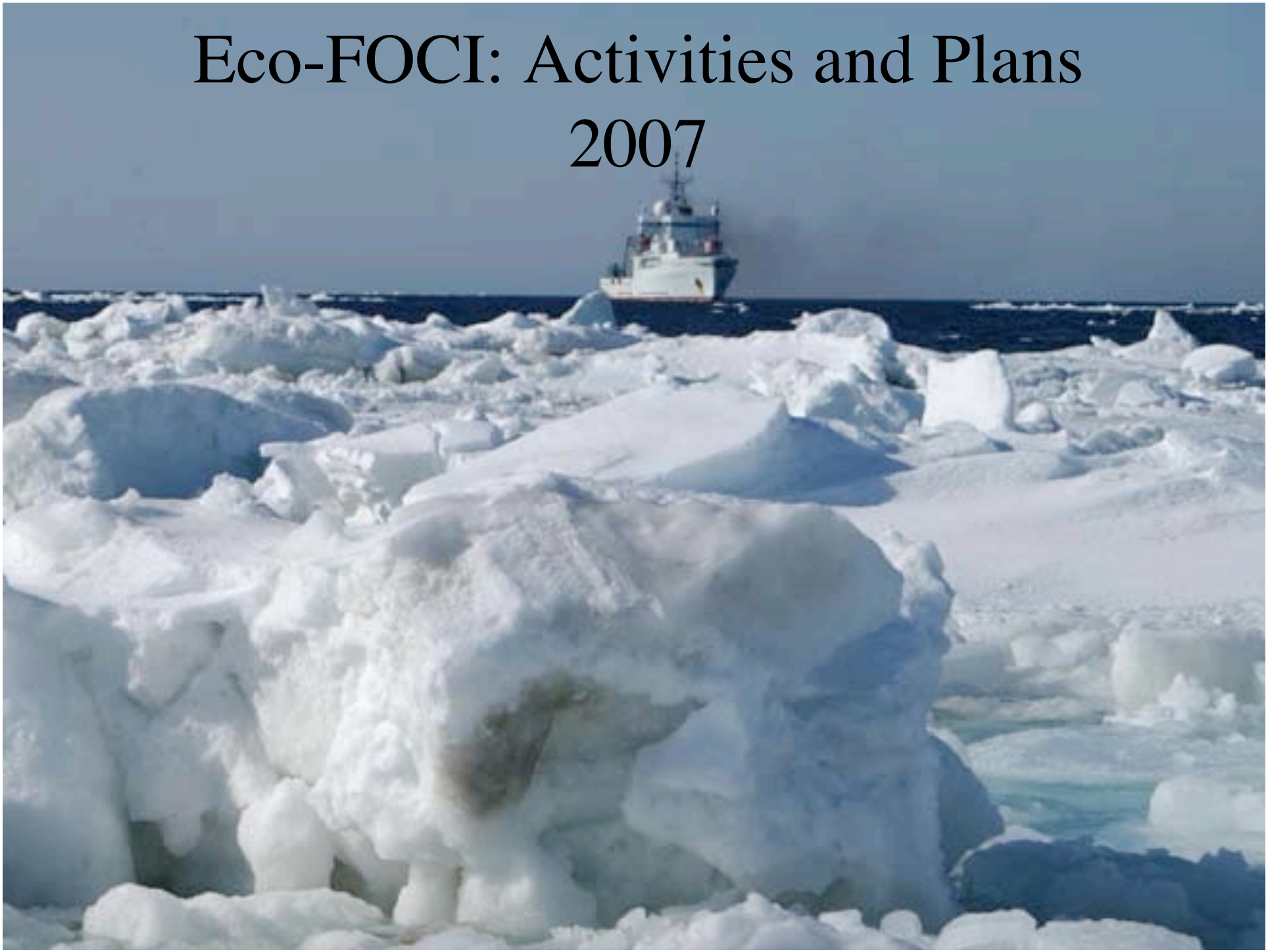
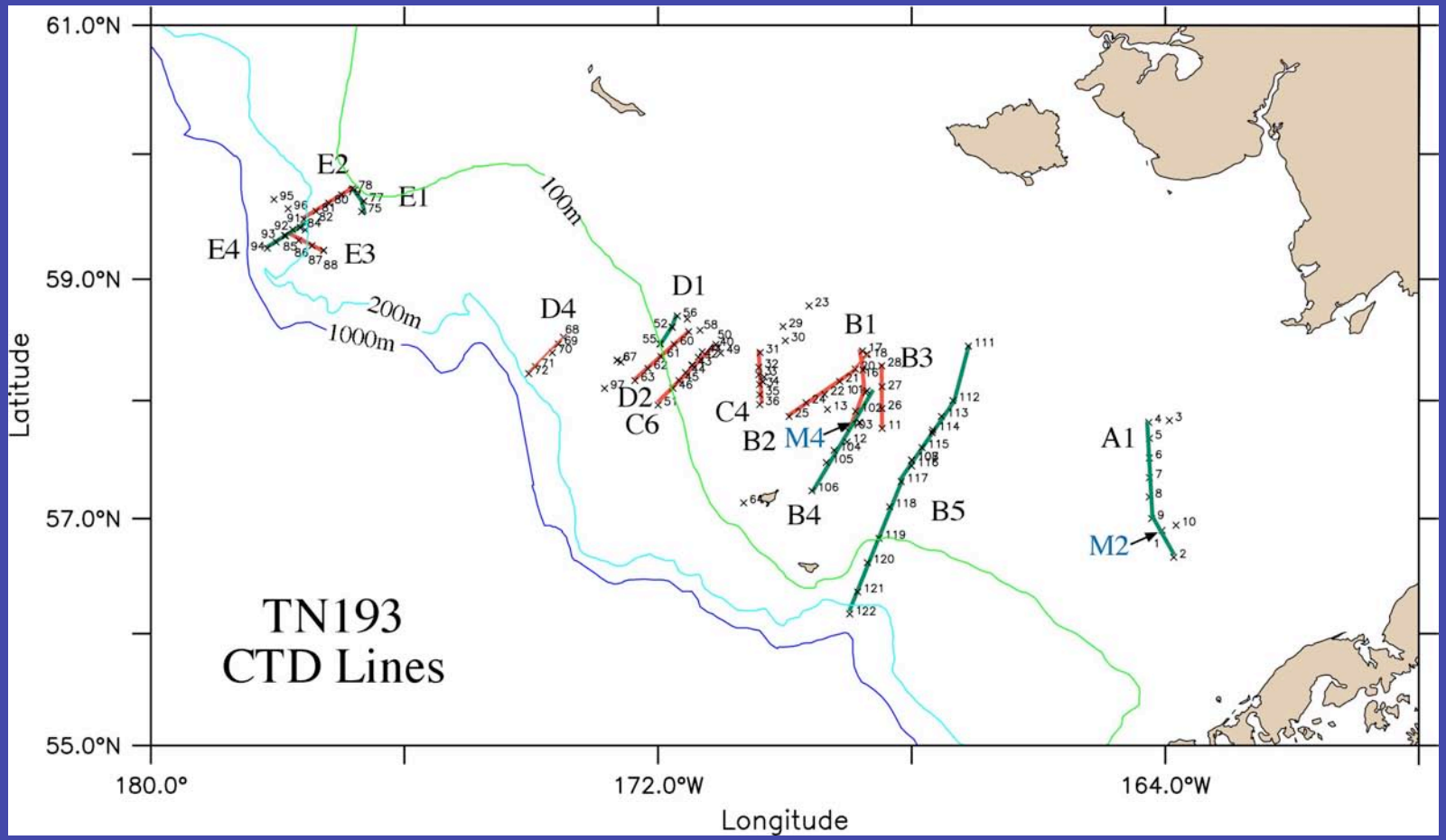
Eco-FOCI: Activities and Plans 2007



