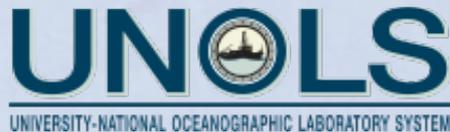


Seismic Early Career Chief Scientist Training Cruise 2017

Funded by NSF to:

- Increase the opportunity for early career scientists to gain experience in marine seismology to maintain and enhance the US marine seismology community.
- Increase the visibility and value of available US (UNOLS) resources, particularly the Scripps Institution of Oceanography (SIO) portable MCS system.



Lead PI: Masako Tominaga (Texas A&M)
Co-PIs: Anne Trehu and Mitch Lyle
(Oregon State Univ.); Greg Mountain
(Rutgers) Outreach specialist: Rebecca
Fowler

Timeline

LOI : Sept.-Oct. 2016
Scheduled: Jan. 2017
IHA process start: Jan. 2017

4/10-4/12 2017

Information Webinars

Astoria Fan

4/12-6/20

Apply to sail

Candidate selection (6/21~)
Cruise planning with PIs
(via skype/zoom in July/August)

Hydrate Ridge

9/24-25

Pre-cruise workshop

Newport

9/26-10/2

Data acquisition and processing (Cruise)

10/3-10/4

Post-cruise workshop

Diebold Kr

Seismic ECS 2017 Program on the Cascadia Margin

Sept.24th- Oct.4th 2017 [Newport, OR] R/V Revelle

April: a 3-day series of webinars (~1.5 hrs each day).

Title: *How to Develop Science Hypotheses and Address Them with Marine Seismics*

Date: Monday 4/10 (4:30-6pm EDT):

Topics: Introduction to the ECS opportunity and application process (Tominaga)

Introduction to the outreach part of this ECS project (Fowler)

Introduction to US seismic facility (Higgins)

Introduction to science in the Cascadia Margin and SIO portable system (Trehu and Lyle)

Seismic Primer-1: Useful database, software, etc. for planning science (Tominaga)

Title: *How to Develop Marine Seismic Proposals*

Date: Tuesday 4/11 (4:30-6pm EDT):

Topics: Introduction (Tominaga)

Writing tips for NSF/seismic proposal (Ransom)

IHA permit process (Ellet)

Seismic Primer-2: Introduction of Multichannel Seismic Reflection Data Acquisition and Processing (Mountain)

Title: *How to Develop a Marine Seismic Acquisition Plan*

Date: Wednesday 4/12 (4:30-6pm EDT):

Topics: Introduction (Tominaga)

Introduction to the UNOLS Ship Time Request System (Alberts)

Management of marine data:

R2R Management of underway environmental data (Stocks)

IDEA:ASP Management of seismic data (Carbotte)

Introduction to underway multibeam: data acquisition, processing, and GMRT (Ferrini)

Recap: SIO portable system (Ellet)

Seismic Primer-3: Q&A session

Seismic ECS 2017 Program on the Cascadia Margin

Applications included a proposal for a project.

19 participants from 16 different institutions selected for the cruise (from total pool of 21). Range from 1st year graduate students to assistant professors.

Participants divided into 4 groups based on their scientific interests and charged with developing a cruise plan for 2 days of acquisition. Each group had a co-PI listening in to provide input as needed.

A spokesperson from each group participated in a conference call to merge the 4 plans into a single coherent prioritized plan.

Seismic ECS 2017 Program in Cascadia Margin

Sept.24th- Oct.4th 2017 [Newport, OR] R/V Revelle



- Plan finalized during a 2 day workshop in Newport at the HMSC.
- Workshop also included a session on how to effectively present science to the public led by Rebecca Fowler.
- 2 day workshop at the end to discuss data and follow-up.

Diebold Knoll

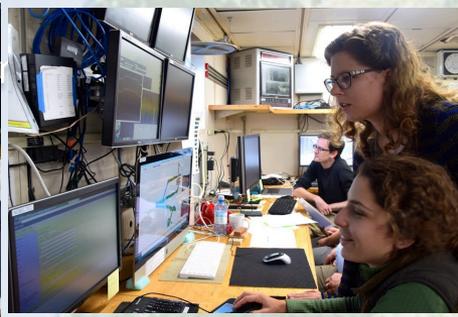
(Rebecca Fowler and Masako Tominaga)

Seismic ECS 2017 Program in Cascadia Margin

Sept.24th- Oct.4th 2017 [Newport, OR] R/V Revelle

During the cruise:

- Students split into watch teams with representatives from each science planning group in each watch.
- Watch team rotated through a variety of rolls, including acting chief scientists (many thanks to the captain and crew for their patience!)
- One-on-one training in data processing (seismic unix) with post-doc mentors Ben Phrampus and Kathy Davenport.

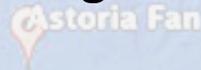


(photos from Brendan Reilly)

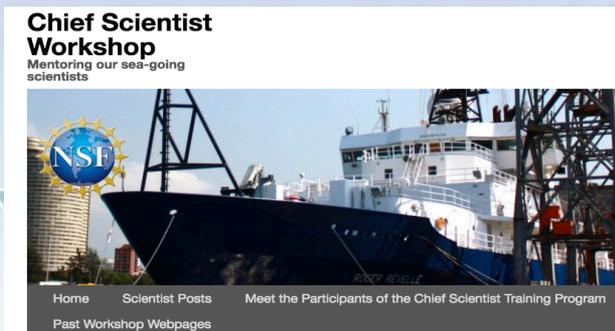
- Daily science meetings to discuss results. Also had presentations by participants on their research.

Science Communication Workshop

- How to figure out our “message”, the foundation of our story
- Why should scientists share their work with the public?
- Why is our message important?



Ways of delivering information (through online tools)



Agua, Hielo y Fuego desde las Profundidades de Cascadia

Published on: October 2, 2017 Author: [cswauthor](#)

Por Casey Hearn

Aquí está un acertijo para usted: Es blanco como la nieve, frío al tacto, y se derrite en la palma de su mano, pero acercale un cerillo y verlo arder! No lo encontrarás en la cima de una montaña o descansando en un glaciar, sino que hará su hogar en el barro bajo el mar. ¿Qué en la tierra podría ser?

