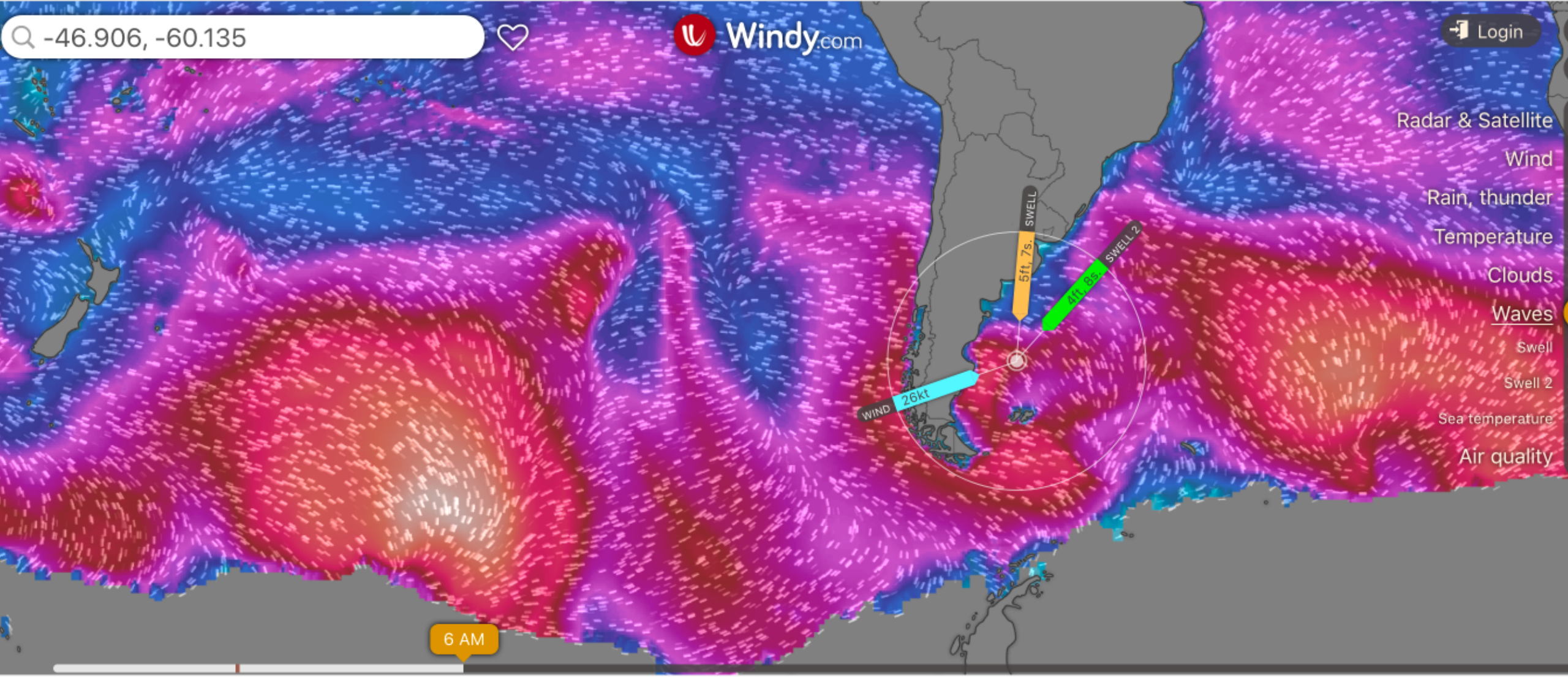
Southern Argentine Margin Hi-Res Seismic and Coring

