

*Marcus Langseth Science Oversight Committee
Chair's Remarks to UNOLS National Meeting
NSF
October 3, 2008*



Overview

1. Summary of First 4 Cruises (w/ data examples)
2. Areas of Concern
3. MLSOC Activities



Summary of First Four Cruises

MGL0804 - Costa Rica I/Holbrook (Feb-March)

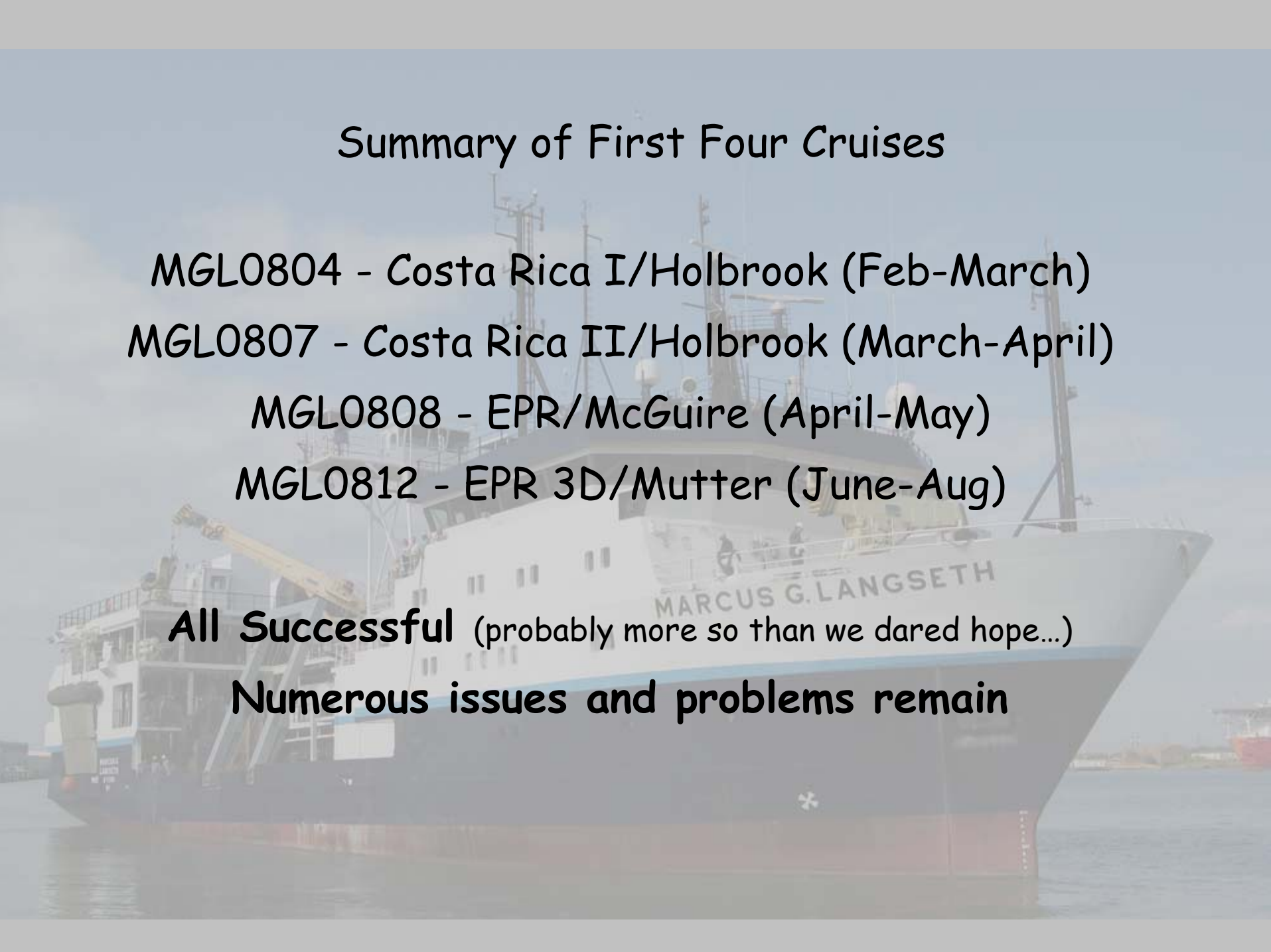
MGL0807 - Costa Rica II/Holbrook (March-April)

MGL0808 - EPR/McGuire (April-May)

MGL0812 - EPR 3D/Mutter (June-Aug)

All Successful (probably more so than we dared hope...)

Numerous issues and problems remain



Current/Future Operations

Sept/Oct 08: - Gulf of Alaska: Gulick

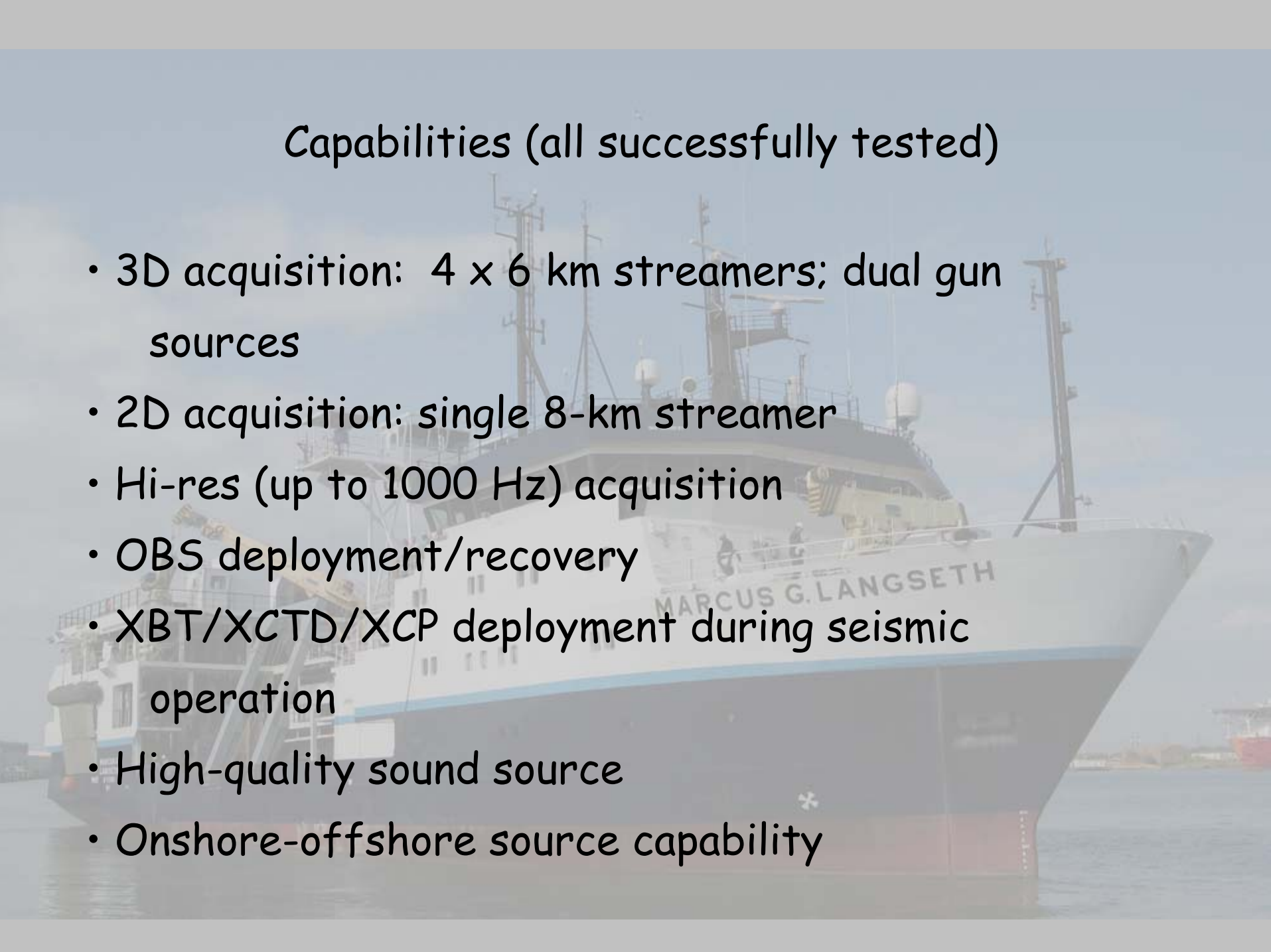
2009 LOI:

- 245 days funded (191 NSF, 54 other)
- Lau Basin; Taiwan; Juan de Fuca



Capabilities (all successfully tested)