Nuestra sustancia misteriosa se conoce como hidrato de metano, o clatrato, y se forma en los sedimentos del fondo marino en los márgenes continentales de todo el mundo. Durante millones de años, los restos de minúsculas plantas y animales marinos cubren el fondo marino en capas de lodo orgánico que puede estar a miles de kilómetros de profundidad. Este material se descompone lentamente, ya sea por el metabolismo de los microbios o por la combinación de la intensa presión del peso del sedimento y el agua por encima y el calentamiento desde el interior de la tierra por debajo. Se producen grandes cantidades de gas metano por esta descomposición, y las burbujas flotantes se filtran hacia arriba a través del sedimento hacia el fondo marino.

Entonces una cosa extraña sucede a algo del gas. En ciertos lugares justo debajo del lecho marino, donde las condiciones de temperatura y presión son las correctas, moléculas de gas metano quedan atrapadas en una jaula de moléculas de agua para formar un sólido que se parece al agua-hielo. Las grandes acumulaciones de esta



OCTOBER 13, 2017

De Estudiante De Geofísica a Jefe Científico (por un Día)

Posted by [larryohanlon](#)

NOTE: The English language version of this post is available [here](#).

Por Estefania Ortiz

Hace dos años, antes de convertirme en estudiante de posgrado, nunca habría pensado que estaría en el mar en una expedición de investigación sísmica. Desde que empecé mi programa de posgrado en la Universidad Texas A&M, tuve la oportunidad de participar en grandes proyectos de investigación: explorando la geología de la secuencia Ophiolita de la Cordillera de la Costa en California y Canadá usando métodos geofísicos, realizando experimentos de magnetismo de nanoescala en la Universidad de Minnesota y Cambridge (Reino Unido), y aprender más sobre las

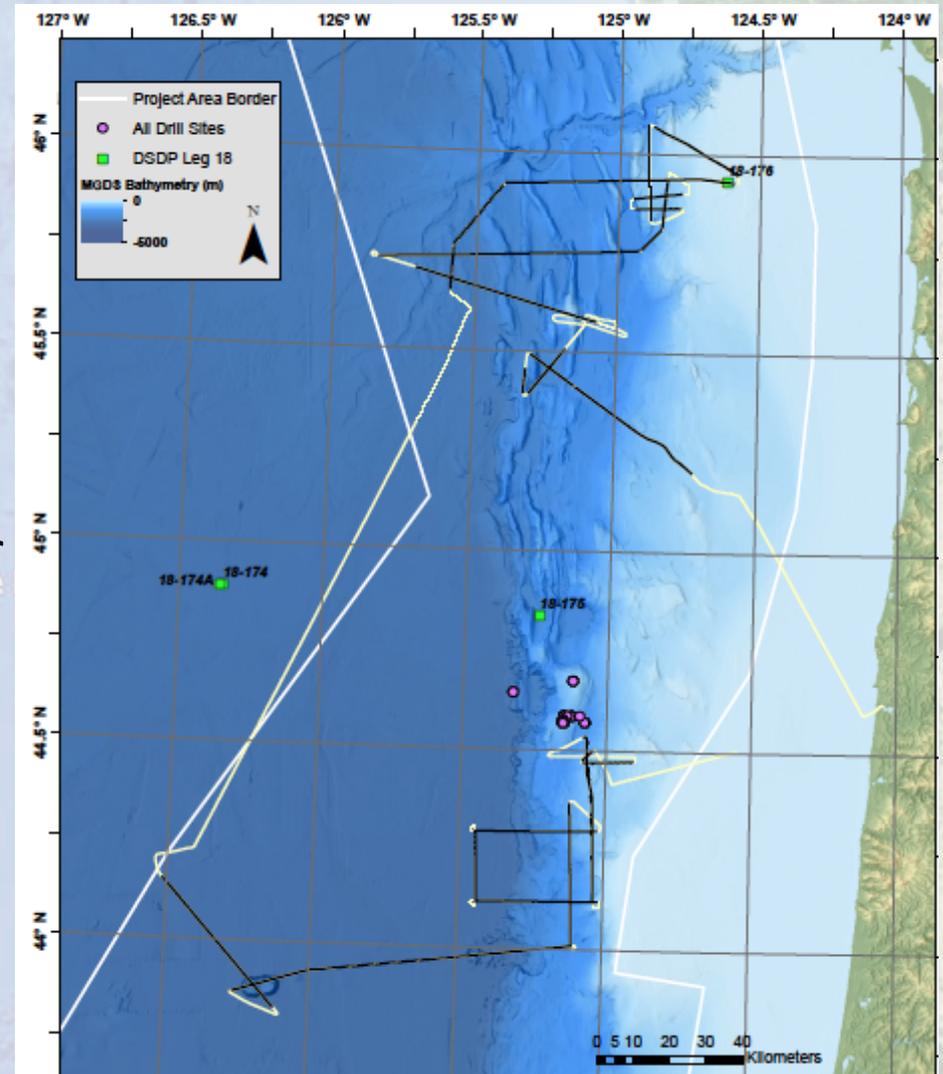
Seismic ECS 2017 Program in Cascadia Margin

Sept.24th- Oct.4th 2017 [Newport, OR] R/V Revelle

Summary of data acquired:

~ 770 km of data acquired along segments of the margin that had not been previously imaged.