TN 372

9/11 - 10/31



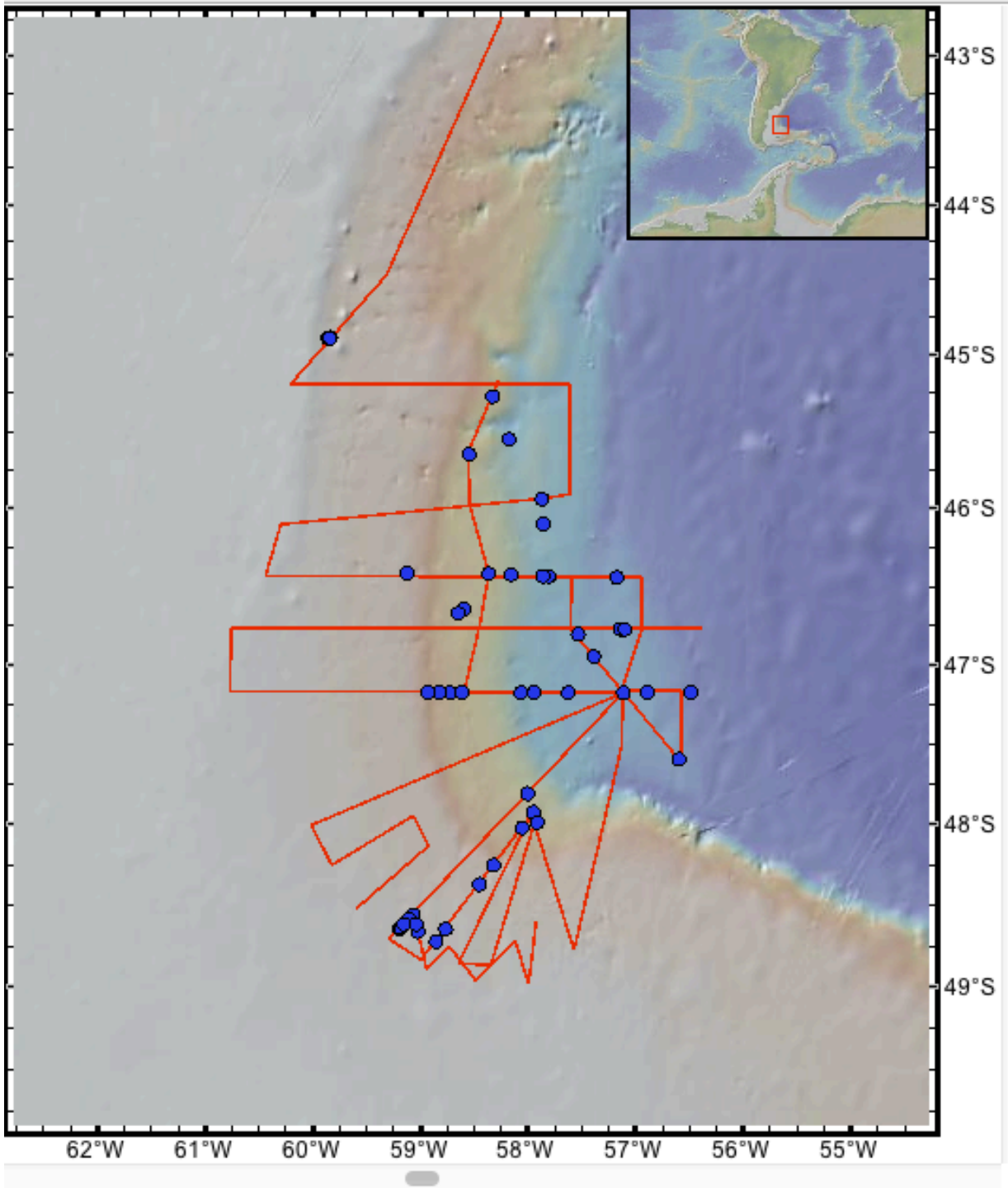
	Saturday 12								Sunday 13								Monday 14								Tuesday 15								Wednesday 16							
	0AM	3AM	6AM	9AM	12PM	3PM	6PM	9PM	0AM	3AM	6AM	9AM	12PM	3PM	6PM	9PM	0AM	3AM	6AM	9AM	12PM	3PM	6PM	9PM	0AM	3AM	6AM	9AM	12PM	3PM	6PM	9PM	0AM	3AM	6AM	9AM	12PM	3PM	6PM
kt	20 28	18 27	14 23	18 23	19 24	22 27	24 31	25 34	27 37	29 41	26 41	29 37	29 38	31 41	31 43	30 43	26 41	23 37	18 31	16 25	13 21	11 17	10 15	13 16	15 19	16 21	14 21	13 17	13 17	11 17	10 15	9 13	11 14	11 14	10 14	13 17	16 19	17 21	17 23	
ft	10	9	8	7	8	8	9	10	11	12	13	13	14	16	17	17	16	15	14	12	11	10	9	8	7	7	7	6	6	6	6	6	5	5	5	5	5	5	5	
ft	9	7	6	5	4	3	3	5	6	4	5	6	4	7	7	8	9	10	10	9	8	8	7	6	6	5	5	4	5	5	5	5	4	4	3	3	3	3	3	
	10	9.8	9.7	6.2	6.6	6.7	6.7	6.7	6.6	7	7.1	5.9	7.6	7.5	7.4	10.5	10	9.6	10	9.6	9.9	9.9	9.8	9.7	9.6	9.7	9.4	9.3	10.5	10.5	10.5	10.5	10.5	10	9.9	9.7	9.6	9.4	9.4	

