Physical Oceanographic Issues in Planning SBCEXP17

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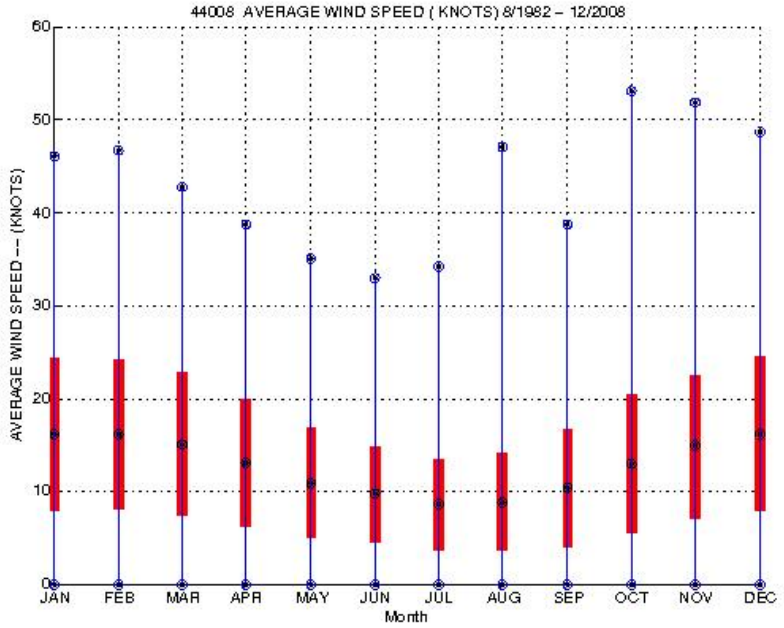
Outline

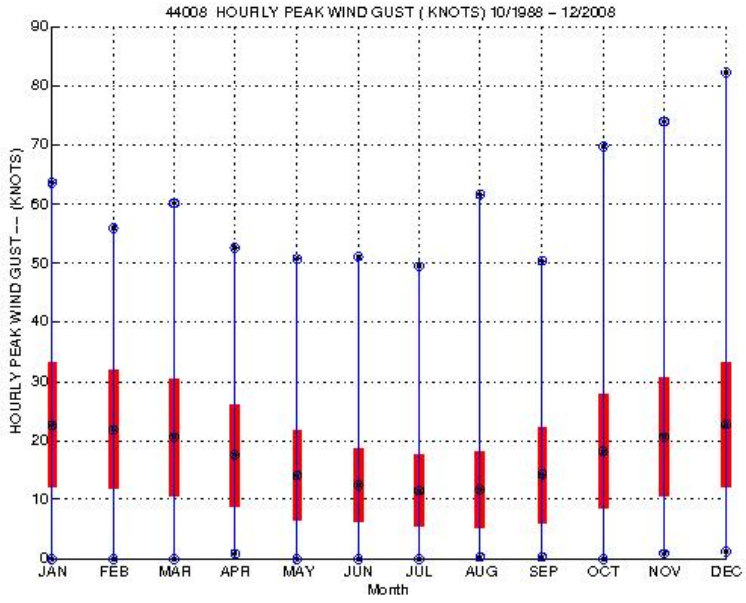
* Timing- Monthly means and extremes for winds, waves, and near surface temperature
* Looking back- High-resolution soundspeed fields from May 2007 and May 2008
* Plans for hydrographic sampling in 2017

NDBC Buoy 44008
Nantucket Shoals- 66 m water depth



Wind Speed

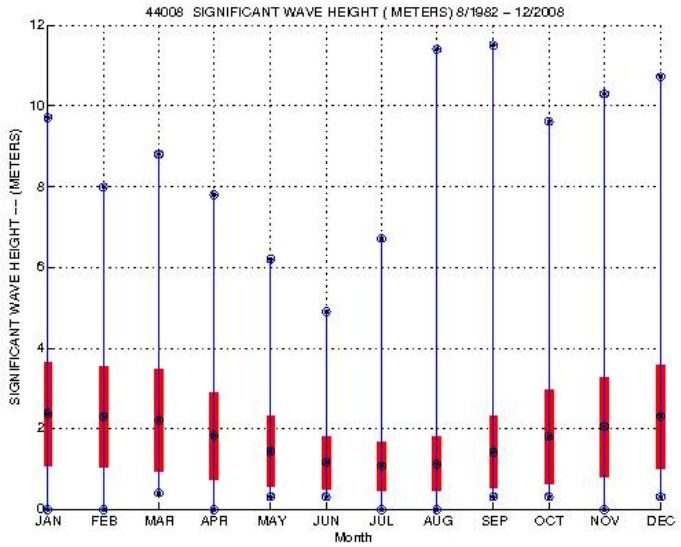
March- 16 knots May- 11 knots



Peak Wind Gust (hourly)