- History of the Columbia River and Astoria fan.
- Incoming plate structure.
- Gas hydrate distribution
- Deformation front structure
- Slope stability

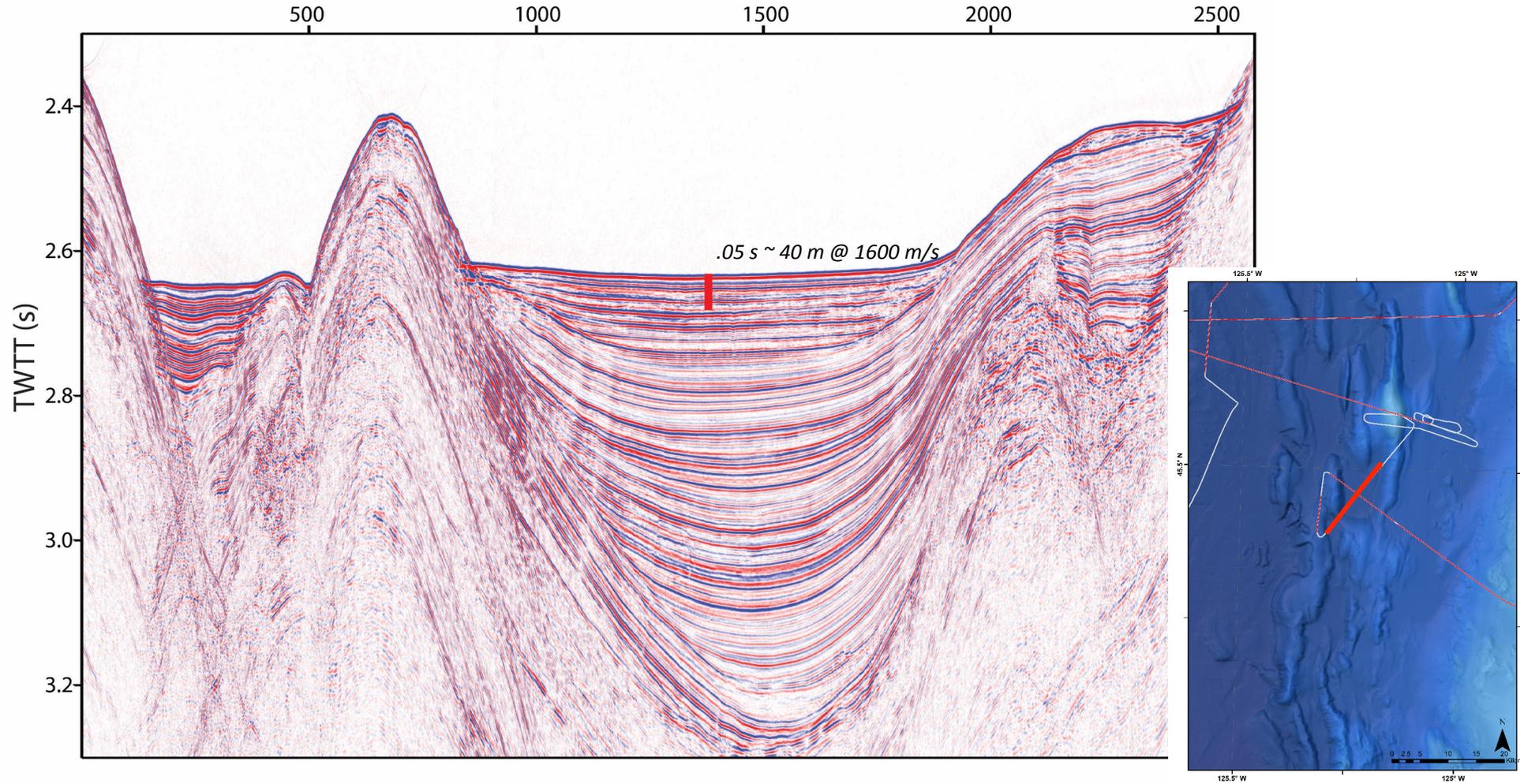


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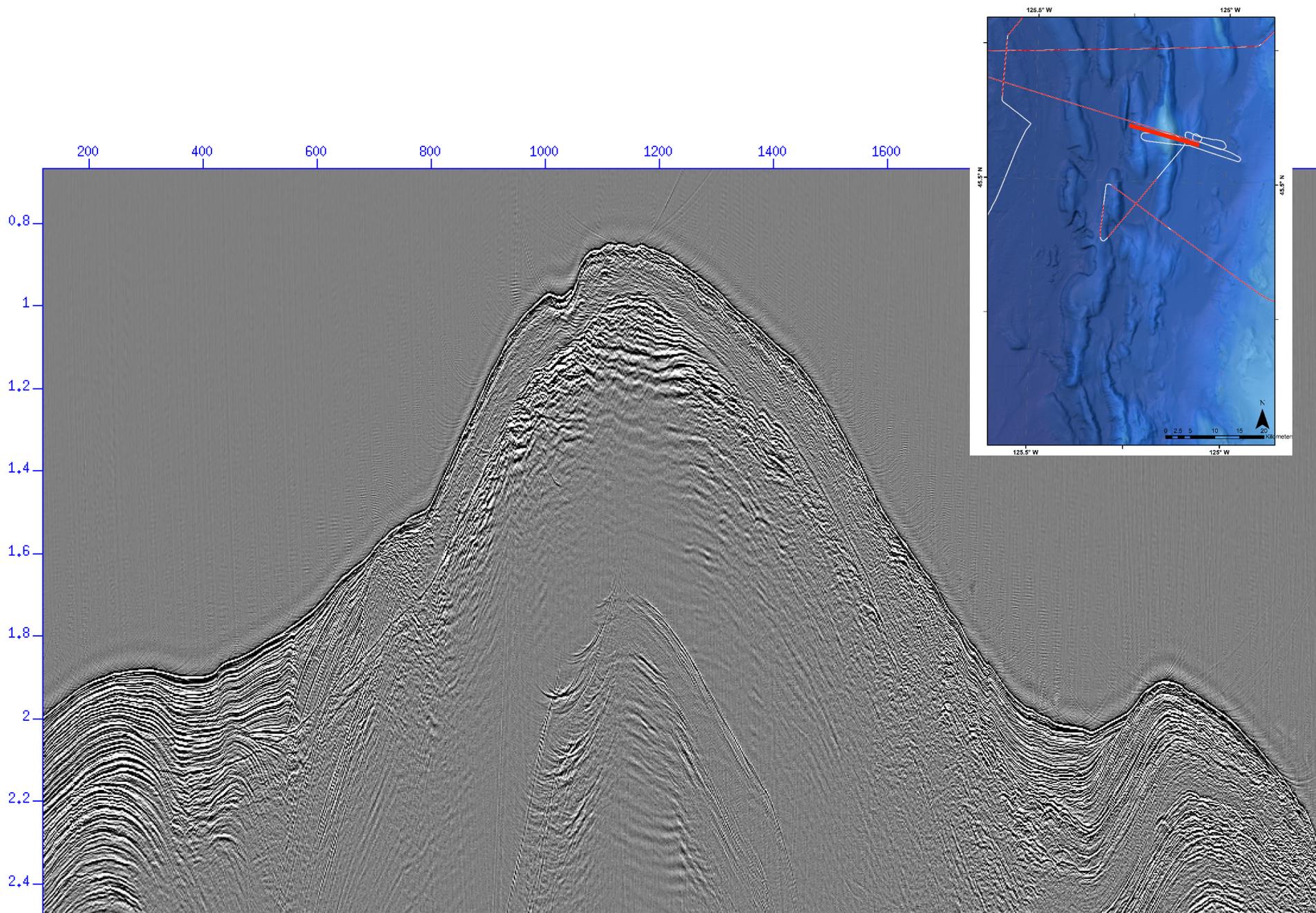
(Emily Schottenfels, Brendan Reilly, John Schmeltz, and RR1718 participants)

