Seabed Characterization Workshop

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5-6 April 2011

Data Requirements

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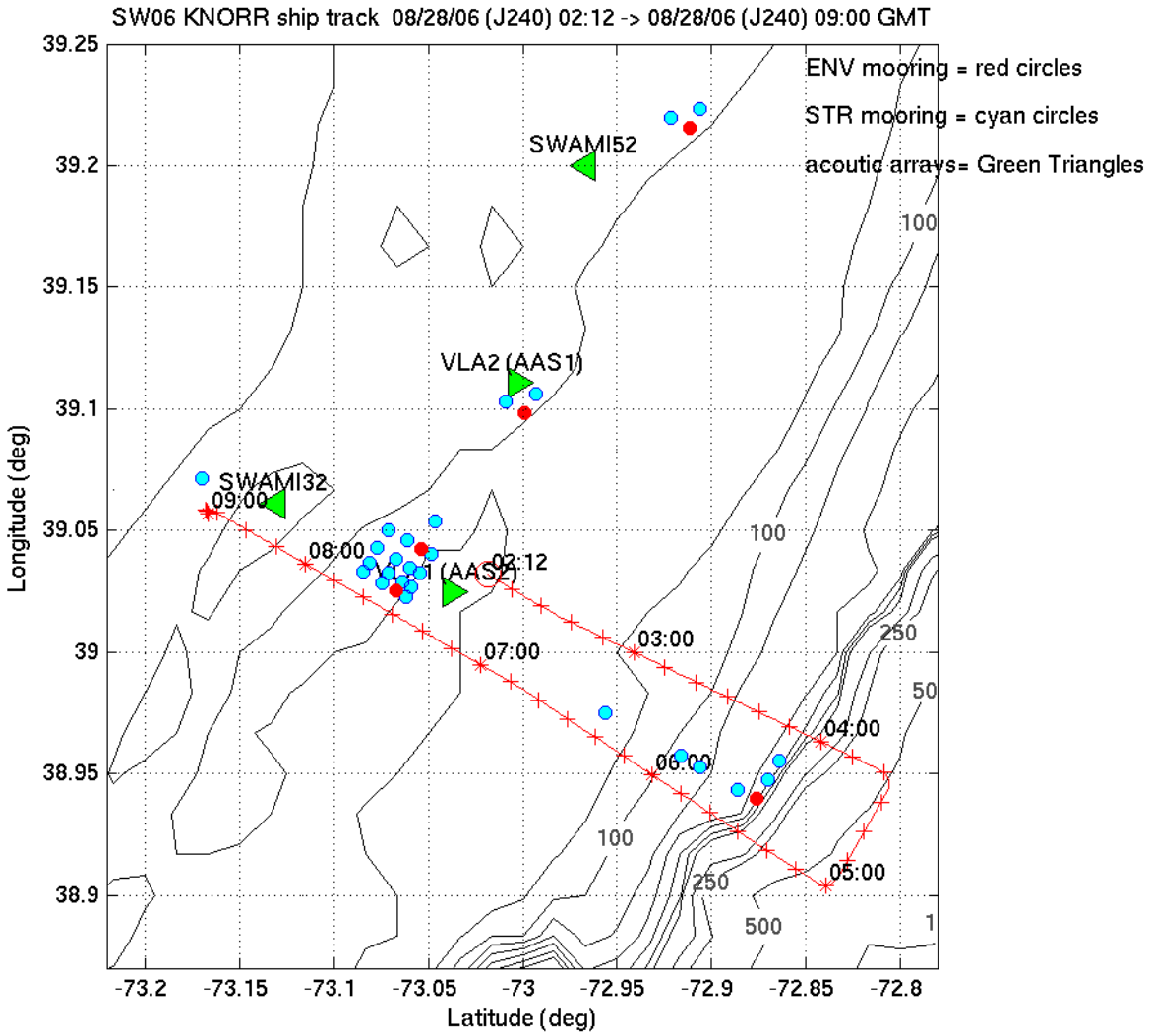
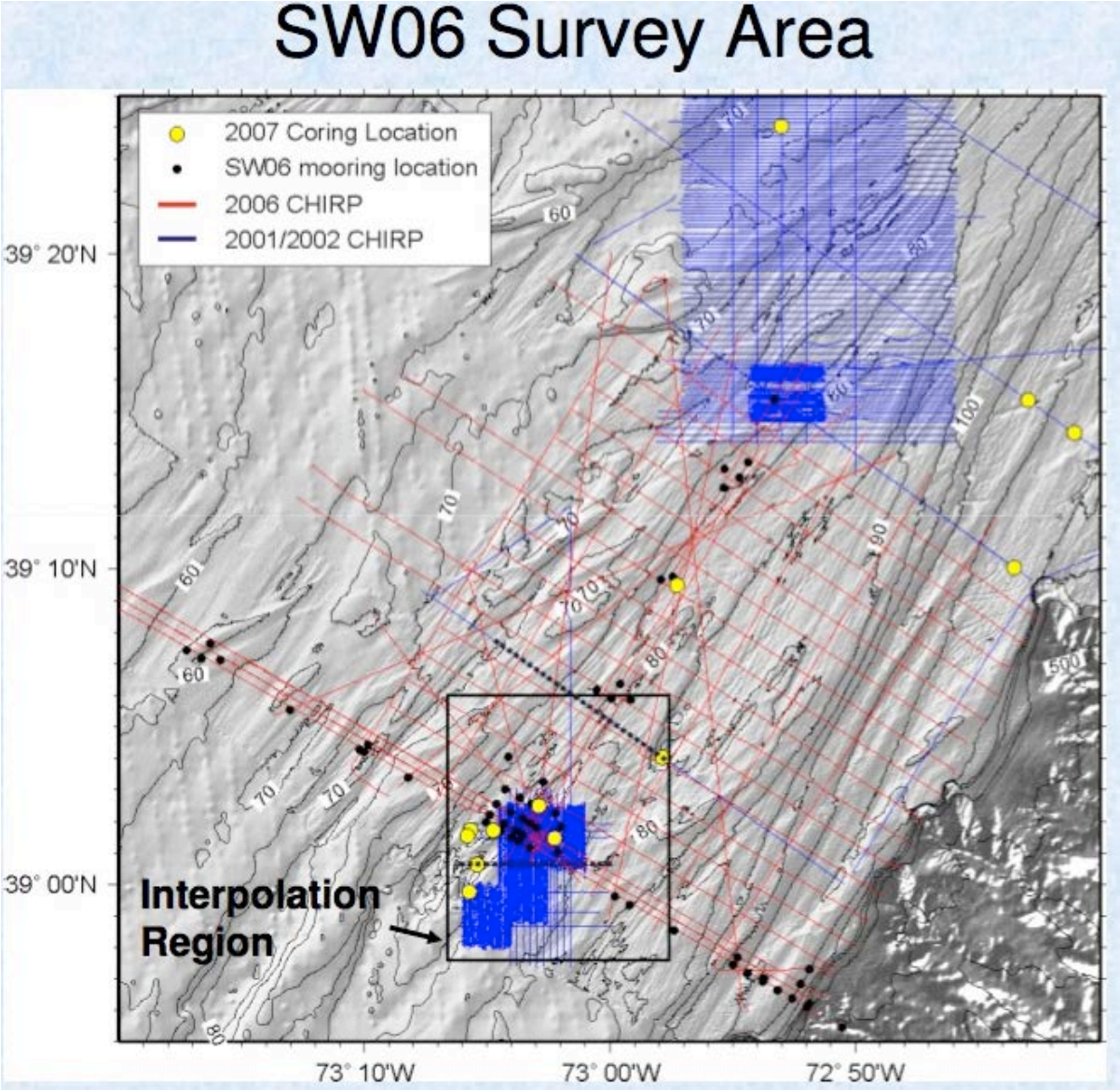
- Impact of water column and sea surface variability
  - Fixed source – multiple fixed receiving array geometry
  - Short and long range
  - Spatially separated water column measurements (thermistor strings)
  - Waverider buoy
- Surface generated noise as ensonifying source
  - Noise fathometry (passive)
  - Drifting arrays (e.g. 16 elements/each)
  - Frequency band ~250 Hz – 2 kHz
- Sloping seafloor
  - Source tows cross-shelf
  - Spatially separated water column measurements (complexity of the cross-shelf region)