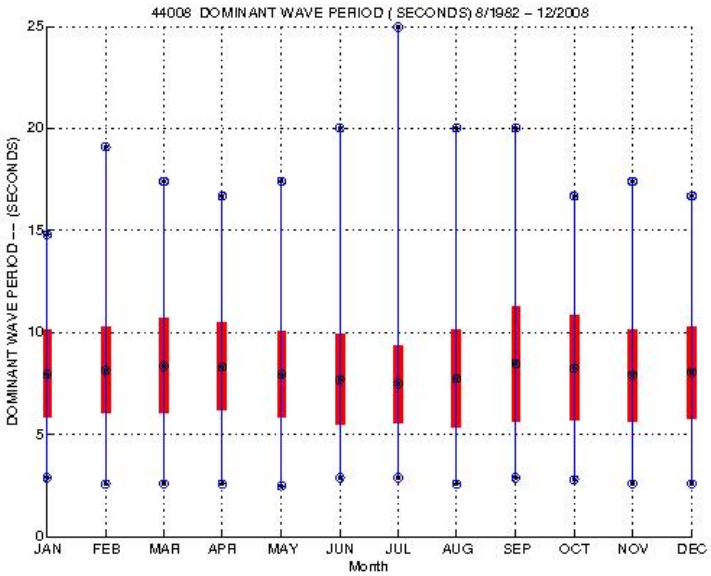
March- 21 knots May- 13 knots

NDBC Buoy 44008
Nantucket Shoals



Significant Wave Height

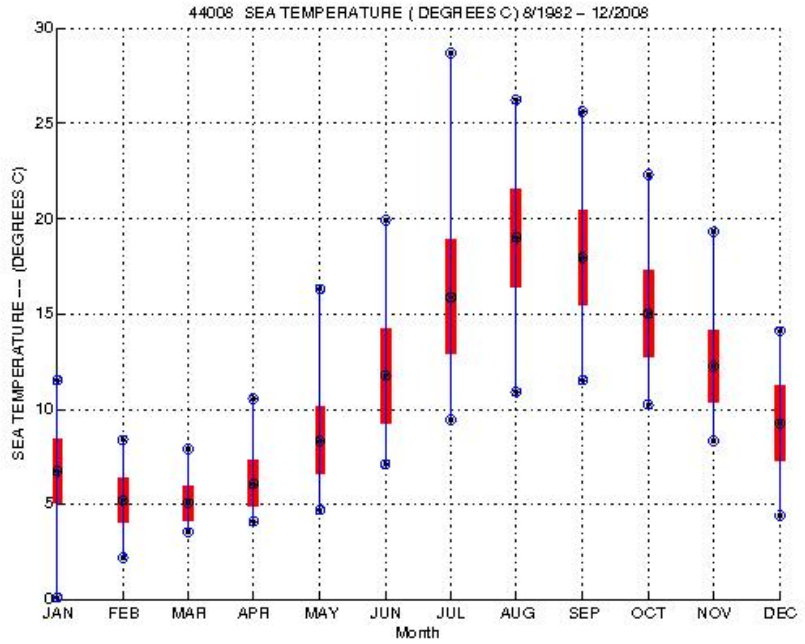
March- 2.1 m May- 1.8 m

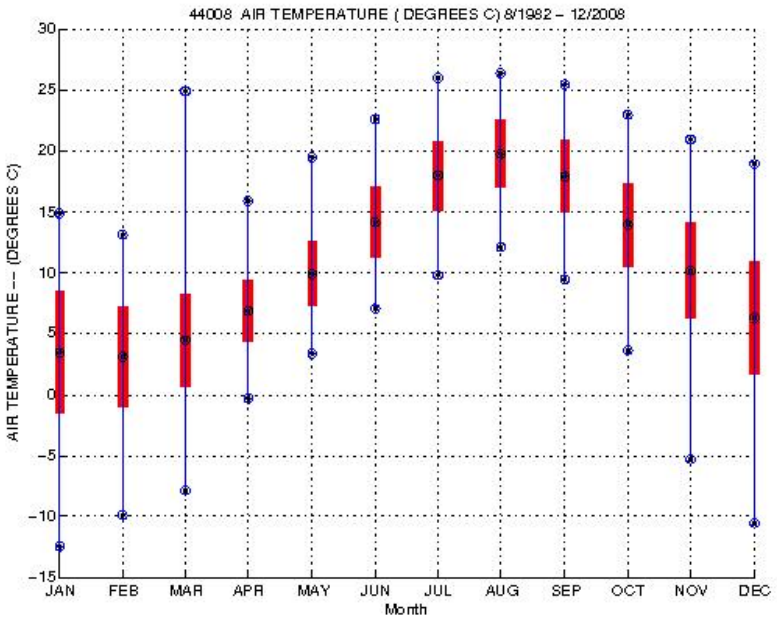


Dominant Wave Period (s)

