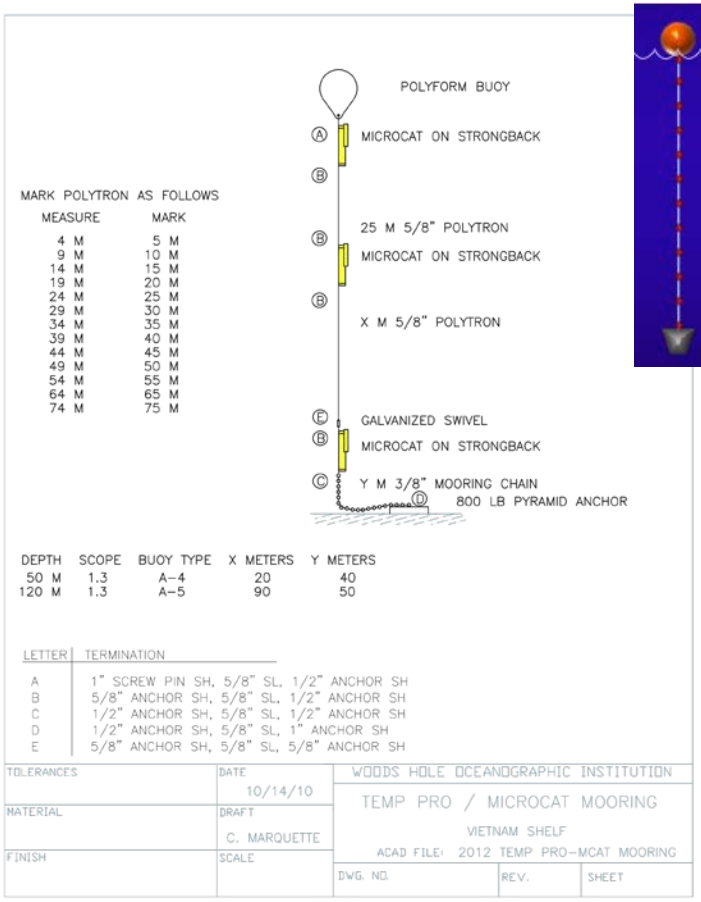
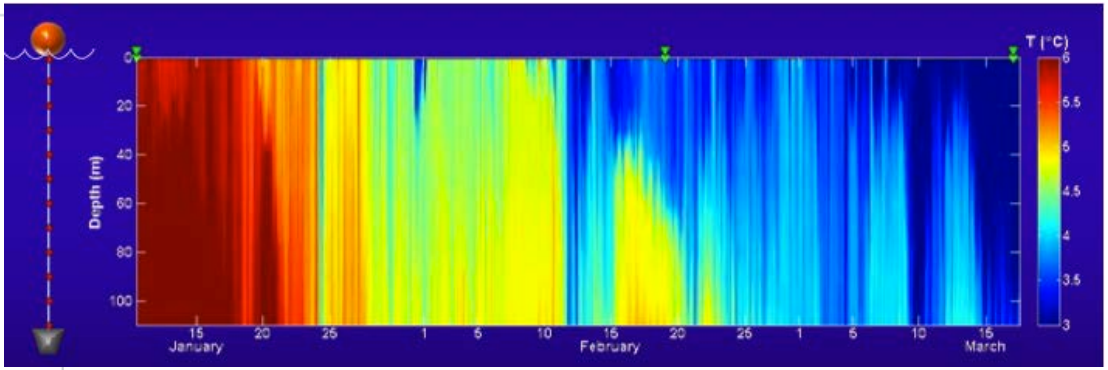
Science Questions- Gawarkiewicz/Lynch

- Characterizing mid-shelf oceanographic processes in “benign” mid-shelf environment
- Key measurements- stratification (moorings), bottom boundary layer structure (AUV), bottom stress (ADV)
- Measure variability of bottom boundary layer including potential intrusions from slope
- Characterize internal wave field and measure TL near moorings

