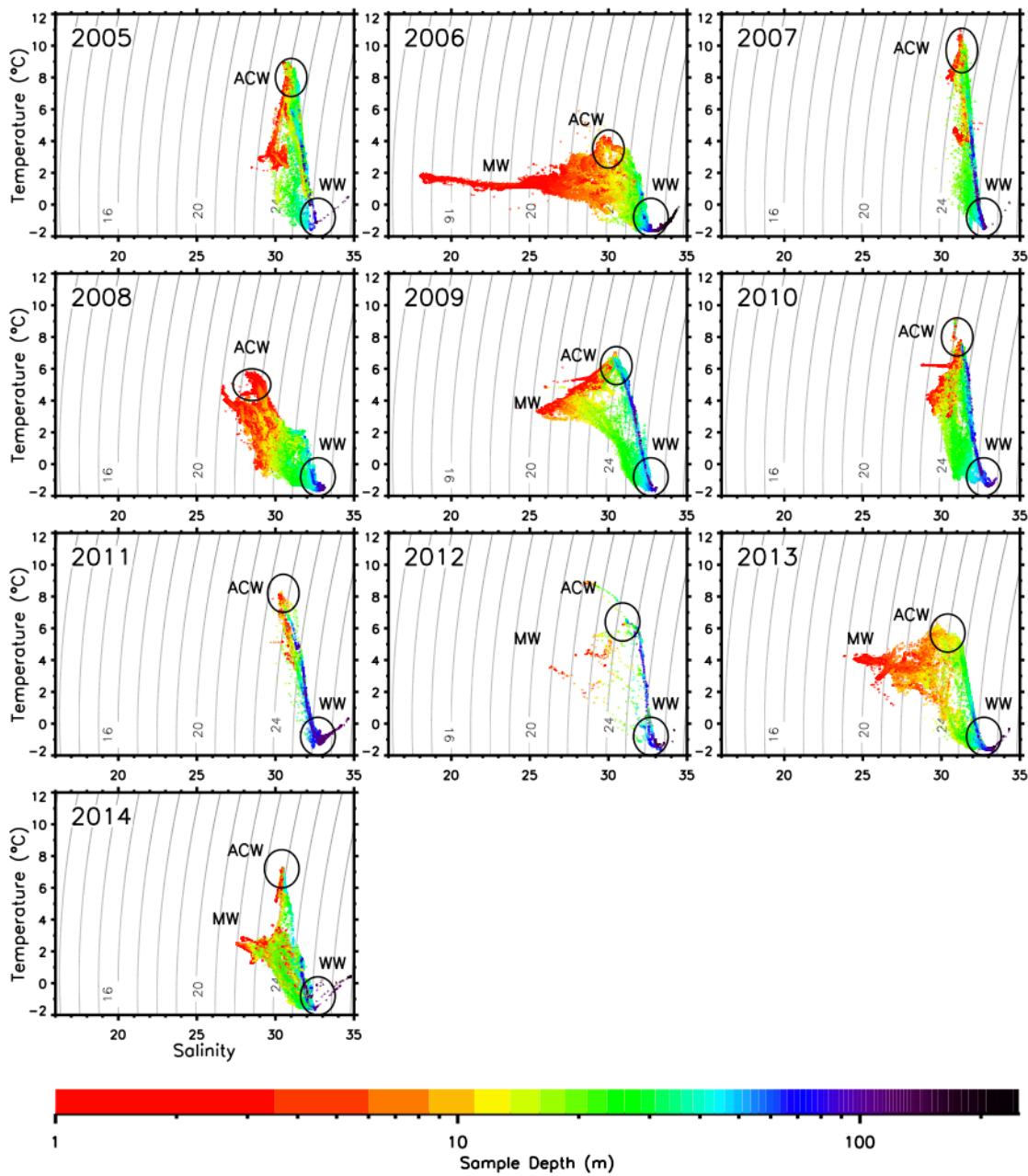
and

The DBO Line in Nov. 2011

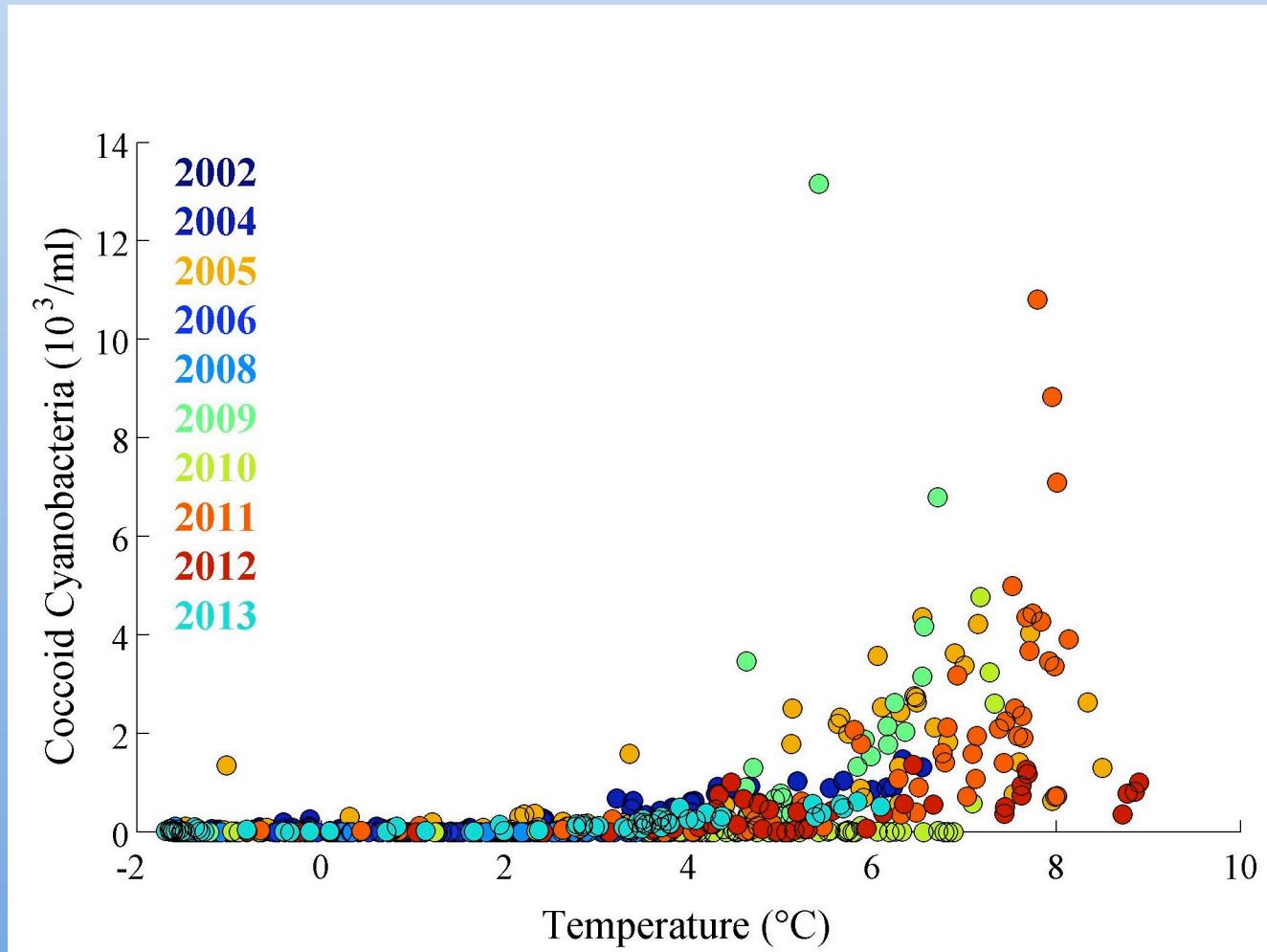
Carin Ashjian, Bob Campbell, Steve Okkonen