From OSU "Quaternary Tea" presentation by Brendan Reilly and Maureen Walczak 10 days after the cruise

RR1718 Line 03

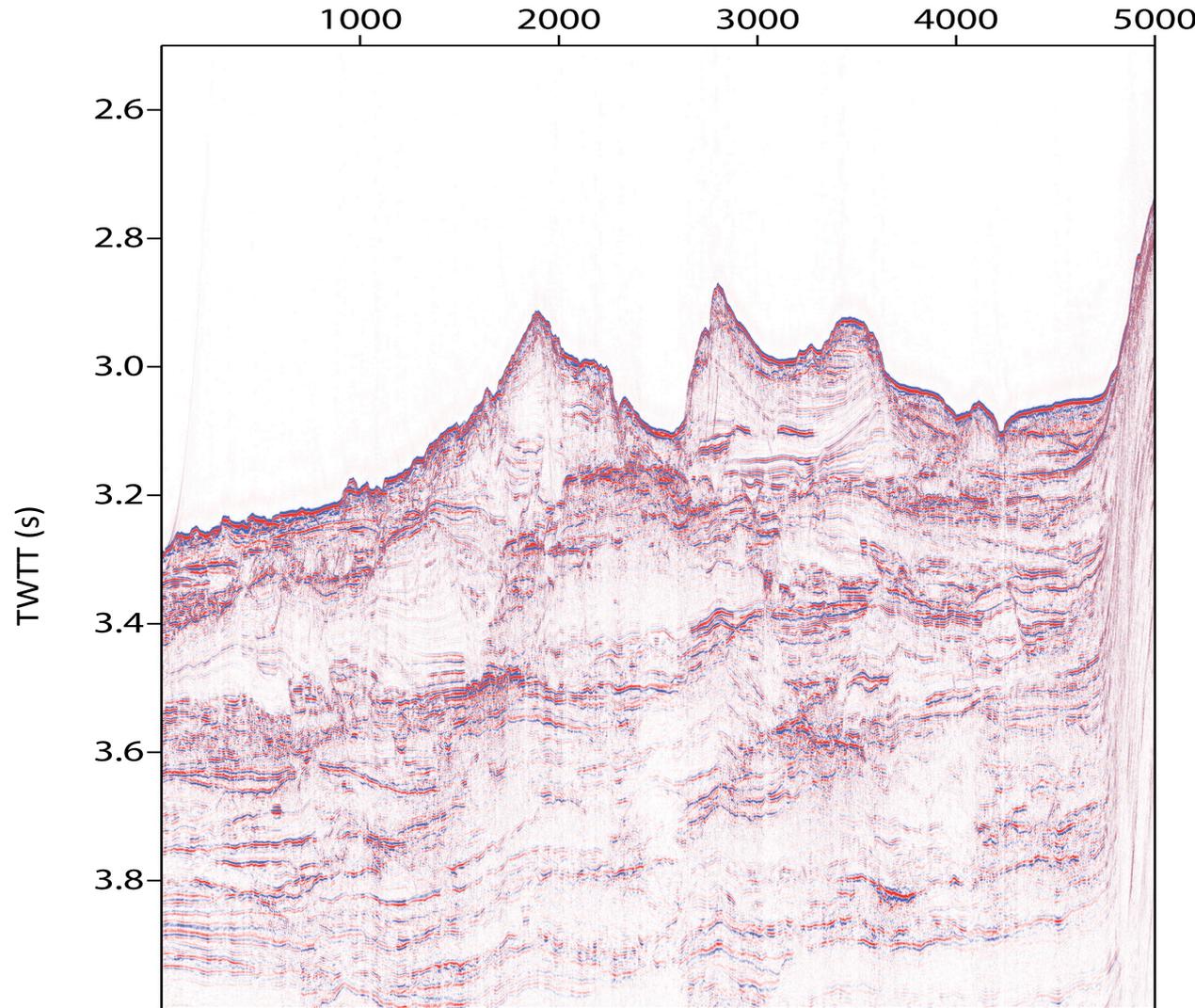
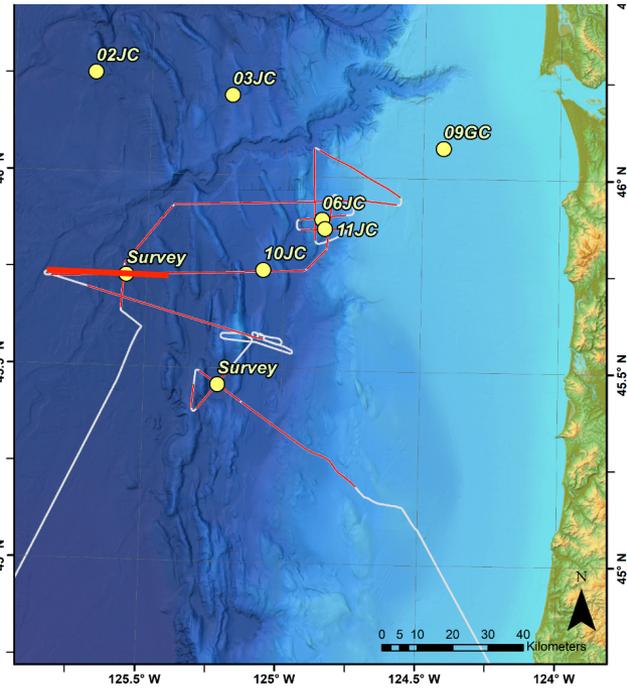