Tools for studying shelf processes- Low cost moorings

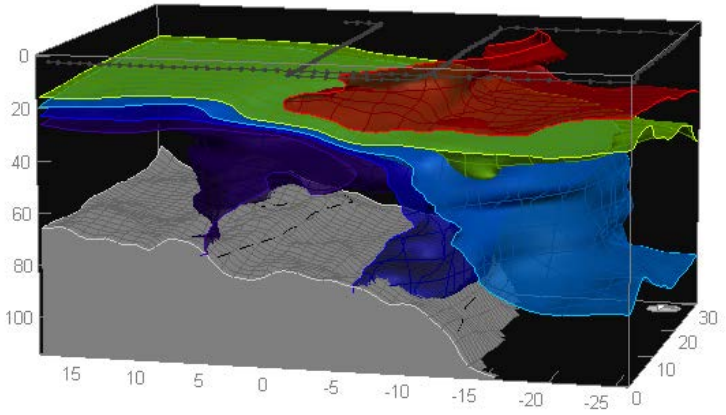




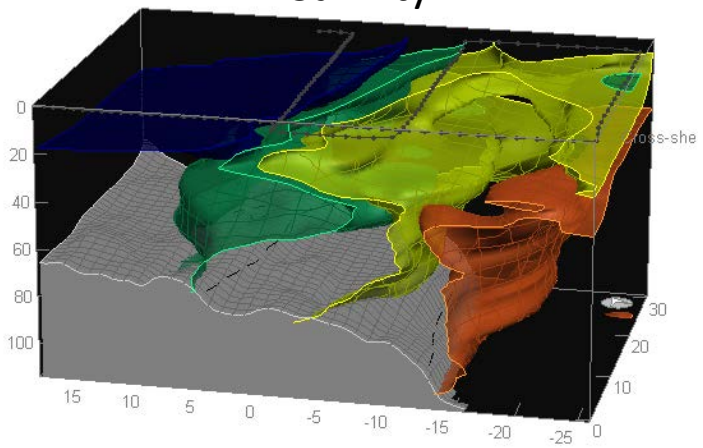
Tools for studying shelf processes- Scanfish

Scanfish carries CTD, fluorometer,
Transmissometer, oxygen sensor
Speed 6 knots, depth range 0-120 m
Can be used in water as shallow as 10 m

Temperature

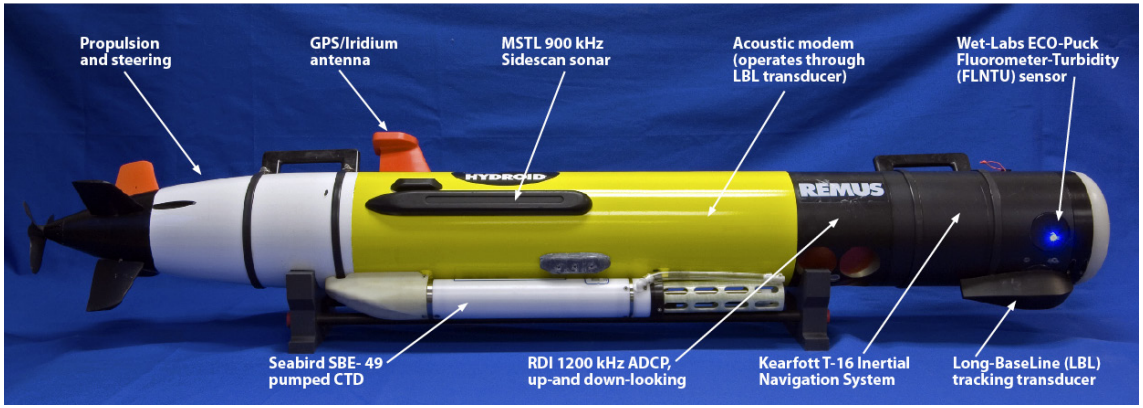


Salinity



Scanfish surveys

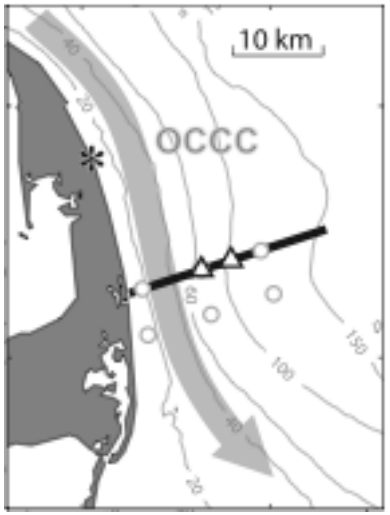
Tools for studying shelf processes- REMUS AUV