- 3D acquisition: 4 x 6 km streamers; dual gun sources
- 2D acquisition: single 8-km streamer
- Hi-res (up to 1000 Hz) acquisition
- OBS deployment/recovery
- XBT/XCTD/XCP deployment during seismic operation
- High-quality sound source
- Onshore-offshore source capability



MGL0804/0808 - Holbrook /Costa Rica

- 2D MCS, OBS, onshore-offshore
- Ocean imaging ("seismic oceanography")
- High data quality

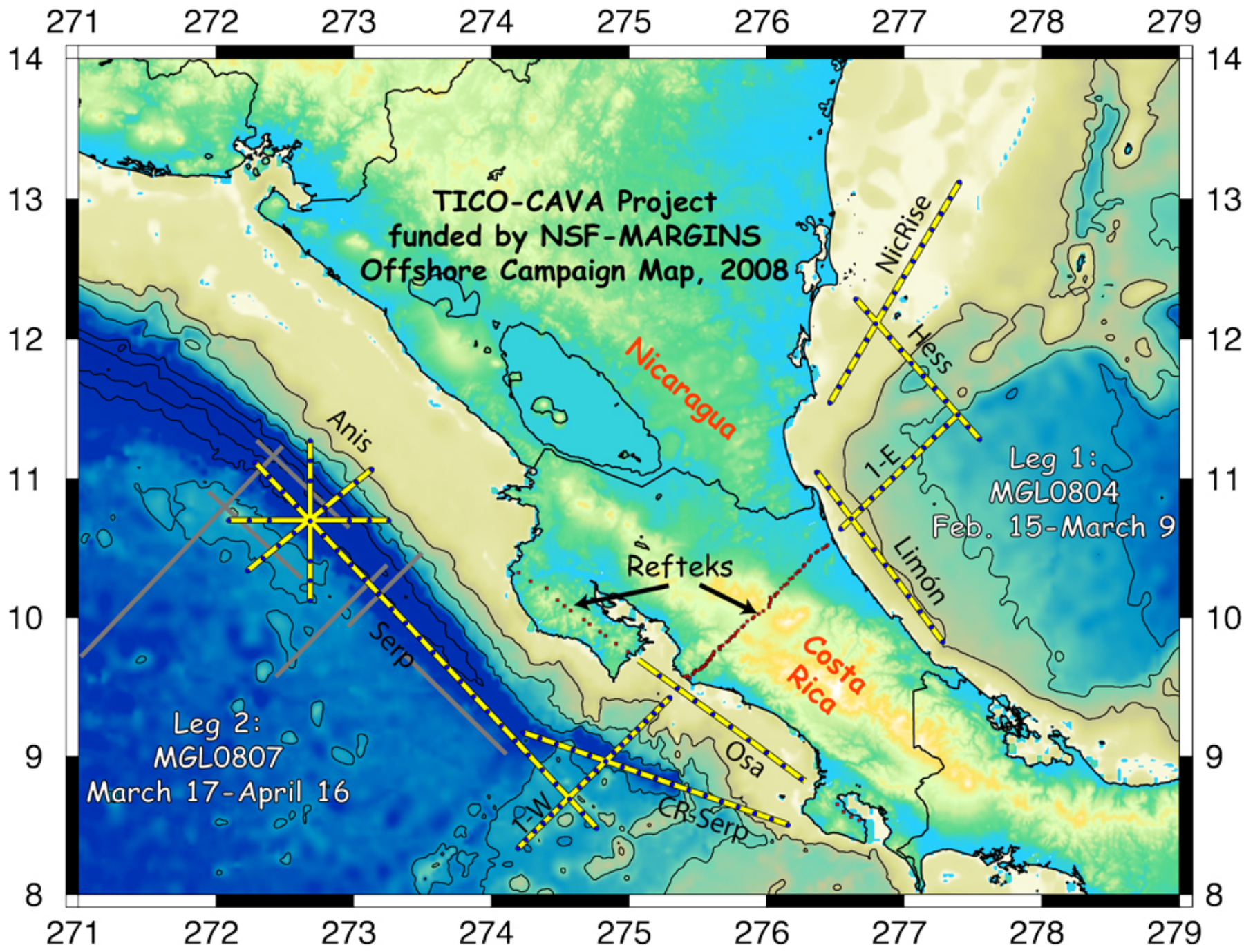
Operational capabilities verified:

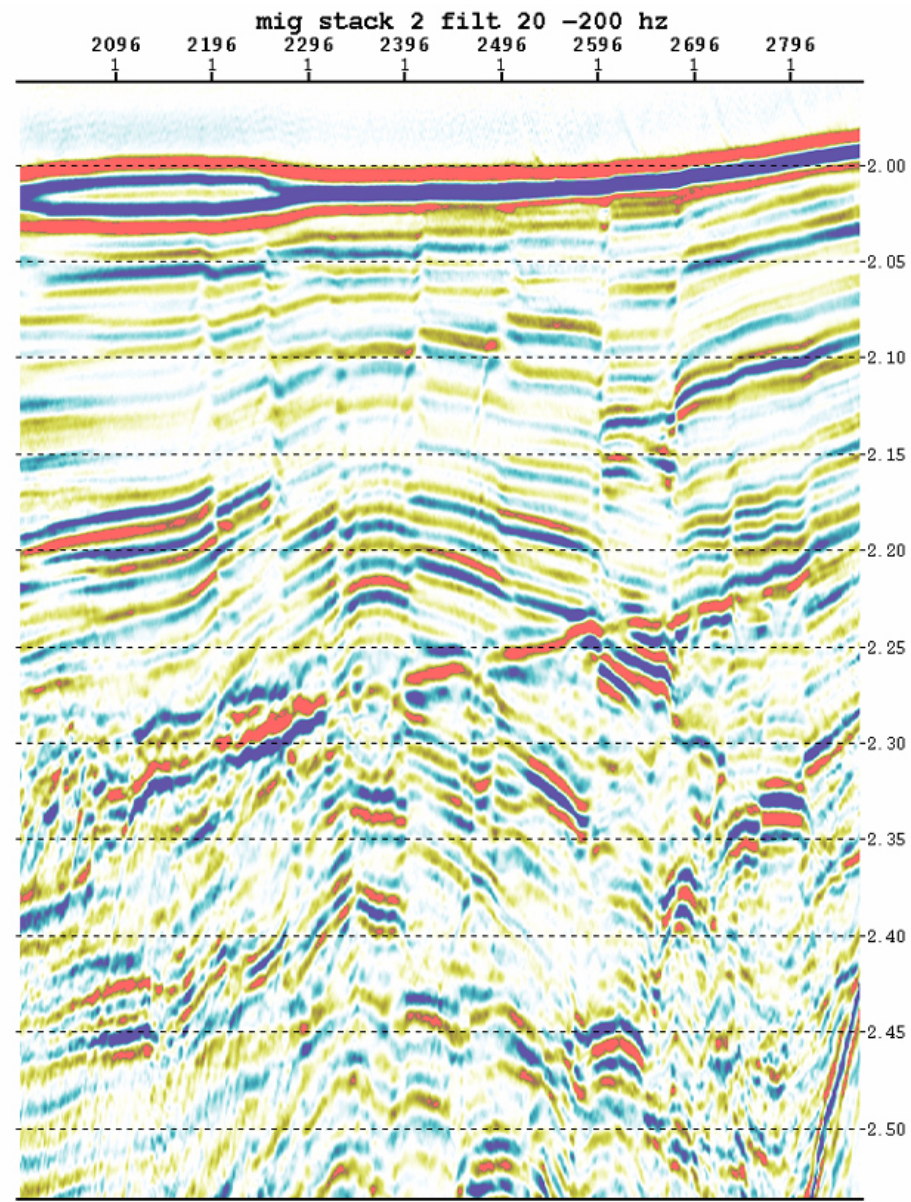
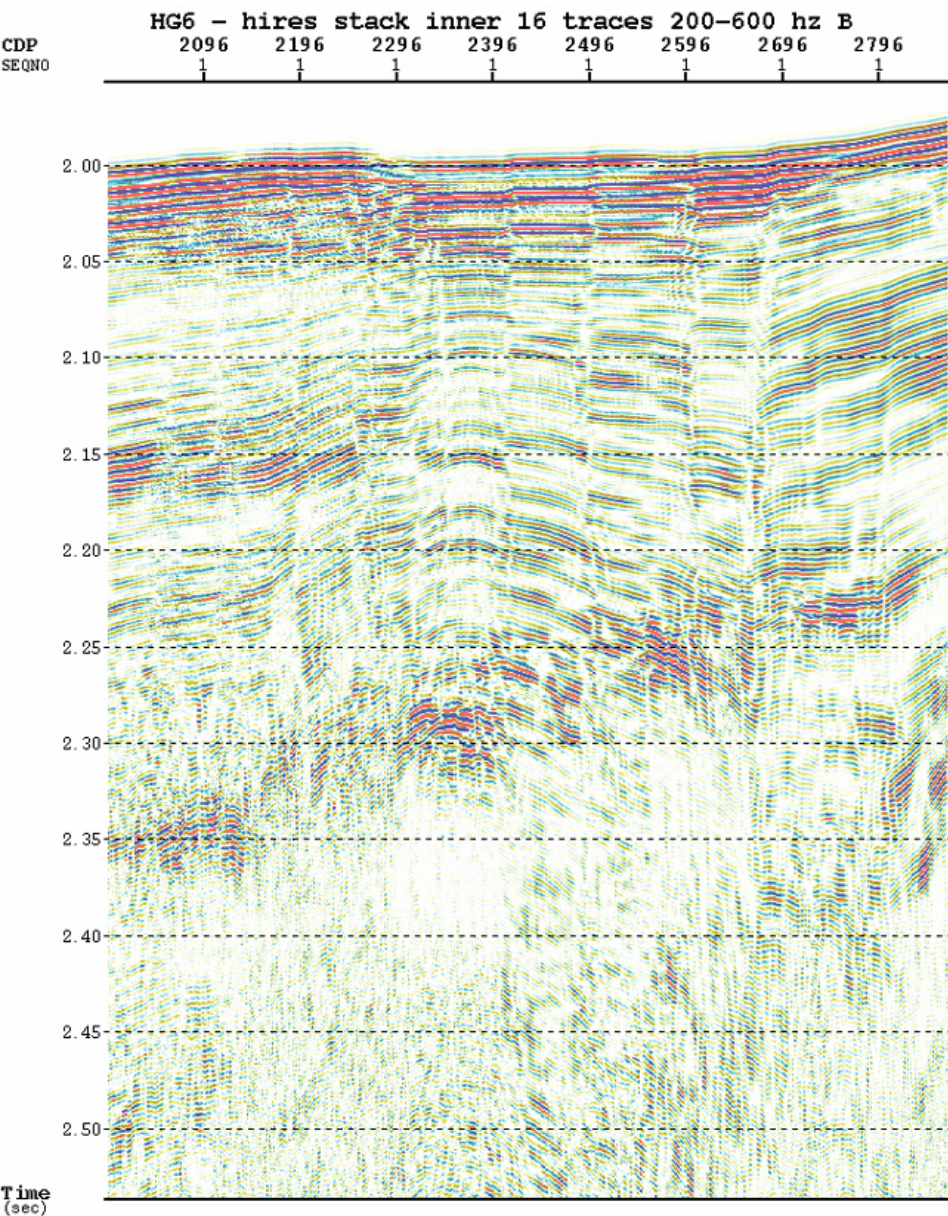
- 2D seismic
- OBS deployment/recovery
- XBT/XCTD/XCP deployment