Existing core, and need for deep drilling



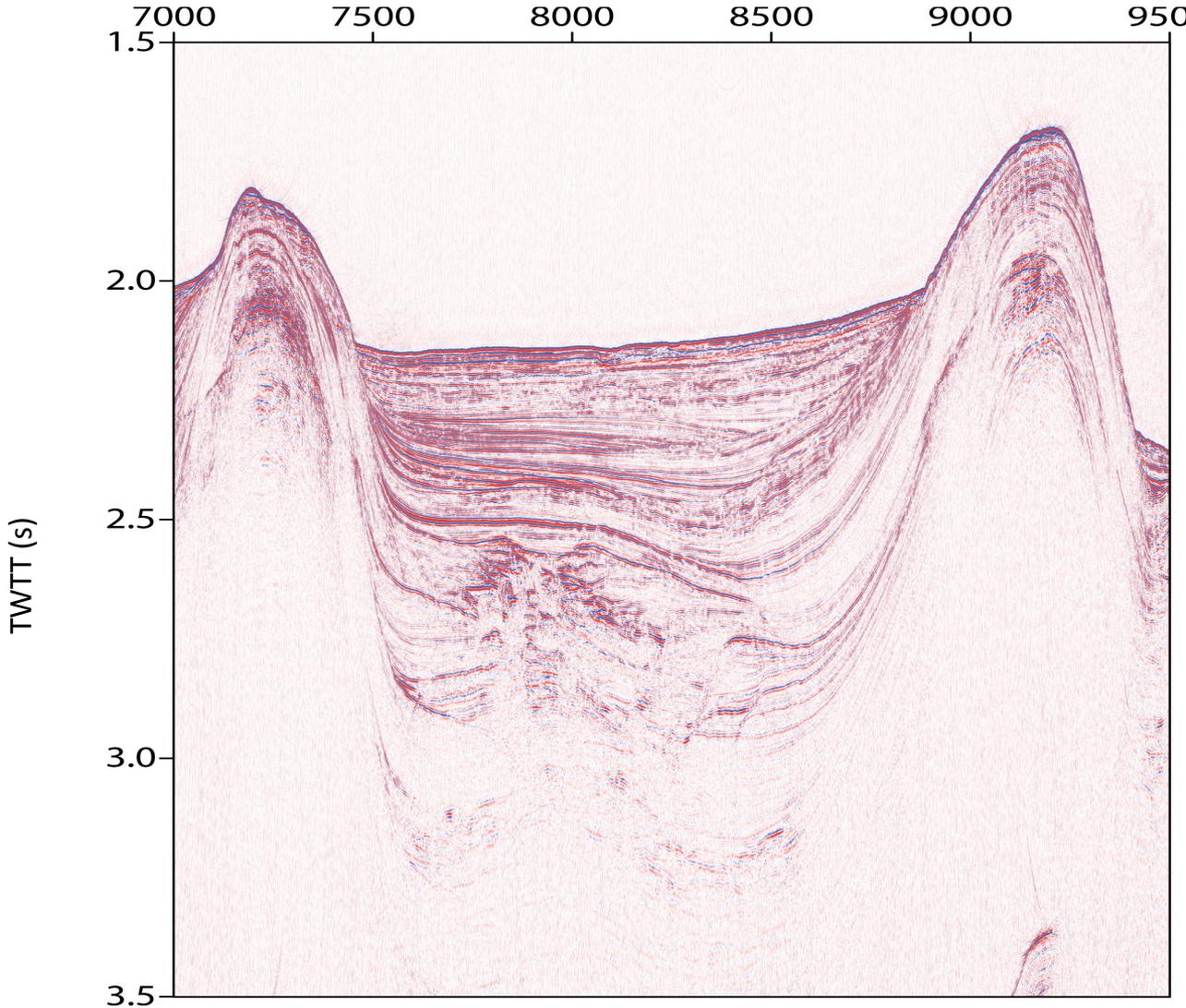
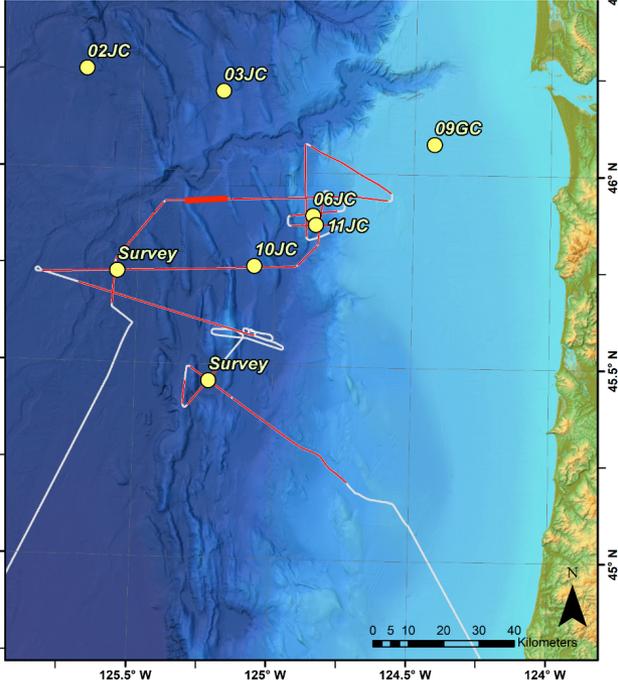
From OSU "Quaternary Tea" presentation by Brendan Reilly and Maureen Walczak 10 days after the cruise