Vehicle Capabilities
Speed 4 knots
Endurance 6 hours
Depth 90 m

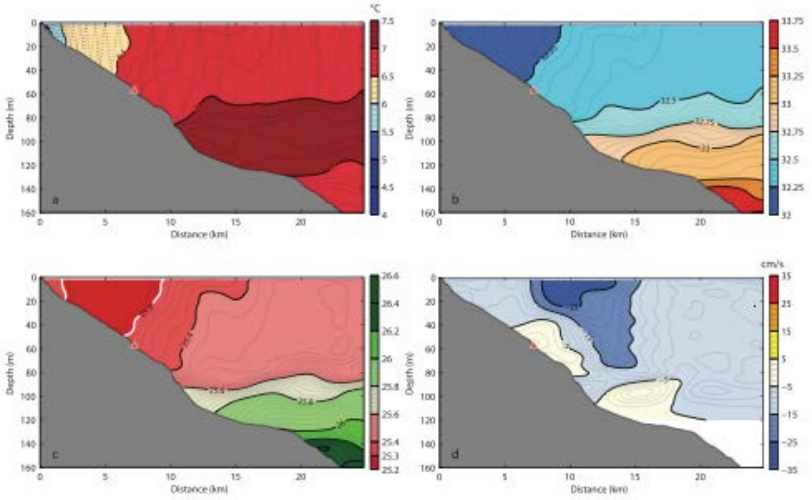
REMUS used to study coastal current east of Cape Cod

