

National Marine Mammal Laboratory (NMML) Science Update

Acoustics

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(NOAA/NMFS/NMML)



Projects

- Beaufort Sea
 - BOWFEST (Bowhead Feeding Ecology Study)
- Chukchi Sea
 - CHAOZ (Chukchi Acoustics, Oceanography, and Zooplankton)
 - IPY (International Polar Year)
- Bering Sea
 - North Pacific Right Whale Study

Gear



Disclaimer

- PASSIVE acoustics



- Listening Devices used:
 - AURALs, EARs, sonobuoys

Gear



AURALs
EARs



Sonobuoys

Gear

- AURALS

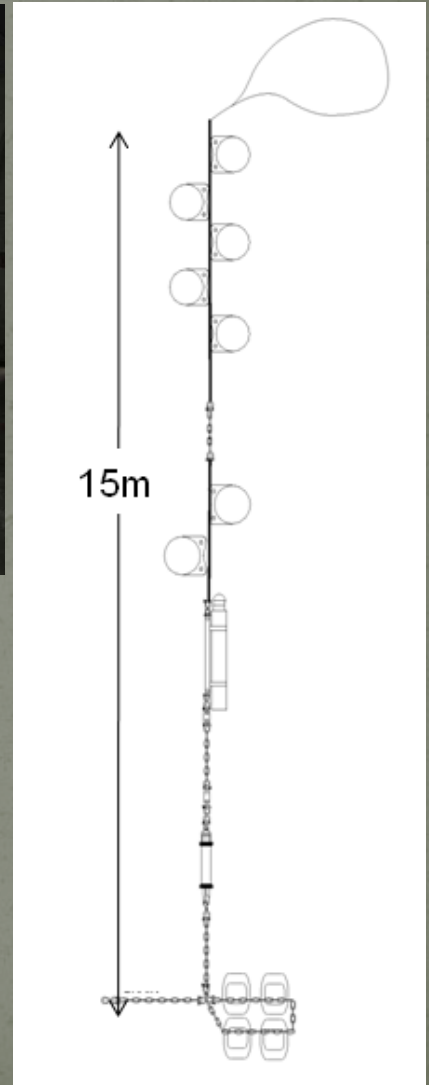
(Autonomous Underwater Recorder for Acoustic Listening)



8192 Hz

~ 10 min on/
20 min off

Year long



Gear

● EARS

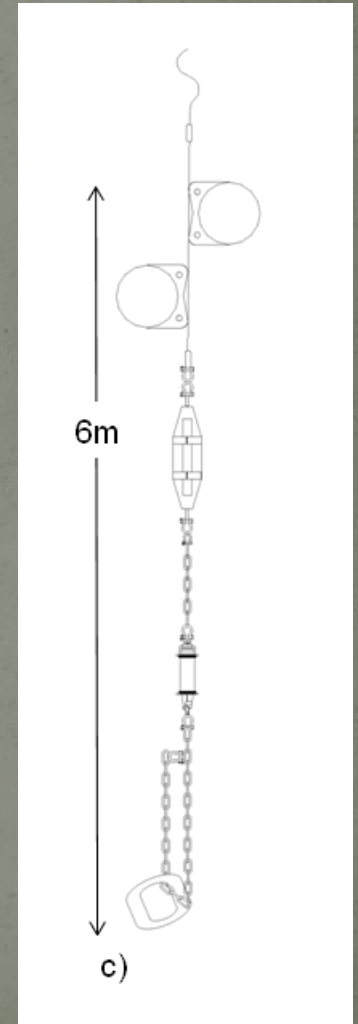
(Ecological Acoustic Recorder)



4 - 40 kHz

~ 5 min on/hr to continuous

Year long & Short term



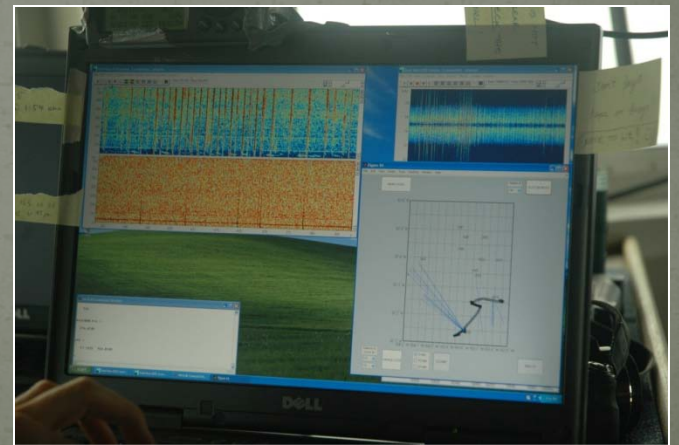
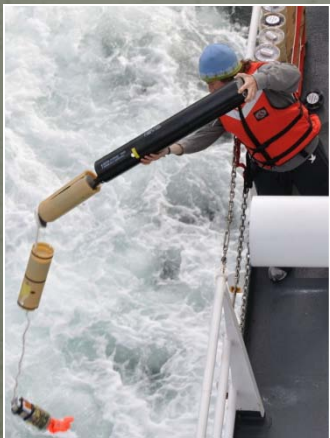
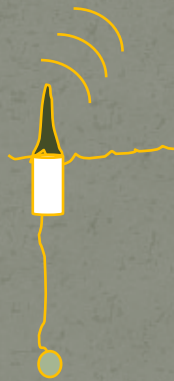
Gear