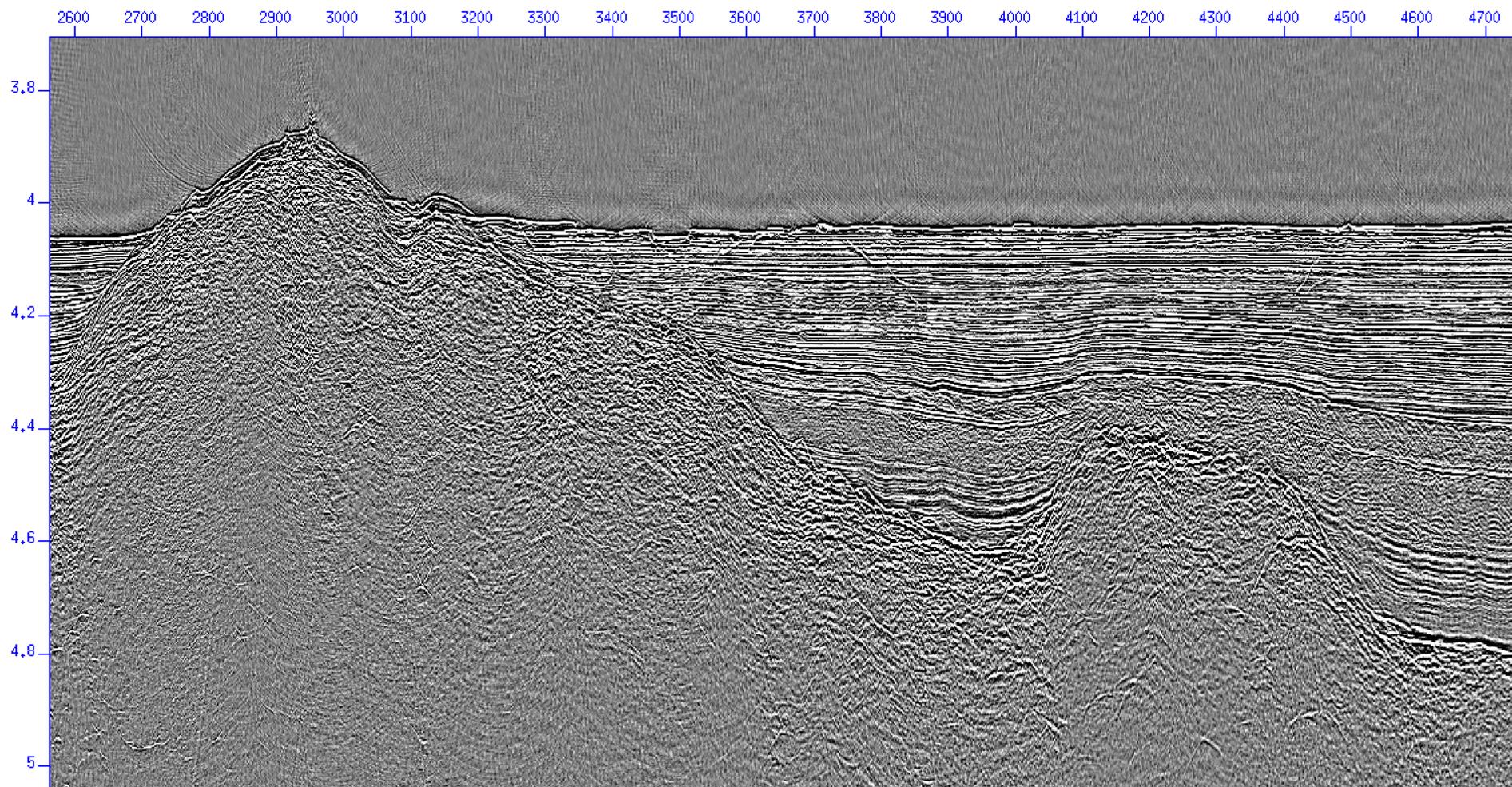
RR1718 Line 05 Astoria Fan



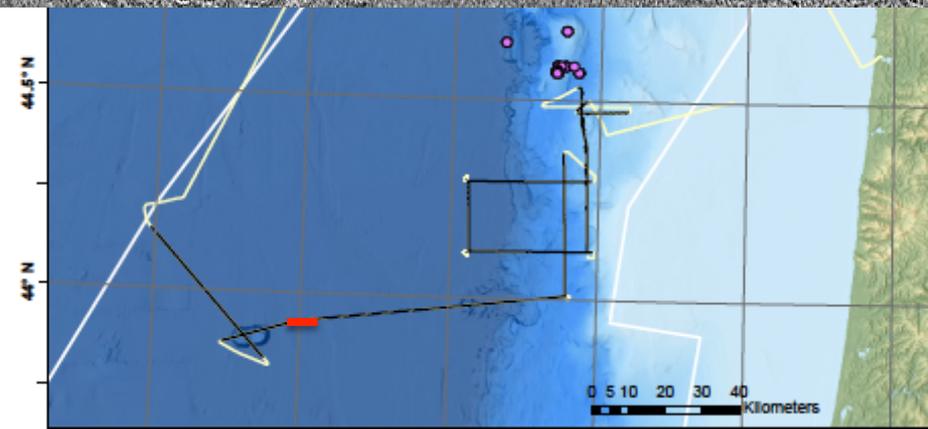
From OSU "Quaternary Tea" presentation by Brendan Reilly and Maureen Walczak 10 days after the cruise