# Oceanographic Research Program (2005-2014)

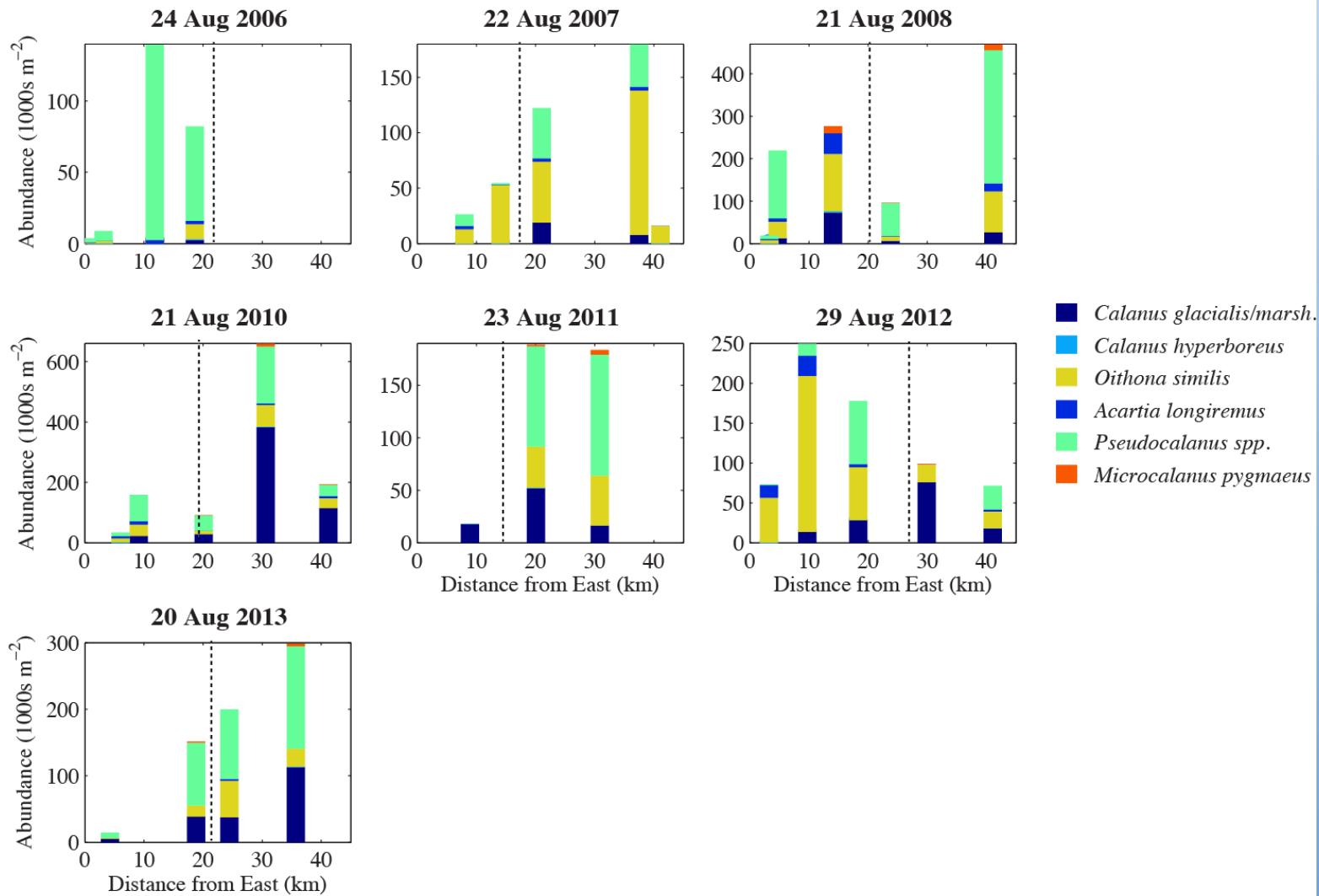




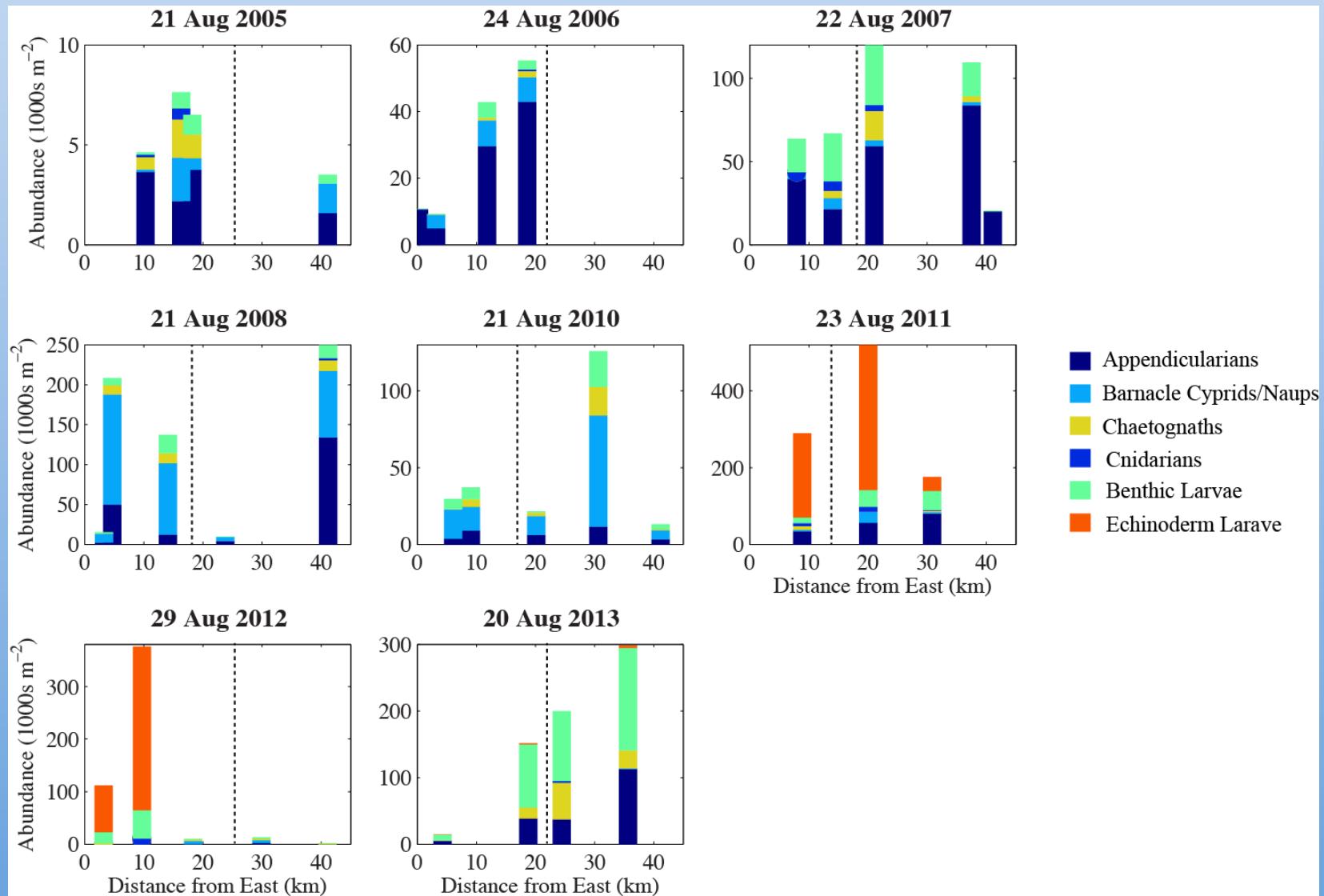
# *Synechococcus*



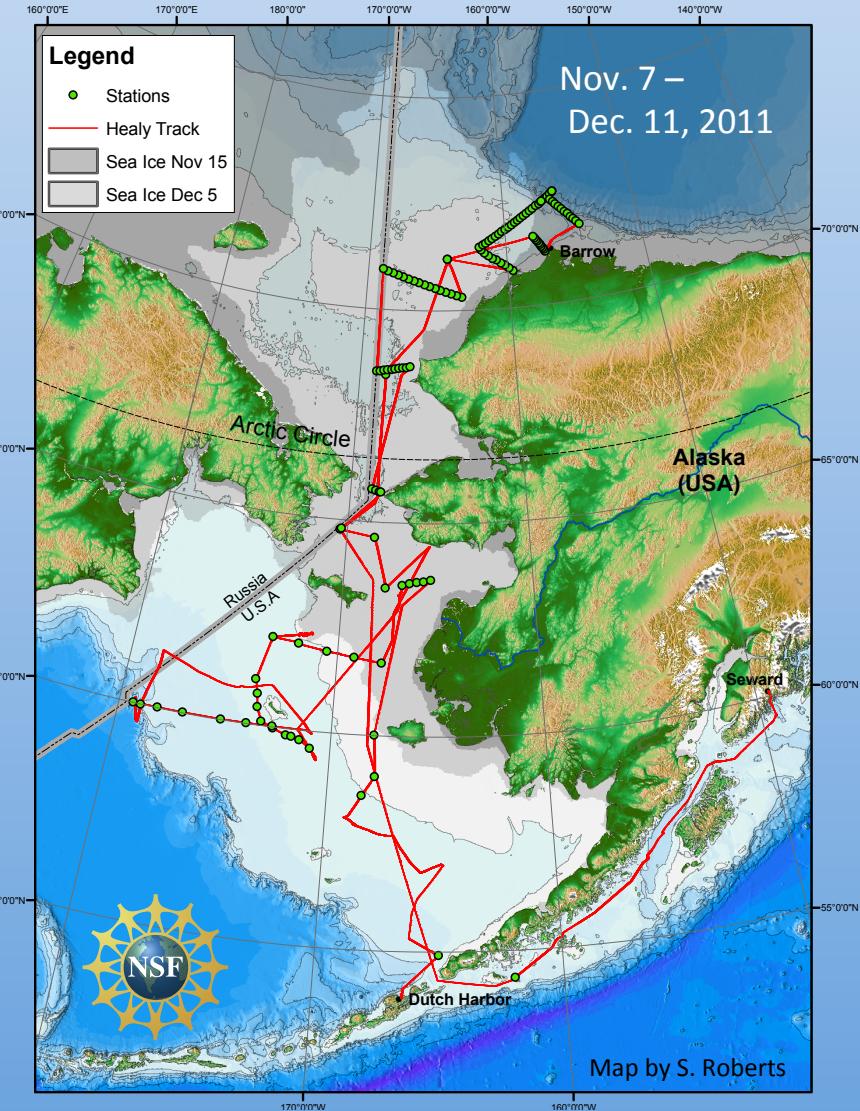
# Copepod Species



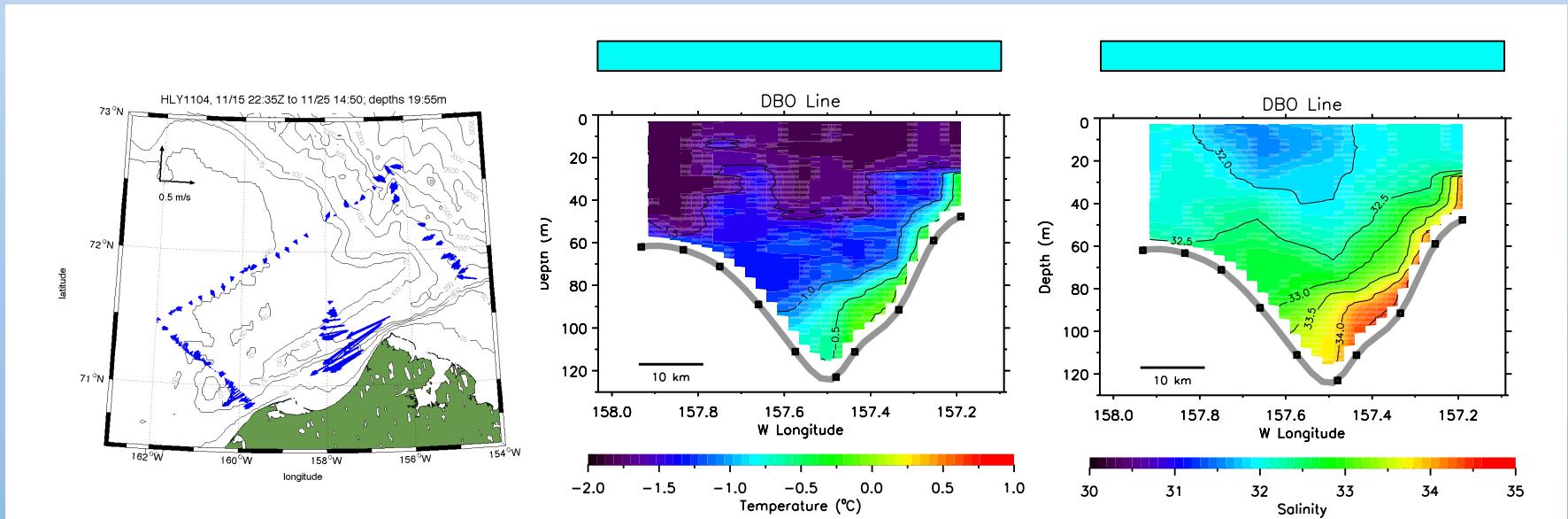