CTD and Water Samples 2006

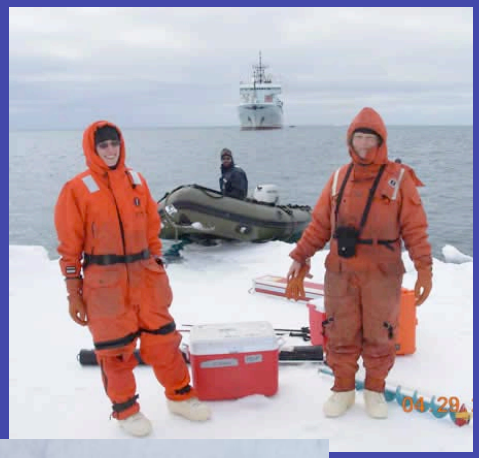


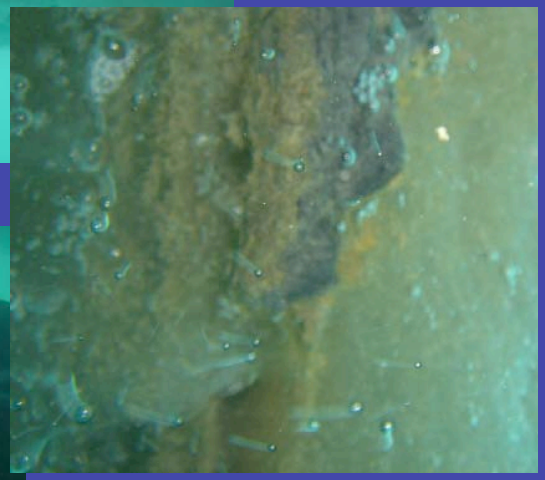
CTD and Water Samples

CTD	**122**	***Thompson***
CTD	**40**	***Freeman***

Ice Floes

Ice cores	**9**	***Thompson***
Brine holes	**3**	
Diving ops	**2**	***Freeman***





Seabirds and Cetaceans

Seabirds and Cetaceans lines (km)	**~3000**	***Thompson***
Seabirds and Cetaceans lines (km)	**~500**	***Freeman***