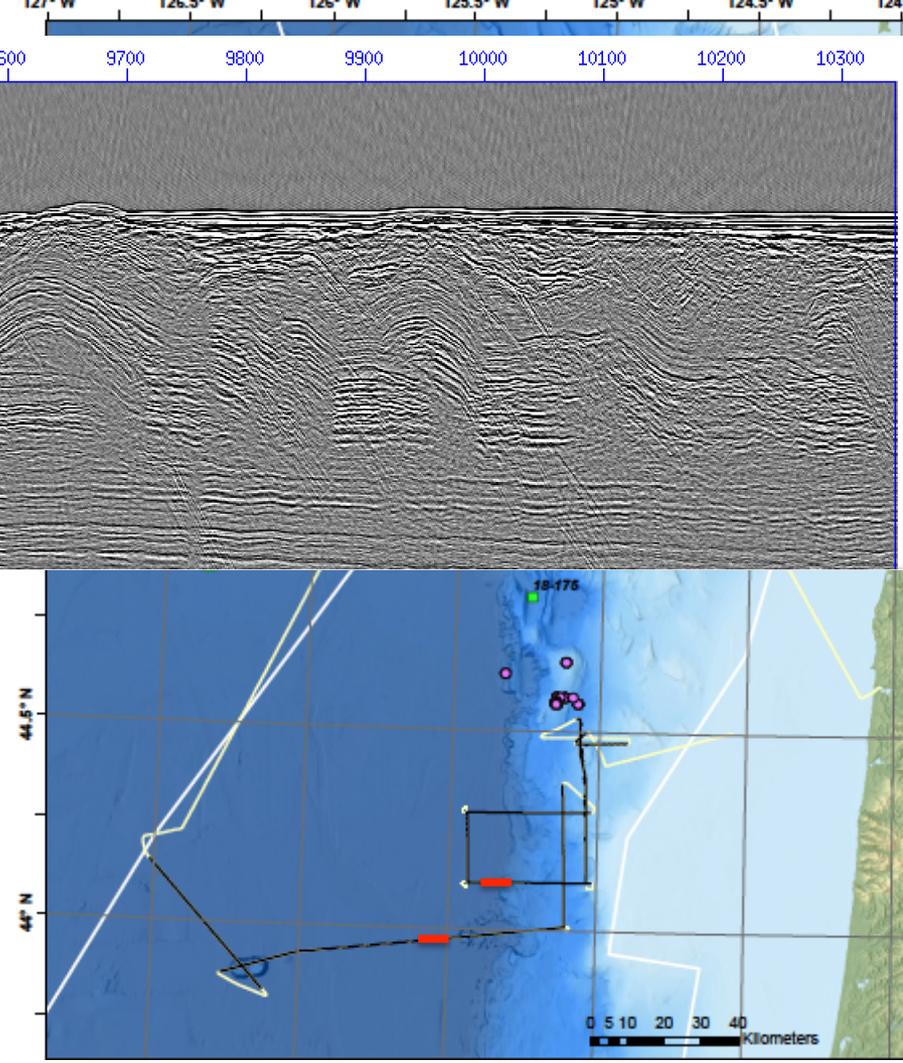
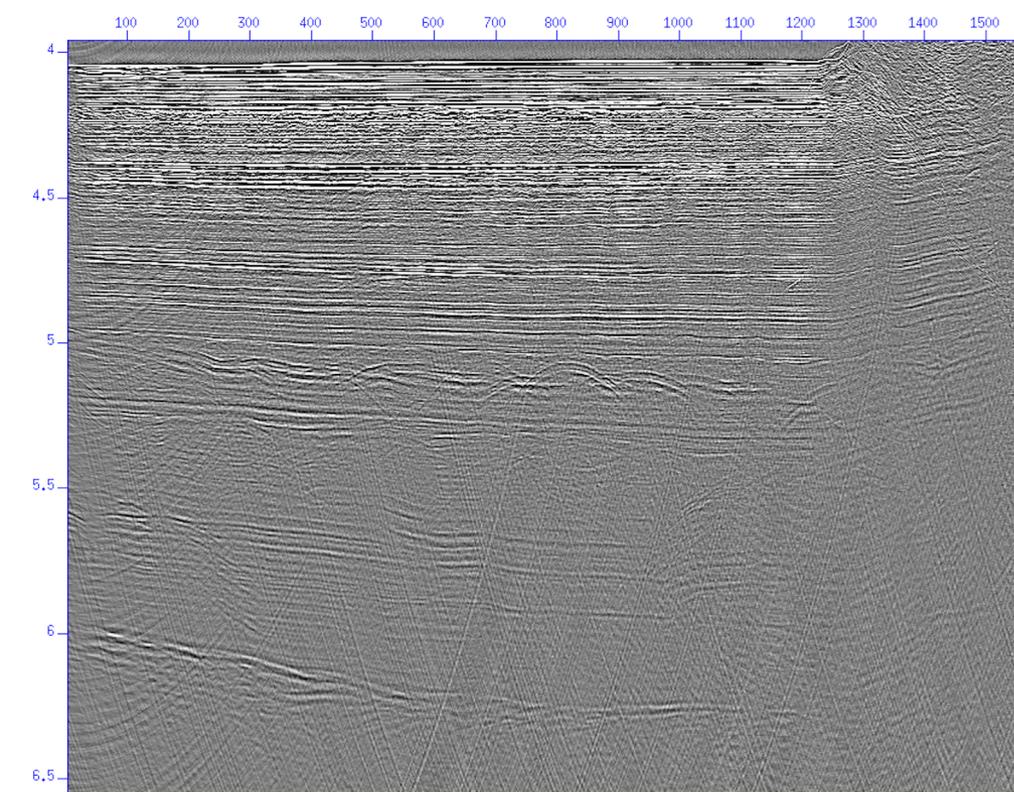
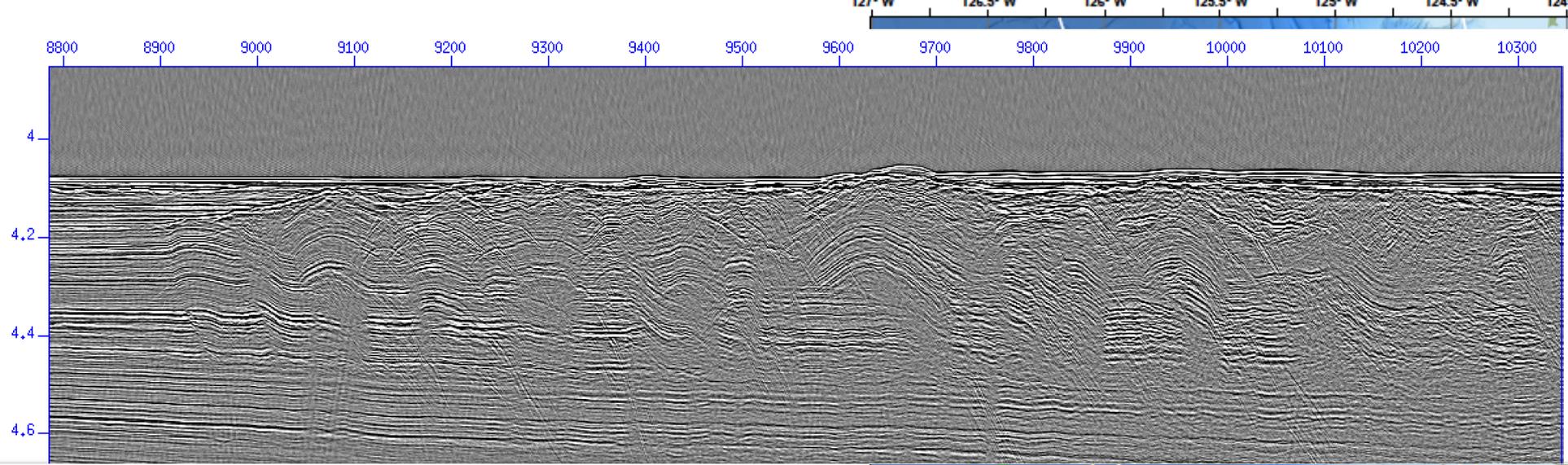
RR1718 Line 11
Slope Basin
Buried Levees