Cruise Summary

>4000 km of Hi-Res Seismic Lines

62 Cores totaling >380 m of sediments

- 23 Jumbo Piston Cores
- 35 Gravity Cores
- 4 Multi-Cores



Thank You from Niall and me

RV Thompson Crew

Captain Eric Haroldson

Jenny Nomura, Liz Ricci

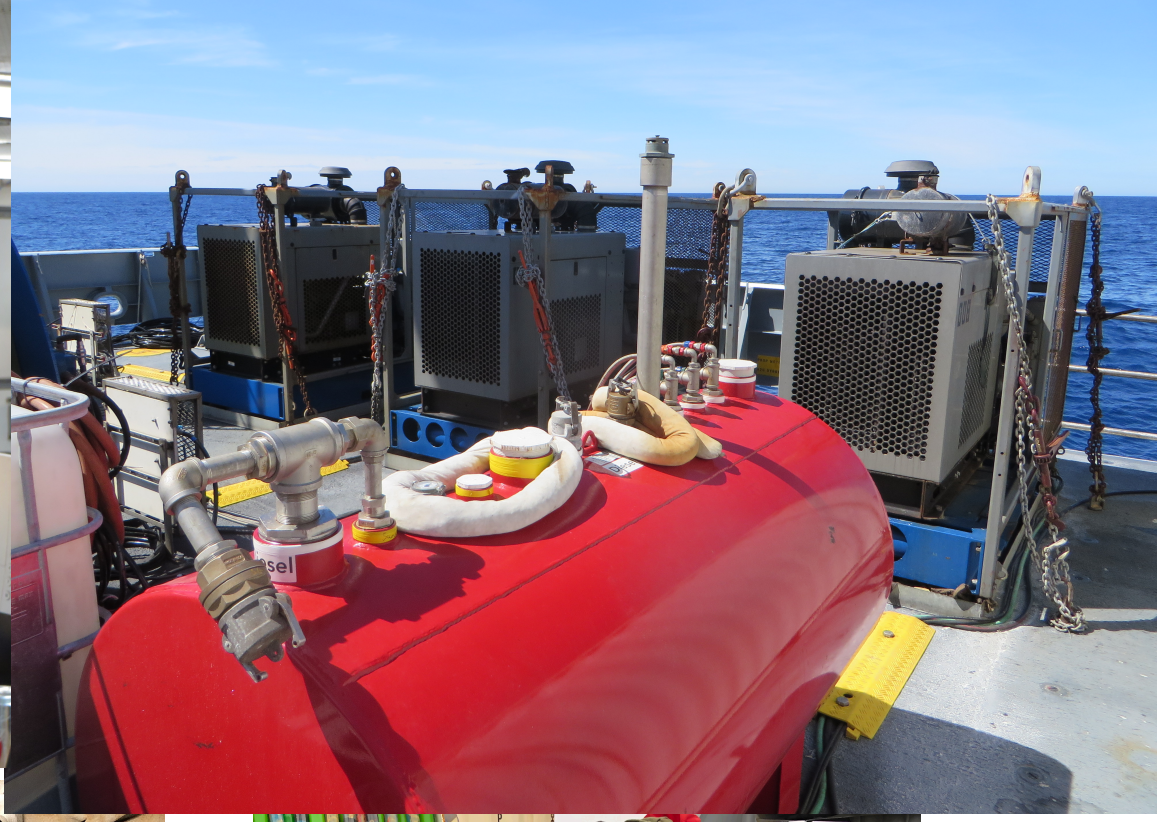
Meegan Corcoran, Robert Kamphaus

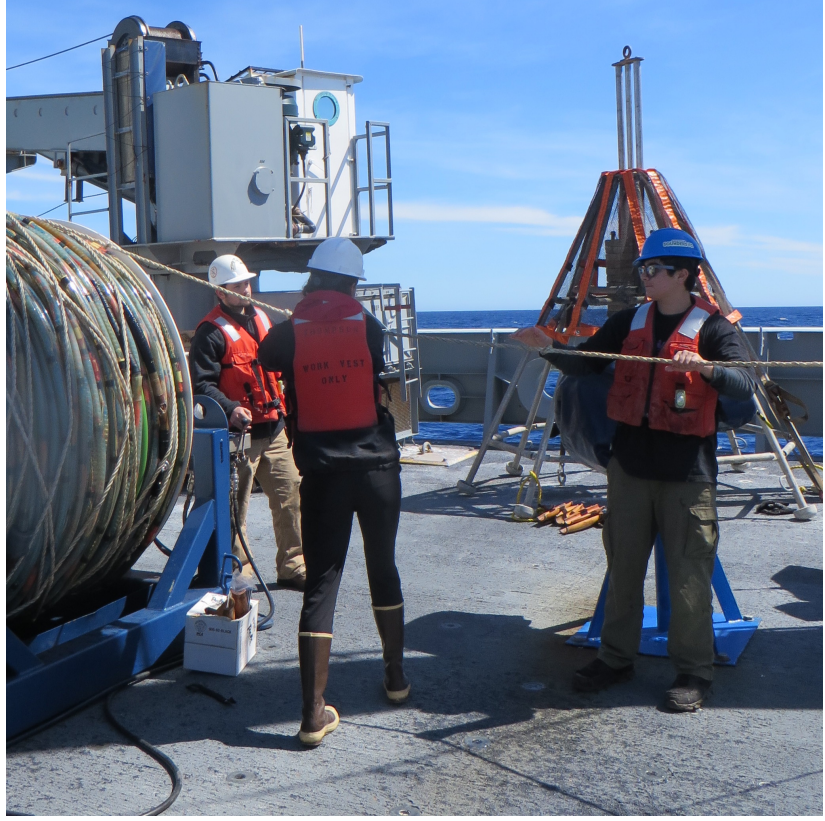
NSF

OSU Coring

Scripps Seismic Group

MARINE FAUNA OF MALDIVES





ximage
cdp
500 1000 1500 2000 2500 3000 3500 4000 4500 5000 5500 6000 6500 7000 7500 8000 8500 9000 9500 10000 10500 11000 11500 12000 12500 13000
2.6 2.8 3 3.2 3.4 3.6 3.8 4 4.2 4.4 4.6 4.8 5 5.2 5.4 5.6 5.8 6 6.2 6.4
Screenshot of part of Line 10
Whales and/or Dolphins
line010.su stolt mig
ximage
190924line010 – Dolphin
Gwenview
How to Install ImageMagick on CentOS
RV_Thompson_2019@om318-59920:~/
us
01:33 AM

Three Seismic Configurations

2 Liquid-filled streamers with 1 air gun – Recon mode

- High-res seismic data quickly – 8 kt
- Velocity analysis is difficult
- Not enough penetration in older exposed material
- Not enough penetration in older exposed material