● Sonobuoys

2.5 – 24 kHz

Continuous

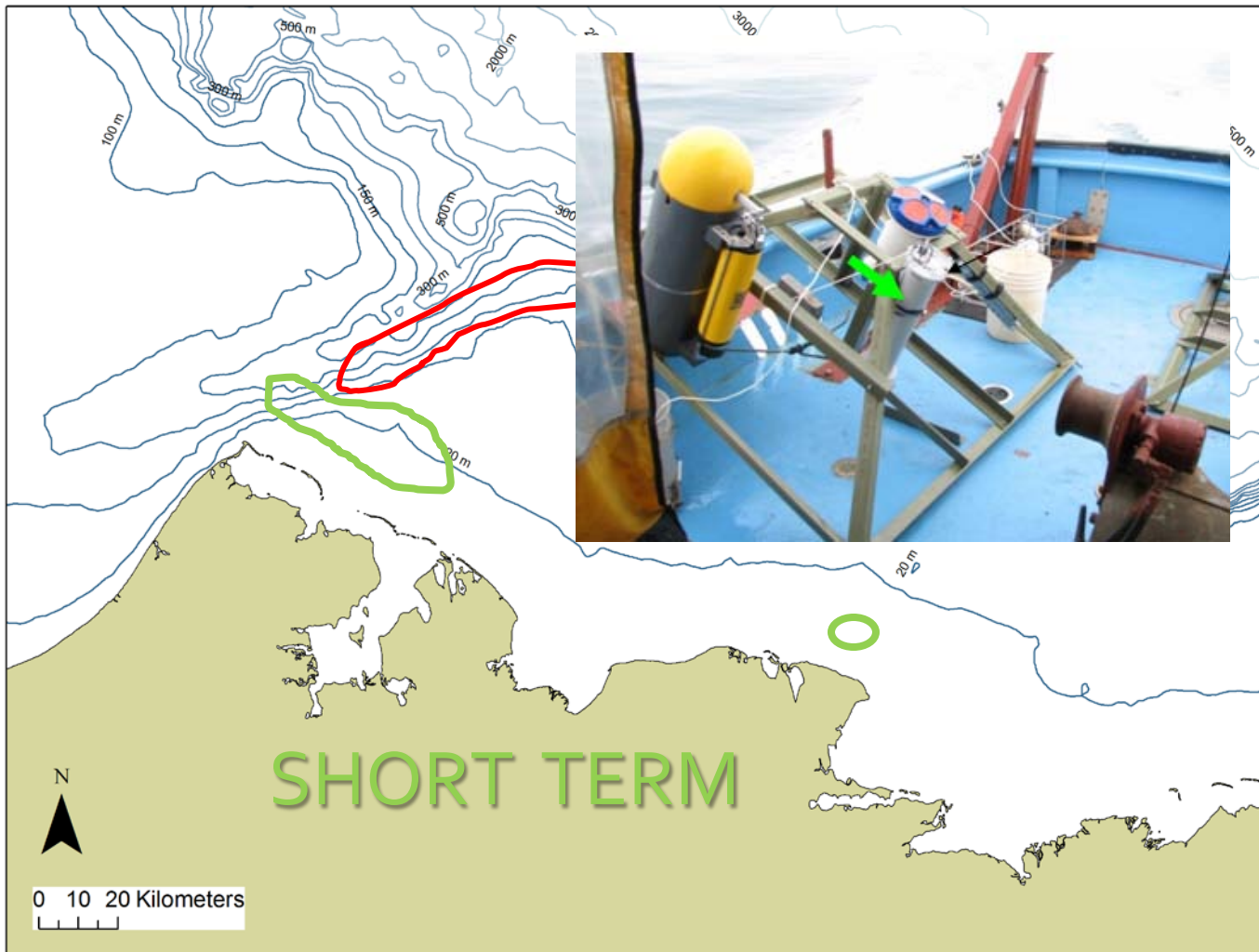
1 – 8 hours



Projects

Beaufort Sea

BOWFEST 2007-Present



Long Term

AURALS

Short Term

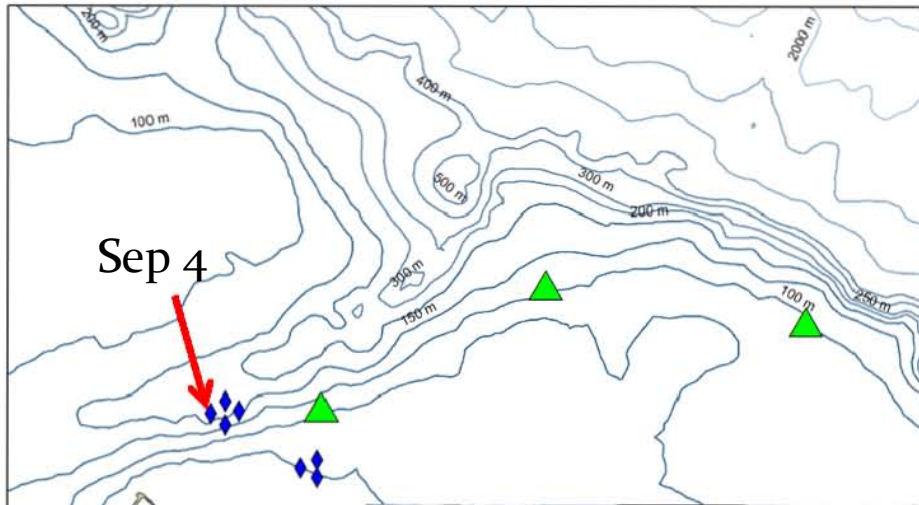
Mostly EARs,
2 AURALS

SHORT TERM