March- 8 sec May- 8 sec

NDBC Buoy 44008
Nantucket Shoals





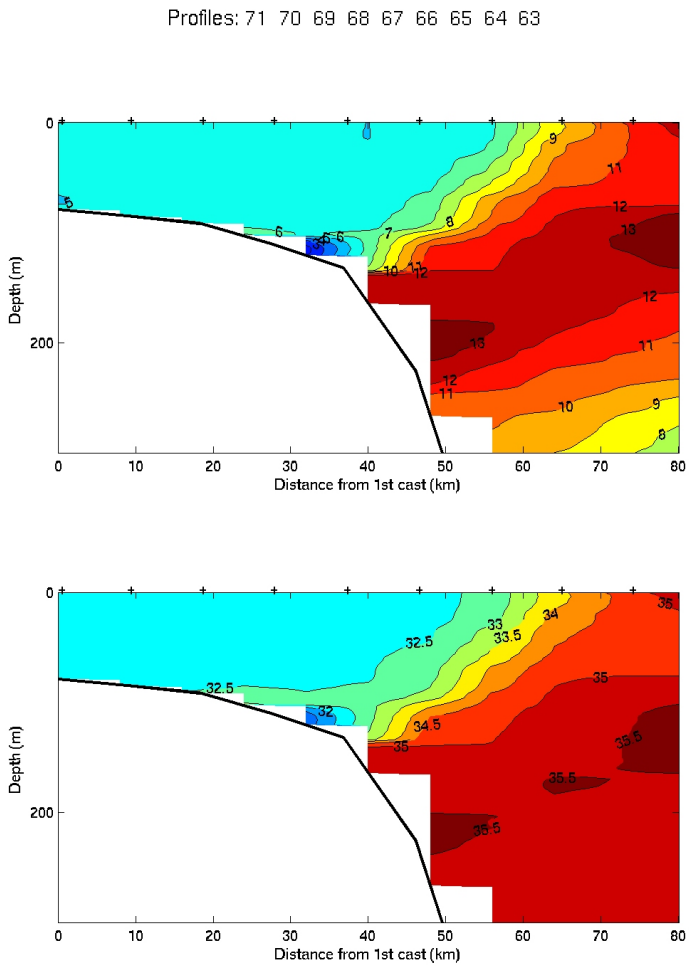
Water Temperature (0.6 m depth)

March- 5 Deg. C May- 8 Deg. C

Air Temperature

March- 4 Deg. C May- 10 Deg. C

Winter Hydrography- February 3, 2005



CTD transect

Foot of Shelfbreak Front at 100 m isobath

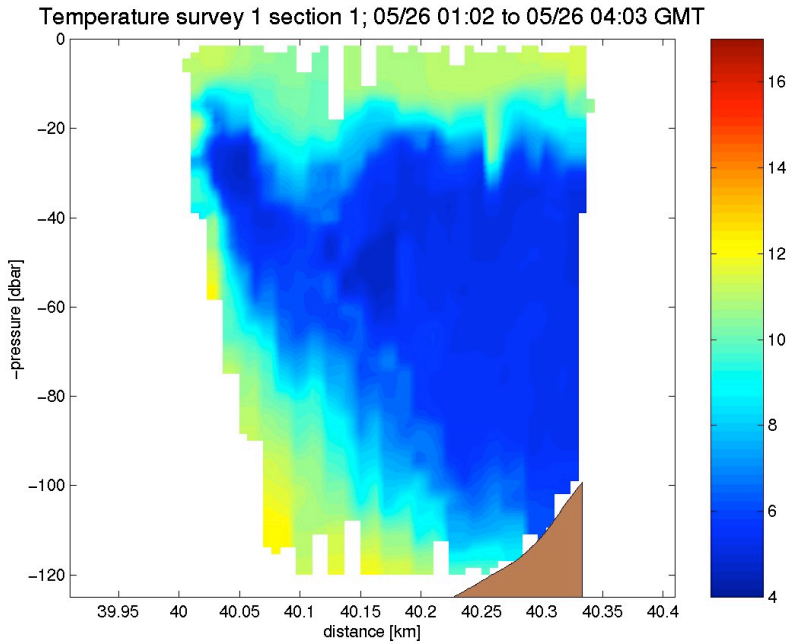
Shelf well-mixed

Cold winter (comparable to 2014-15)