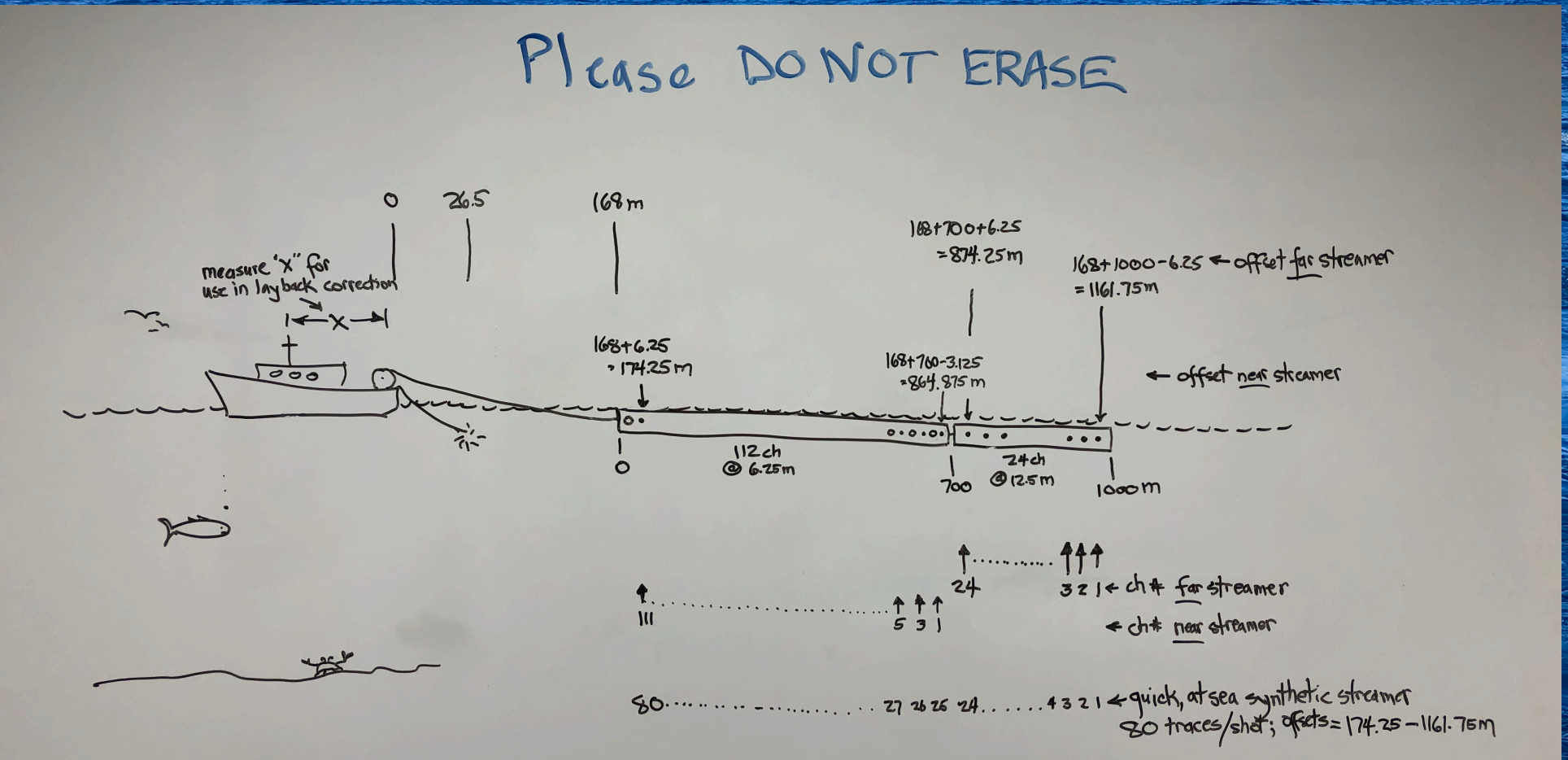
2 new solid streamers (700 m) + 3 liquid-filled streamers (300 m) + 2 air guns

- 1 liquid-filled streamer failed