New Capabilities tested:

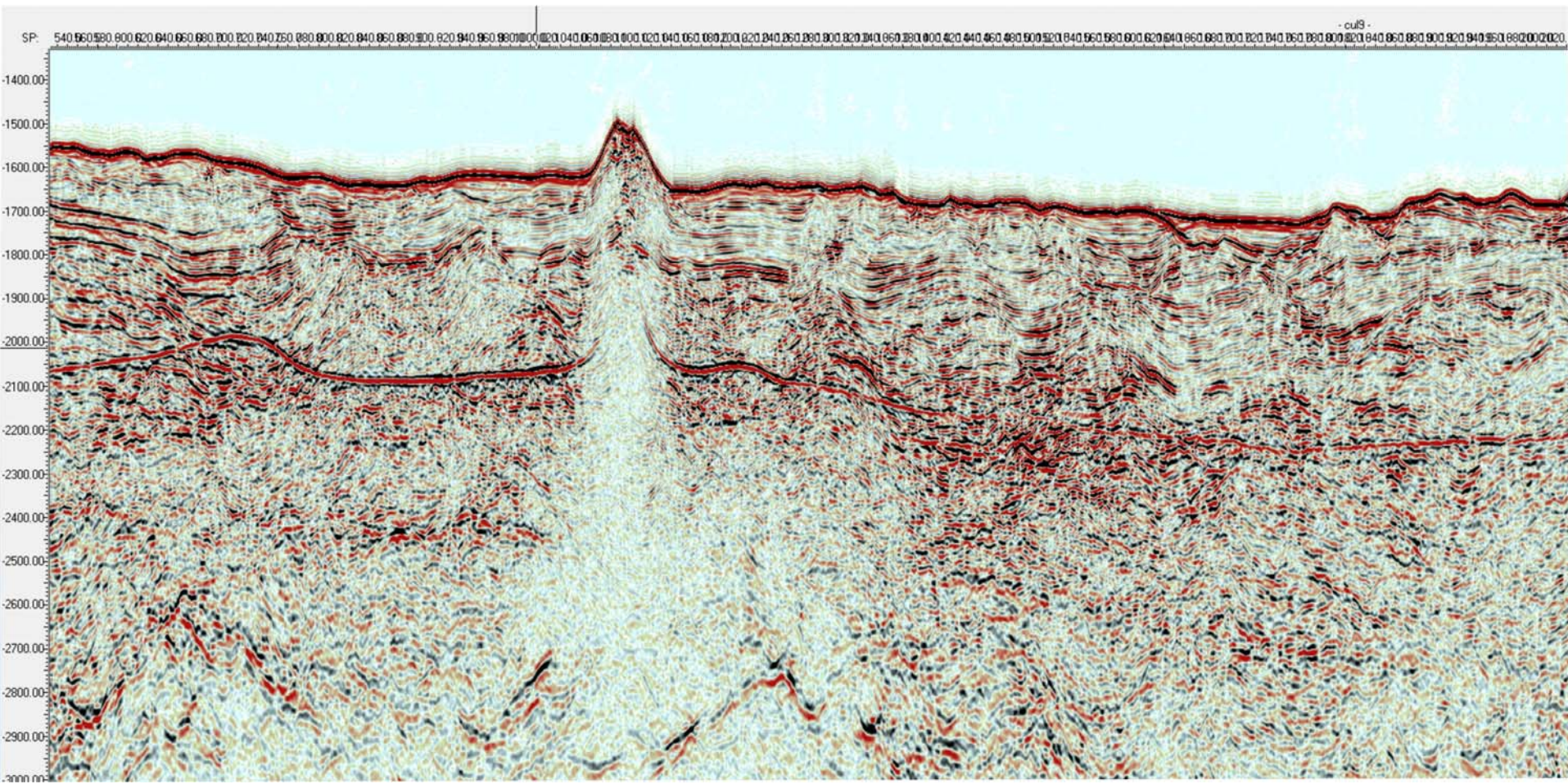
- 8 km long streamer
- high-res data (1000 Hz)