Seals

Ice seal lines (km) **~1700**

Seals tagged **18**

Thompson

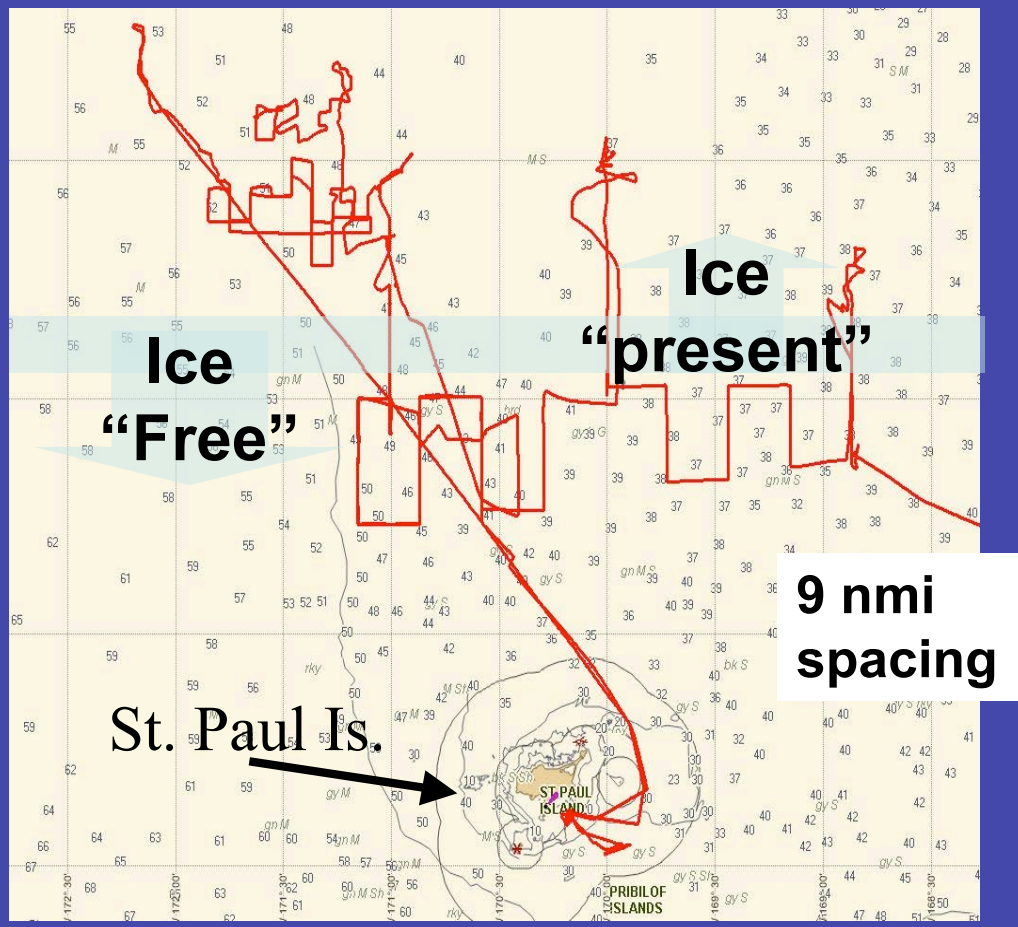
Nets

Bongos (20cm and 60cm)	95	*Thompson*
CalVET	6	
0.8 m diameter ring net	12	
Tucker trawl	10	
Methot Tow	6	*Freeman*
Hydroacoustic lines (km)	~1000	

Miller Freeman Ice Edge - Acoustic Effort (21 - 28 Apr)