# Other Taxa



# November – December 2011

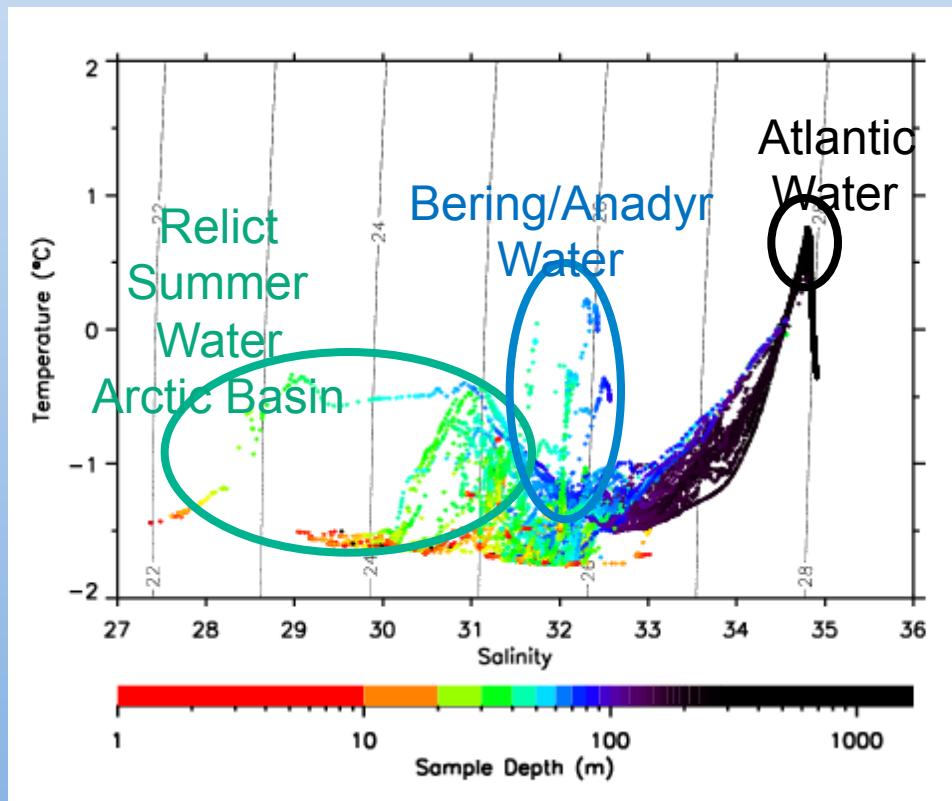


# Temperature and Salinity along DBO Line



- Warm, salty Atlantic Water on eastern side.
- This is seen also in the water column velocities