Used in monthly surveys- Jan. 2005 to present



Temperature

Salinity



Density

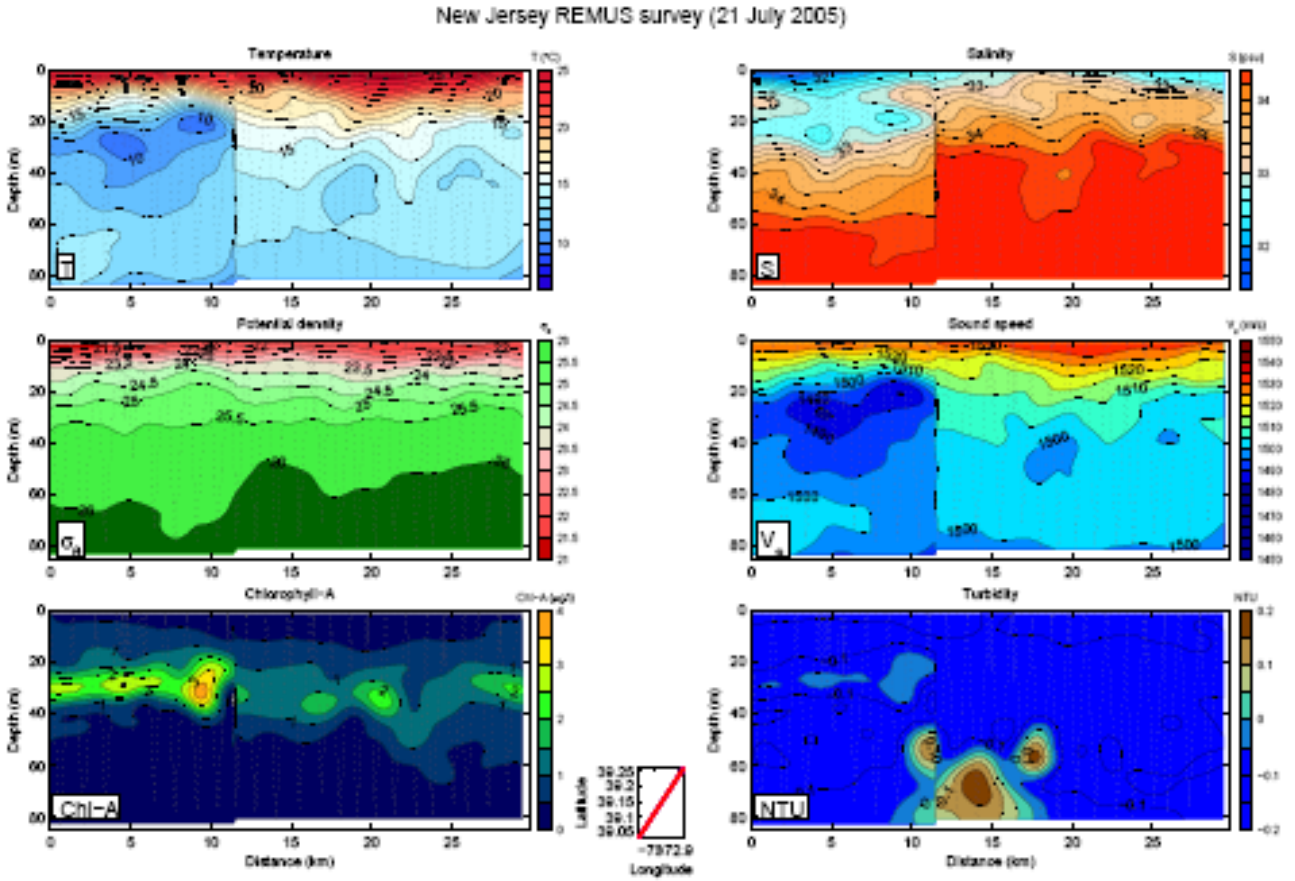
Alongshelf Velocity

REMUS Survey-New Jersey, July 2005

Temp

Density

Chl a