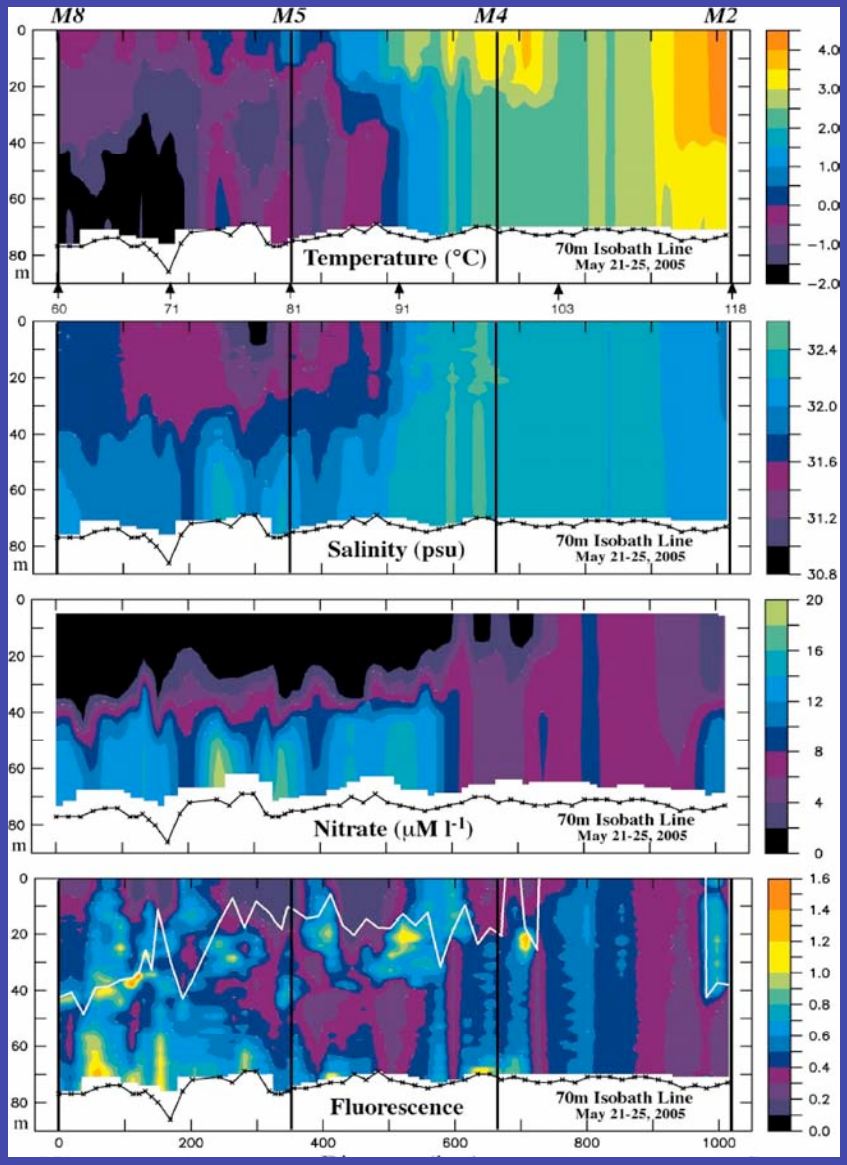
Preliminary Results

- Two zones: “Ice Free” & “Ice Present”
- ca. 1000 nmi of transects run (18, 38, 120, 200 kHz data collected)
- Methot hauls = 6
- Weak, persistent acoustic backscatter layer of euphausiids & gelatinous zooplankton (~ 50-80 m depth)
- Fish backscatter virtually absent



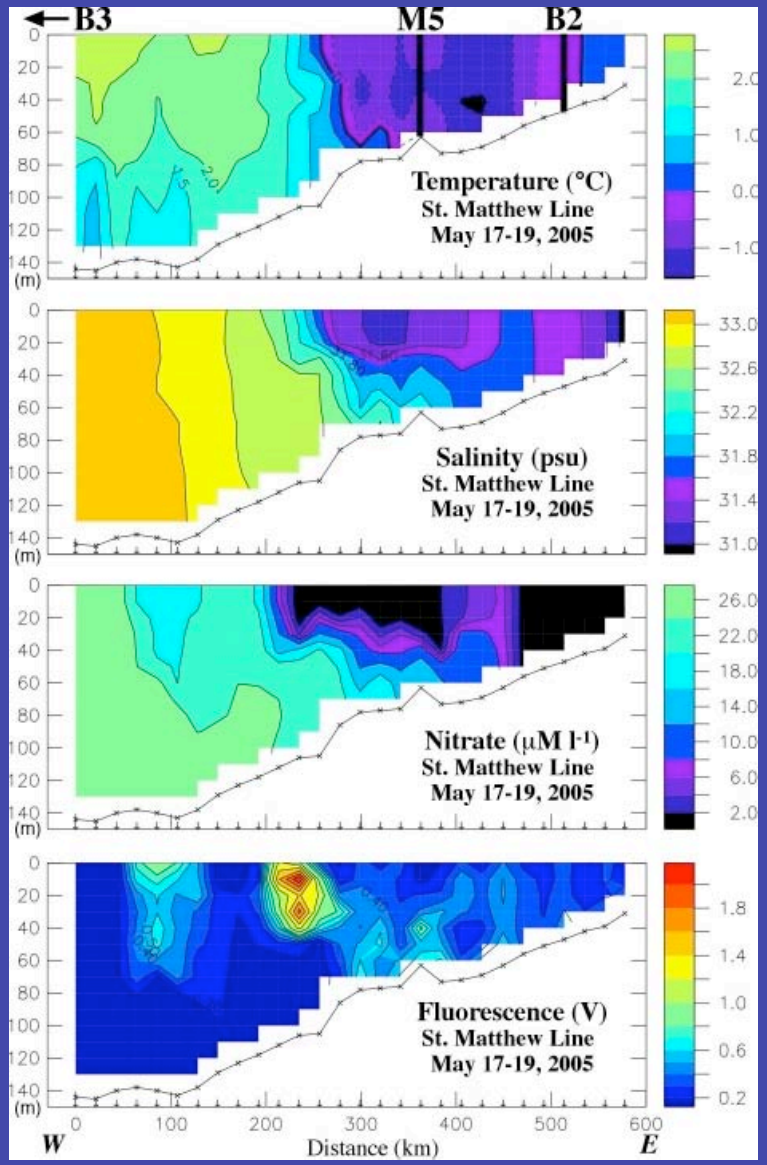
May 2005

(10 days - 118 CTD stations, 44 bongos)



May 2005

(10 days - 118 CTD stations, 44 bongos)



NOAA Physical/Chemical Priorities: 2007

CTD: Temperature, salinity, fluorescence, PAR, turbidity, oxygen.
Discrete samples: Nutrients (*nitrate, nitrite, phosphate, silicate, ammonia*), oxygen
Underway measurements: Temperature, salinity, fluorescence, nitrate

- Mooring groundtruth data (M2, M4, M5, M8)
- 70-m isobath
- Cross shelf sections
- Measurements for process studies
- Ice cores (T, S, chlorophyll, phytoplankton species, PAR)
- Calibration samples

Other possible measurements:

- Urea (?)
- CO_2 + Alkalinity *(Melissa Chierici)* (?)
- Satellite-tracked drifters (4-8)
- Other needs of BEST PIs