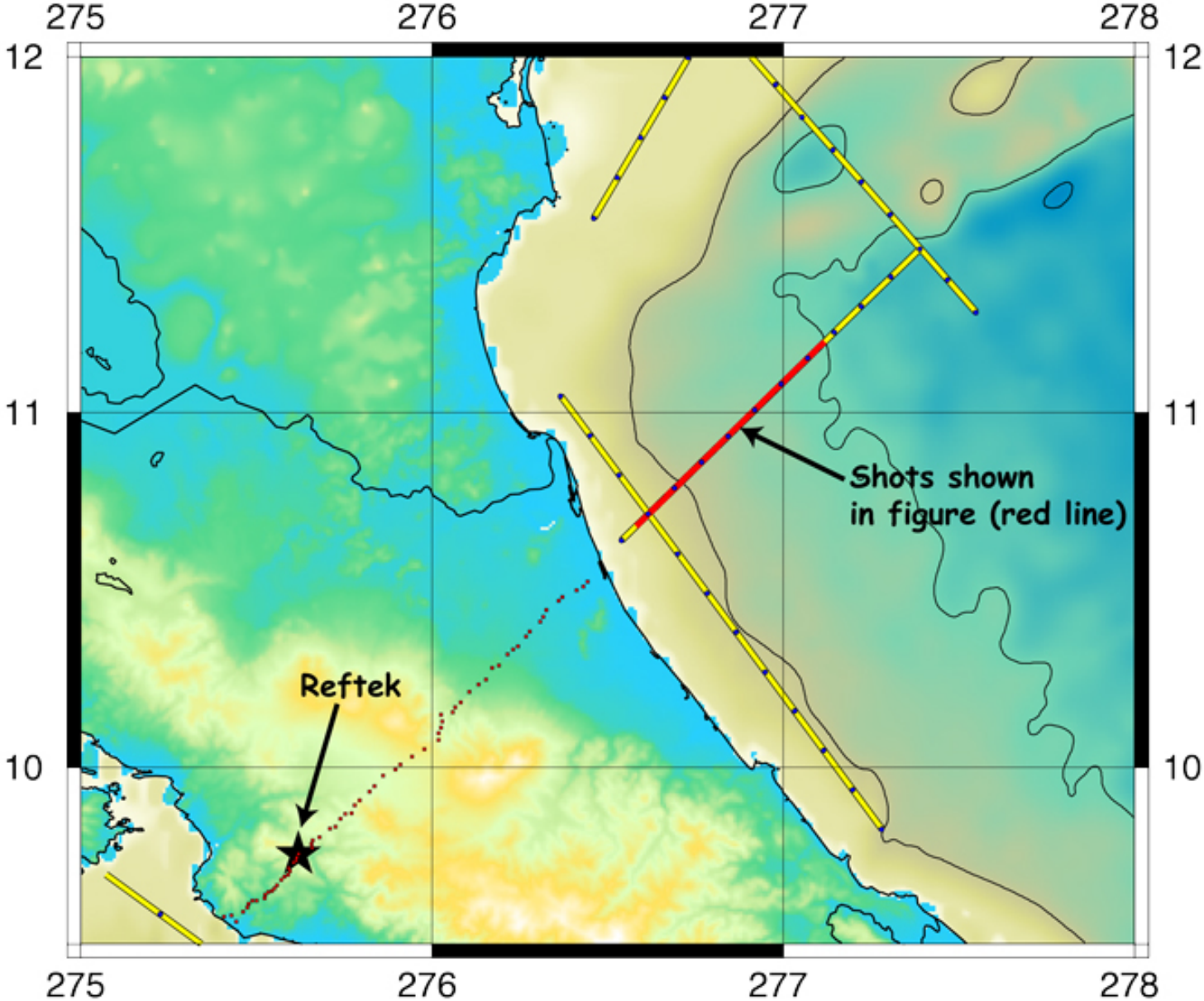




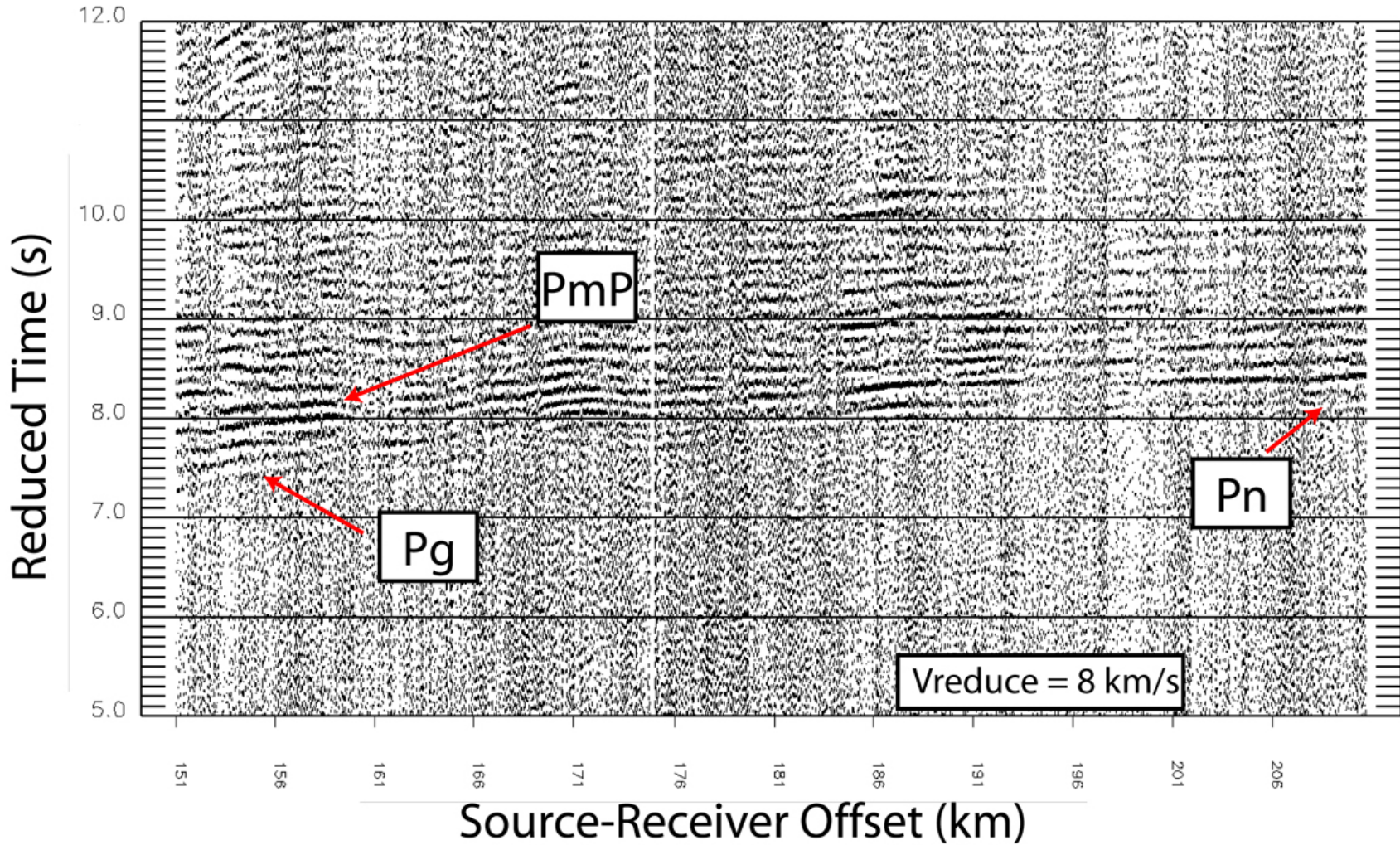
Mound Culebra Line 9: Prestack Depth Migrated



Onshore-Offshore Seismic Data



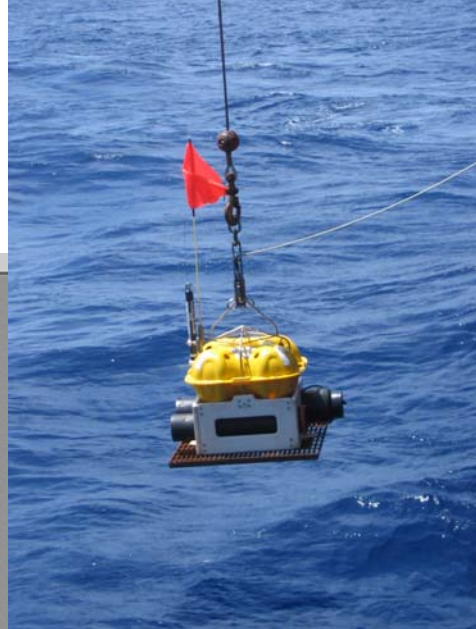
Onshore-Offshore Seismic Data



WHOI OBS 39
Line 1E
MGL0804

crustal refraction

Moho Reflection



-78 km

0 km

+55 km

Distance (km)