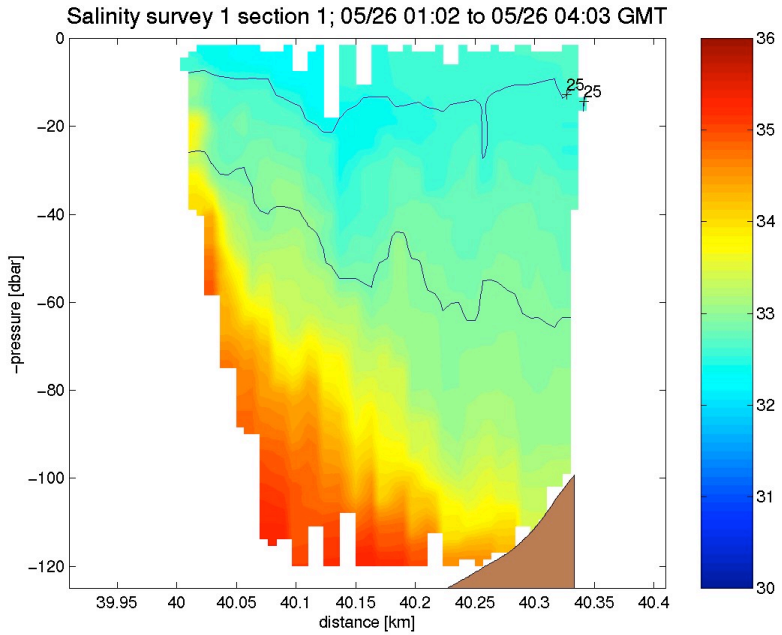
Shelf Temperature ~6 Deg. C

Section along 71 Deg. W

Spring Hydrography
May, 2007

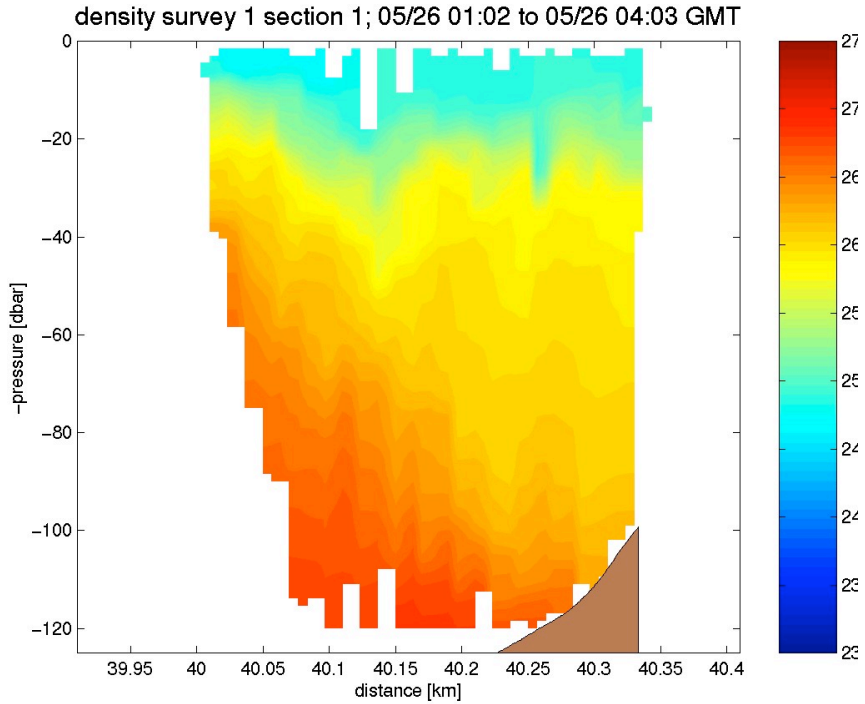


Temperature
Range- ~6 to 12 Deg C

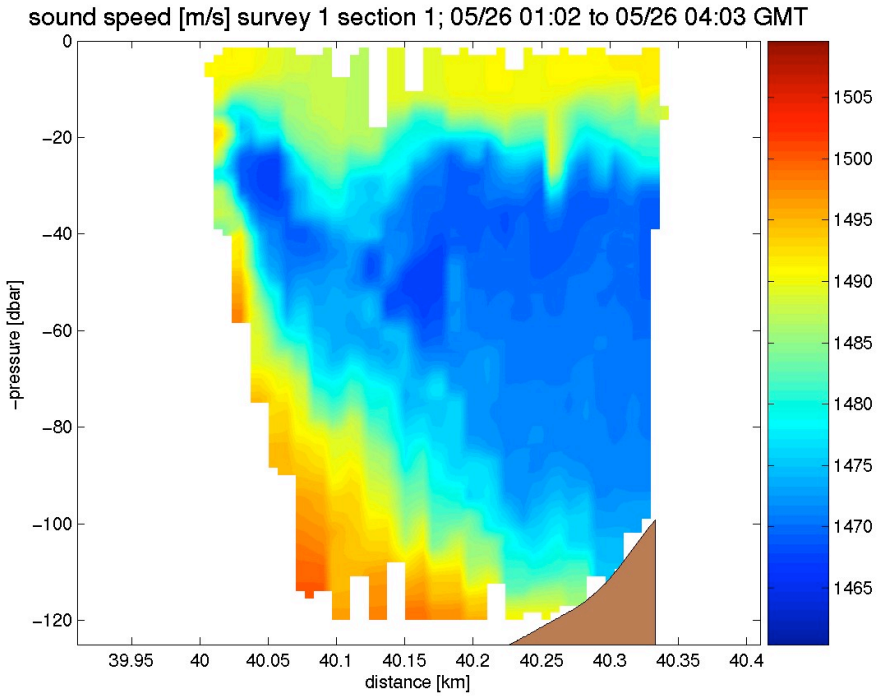