- Winter Water forming across the section but the inflowing Atlantic Water influenced the vertical distributions of properties
- This section was totally sea ice covered when we sampled

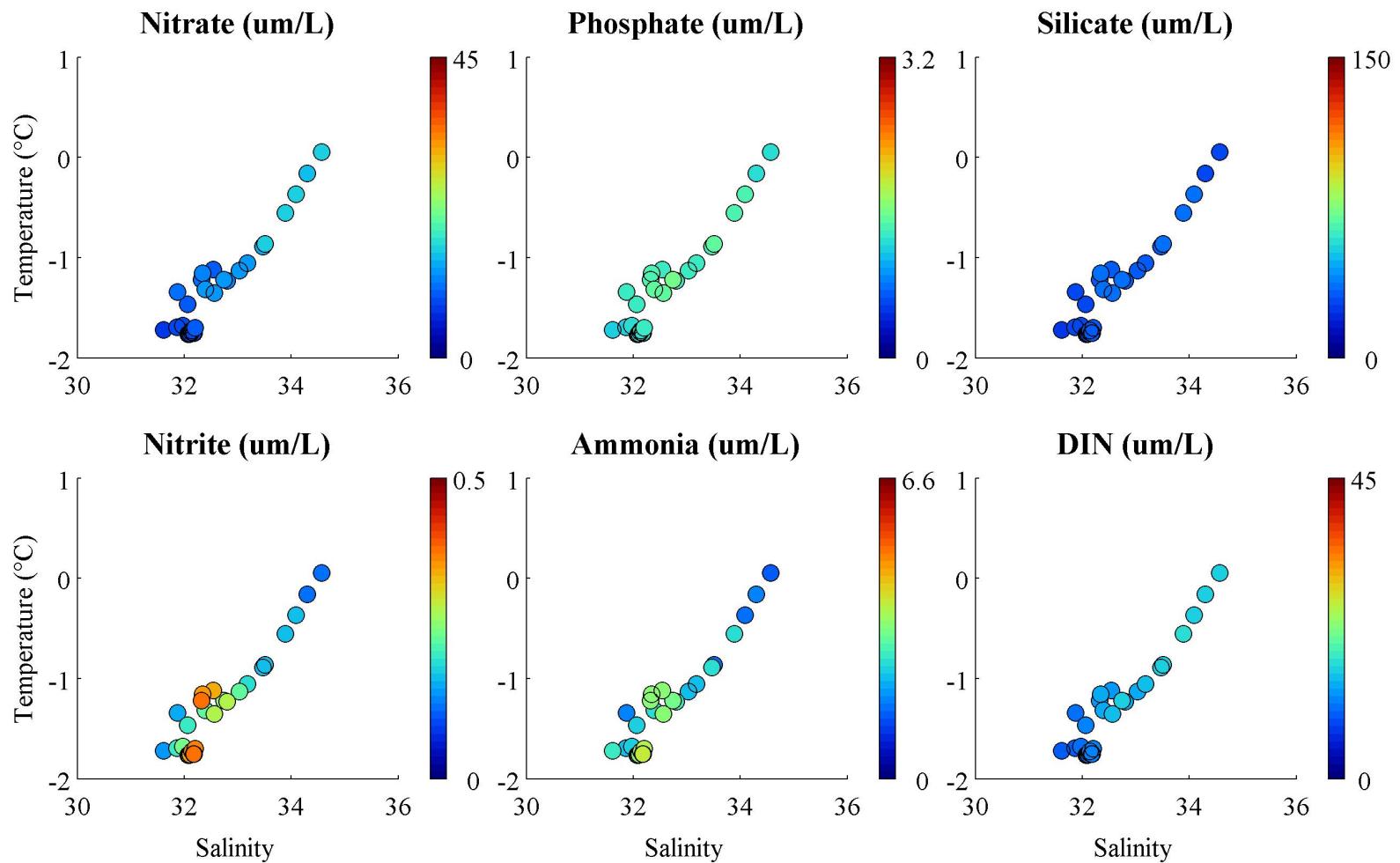
# Temperature-Salinity Properties in the Chukchi Sea