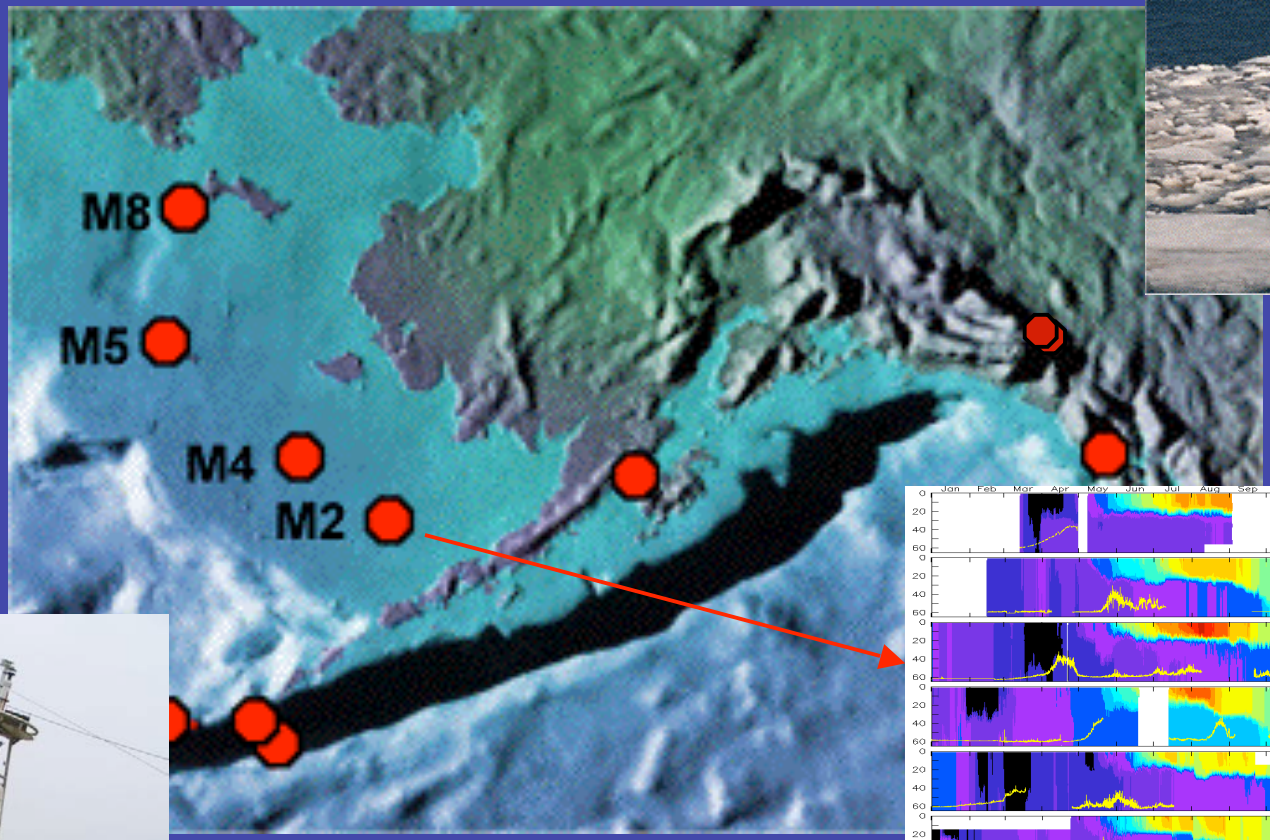
NOAA Biological Priorities: 2007

- **Holoplankton**
  - **Mesozooplankton species abundance and distribution**
    - **Mooring groundtruth data (M2, M4, M5, M8)**
    - **70 m isobath (demarcation between two communities)**
    - **Cross shelf advection of large oceanics and interactions w. planktivorous birds**
    - **Under-ice (aggregation of species)**
- **Meroplankton**
  - **Ichthyoplankton species abundance and distribution**
  - ***Chionoecetes opilio* (snow crab)**
    - **Vertical distribution for IBM model (NPRB project)**
    - **Regional abundance and distribution**
- **Phytoplankton**
  - **What does BEST need?**
  - **Participation by another NOAA investigator?**
  - **Ice cores (chlorophyll, phytoplankton species, PAR)**

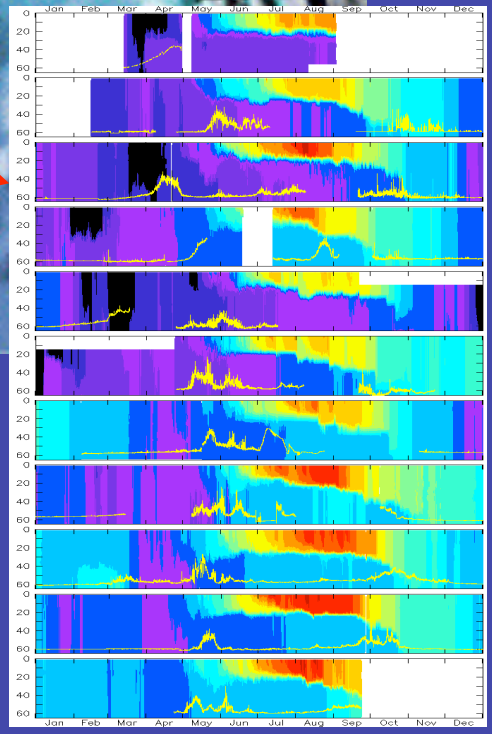
Other Projects

- **Quantitative Fisheries Acoustics** ***(Freeman)***
  - **–Limited to ice edge**
  - **–Limited ship time**
- **Moorings (M2, M4, M5, M8)**
- **Marine Mammals**
  - **– Request for helicopter-based surveys of ice-dependent seals (ringed, spotted, ribbon, bearded)**