Salinity
Range- ~32.5 to 35

Spring Hydrography
May, 2007

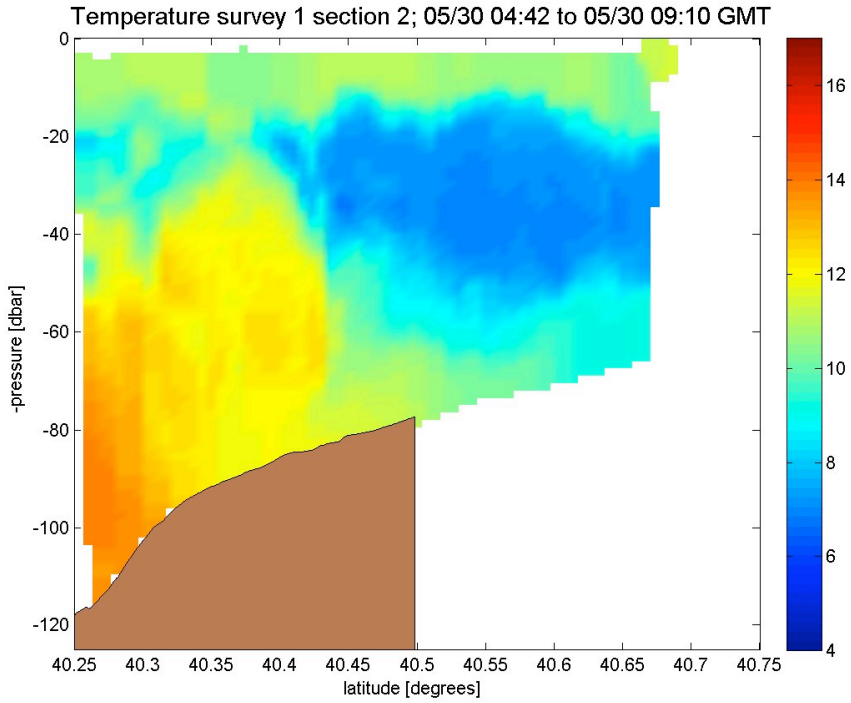


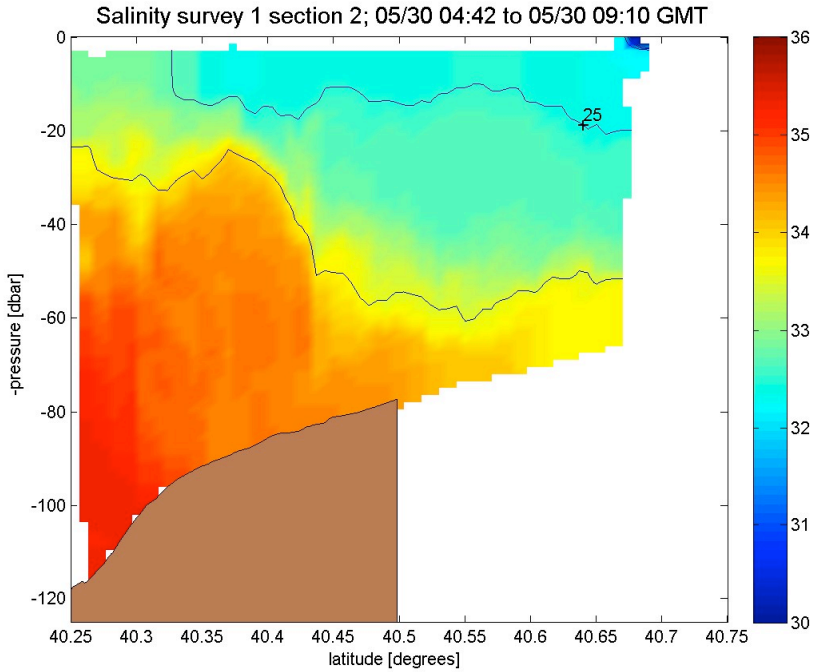
Density
Range- 24 to 26.5 σ



Soundspeed
Range- ~1465 to 1500 m/s

Spring Hydrography
May, 2008