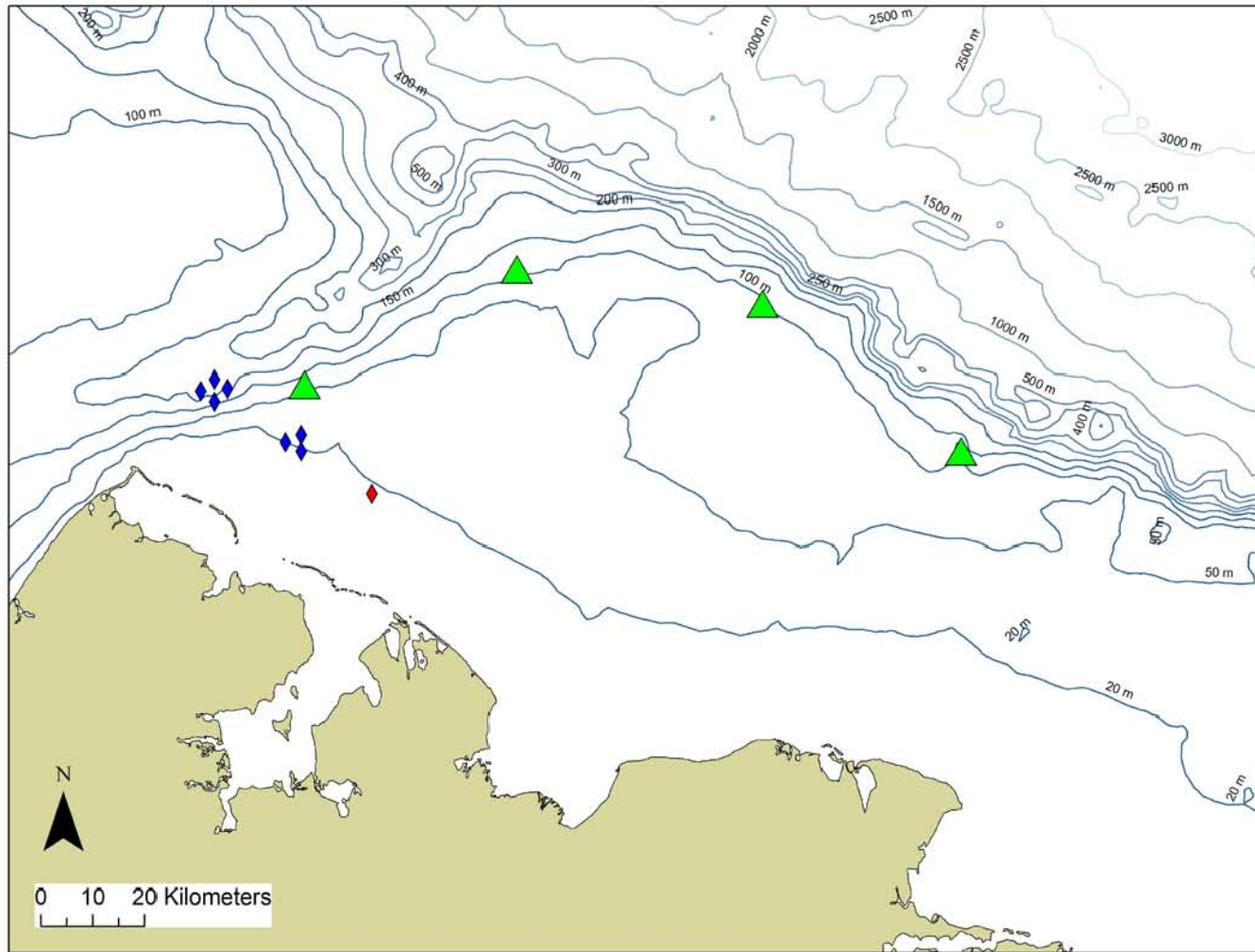


0 10 20 Kilometers

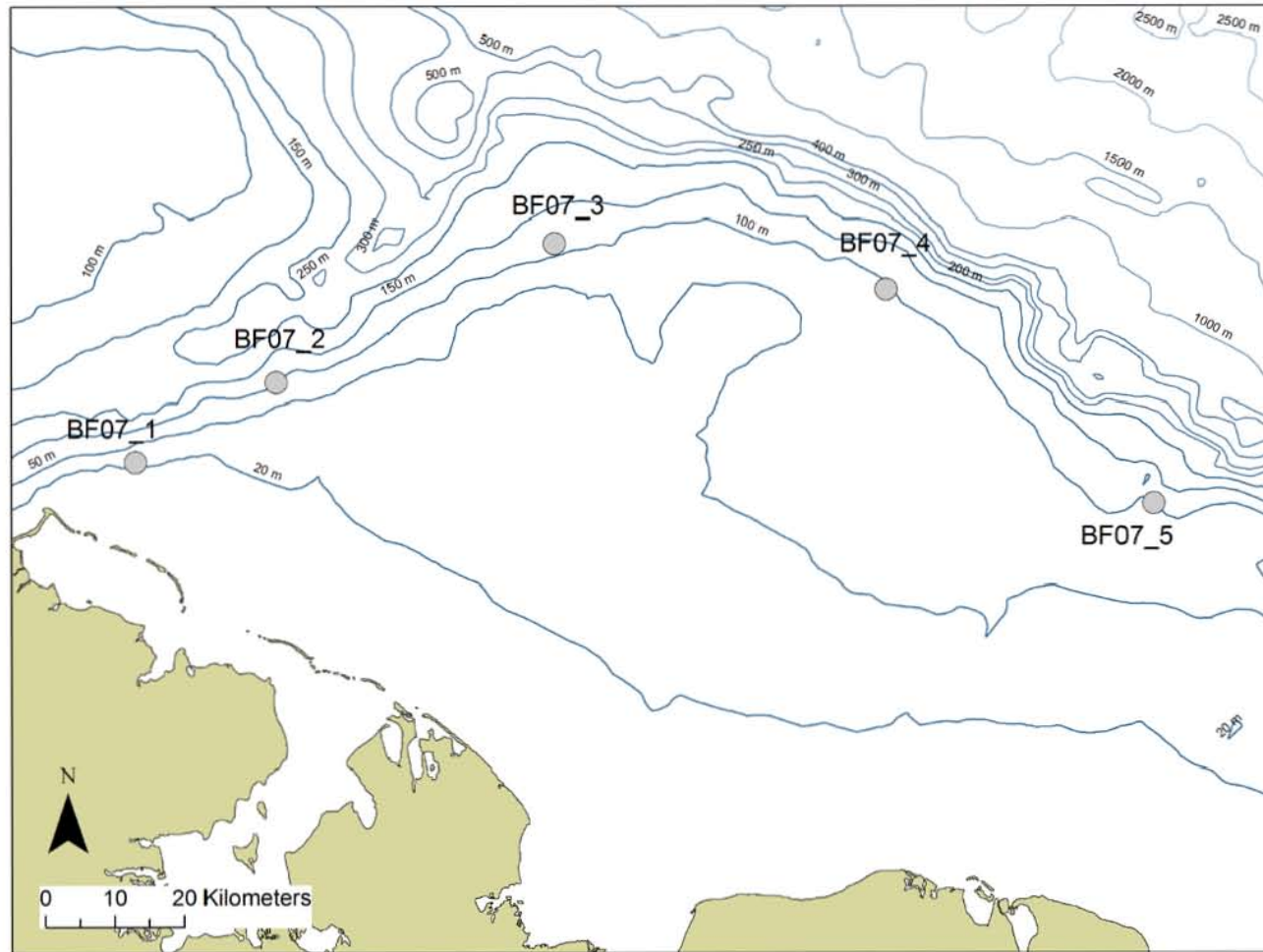
BOWFEST-TEK



BOWFEST- Plans for 2010



BOWFEST- 2007 Results



2007-2008
Deployment

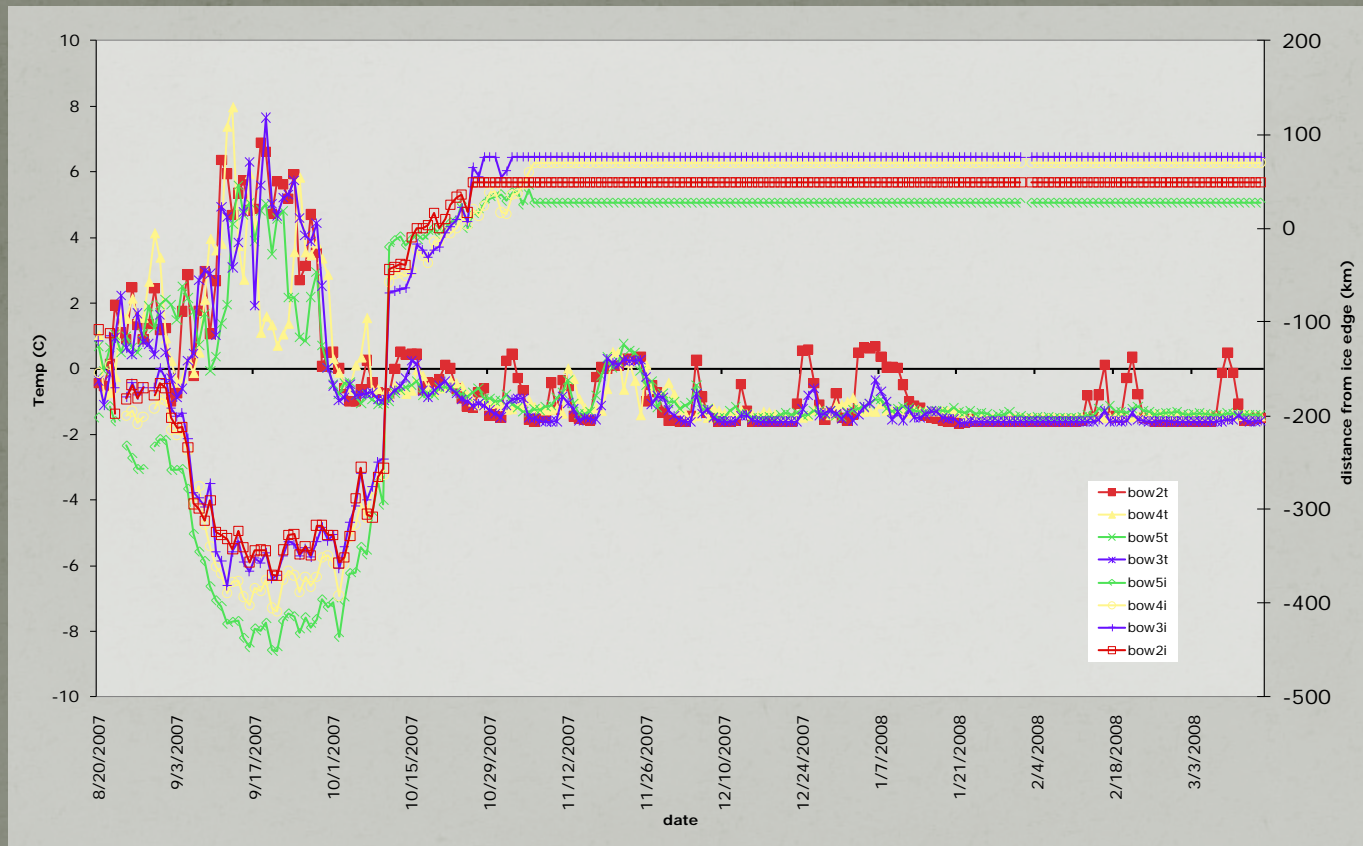
AURALs

Ice/Temp

Airguns

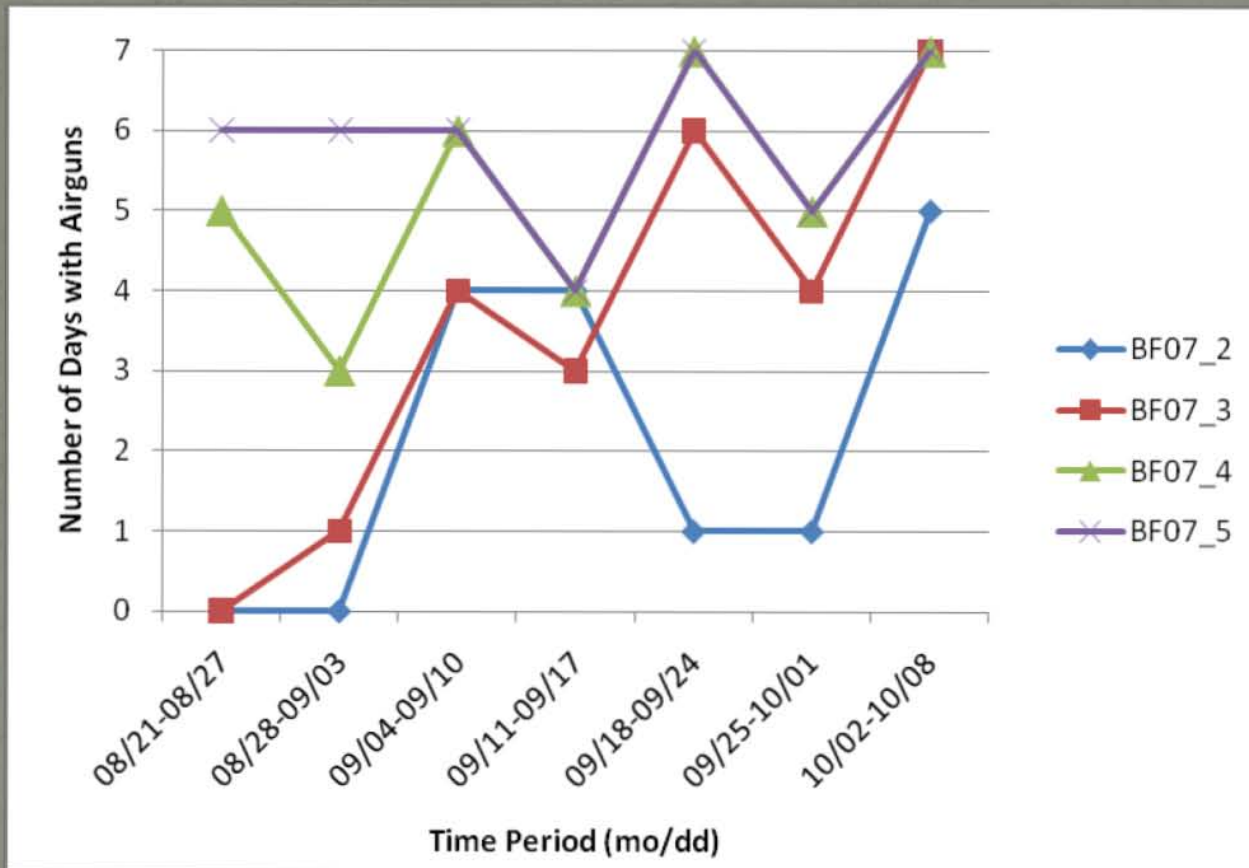