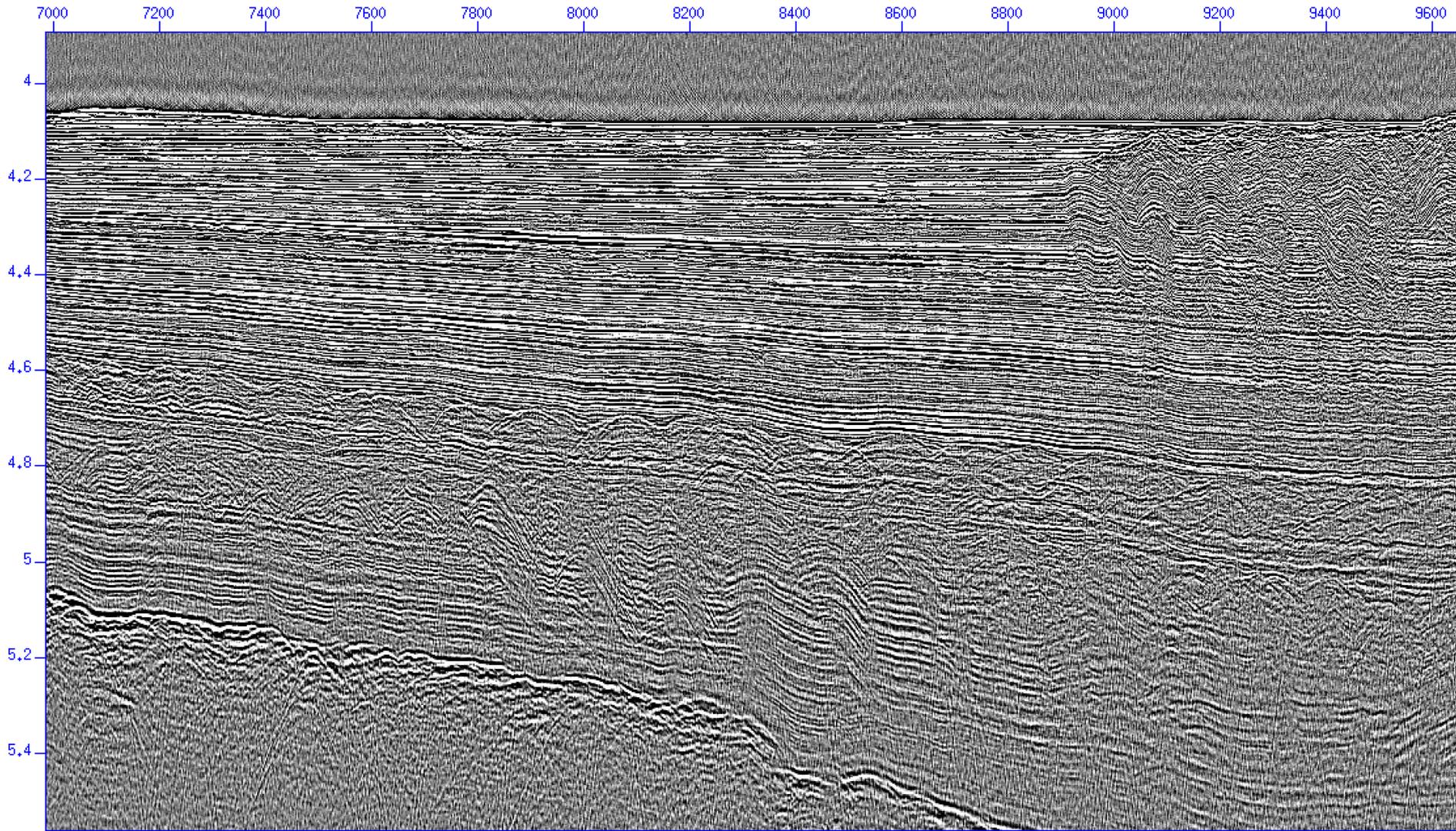


Moving to the south...
Diebold Knoll





- >2 s twtt (to basement)
- Deformed sediments on the JdF plate



Summary of feedback from participants

(16 detailed questionnaires returned)

- Feedback generally very positive.
- Suggestions to improve webinar and recruitment process: e.g. advertise more widely
- Suggestions to improve pre-cruise workshop: e.g. more hands-on intro to processing during pre-cruise workshop; research talks from all participants; more/better space.
- The one-on-one instruction provided by the Ben, Kathy, and Rebecca was greatly appreciated.
- Opportunity to talk directly to crew as “chief scientist” was also greatly appreciated.
- FAST internet connectivity was greatly appreciated.
- Several participants have followed up either as lead PIs or participants on LOI to this committee.
- Ultimately success will be measured by proposals written by this cohort.

Recommendations for future training:

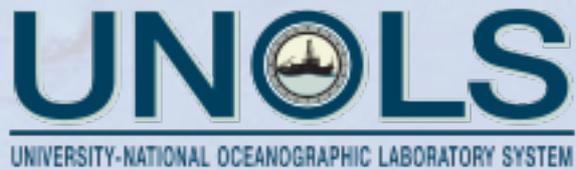
- Repeat every few years.
- Need a parallel training plan for controlled source with offset/velocities (long streamer & OBS).



(Photo Credit: Rebecca Fowler)

Thank you!

Astoria Fan



Diebold Knoll