Moorings


M8
M5
M4
M2


PEGGY


Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Oct
Nov
Dec
0
20
40
60

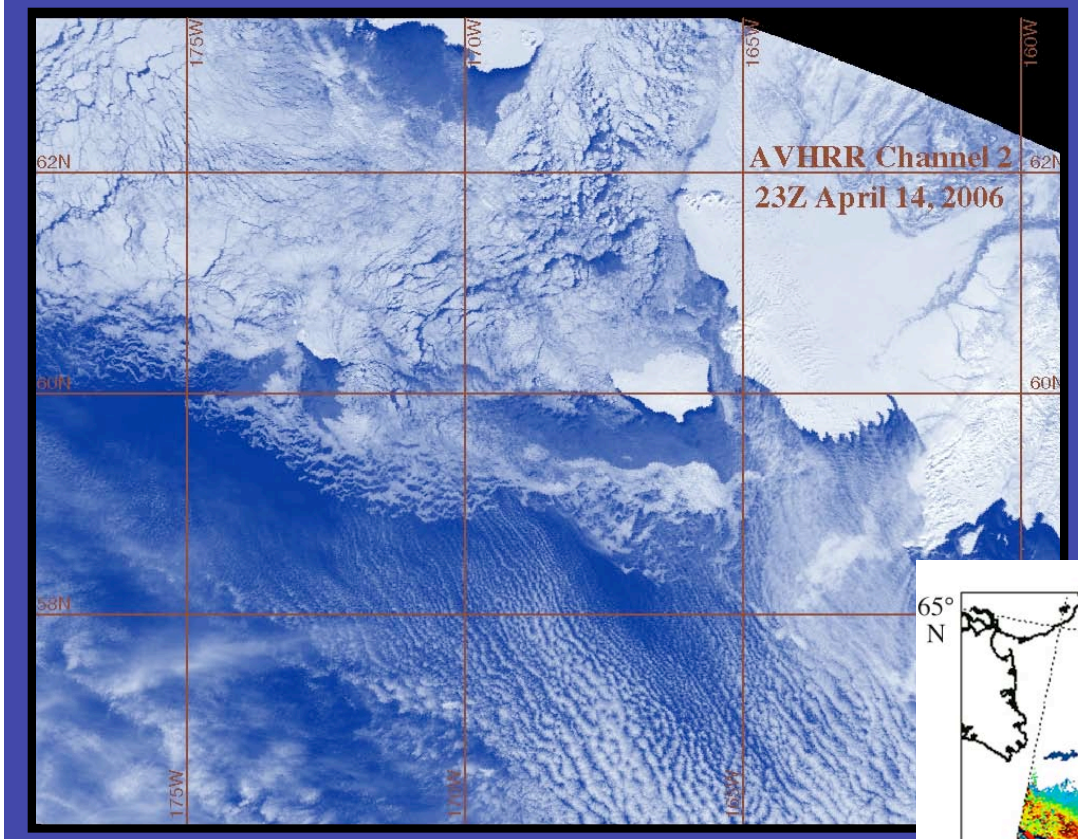
2007 Eco-FOCI Cruises into the Bering Sea

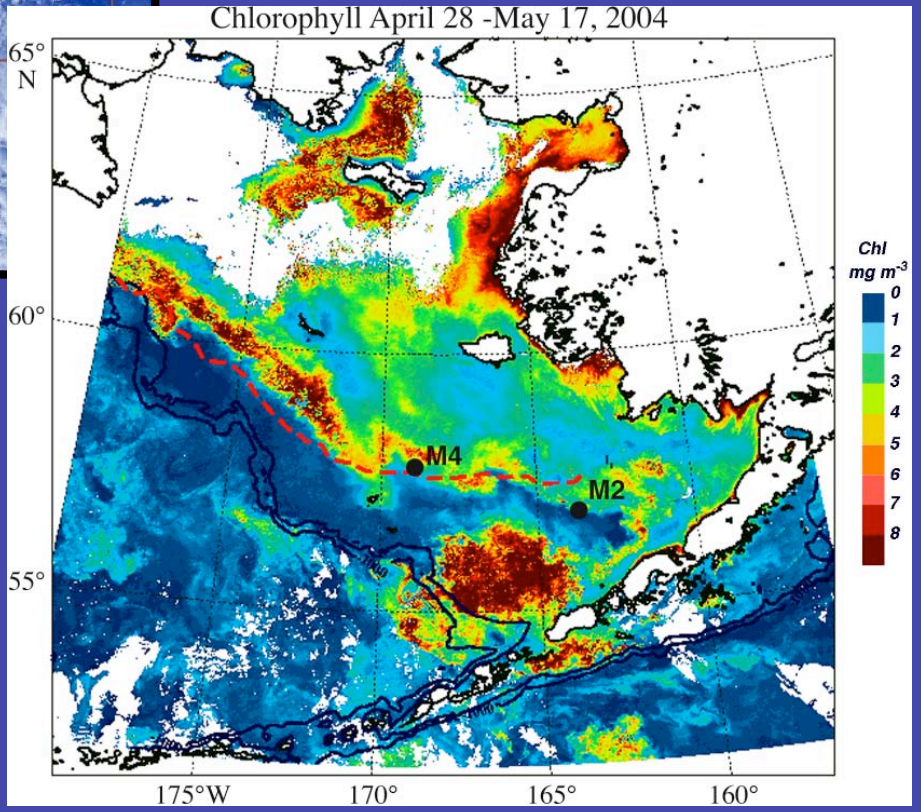
2/19-3/1	Icthyo survey	*Dyson/Freeman*	
4/28-5/10	Moorings, 70-m isobath	*Freeman*	
4/9-5/9	BEST	*Healy*	
5/9-5/18	Spring icthyo survey	*Dyson/Freeman*	
9/19-10/2	Moorings, hydrography	*Freeman*	
9/1-9/20?	Ecosystem study	*Thompson*	