Salinity

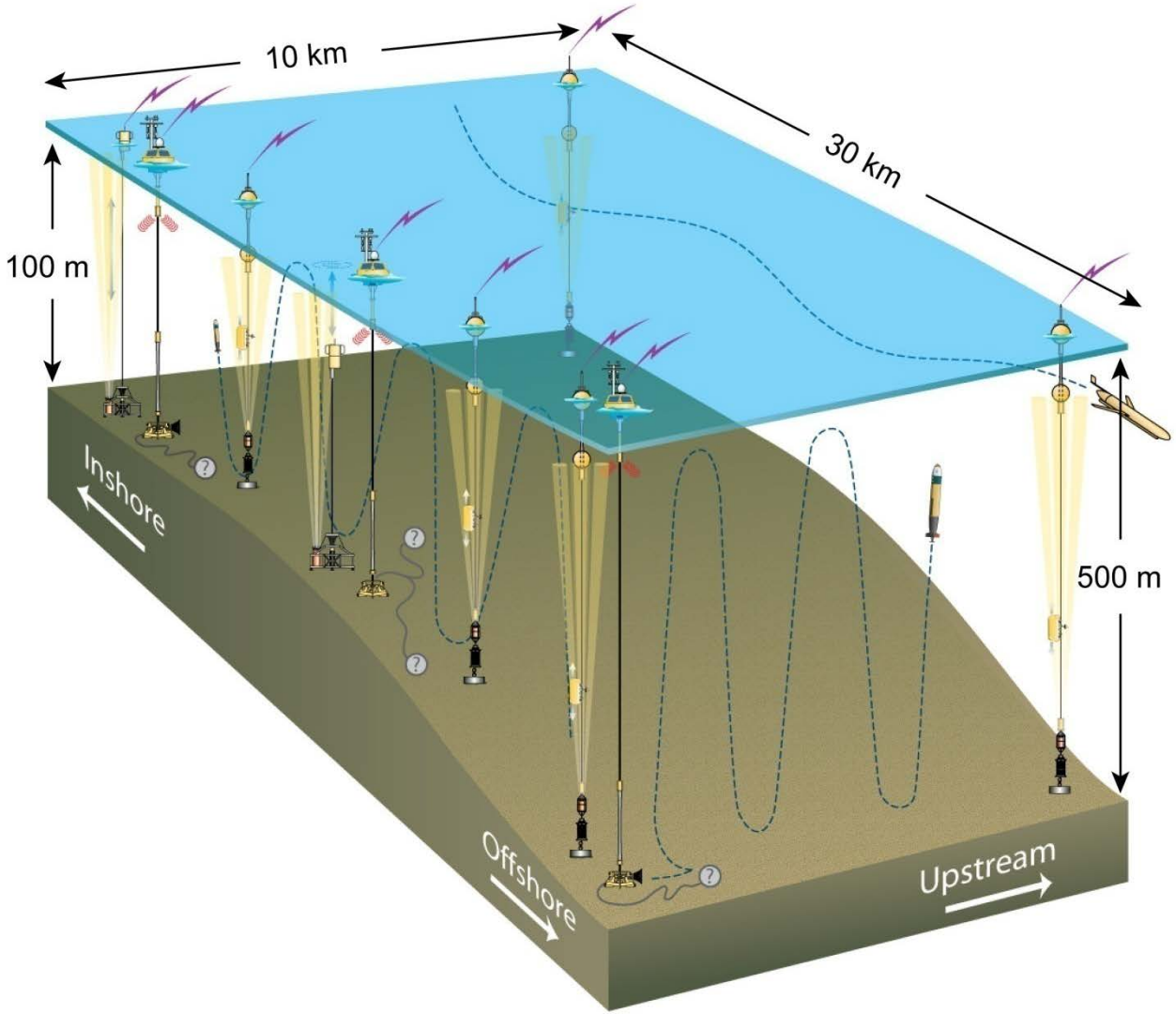
Sound Velocity

Turbidity

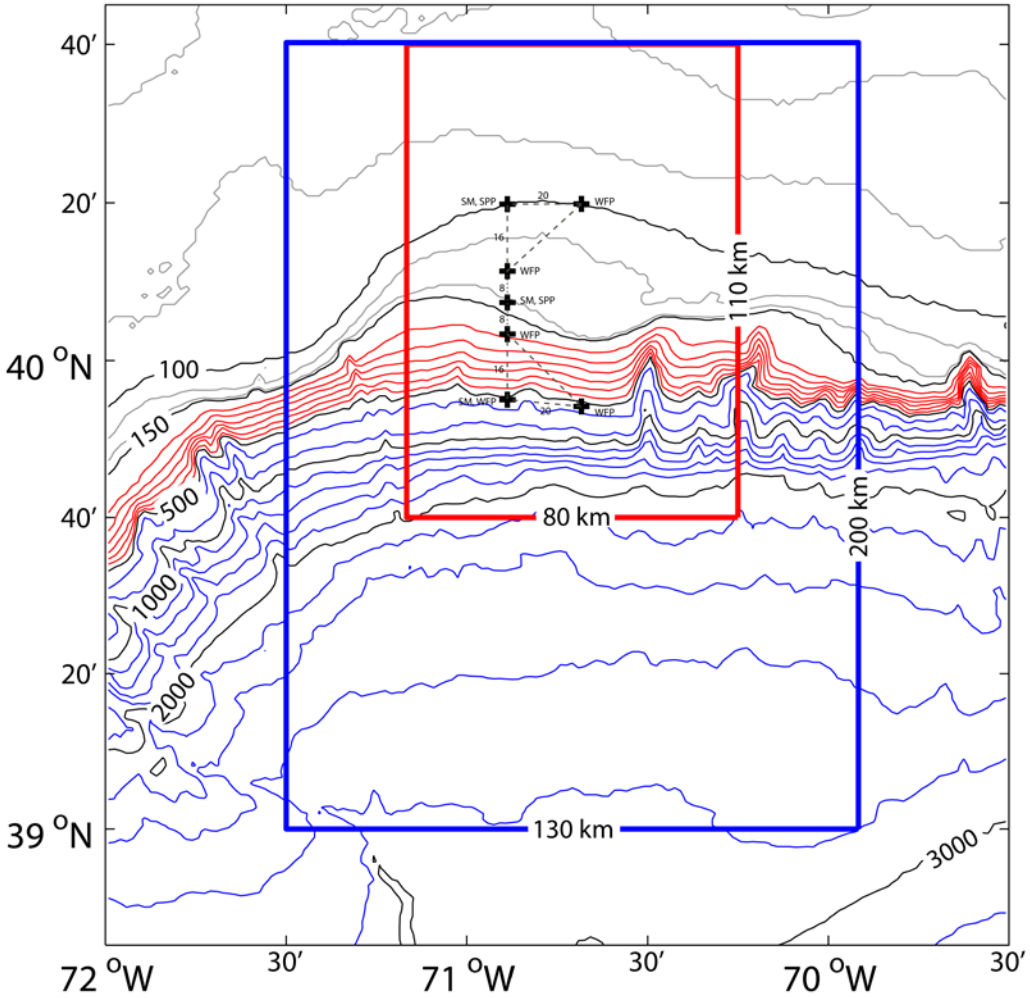
Strong Temperature and Soundspeed
Gradients- 20 m/s lateral Soundspeed difference at 30 m