Bowheads

BOWFEST- Ice edge



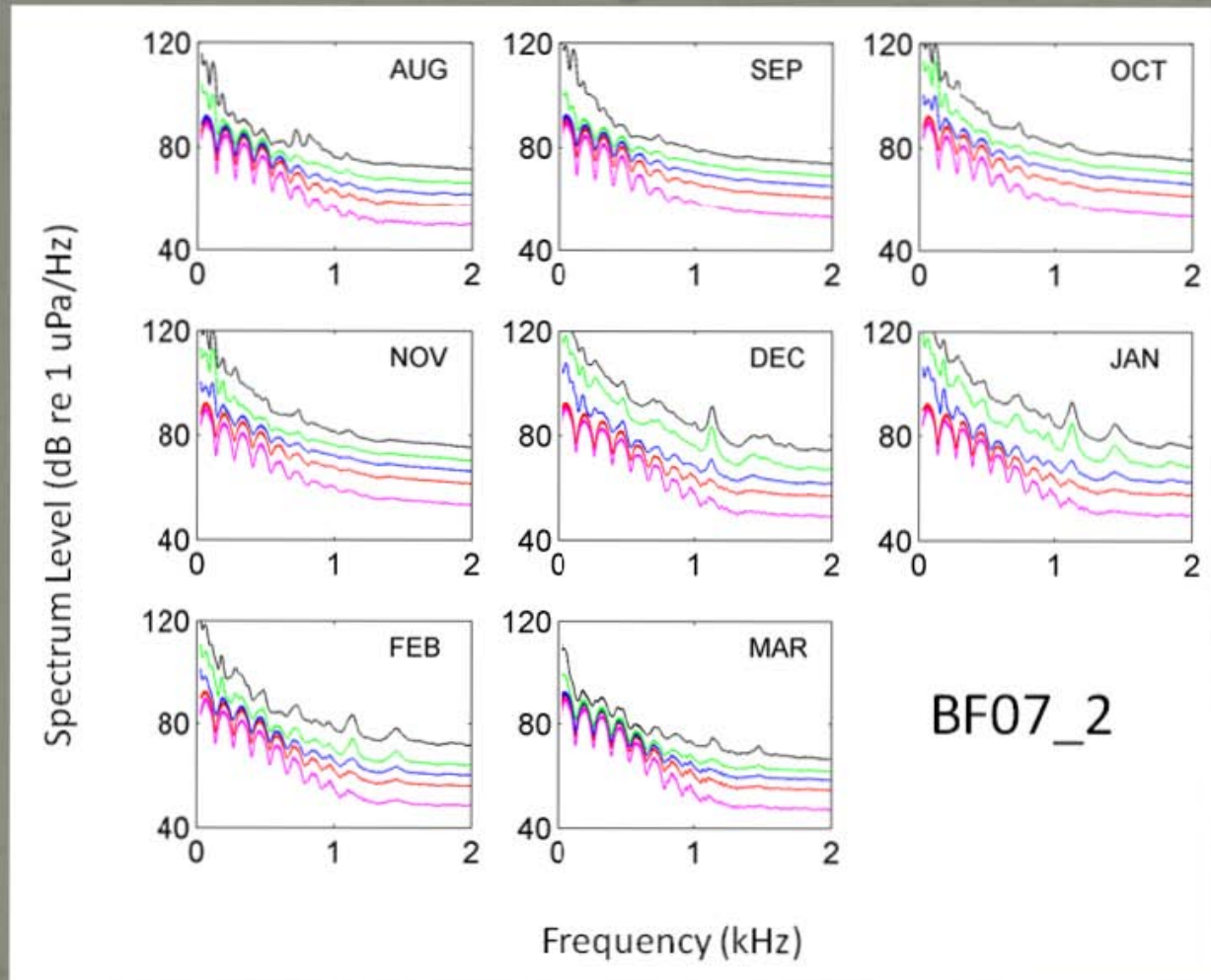
Kate Stafford

BOWFEST- Airguns

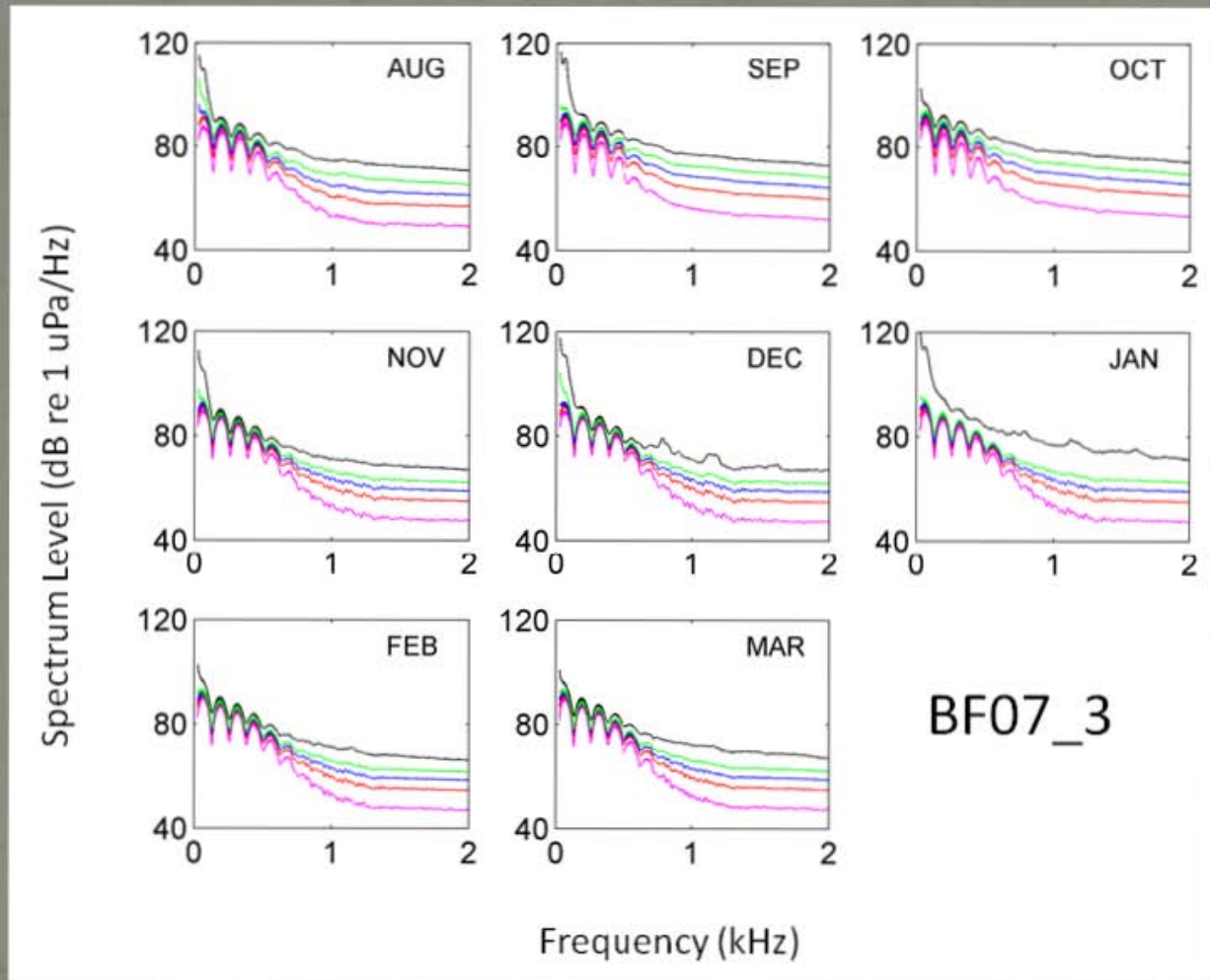


Kate Stafford

BOWFEST – Ambient noise

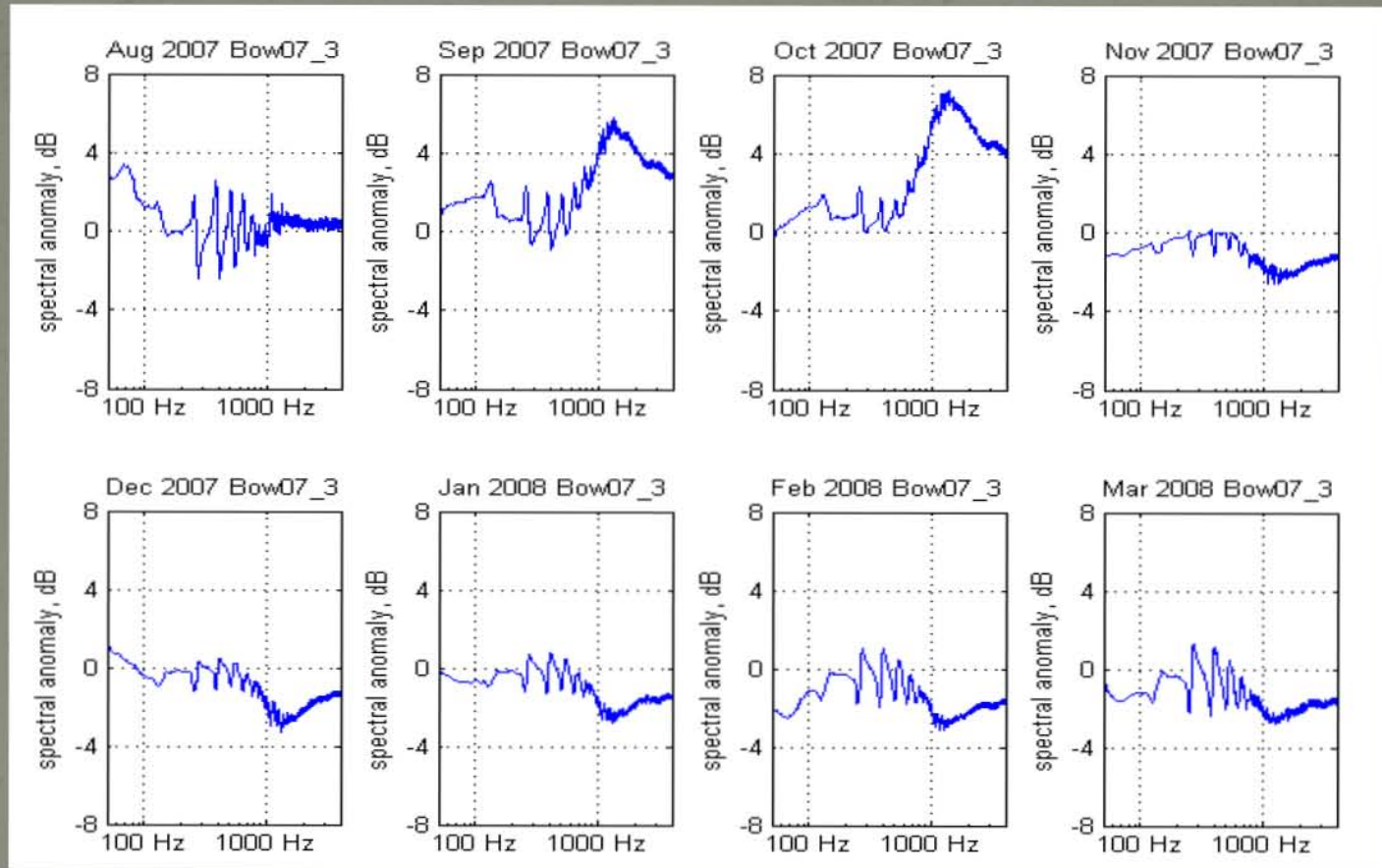


BOWFEST – Ambient noise