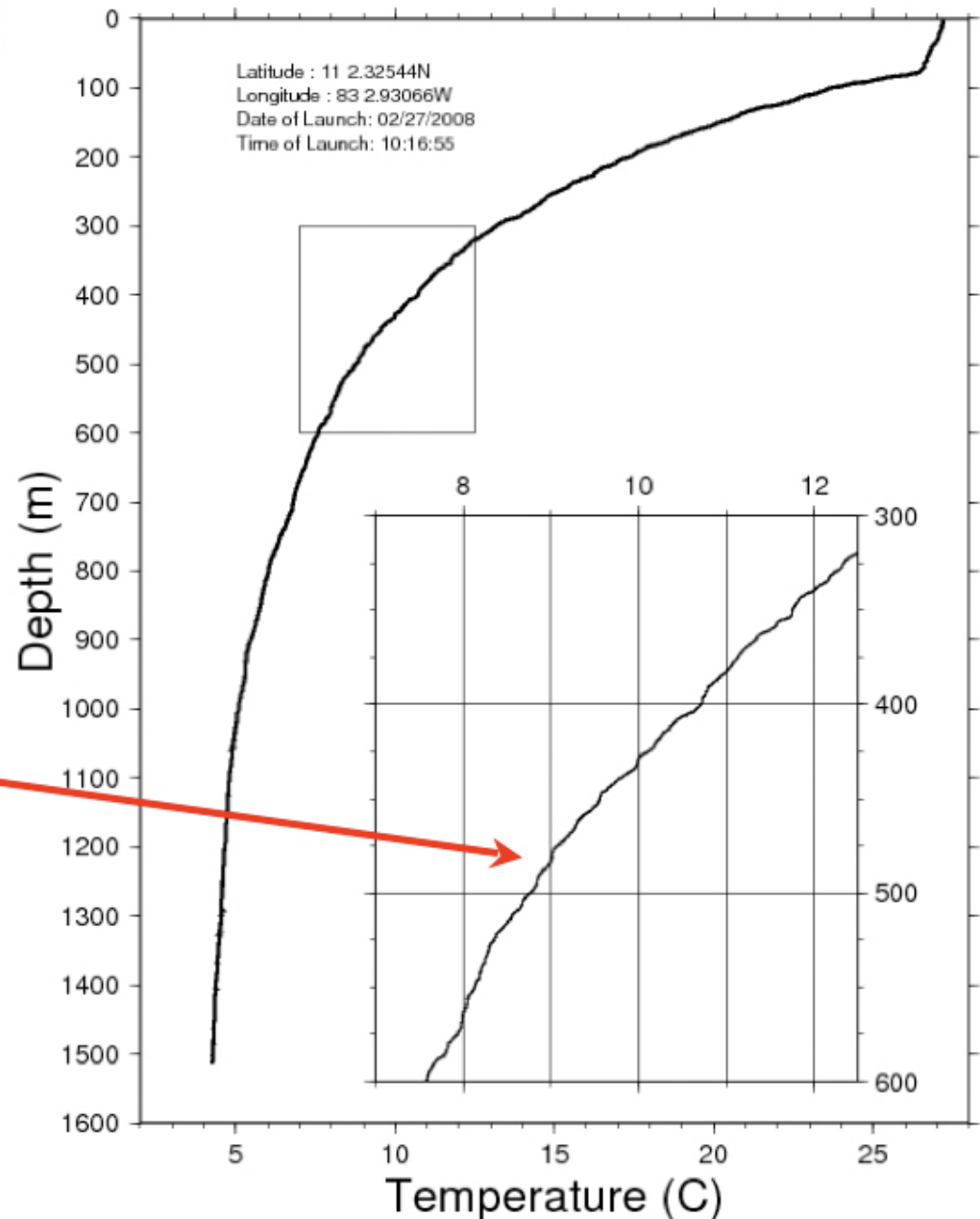
A photograph taken from the deck of a ship, showing a complex rig of metal pipes and cables extending over the ocean. A large, dark, cylindrical object, possibly a sensor or camera housing, is visible in the lower-left foreground. The rig consists of several horizontal and diagonal pipes, with a red hook and pulley system suspended from one of the upper pipes. The ocean is a deep blue with small waves, and the sky is a clear, light blue. The text "Ocean Temperature Measurement and Imaging" is overlaid in the center of the image.

Ocean Temperature Measurement and Imaging

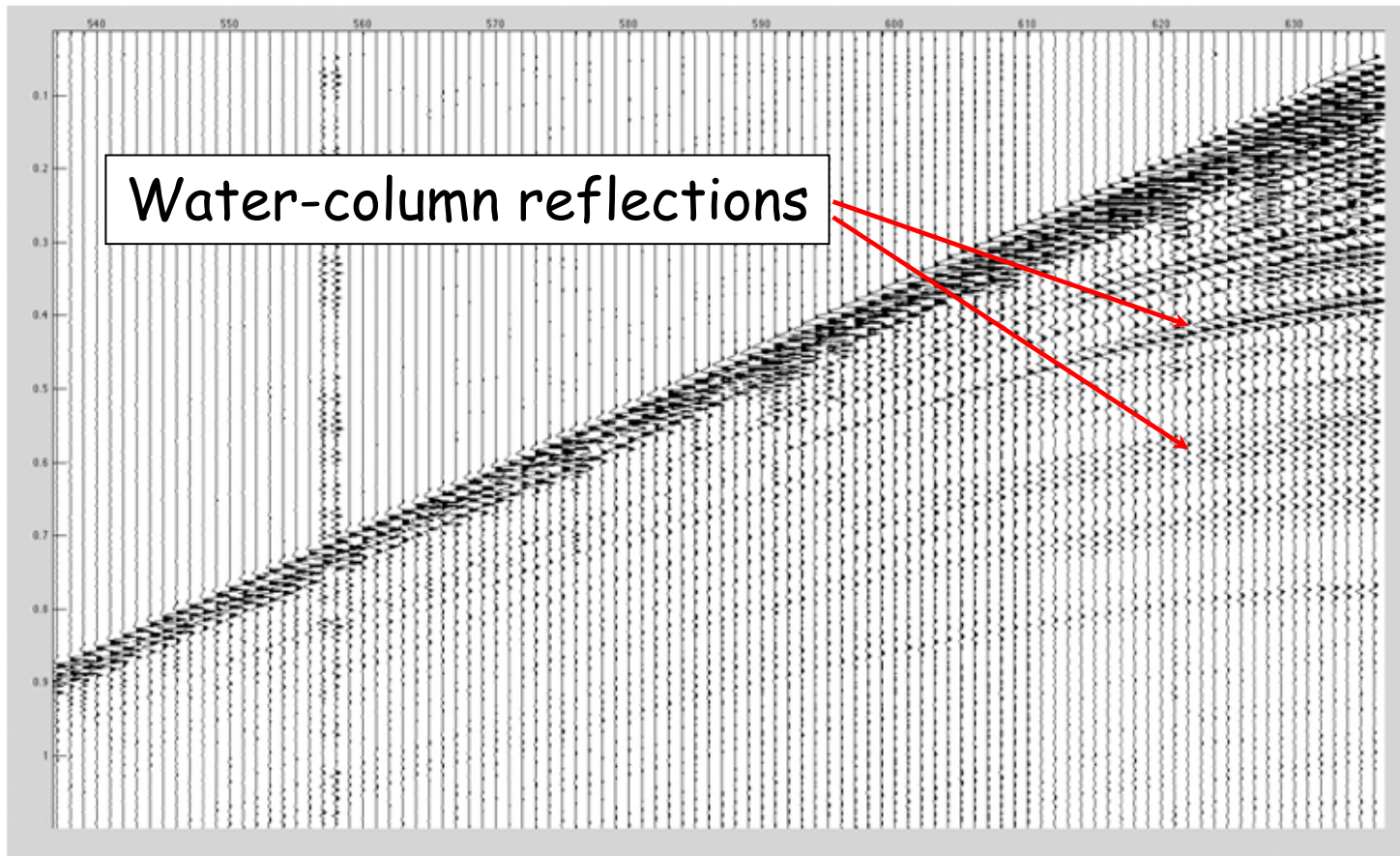
Sensitivity of Method

XBT temperature profile in Caribbean from MGL0804.

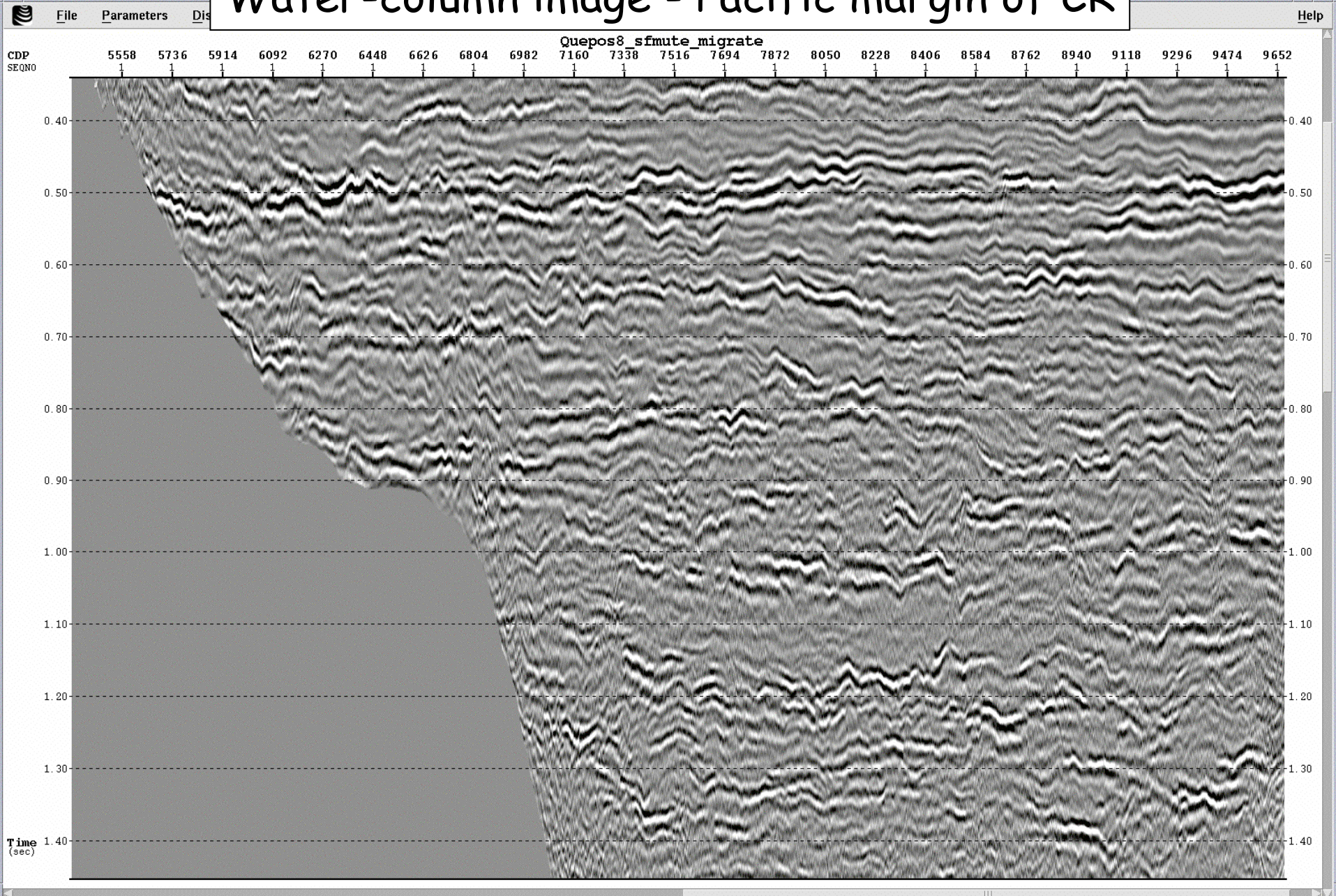
Note how smooth the temperature profile is, with very subtle finestructure.