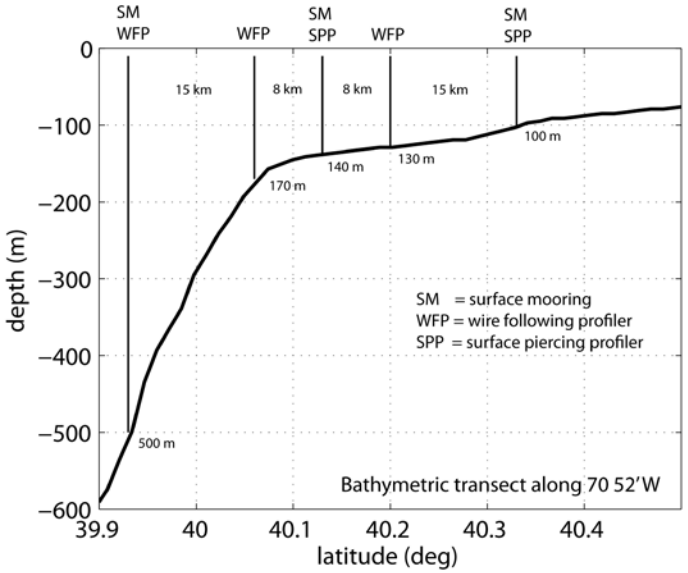
OOI Pioneer Array

- Full water column
- 3D volume sampling
- Two-way satellite links
- Power-generating buoys
- Multi-function seafloor nodes