Four water types observed:

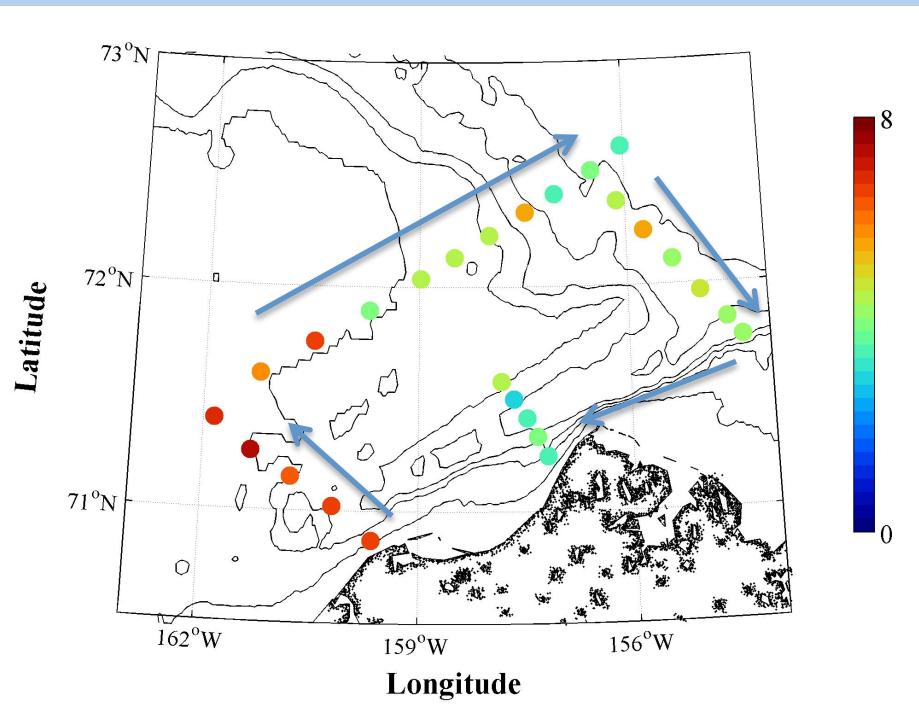
- Atlantic Water seen at depth off of the shelf and in Barrow Canyon
- Relict Summer Water seen at shallow depths in the Arctic Basin
- Bering/Anadyr Water on Chukchi Shelf
- Very cold, fresher water seen on the shelf, product of ice formation

# Nutrients - Calvin Mordy



# Phytoplankton

Integrated (0-40 m) Chlorophyll ( $\text{mg m}^{-2}$ )

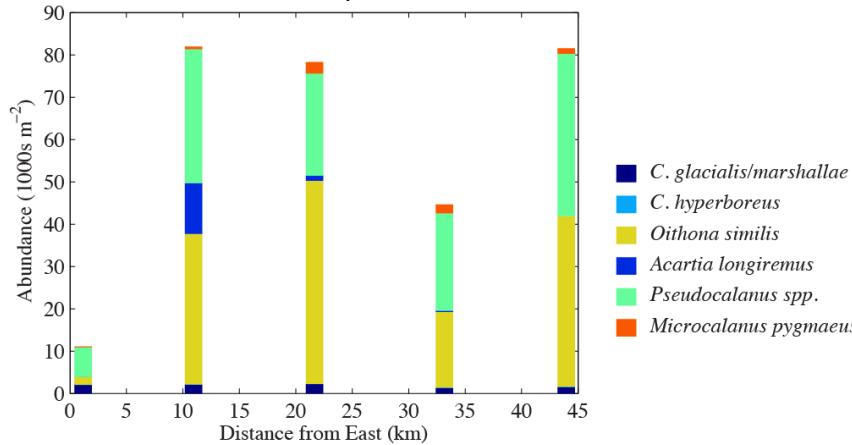


- Chlorophyll levels were low throughout the cruise and showed little structure in vertical distribution
- Values in the Chukchi Sea were 0.1-0.2  $\mu\text{g/L}$
- Chlorophyll may have been decreasing with time under ice; highest values were seen at locations where ice formed last