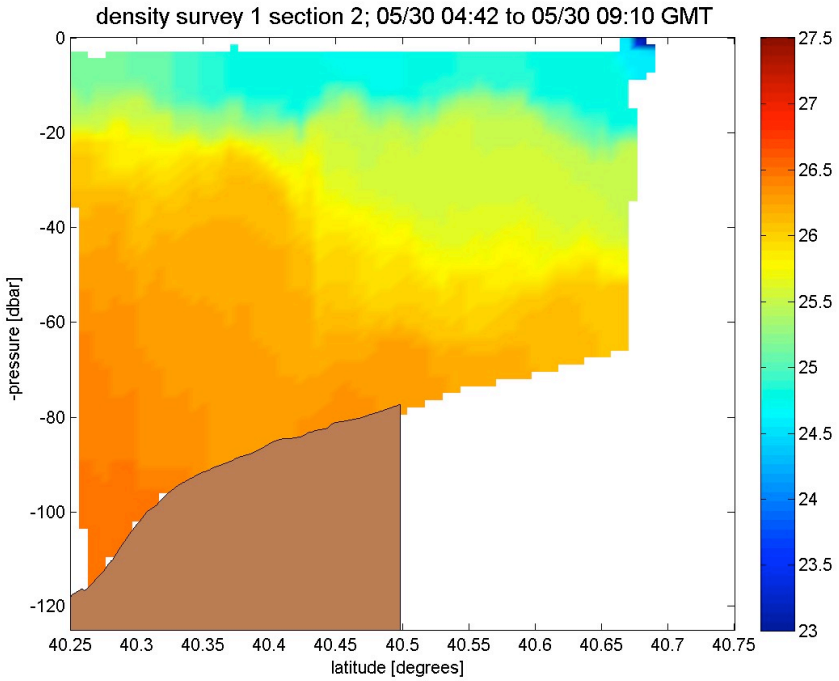




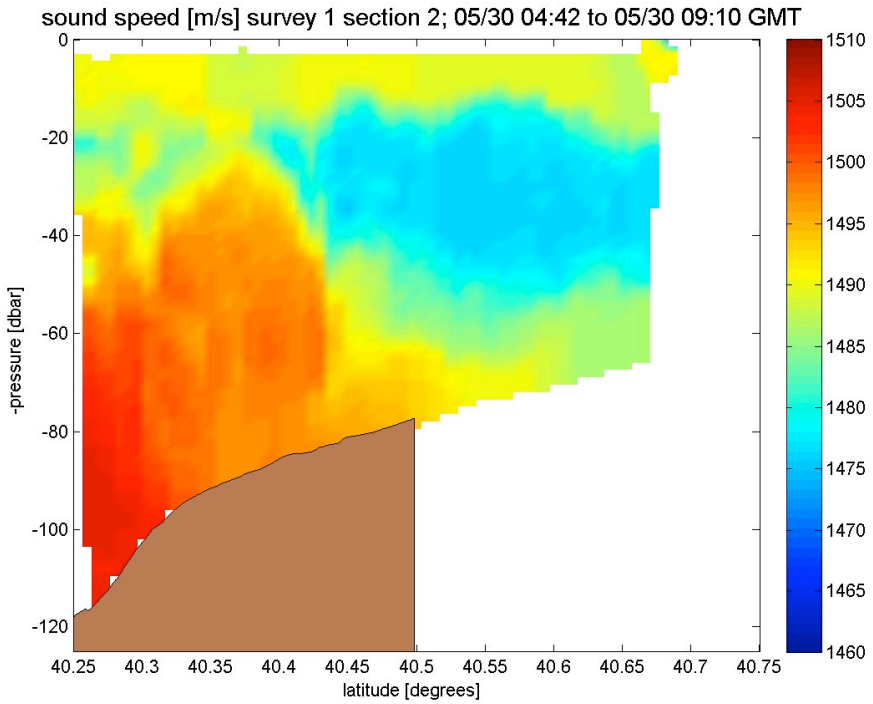
Temperature
Range- ~8 to 14 Deg. C

Salinity
Range- ~32.5 to 35.5

Spring Hydrography
May, 2008

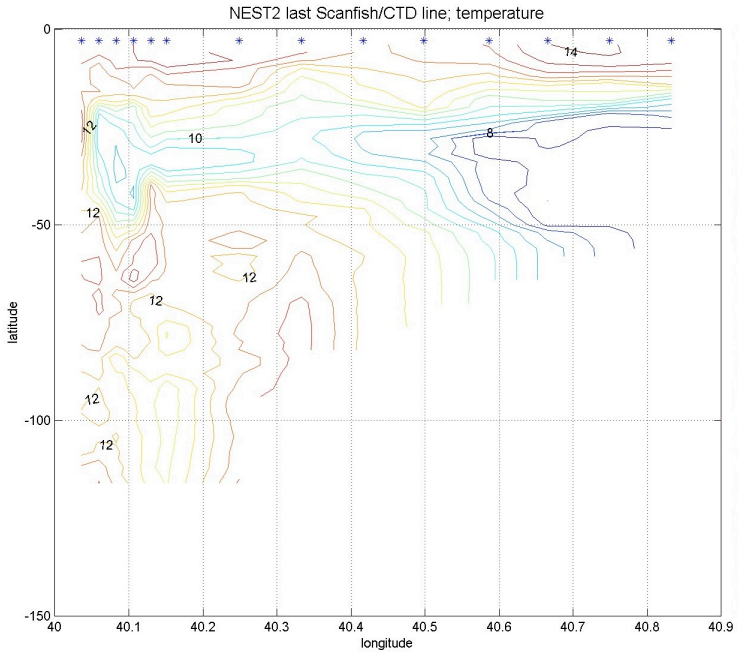


Density
Range- 24.5 to 26.5 σ