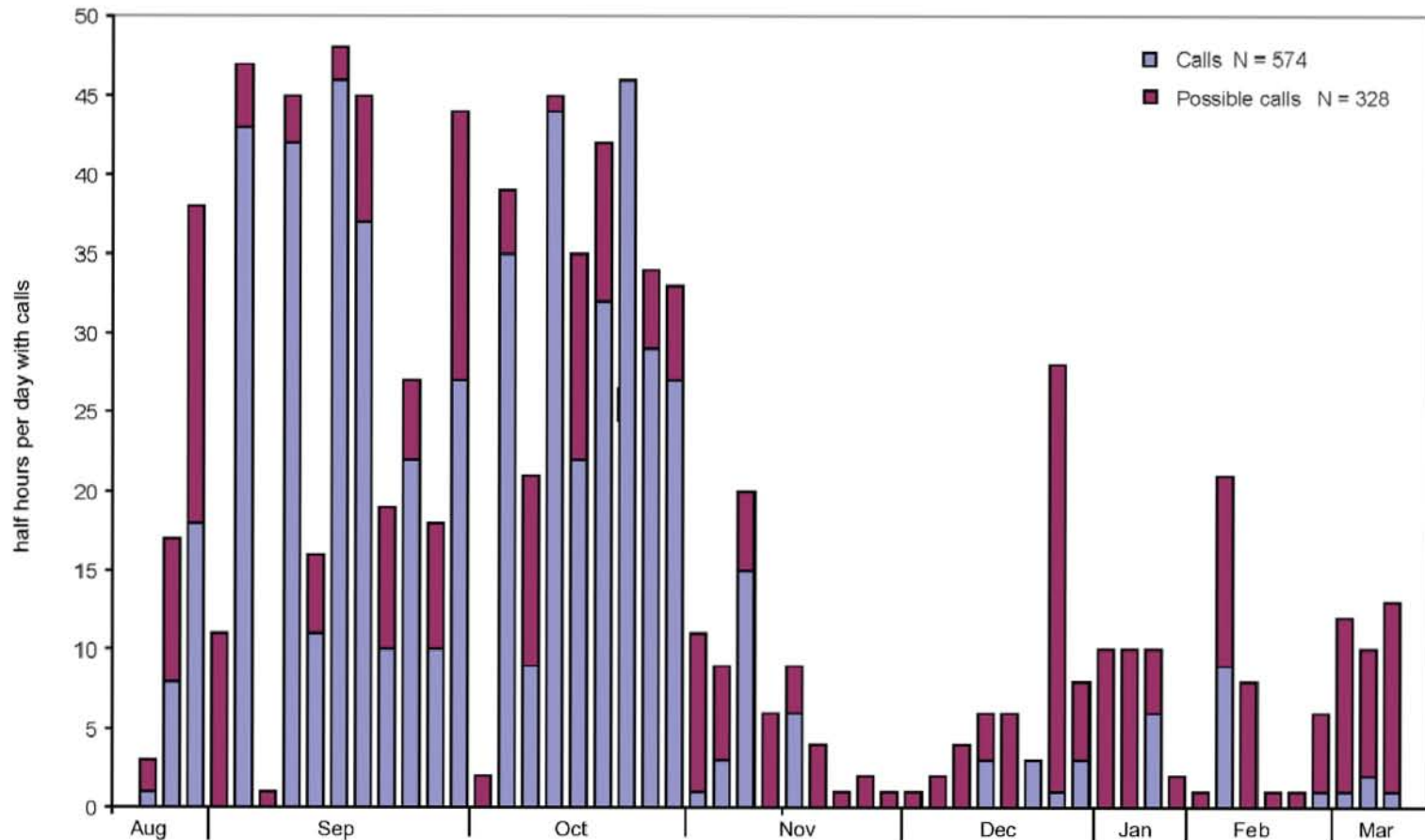
Beaufort Sea – 2007

BF07_3



Kate Stafford/David Mellinger

Beaufort Sea – 2007-2008



Sara Heimlich/David Mellinger

Projects

Chukchi Sea

CHAOZ – A – Objectives

- Monitor baleen whales in lease areas