SW06 KNORR ship track 08/28/06 (J240) 02:12 -> 08/28/06 (J240) 09:00 GMT
ENV mooring = red circles
STR mooring = cyan circles
acoutic arrays= Green Triangles
SWAMI52
VLA2 (AAS1)
SWAMI32
VLA1 (AAS2)
09:00
08:00
02:12
07:00
03:00
04:00
06:00
05:00
100
250
50
500
1
Longitude (deg)
Latitude (deg)
39.25
39.2
39.15
39.1
39.05
39
38.95
38.9
-73.2
-73.15
-73.1
-73.05
-73
-72.95
-72.9
-72.85
-72.8

MARINE PHYSICAL LABORATORY

SW06 Survey Area



Experiment Hardware

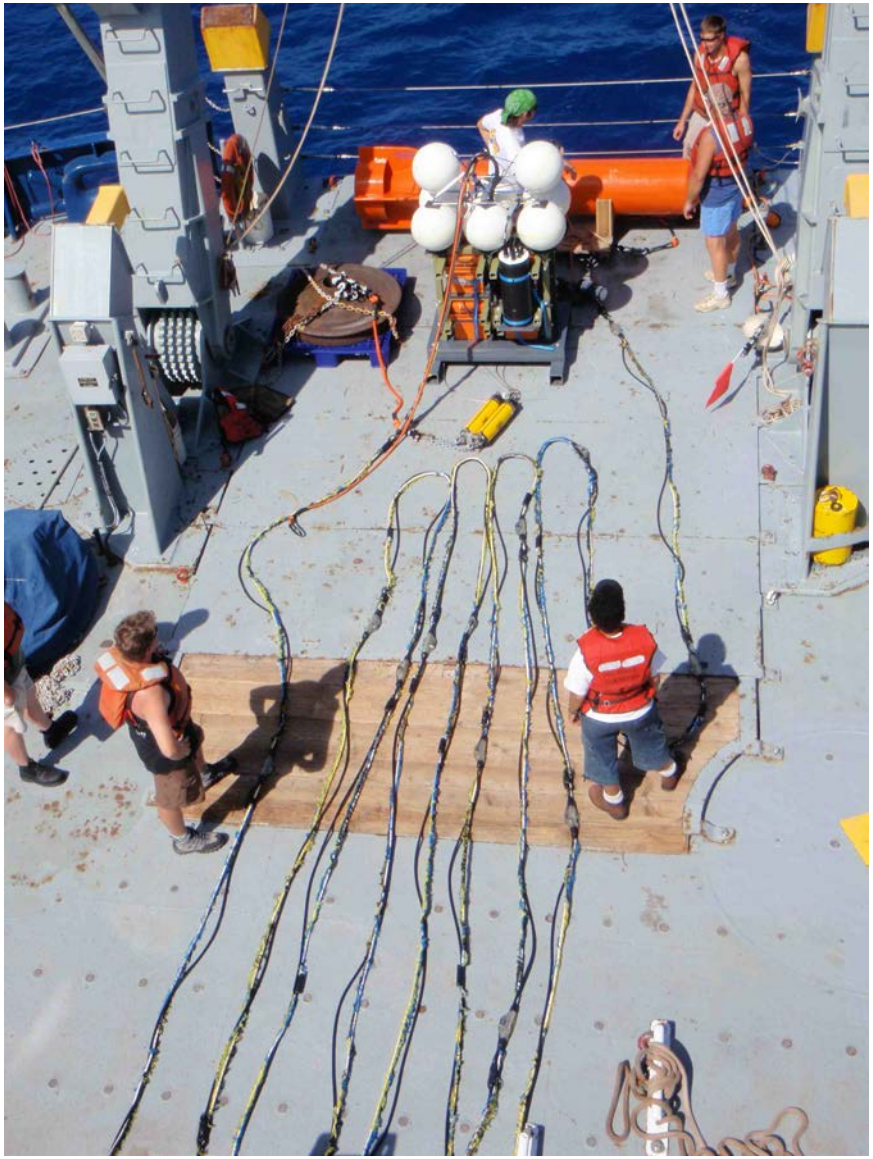
MPL Receive Arrays, Source/Receive Arrays, and Towed Sources