# Zooplankton

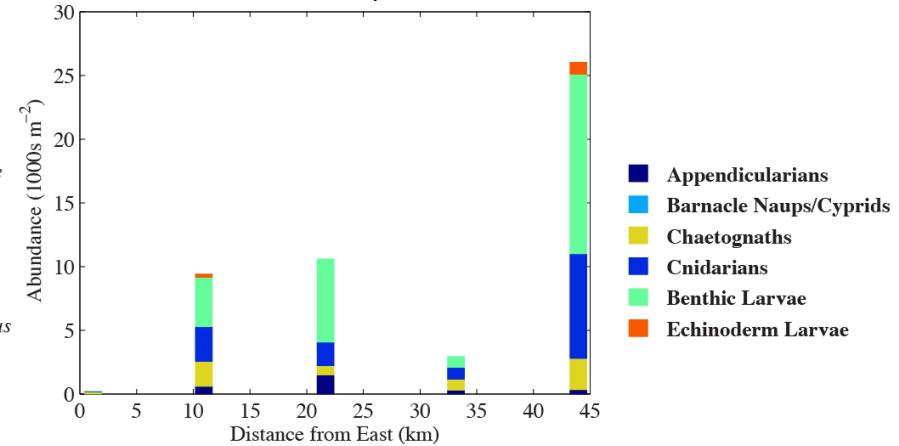
## Copepods

Nov. 23-24, 2011

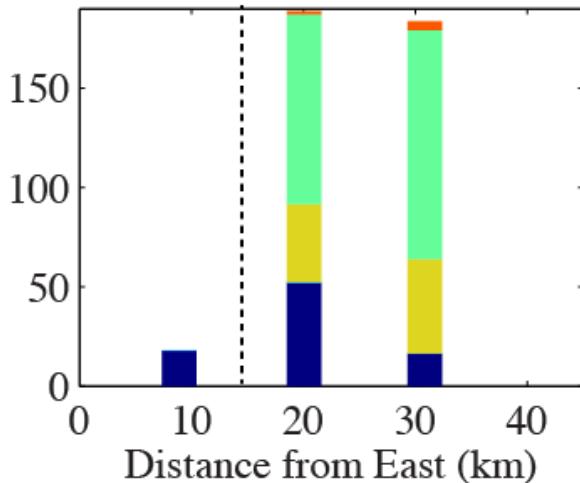


## Other Taxa

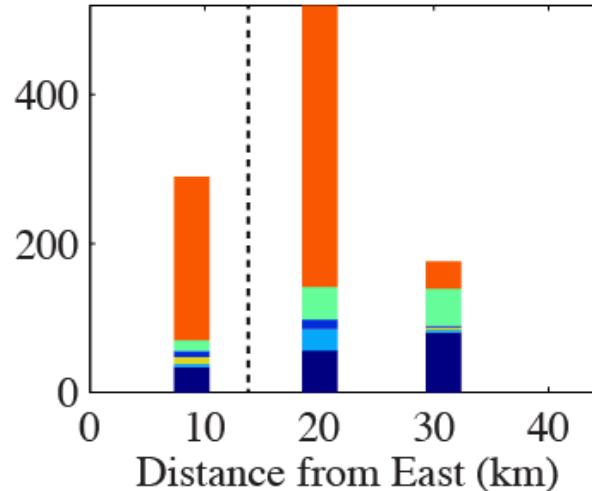
Nov. 23-24, 2011



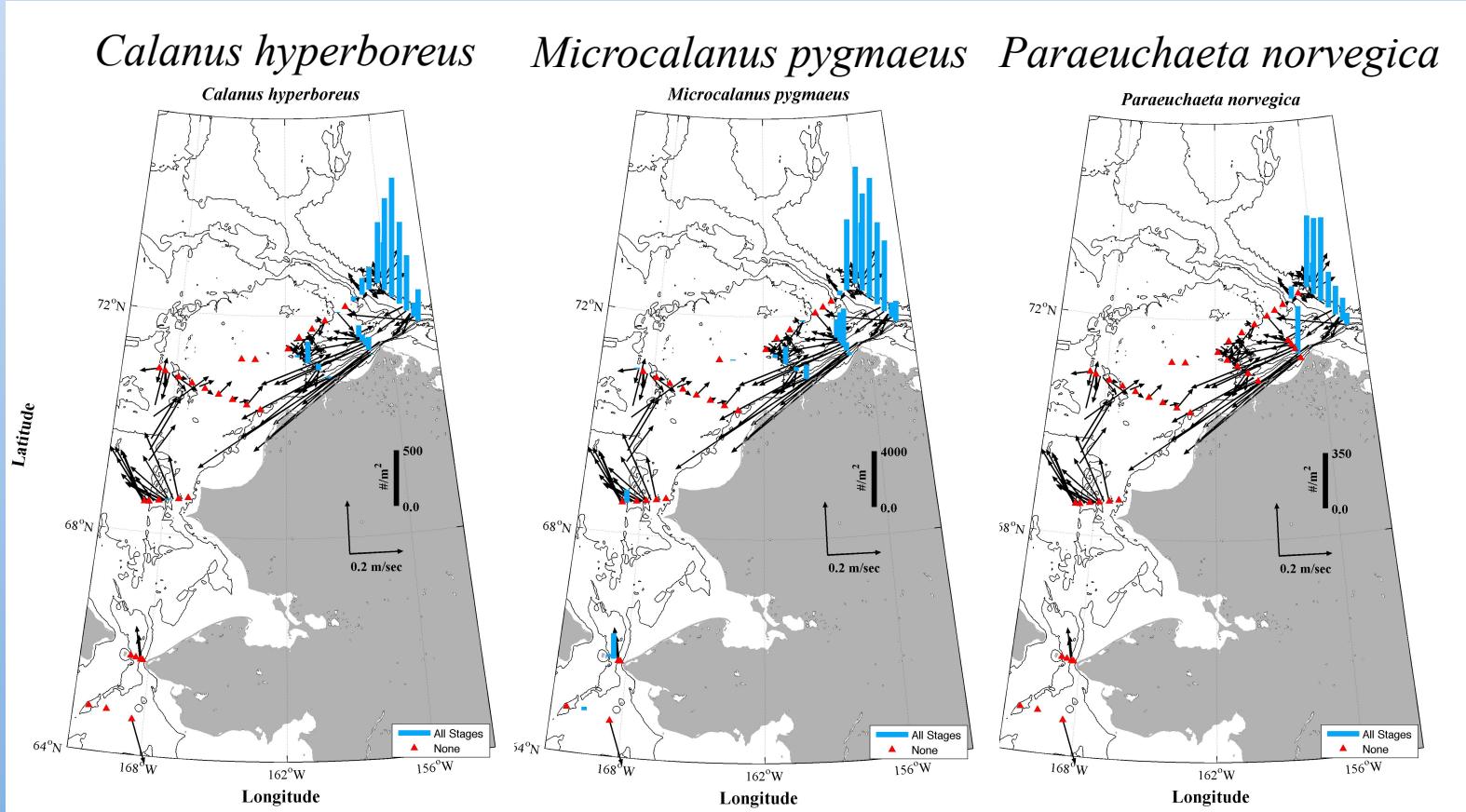
23 Aug 2011



23 Aug 2011