early on (connection issue?)

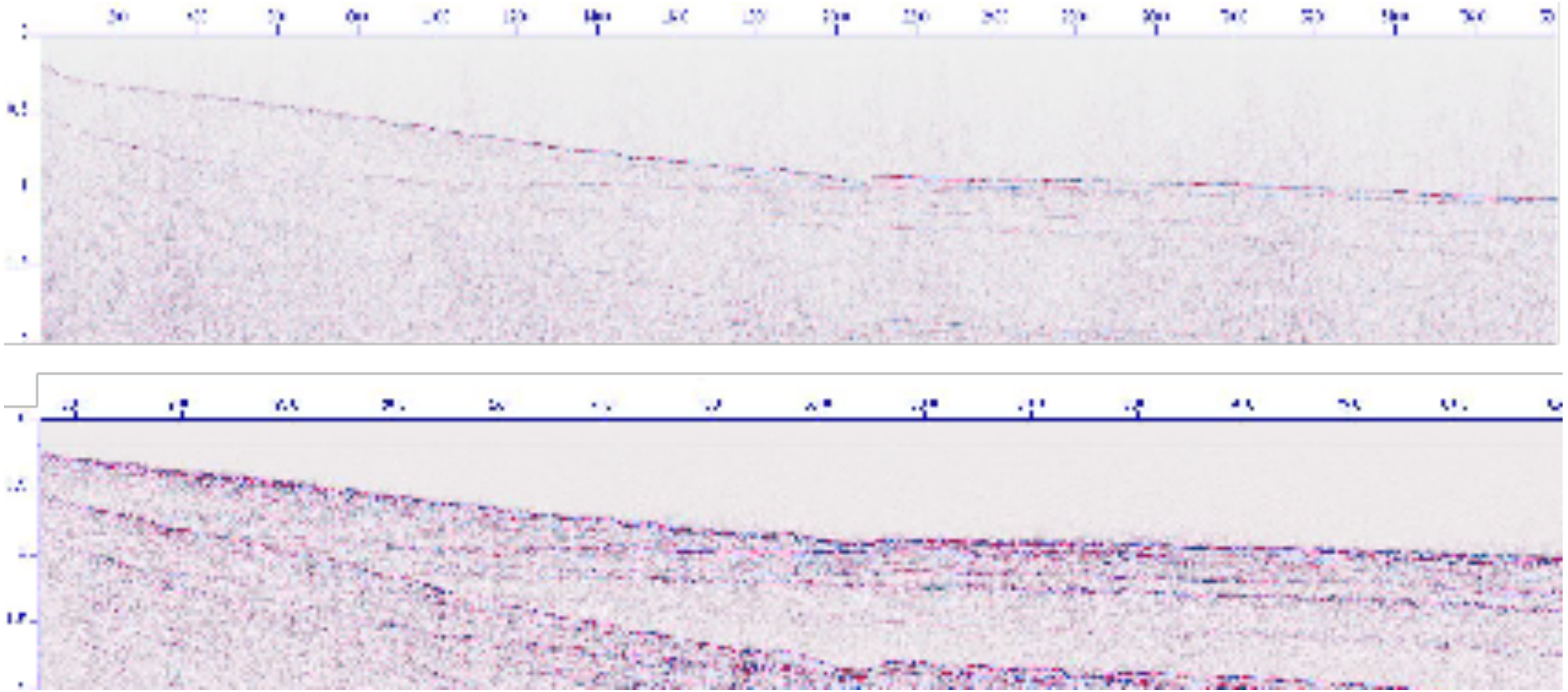
2 new solid streamers + 2 liquid-filled streamers (total streamer = 900 m) + 2 air guns