- Autonomous Seafloor Receive Arrays (4) - Each Array
  - 16/32-element seafloor VLA with 3.75 m element separation (56.25 m aperture)
    - Other separations easily obtained with new array cables
  - Bandwidth 20/500 Hz – 20/30 kHz (fs = 50/100 kHz)
  - Record duration ~96 hours
  - Autonomous or buoy deployed
  - 2D array configuration feasible (128 elements max)

- Autonomous or Ship–Deployed Source/Receive Arrays (2) – Each Array
  - 8-element VLA with 7.5 m element separation (52.5 m aperture)
    - Separations easily can be modified
  - Bandwidth 10-32 kHz (fs = 100 kHz)
  - Source level 185 dB +/- 4 dB across band
  - Arbitrary waveform transmissions from any or all elements

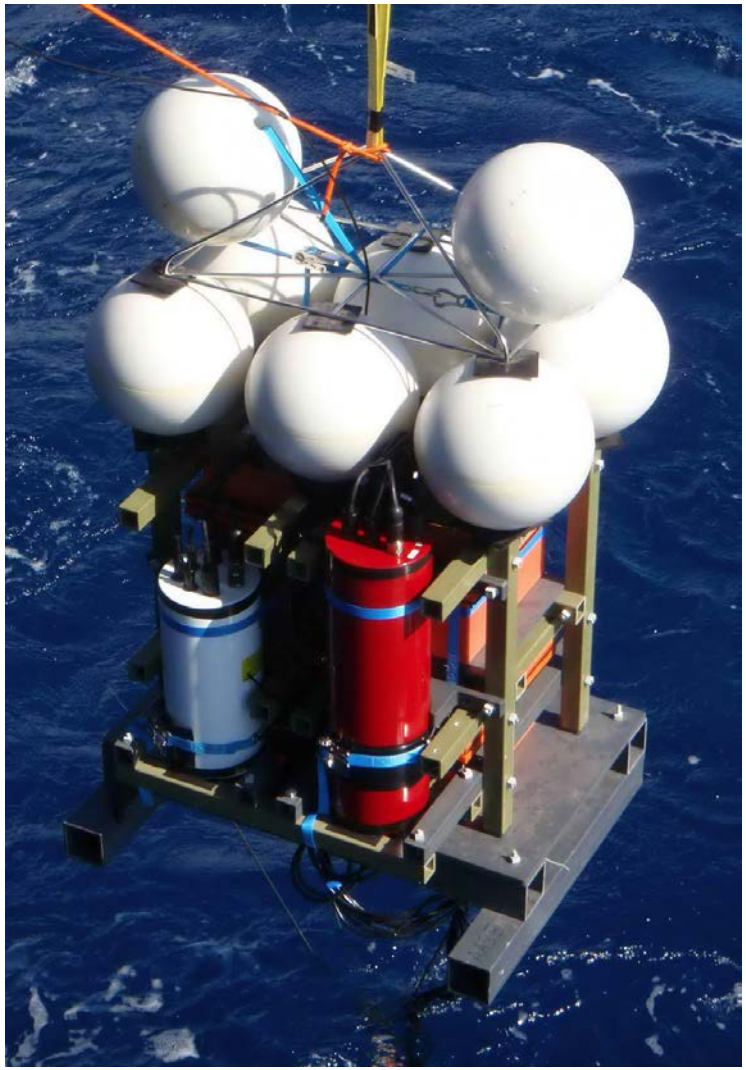
- Towed Sources
  - ITC-2040X and ITC-1001in a tow body (3-30 kHz)
  - ITC-2015 (1.5-4 kHz)
  - J-15-1 / J-15-3 (rental)
- Source Tow System
  - Winch
  - Monitor phone and depth sensor (both recorded)
  - Arbitrary waveform synthesis (fs = 100 kHz)
  - Transmit from two sources simultaneously (separate power amplifiers)