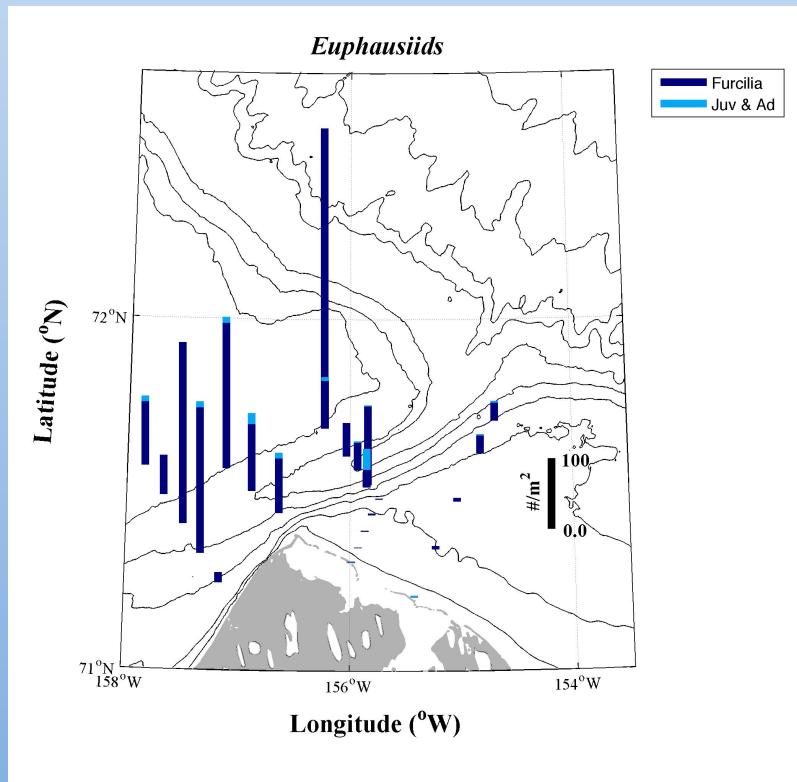
# Abundance of Three Arctic Basin Types



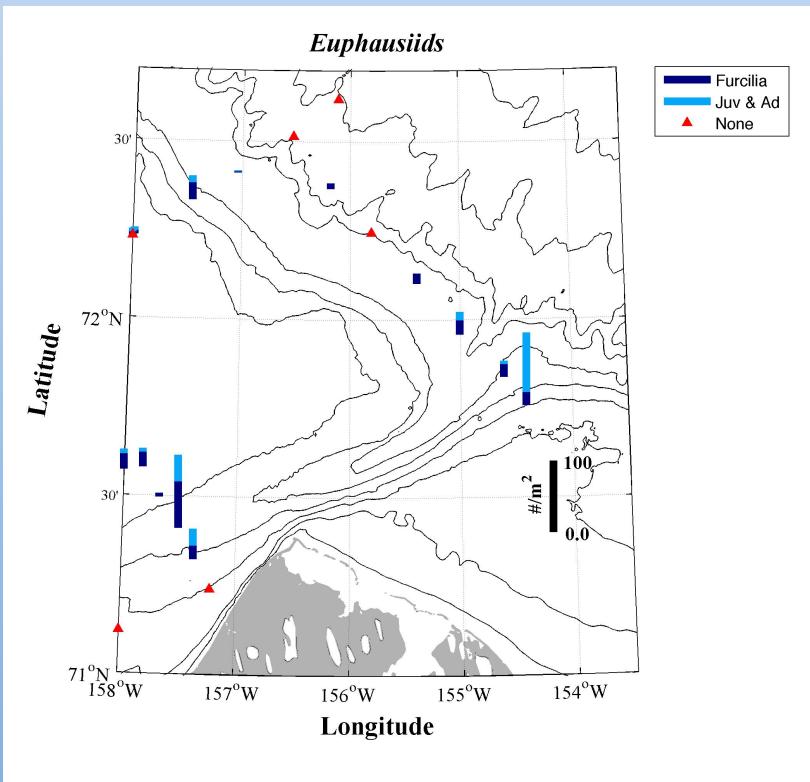
- Seen only over the Chukchi shelf break, slope, and in Barrow Canyon in association with flow of Arctic (and Atlantic) water into the Canyon