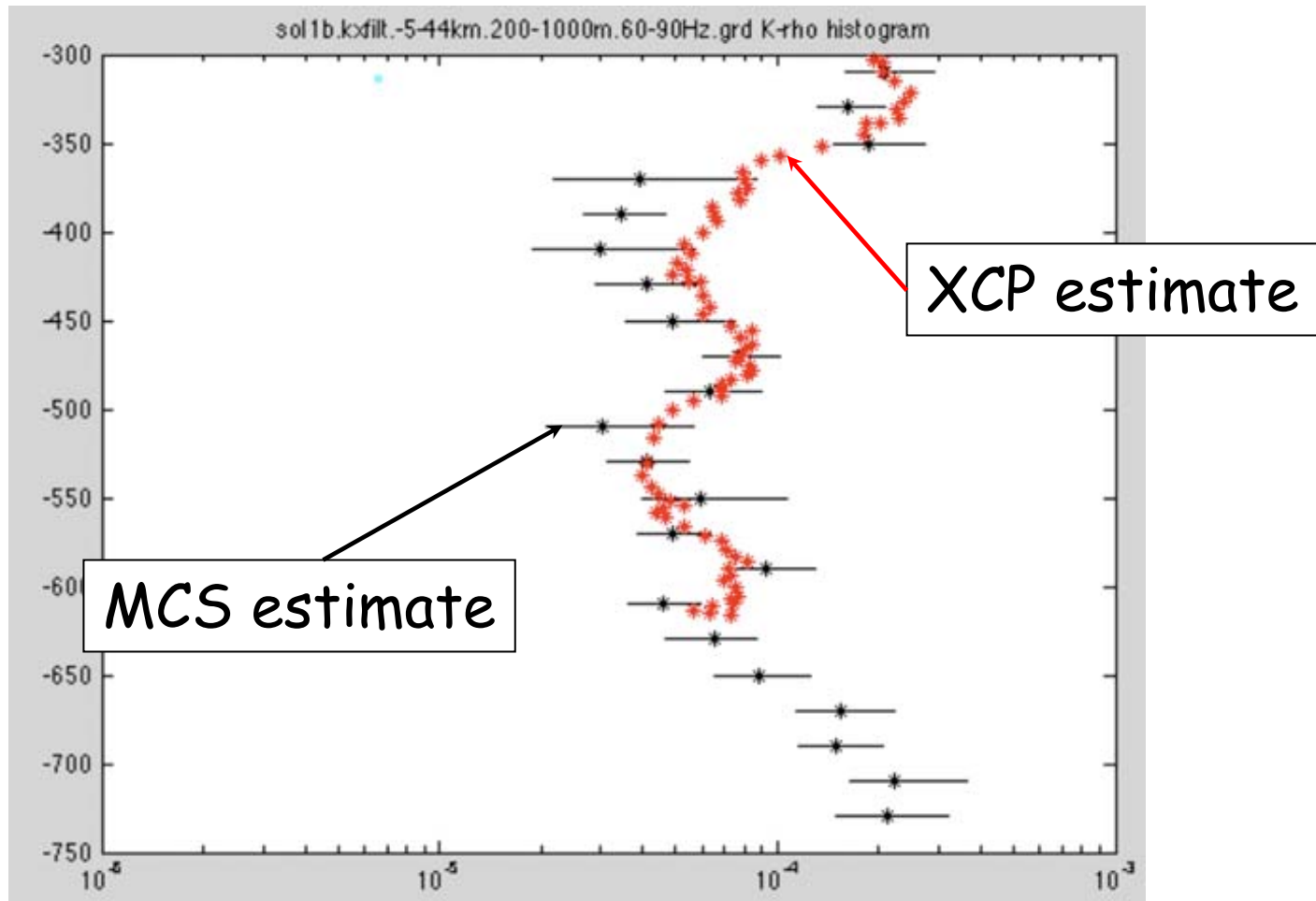
This shot gather, co-located with the XBT, shows very clear, high S/N reflections from even this subtle finestructure. (The secret here is a 36-gun, well tuned, linear gun array. Enjoying a calm sea state doesn't hurt either.)