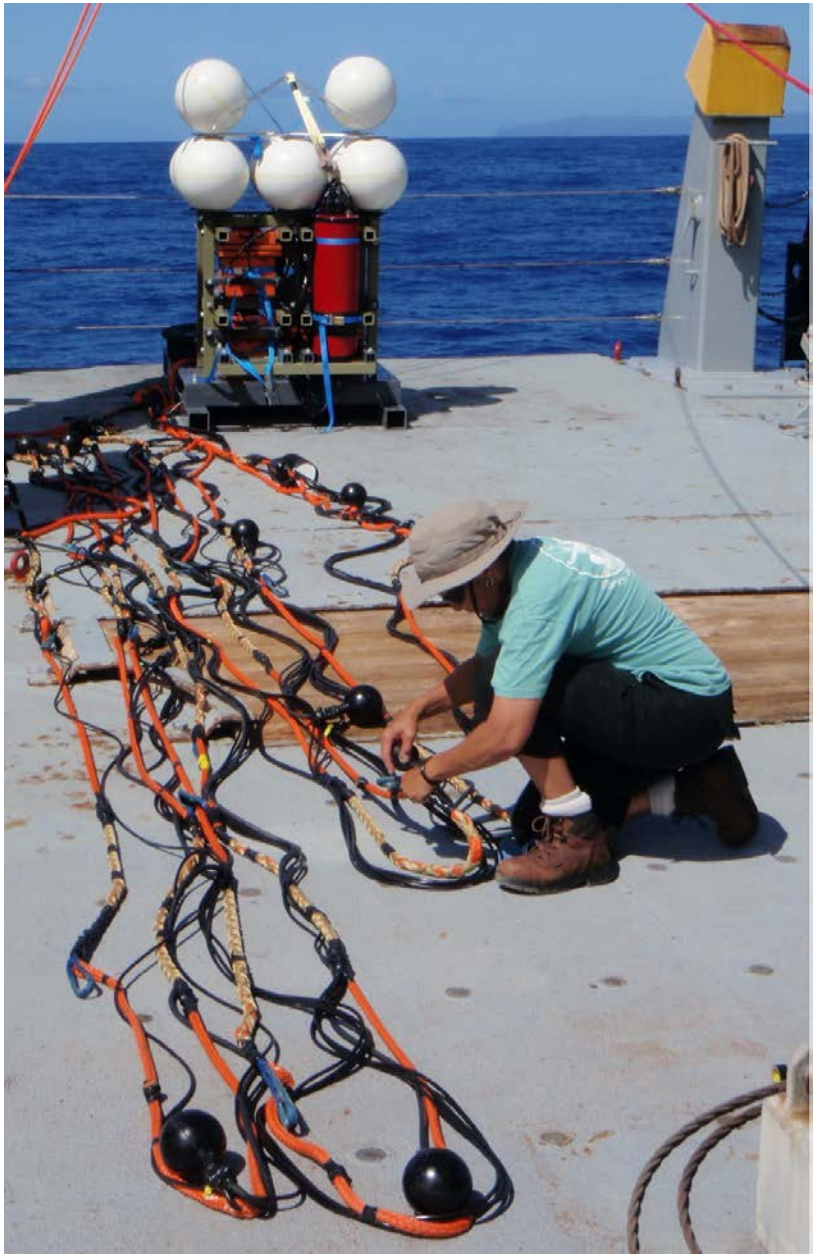
- Radio Buoys (2)
  - DSPL batteries (4)
  - 802.11 WLAN connectivity to ship