 - Long-term passive acoustic recorder arrays, sonobuoys, shipboard visual observations
 - General presence and detailed movements of bowhead, fin, gray, and humpback whales



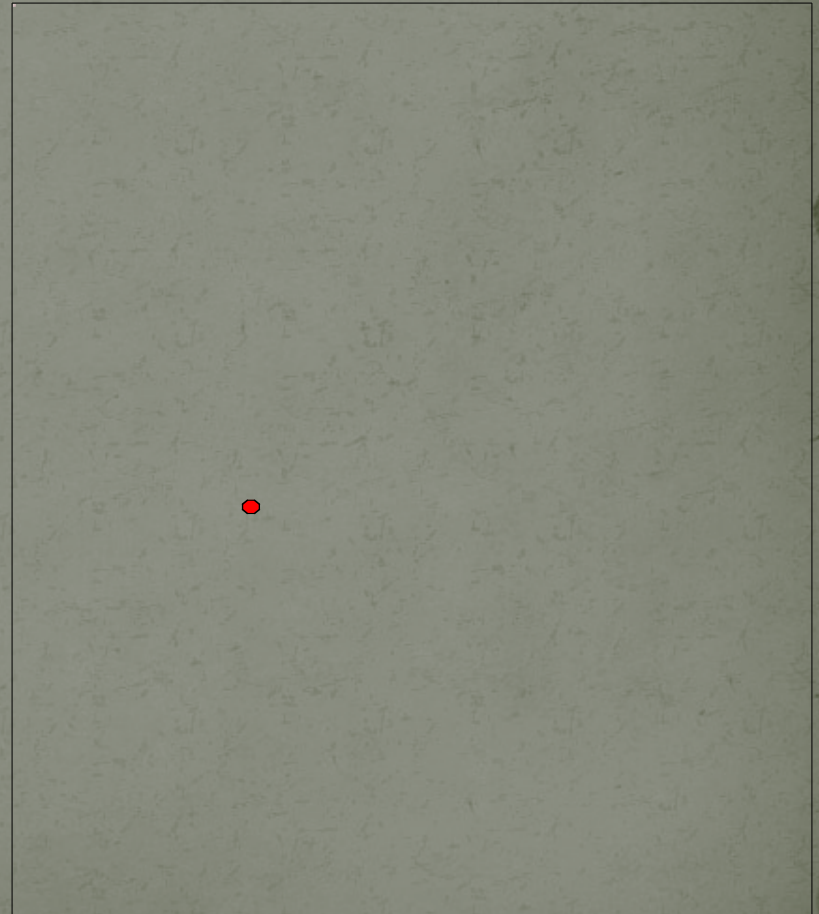
Photo by: Julie Mocklin
NOAA/AFSC/NMML
Permit #: 782-1719-08