- Ship Velocity = 5 kts (4.8 kts)
- Differences in Solid vs liquid
- Receiving groups 6.25 m vs 12.5 m
- Less noise (new electronics + solid vs liquid may influence travel thru H_2O)
- Greater total length of streamers = potential for better velocity analysis
  - Still in progress
  - Compare 700 m @ 6.25 m vs 900 m @ 12.5 m
  - You may want one of us to present these results next year

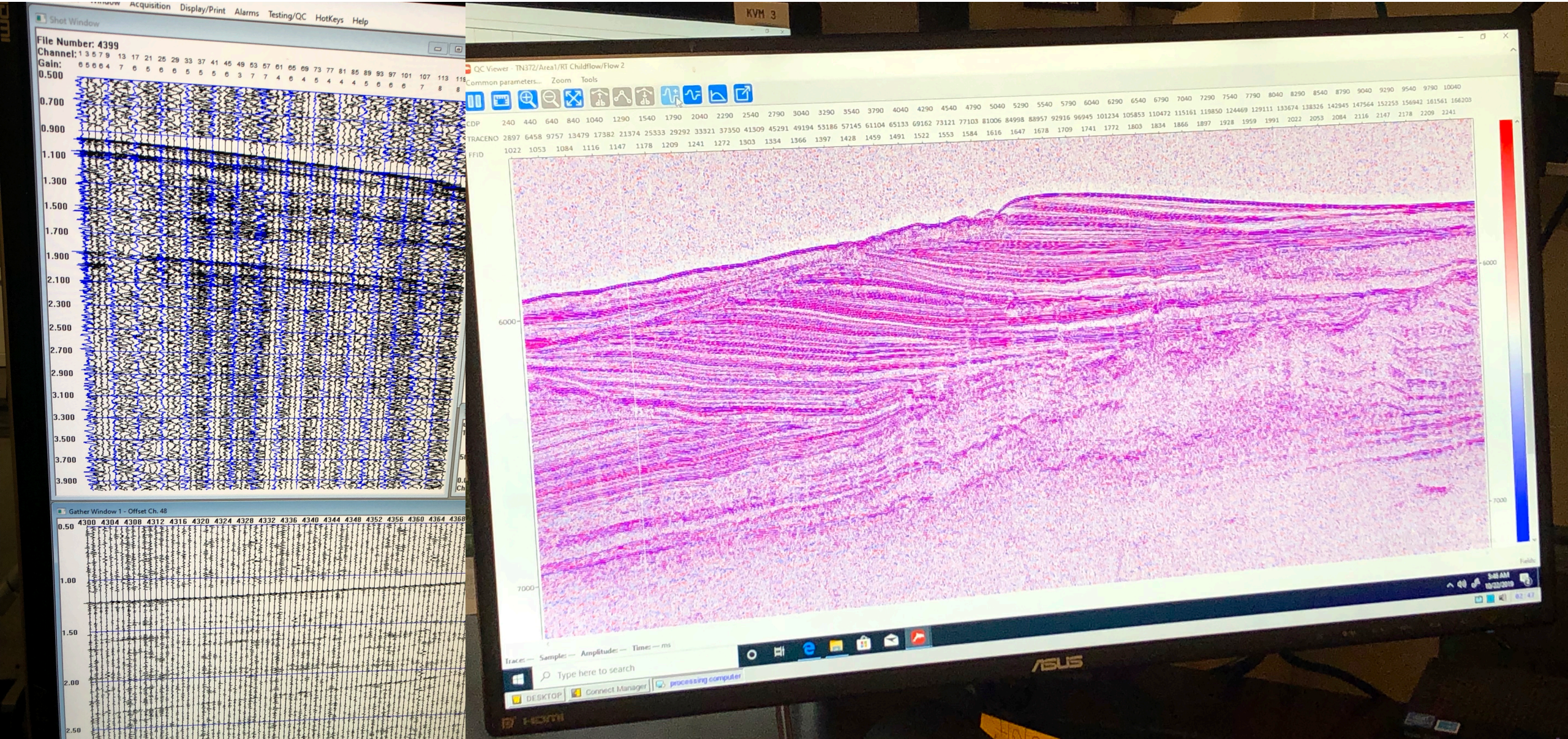
Streamer Configuration – Greg Mountain's art