Autonomous Receive Array

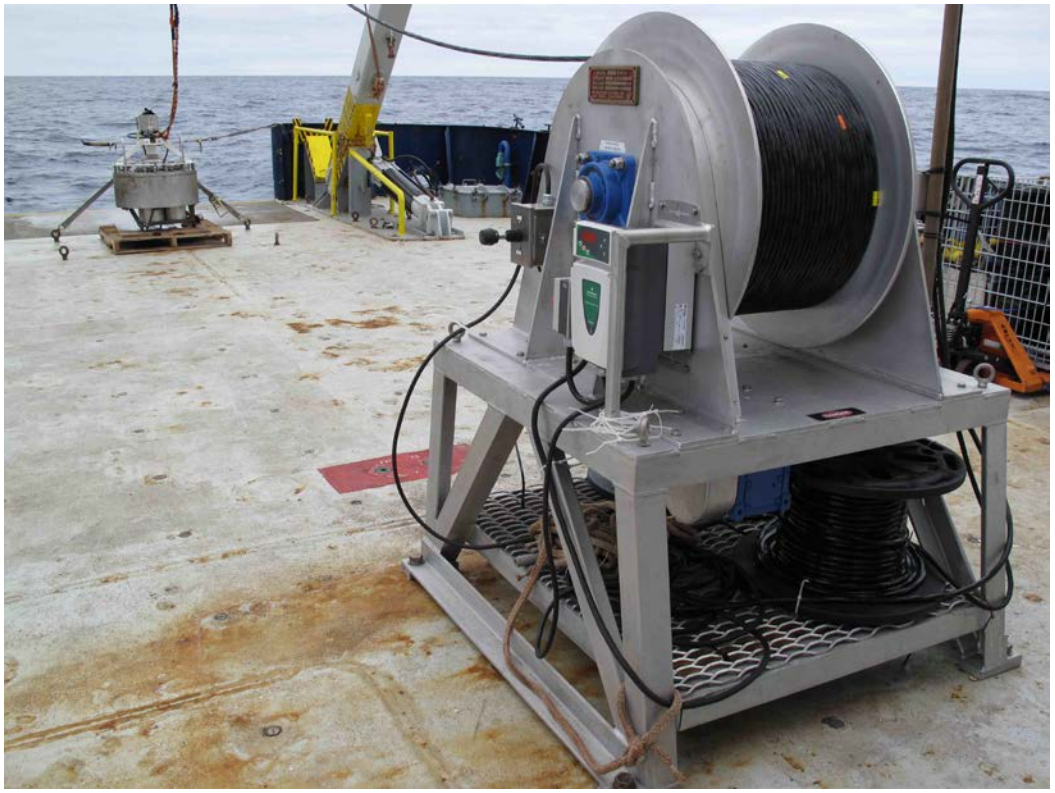
Source-Receive Array

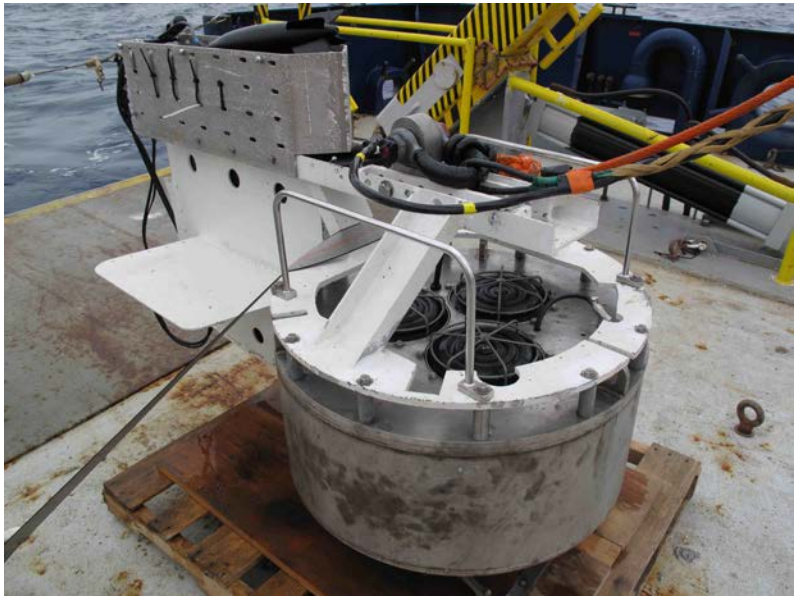




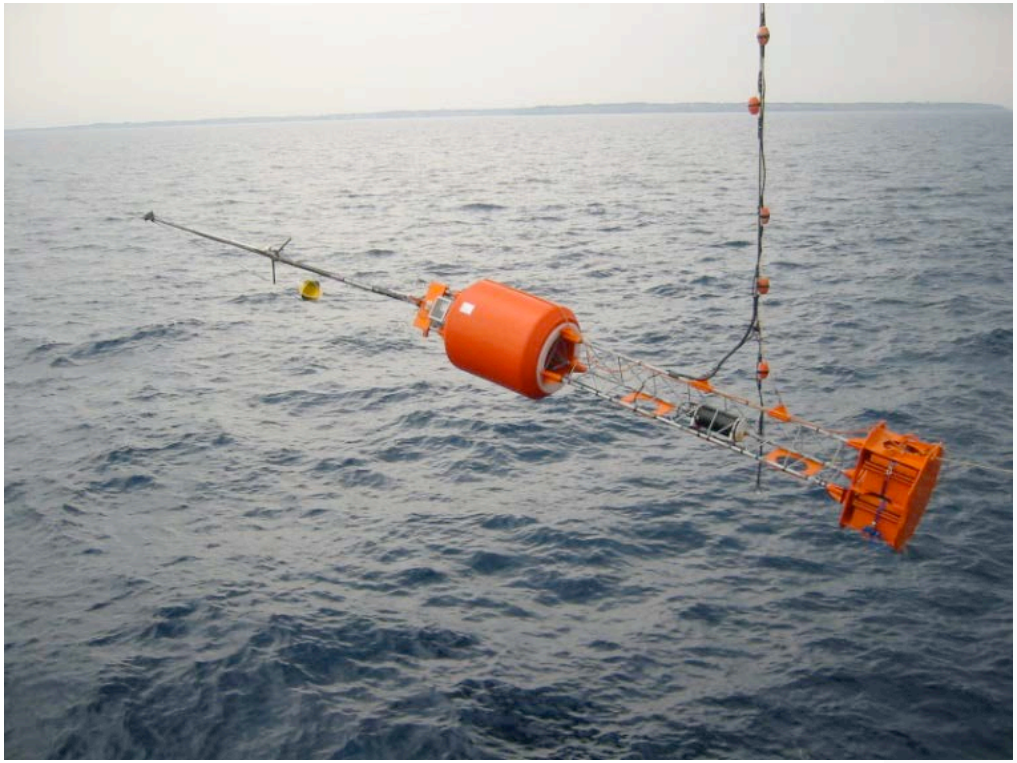
Towed Source System

Winch, Tow Body, and J-15-3 (rental)





Networked Deployment with Communications Buoy



Recording electronics in tower section. 802.11g antenna on top of mast.