PIs: Catherine Berchok

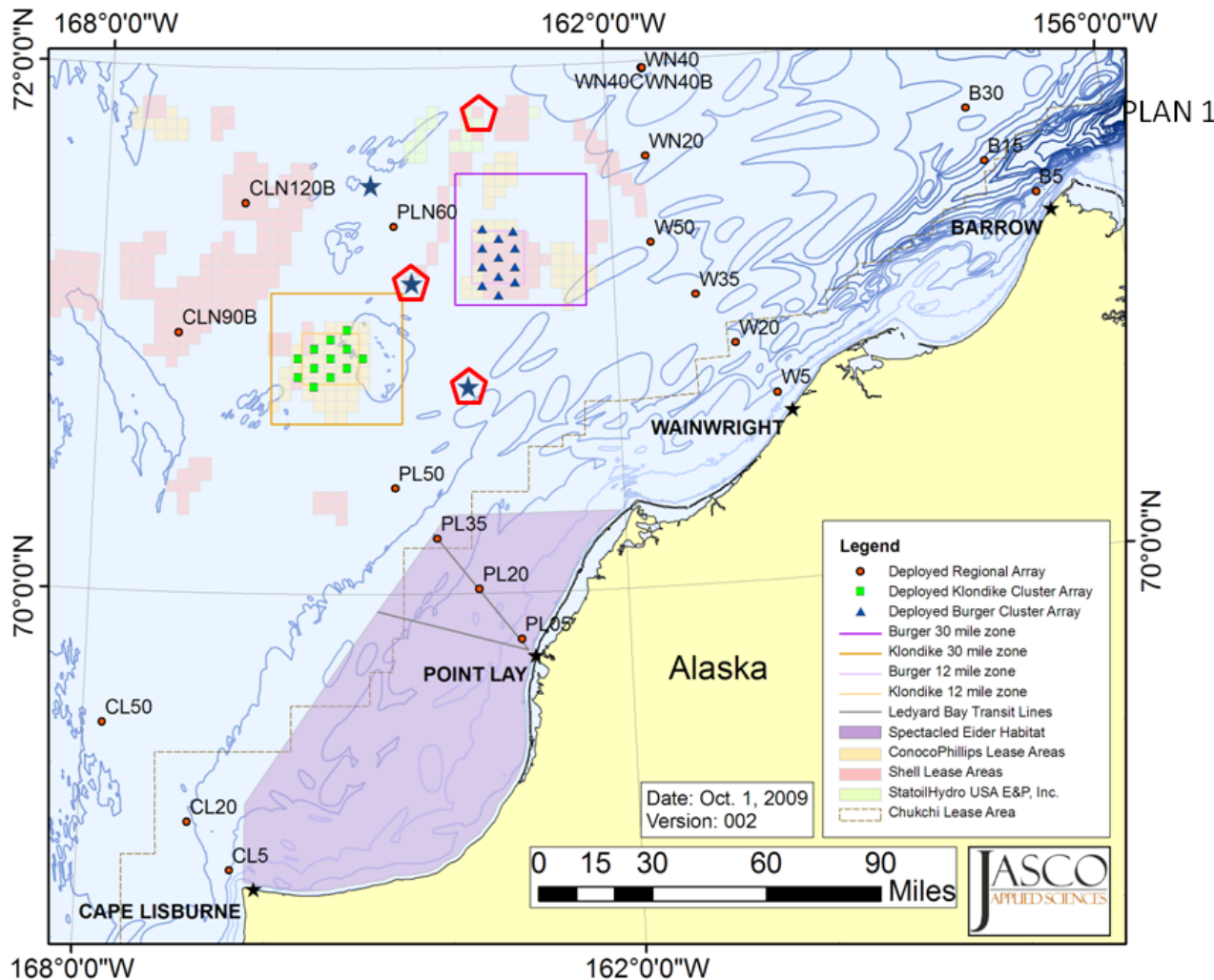
CHAOZ - OZ - Objectives

- Ecosystem Change
 - Biophysical moorings, shipboard observations and climate numerical models
 - Temperature, salinity, Nitrate, Chlorophyll a fluorescence, O₂, PAR, ice thickness, and zooplankton bio-volume.

PIs: Sue Moore, Phyllis Stabeno, Jeff Napp, and Jim Overland.



CHAOZ- 2010 Plan



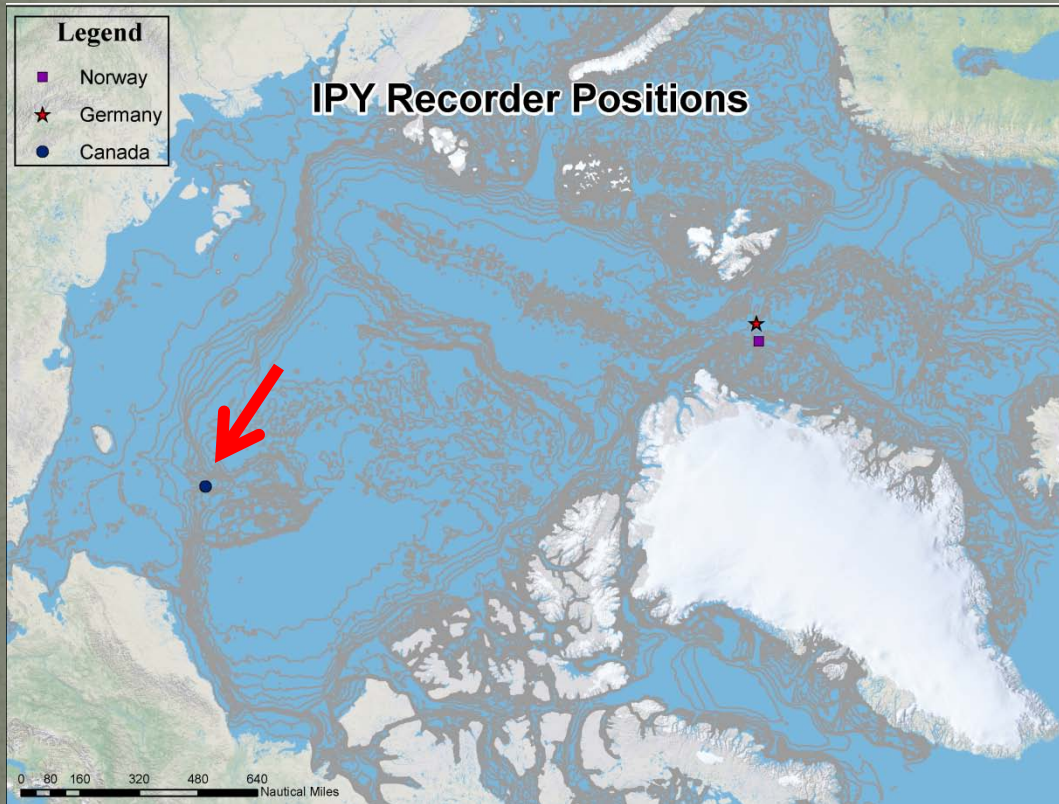
24 Aug
depart Nome

27 Aug-13 Sep
Working days

16 Sep
Nome

20 Sep
Dutch Harbor

International Polar Year



Humfrey Melling (DFO-MPO),
Jackie Richter-Menge (CRREL)

2008 – present

Recorder: AURAL

Analysis: Kate Stafford

Natural sources :
beluga whales,
bowheads, ribbon and
bearded seals.