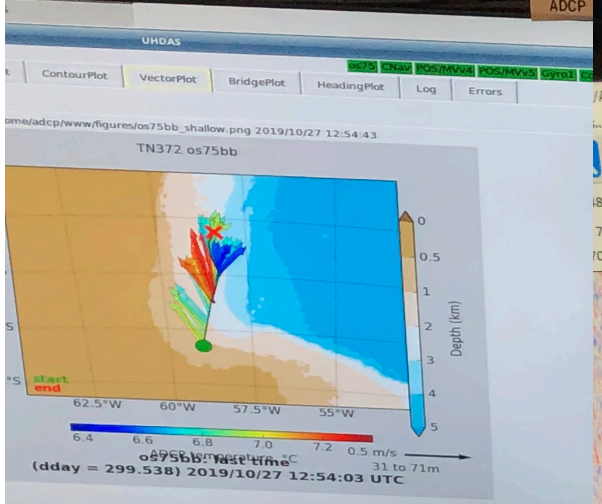


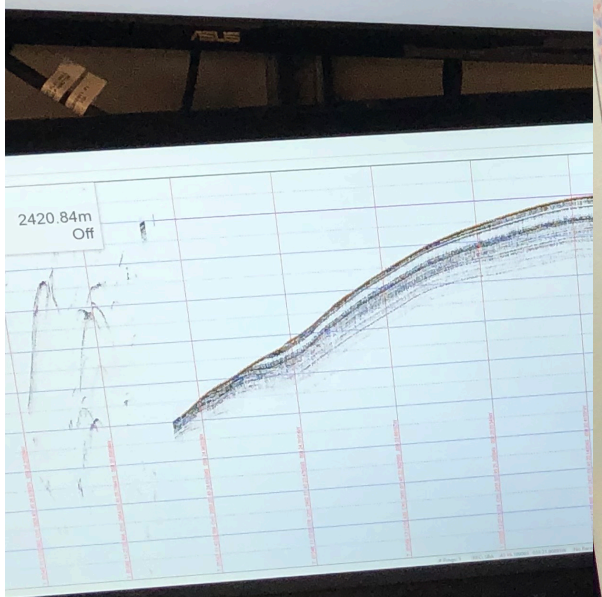
Recon mode vs Full streamer + 2 air guns