# Late Summer (August-Sept.) vs. November Abundances and Life Stages

August – September 2011

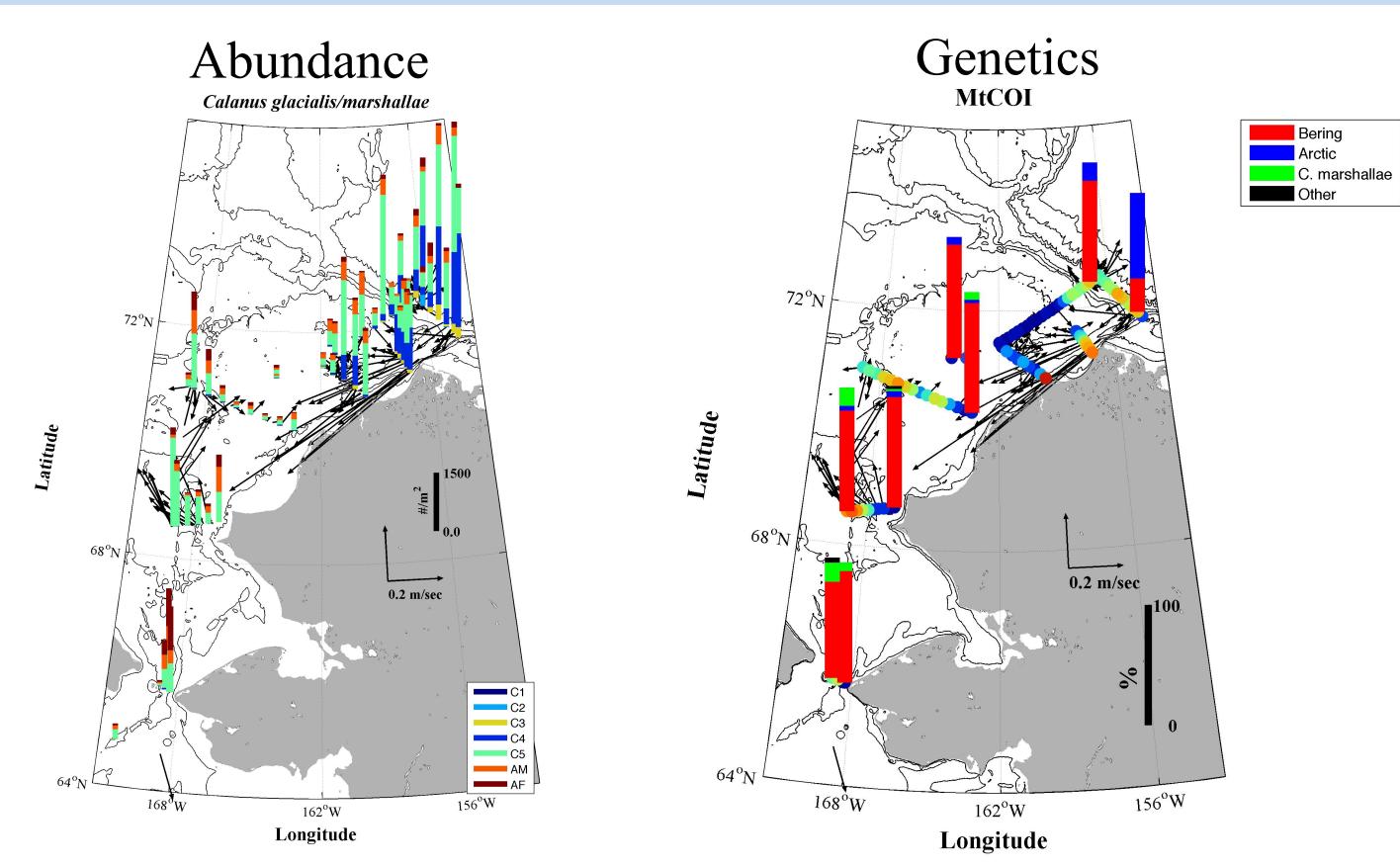


November 2011



- Krill less abundant at Barrow in summer than in Northern Bering in November but more abundant at Barrow in summer than at that location in winter
- Furcilia dominated in late summer while juveniles and adults dominated in early winter (where there were any observed)

# Distribution of *C. glacialis*

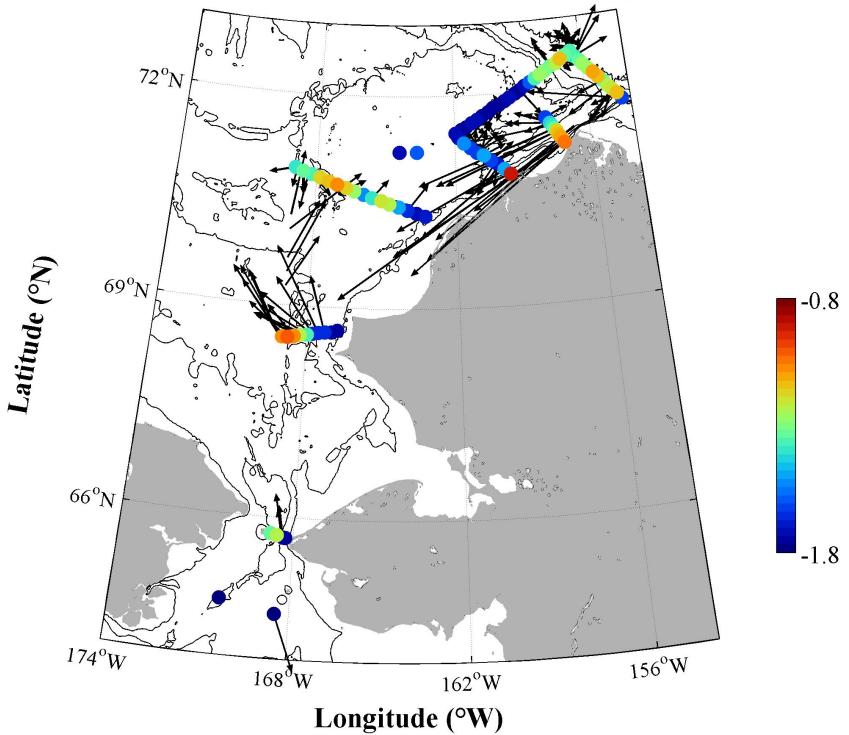


- *Calanus* were widespread on the shelves. Higher abundances along the Chukchi shelf break and slope, in Barrow Canyon, and in the western Chukchi
- Very low abundances in mid-Chukchi Sea
- Distinctive differences in life stage composition between Barrow Canyon and Basin, with notable abundances of Copepodid 4, and the remainder of the region that was dominated by C5 and adults
- Arctic MtCOI haplotype/populations seen primarily on shelf break and in Barrow Canyon

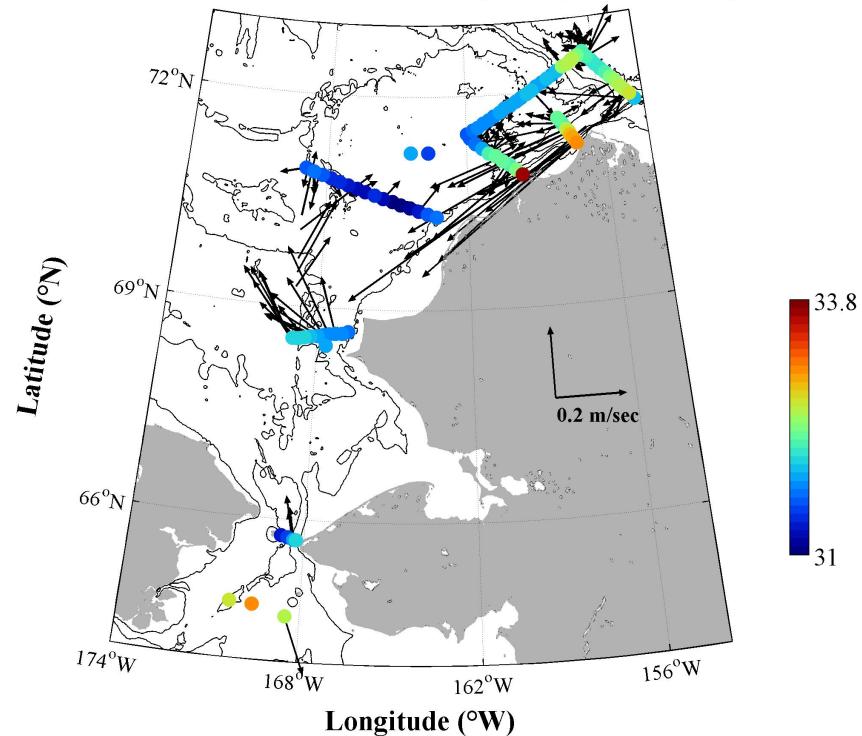


# Mean Water Column or upper 200 m Temperature, Salinity, and Hourly De-Tided Velocity

Mean Water Column Velocity (m/s) and Temperature (°C)



Mean Water Column Velocity (m/s) and Salinity



- Influx of warmer, salty Atlantic Water along eastern Barrow Canyon
- Warmer Bering Sea water along western end of Pt. Hope and Pt. Lay Transects
- Warmer Bering Sea Summer Water along Chukchi Shelf Break and in Basin
- Formation of cold, fresh Winter Water (and sea ice) along Hanna Shoal Transect