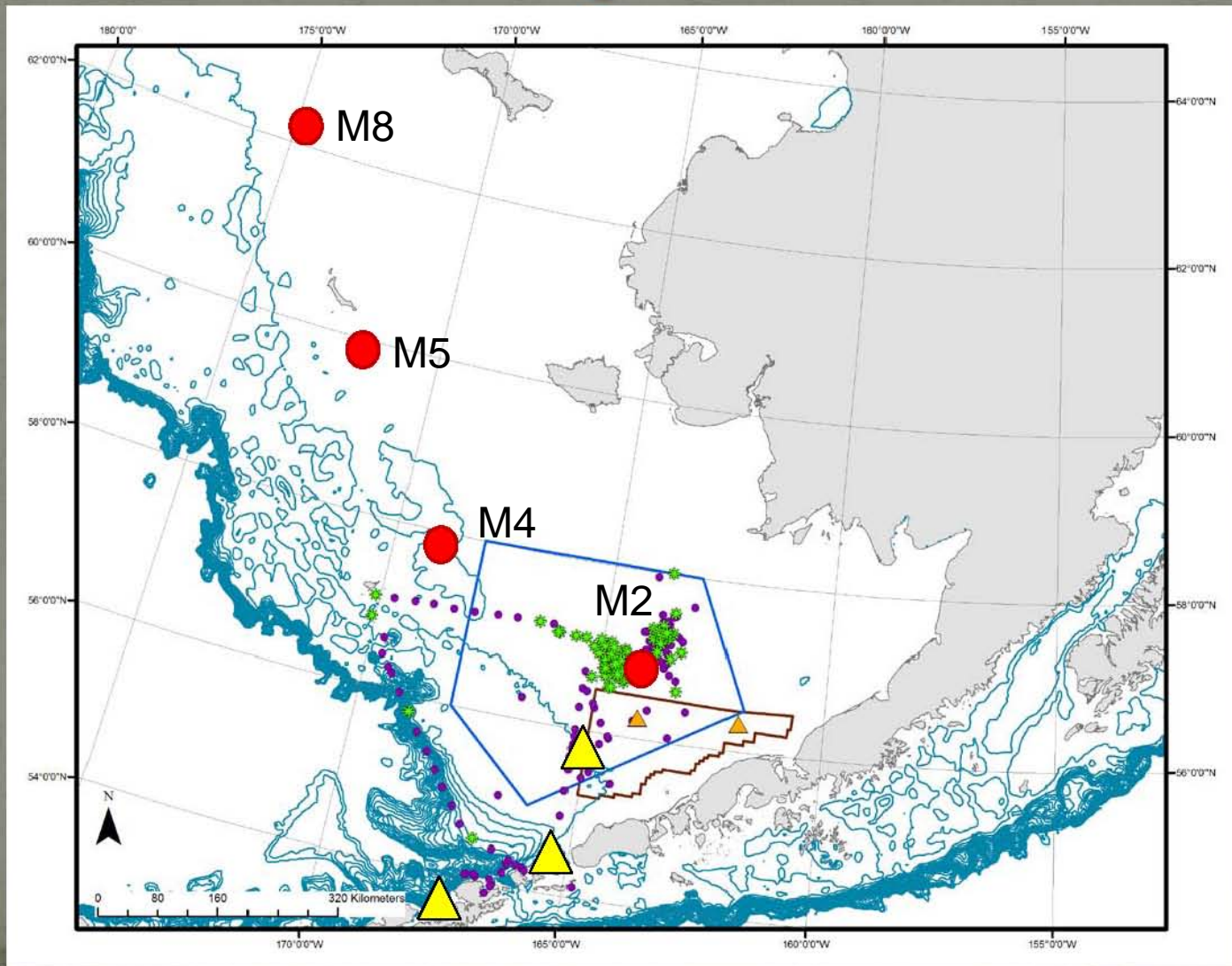
Anthropogenic sounds:
airguns.

Overall very low
ambient noise levels.

Projects

Bering Sea

Bering Sea

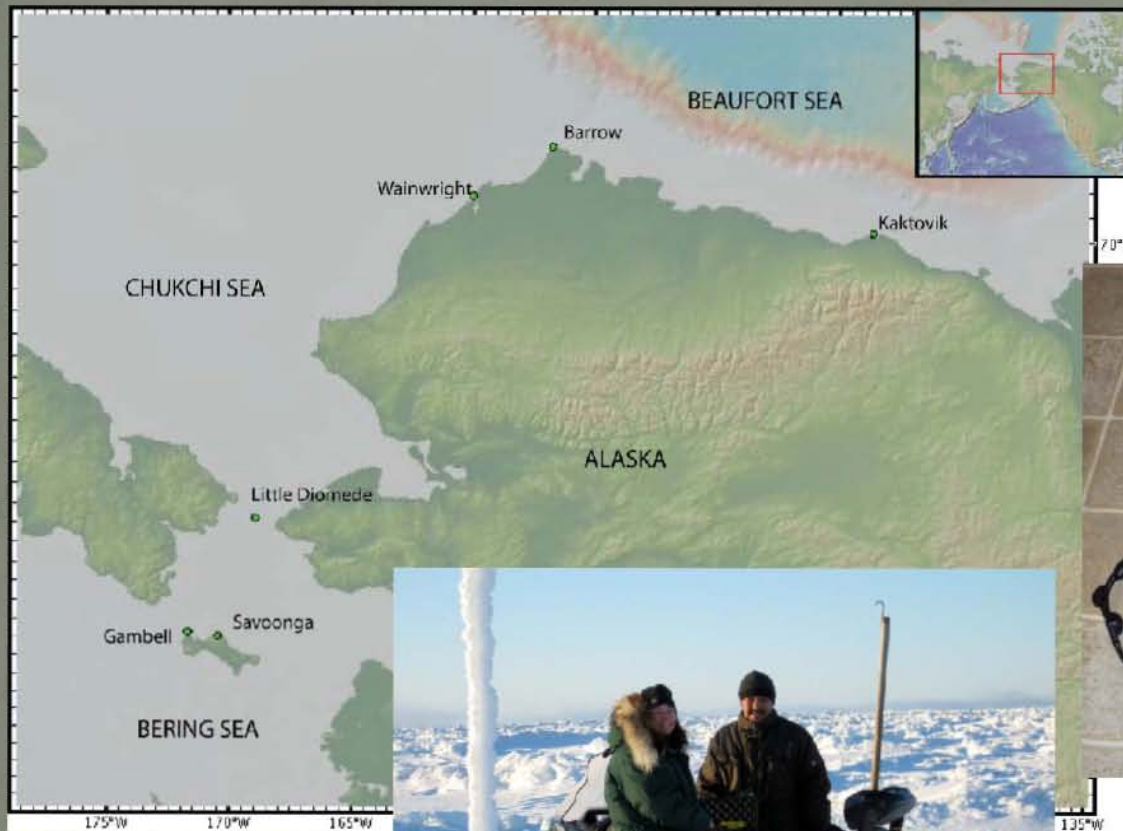


Projects

TEK

1. What the H was that sound ?
2. Getting more use out of long-term recorders.

Dipping Hydrophone Project



Acknowledgements

- Minerals Management Service / Alaska Environmental Studies Program (Charles Monnett) – BOWFEST, CHAOZ, Right Whale
- NOAA Office of Science & Technology/Ocean Acoustics Program (Brandon Southall)- IPY
- Barbara Mahoney (NMFS) – Dipping Hydrophones
- Jeff Leonhard (Naval Surface Warfare Center, Crane Division) , Theresa Yost (Naval Operational Logistics Support Center) , CAPT Robin Brake (I&E Director Marine Science, Office of the Assistant Secretary of the Navy) - Sonobuoys
- North Slope Borough/ BASC (Craig George/ Lewis Brower)
- Sue Moore, Kate Stafford, Dave Mellinger
- Jessica Crance
- Frederick Brower