Methodology Issues

- Healy unable to do oblique net tows in ice
  - Paired bongo tows in open water (20 cm, 153 μm mesh & 60 cm, 333 μm mesh)
  - What gear to use inside ice? (25 cm, 153 μm mesh CalVET + _____).
- Assessment of euphausiids
  - 1 m^2 Tucker in open water
  - Plummet net in ice (or in both to be comparable)?

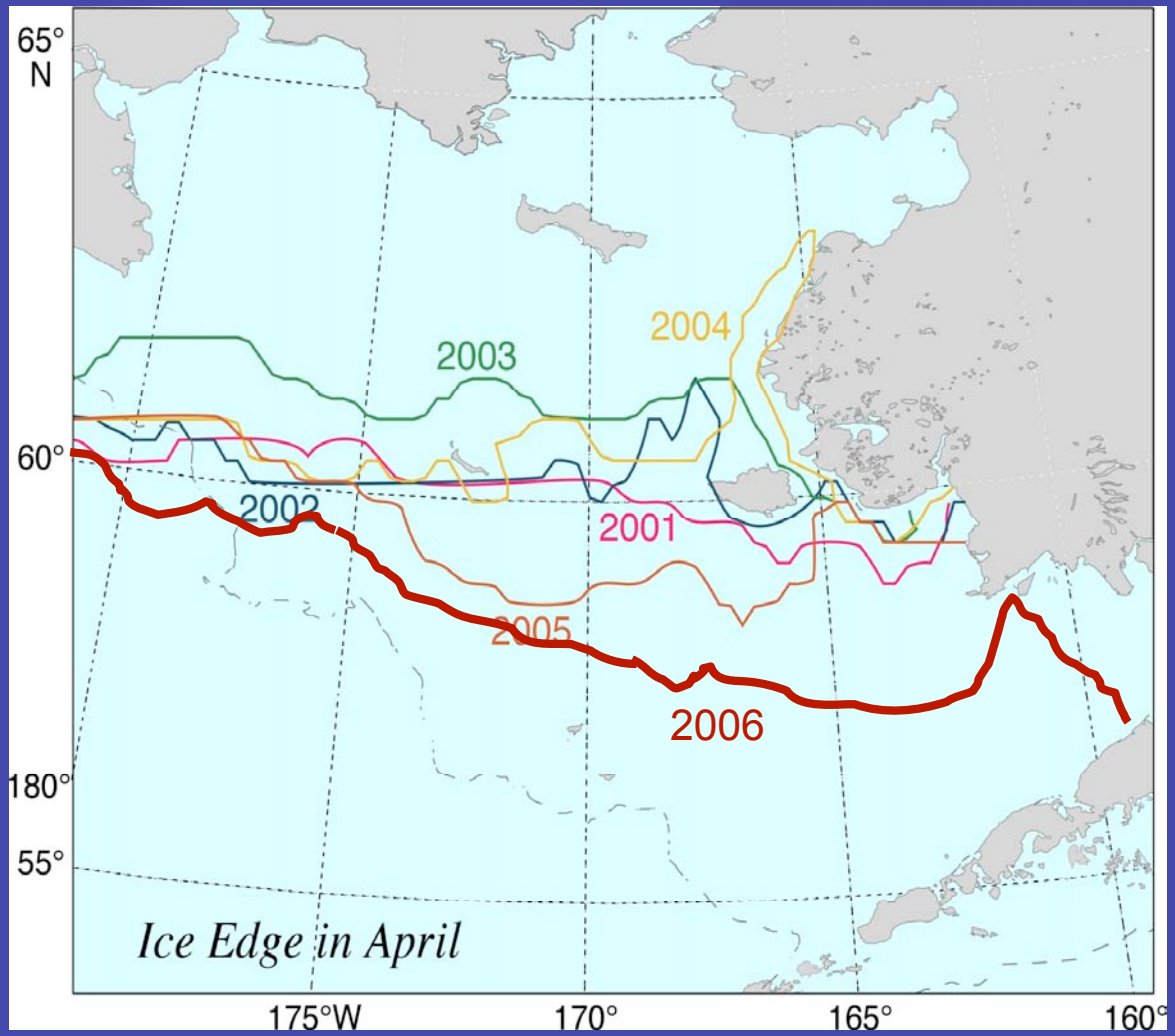
Concern



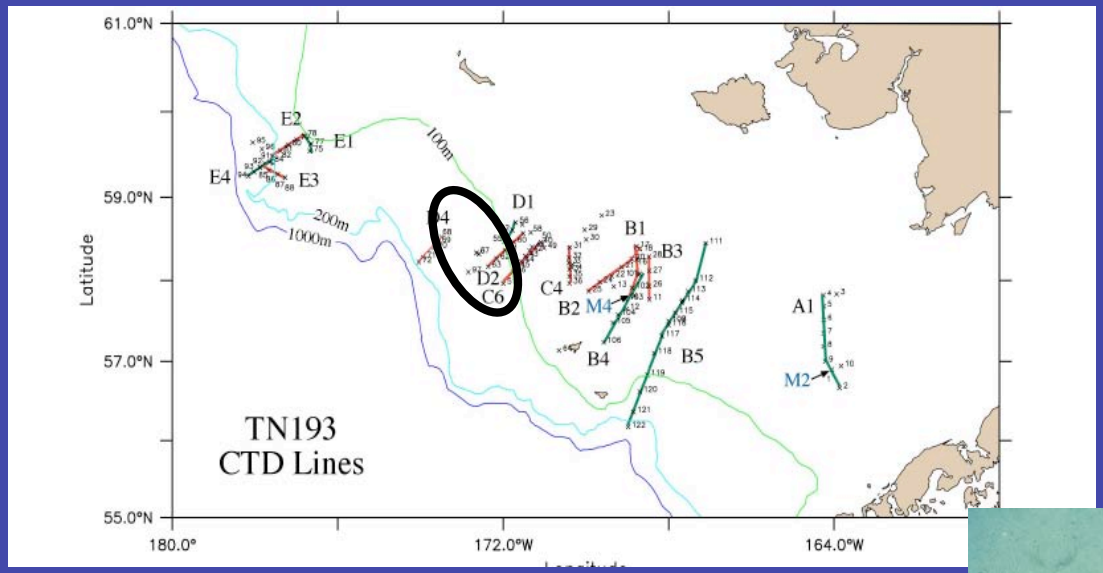


Satellite Imagery

Sea Ice Extent



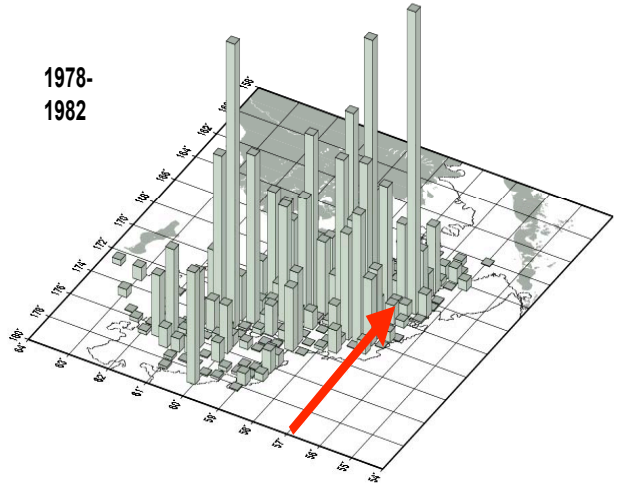
Larval Snow Crab Vertical Distribution



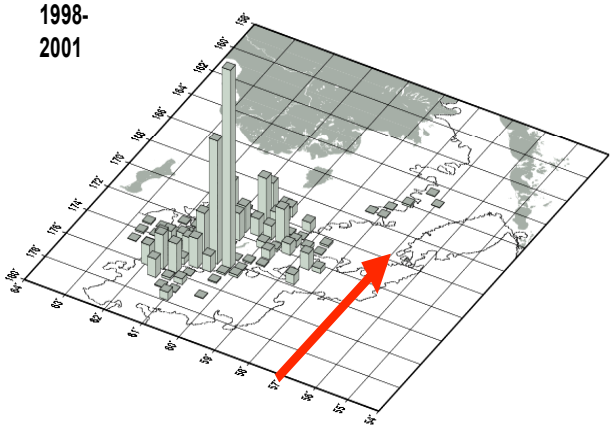
Orensanz, J. L., B. Ernst, D. Armstrong, P. Stabeno, and P. Livingston. 2004. Contraction of the geographic range of distribution of snow crab (Chionoecetes opilio) in the eastern Bering Sea: An environmental ratchet? CalCOFI Rep. 45: 65-79

Background

- ***Shift in range of snow crab:***
  - *Female snow crab distribution has shifted and contracted to the northwestern parts of the Eastern Bering Sea (EBS)*
  - *This coincides with warming of near bottom temperatures over the EBS, and reduction of the "Cold Pool"*



Aggregated Abundance of Mature Females, SCI-2



Question: Will the range shift back?

FACTS:

- *Female range has not expanded back to the south*
- *Spawning females are "up-current"*

HYPOTHESIS:

- *Larval advection to the south may not be likely*

MODELLING

- *Use coupled models to study this question*