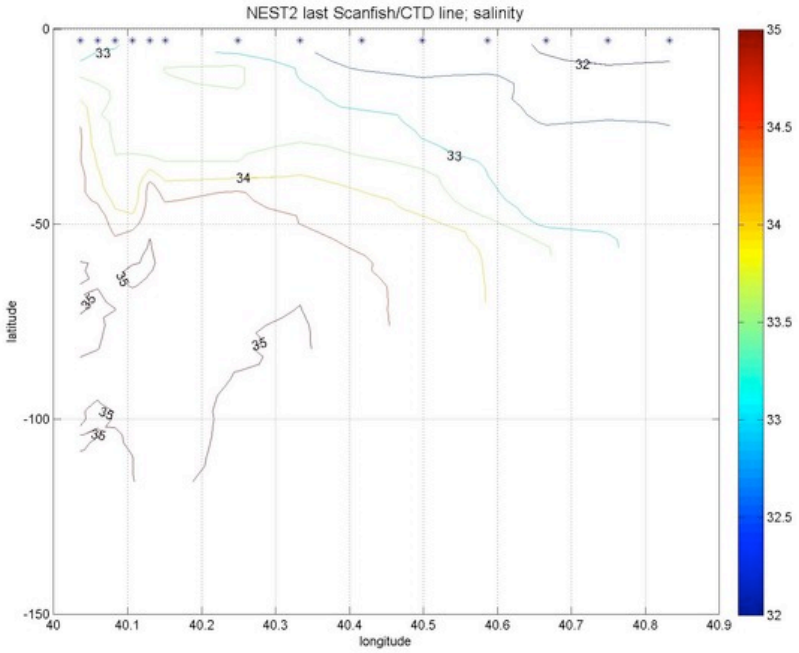


Soundspeed
Range- ~1470 to 1505 m/s

Spring Hydrography
May, 2008

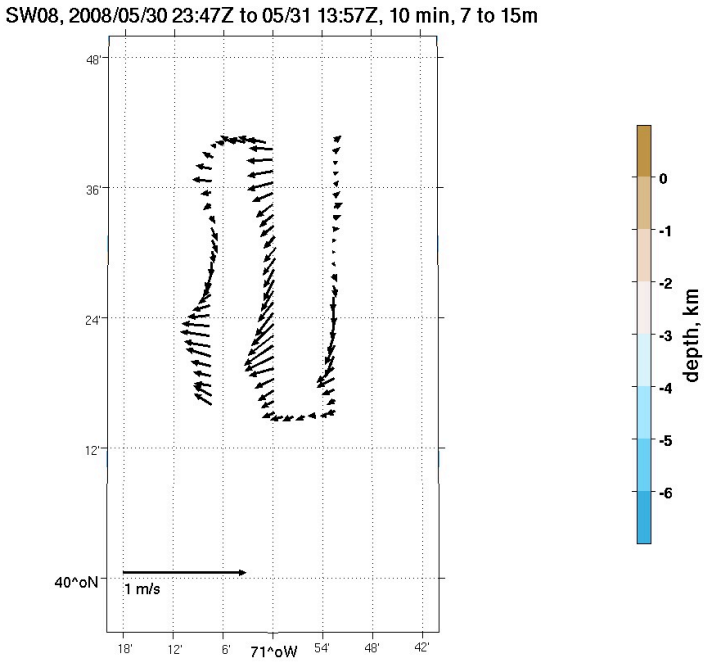


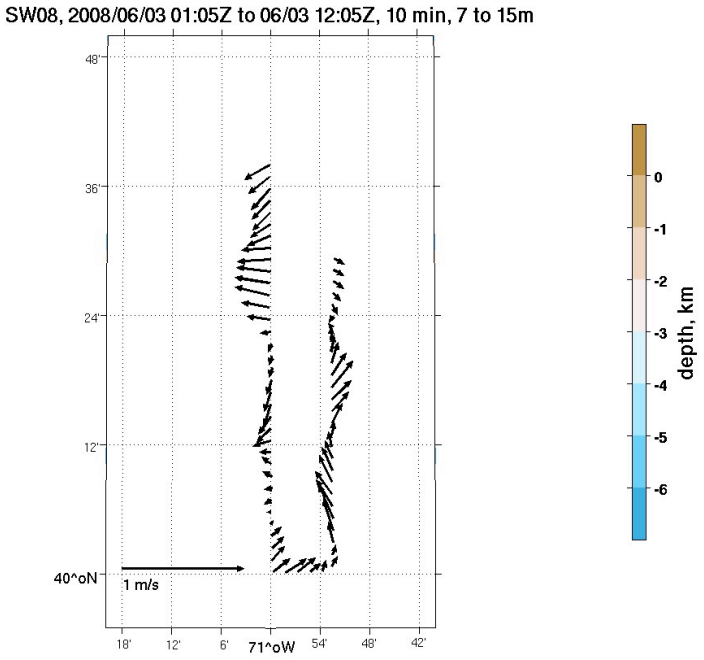
Temperature
Coldest water along bottom
At 40.7 Deg. N