Water-column image - Pacific margin of CR

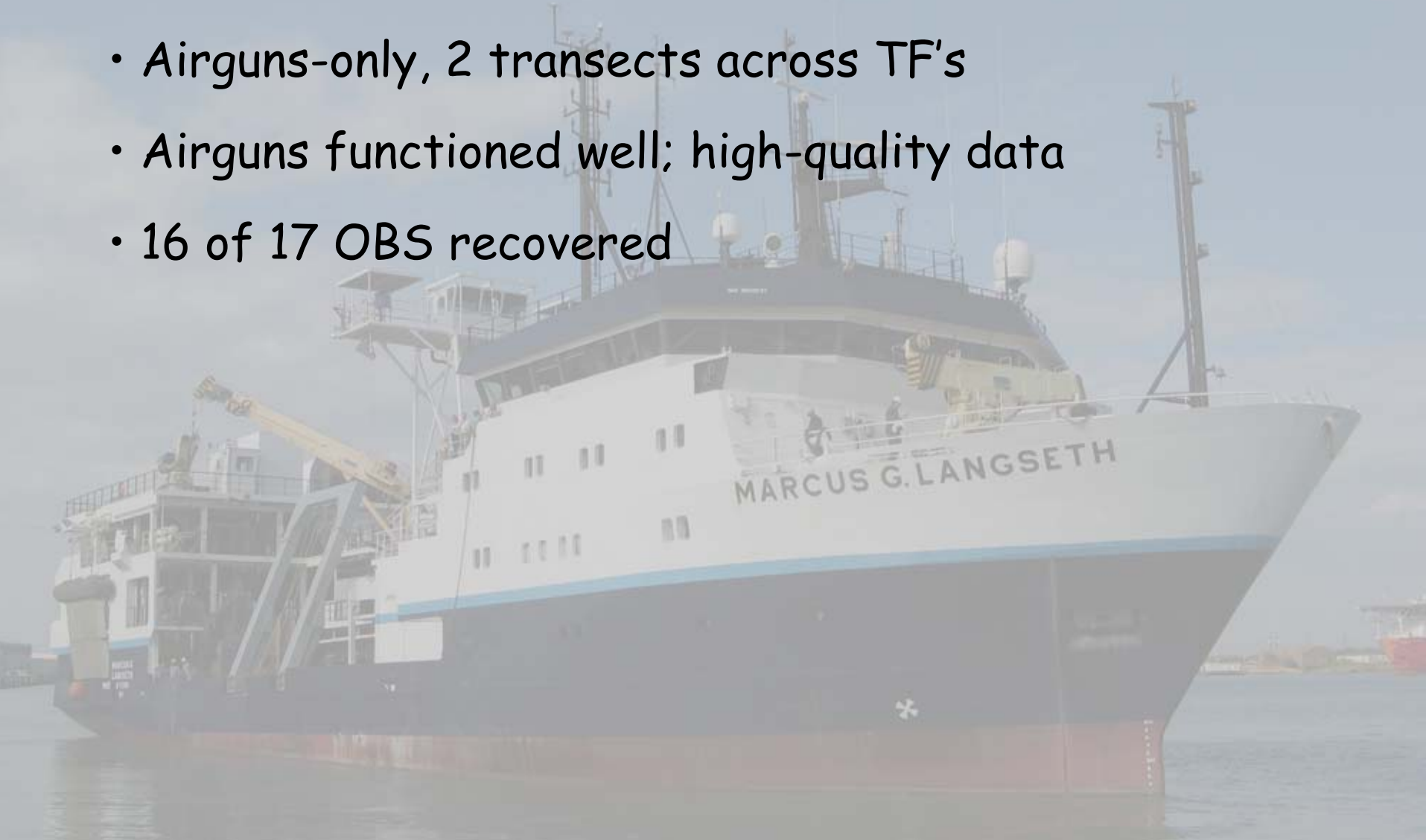


Measurement of ocean mixing (diapycnal diffusivity) from reflection images



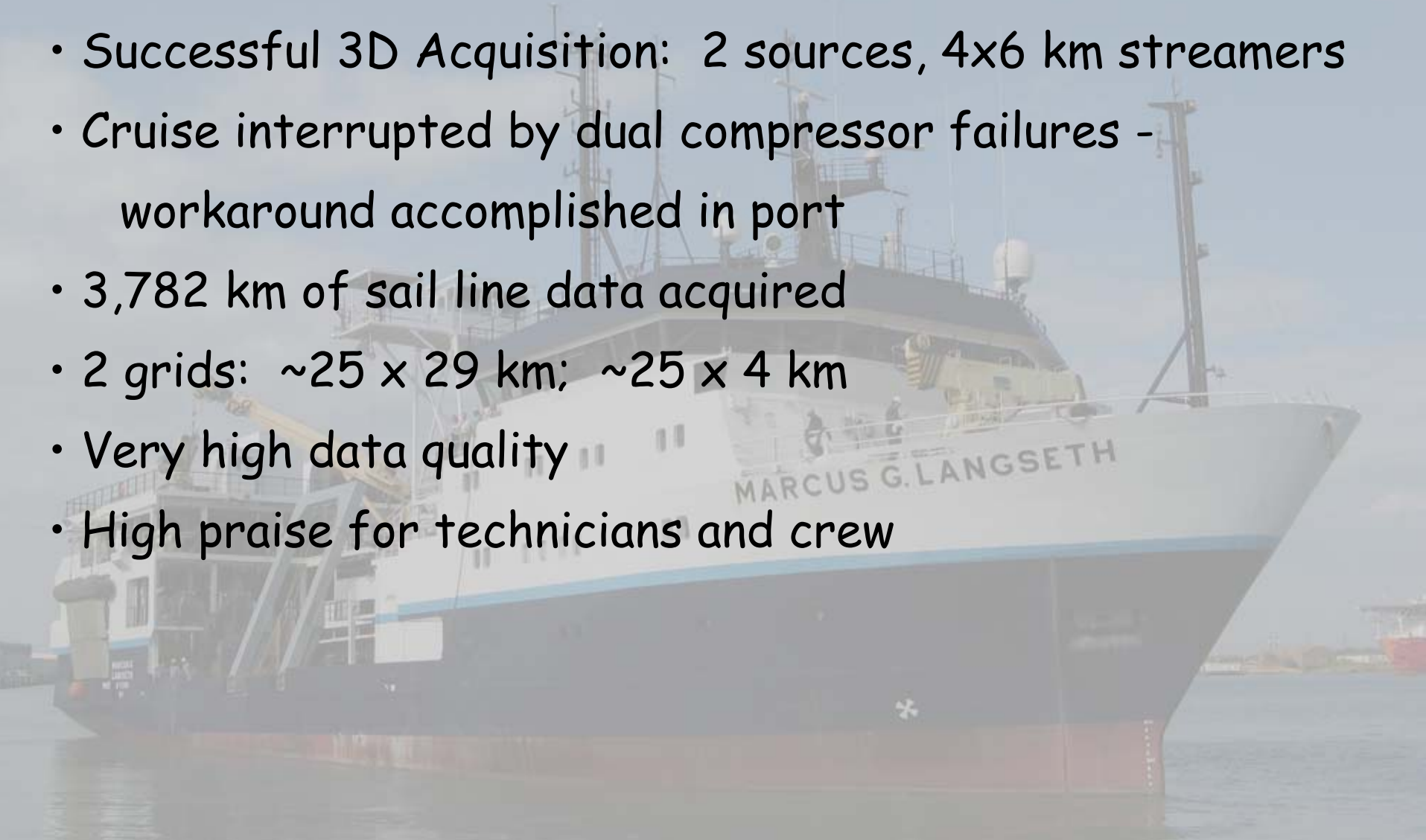
MGL0808 - McGuire EPR

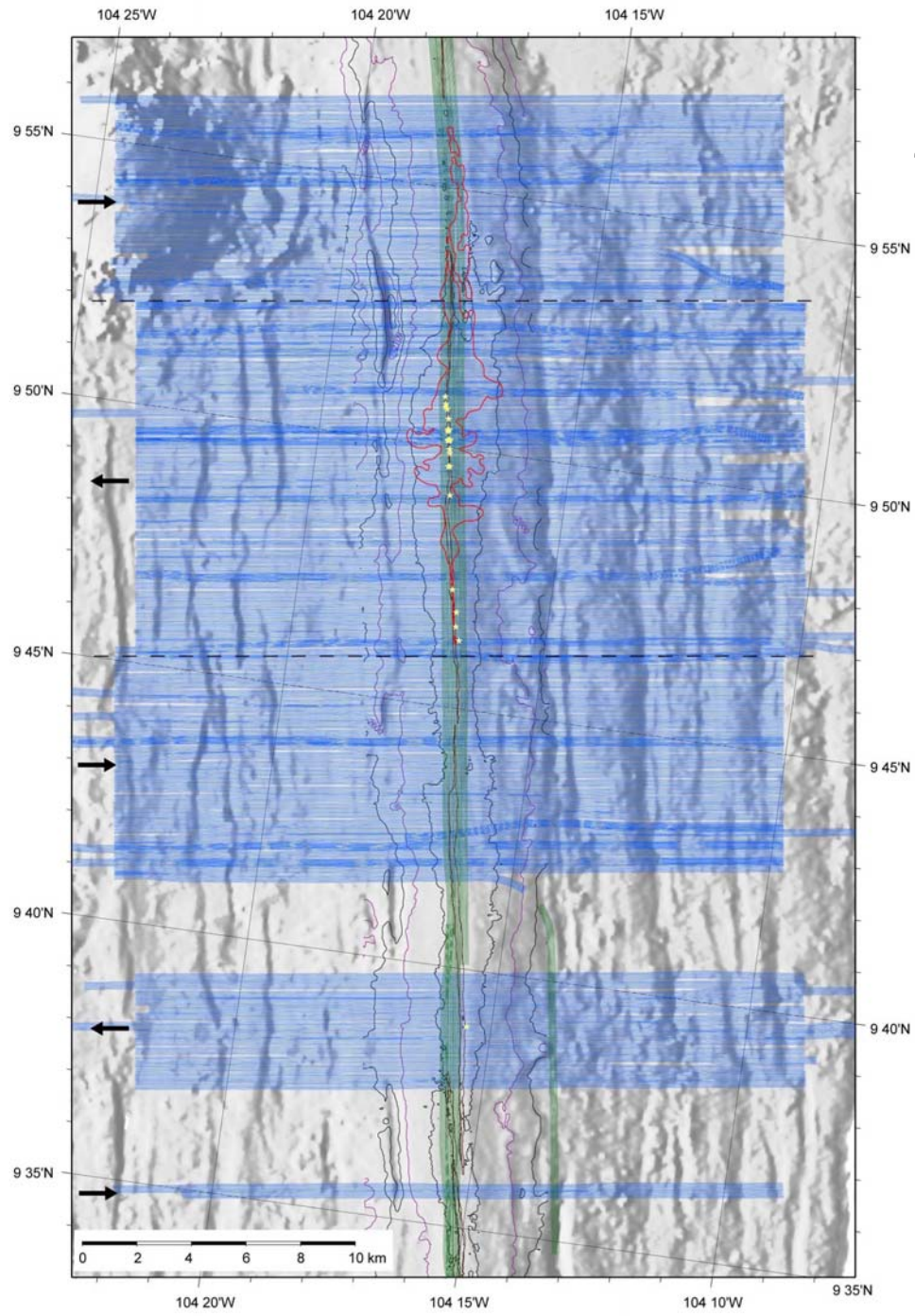
- Airguns-only, 2 transects across TF's
- Airguns functioned well; high-quality data
- 16 of 17 OBS recovered