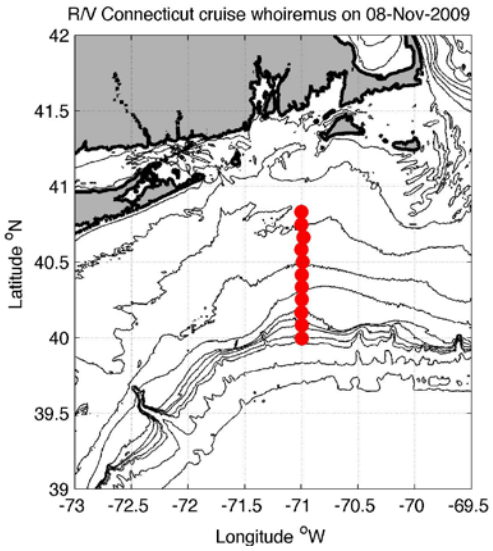


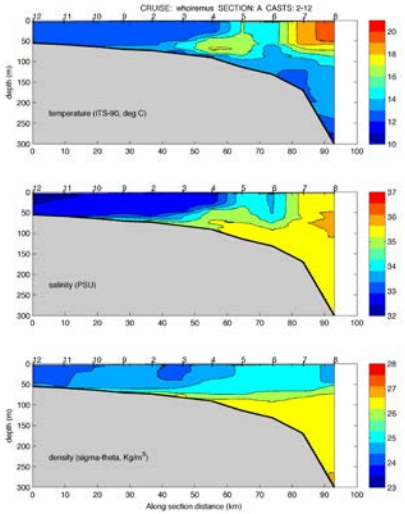
OOI Pioneer Array

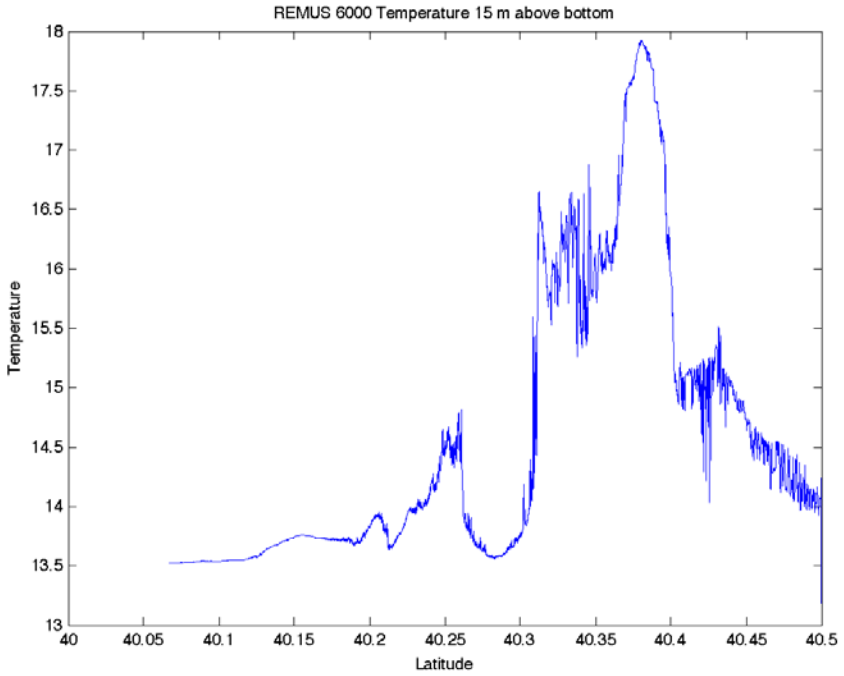




Near bottom temperature measured by a REMUS 6000







TL Measurements

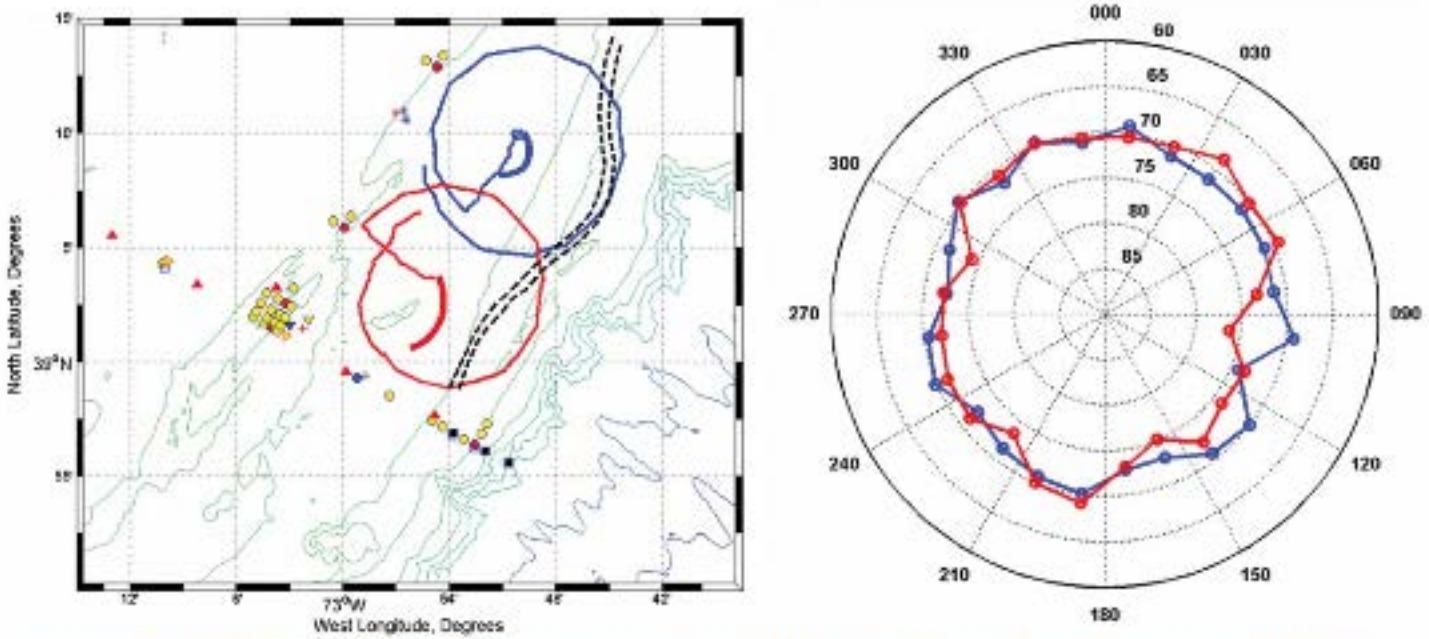


Figure 6. (a) The top panel shows tracks of Oasis mobile acoustic sources (large red and blue circles) emitting sounds to sonobuoy receivers (darker red and blue arc-segments within the circles) in the vicinity of the shelf-break front, in order to study the effects of frontal and shelf oceanography on sound propagation. (b) The bottom panel displays average acoustic propagation loss at 900 Hz and clearly shows: (1) near azimuthal isotropy over the shelf region, and (2) anisotropy (more loss) where the acoustic paths cross the shelf-break front, in the angular sector from (roughly) 90 to 180 degrees. Prediction of the position of the shelf-break front was one of the oceanographic challenges of AWACS.