Salinity

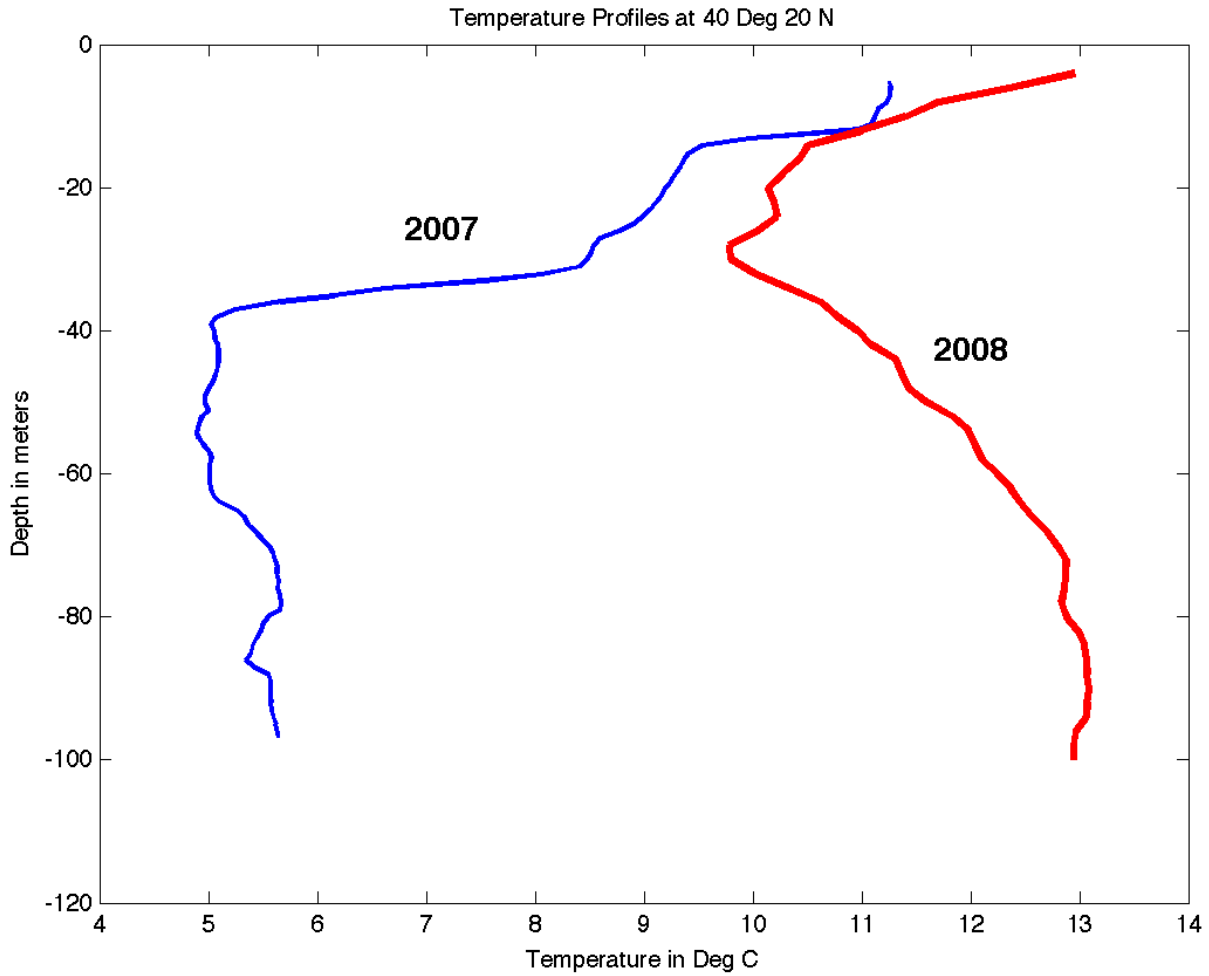
ADCP Maps
May, 2008





Shelfbreak Jet is highly variable and can shift cross-shelf position rapidly due to meandering

Contrasting 2007 and 2008: Temperature Profiles at 100 m isobath



Plans for SBCEXP

* Thermistor Chains (5) and ADCPs (3) in cross-shelf array near middle of study area- 6 weeks
* Repeat Scanfish sections (nightly) for 3 weeks
* (Possibly) REMUS sections down main transmission lines with REMUS 100- coordinated with Acoustics AUV/REMUS operations
* Monitoring of OOI Pioneer Array data to resolve offshore forcing of study area

Fishing Activity in Area- March time frame

* Primary activity is Jonah crab fishery
* Pots set in strings of 35
* Line between pots is negatively buoyant
* Line at ends with floats are not strong- break away easily to minimize whale entanglements
* Lobsters not likely to be moving onshore in March 1- April 15 time frame- still offshore in deep water