MGL0812 - Mutter EPR 3D

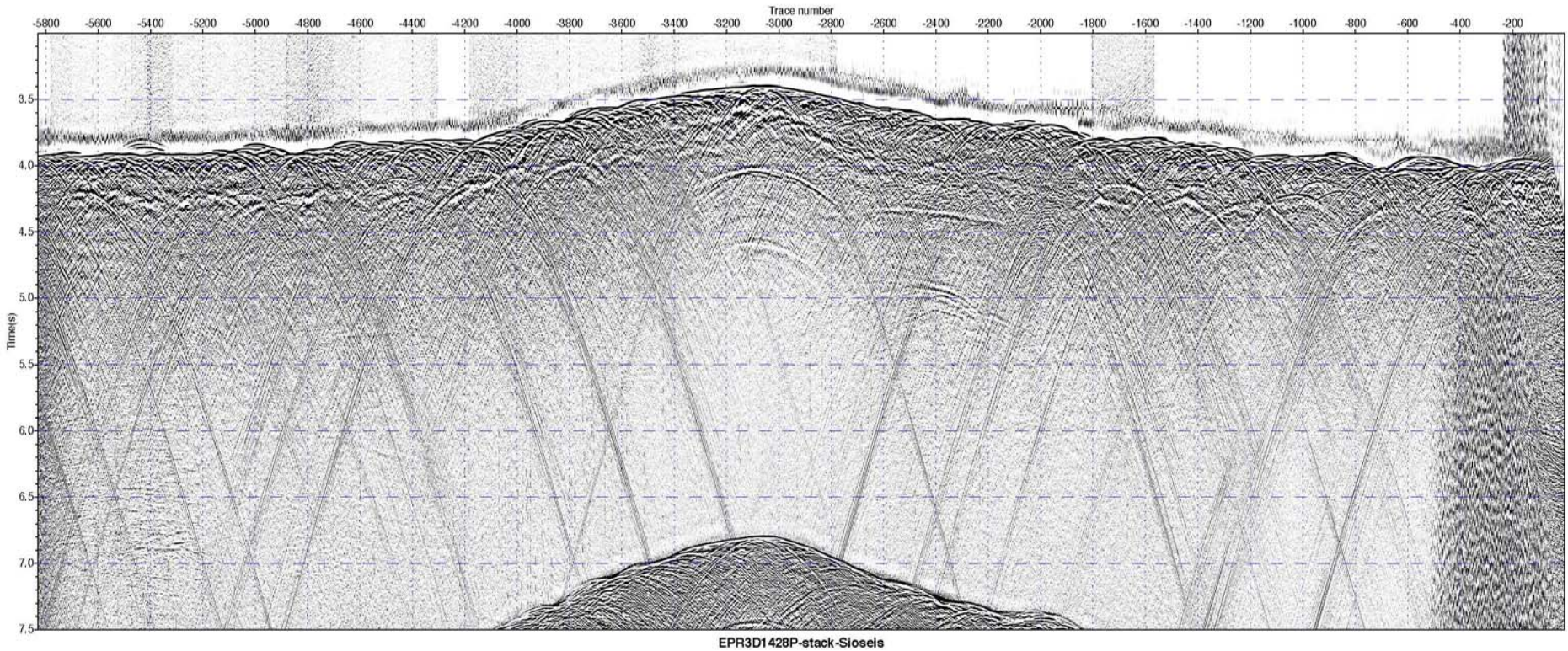
- Successful 3D Acquisition: 2 sources, 4x6 km streamers
- Cruise interrupted by dual compressor failures -
workaround accomplished in port
- 3,782 km of sail line data acquired
- 2 grids: ~25 x 29 km; ~25 x 4 km
- Very high data quality
- High praise for technicians and crew





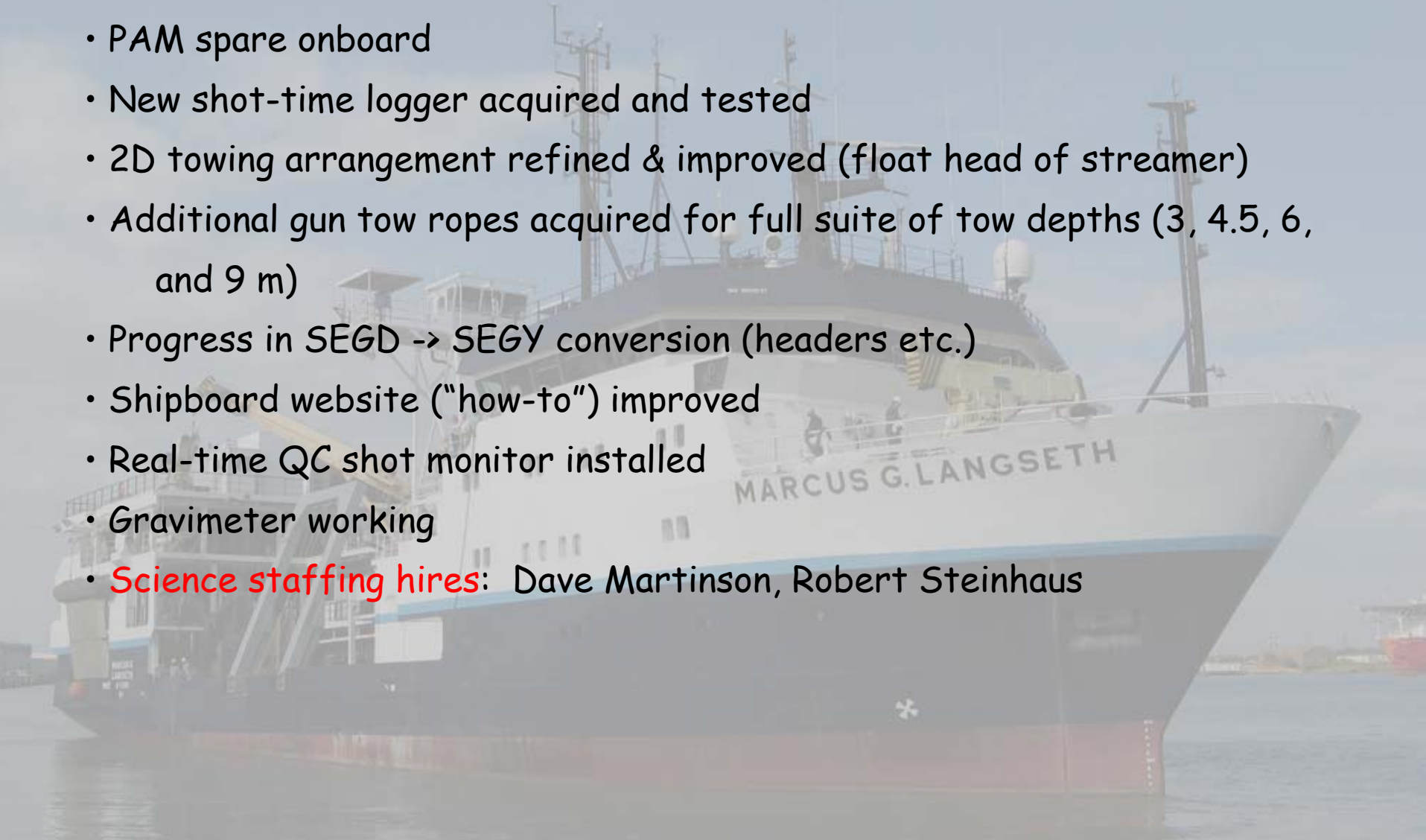
MGL0812 - Mutter EPR 3D Track Map

MGL0812 - Mutter EPR 3D Data Example



Improvements since MGL0804

- PAM spare onboard
- New shot-time logger acquired and tested
- 2D towing arrangement refined & improved (float head of streamer)
- Additional gun tow ropes acquired for full suite of tow depths (3, 4.5, 6, and 9 m)
- Progress in SEGD -> SEG-Y conversion (headers etc.)
- Shipboard website ("how-to") improved
- Real-time QC shot monitor installed
- Gravimeter working
- **Science staffing hires:** Dave Martinson, Robert Steinhaus



MLSOC Activities

- Bi-annual meetings
 - Last meeting May 2008, San Diego
 - Next meeting: pre-AGU, San Francisco
- Interactions with PI's
 - Post-cruise "debrief" with Chief Scientists
 - Available for pre-cruise planning questions
- Interface with operator (LDEO):
 - Requesting and monitoring improvements
- Membership rotation:
 - Staggered rotations beginning Oct. 2009



Areas of Concern/Risk

- Personnel

- IT support
- recruiting/retention

- Equipment

- winches
- magnetometer towing
- streamer replacement
- airgun spares

- Software/data flow

- Habitability

- "snake pit" cabin clusters
- common areas

- Engine Room

- compressors
- training
- maintenance

- MMO Issues

- PAM
- Turtles/ESA
- clarity and consistency of IHA*



Long-Term Issues

- Upgrade path for streamer (already beyond rated age)
- Improvement of habitability
- Role of MLSOC in scheduling/solicitation
- How do we broaden funding base beyond NSF?
- “Lowering the bar” to access