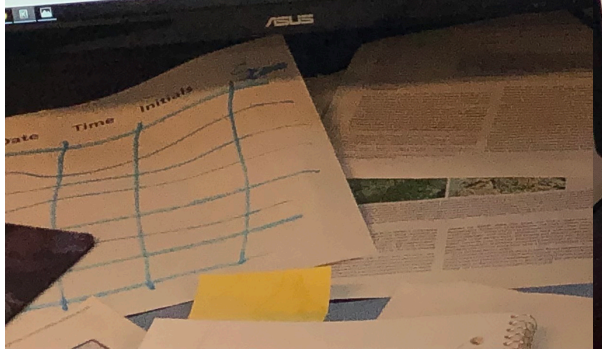


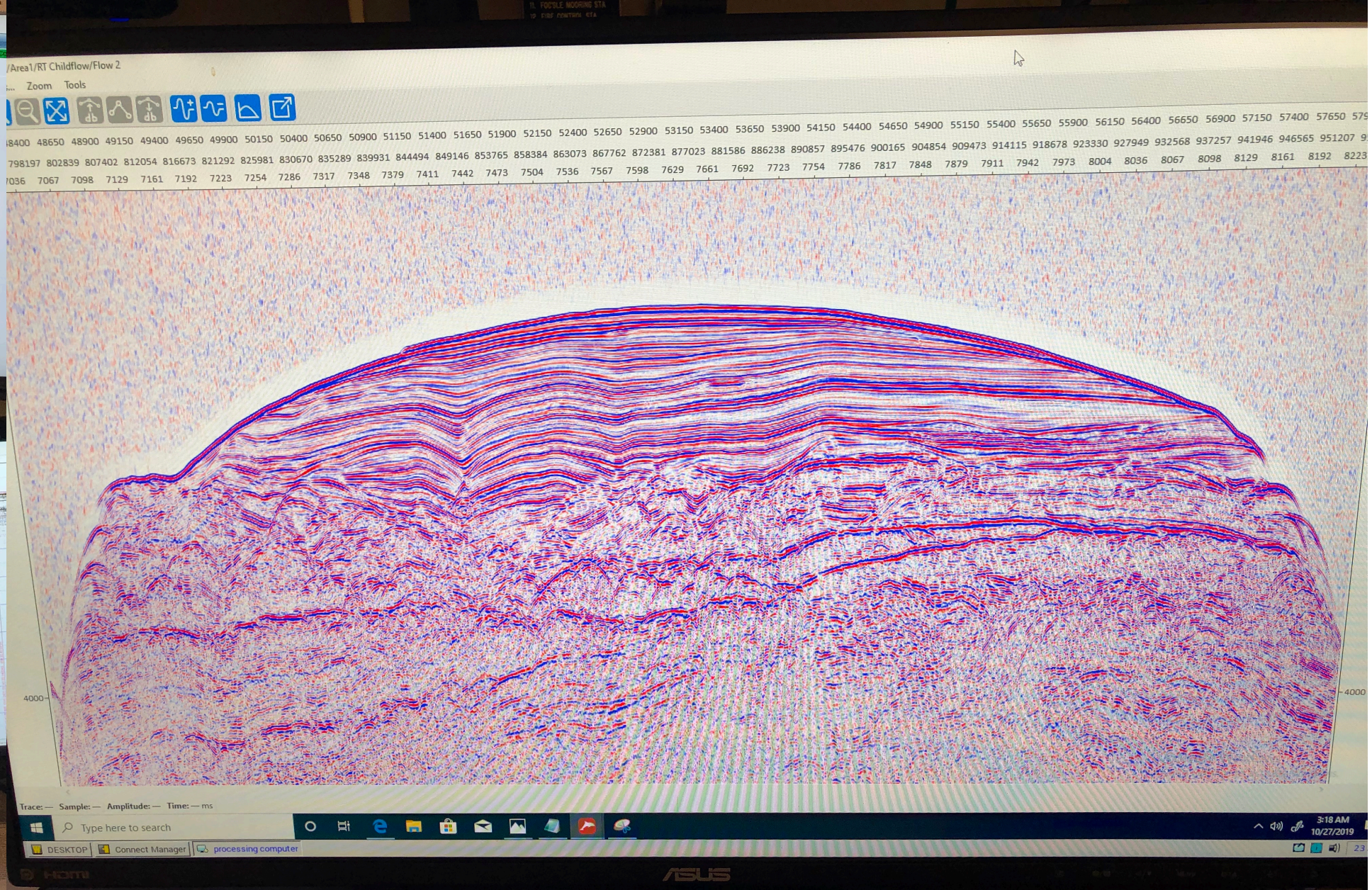
RadExPro Seismic processing software




ADCP
UHDAS
ContourPlot
VectorPlot
BridgePlot
HeadingPlot
Log
Errors
TN372 os75bb
Depth (km)
62.5°W
60°W
57.5°W
55°W
0.5 m/s
31 to 71m
(dday = 299.538) 2019/10/27 12:54:03 UTC


2420.84m
Off




/Area1/RT Childflow/Flow 2
Zoom
Tools
4000
Trace: — Sample: — Amplitude: — Time: — ms
Type here to search
3:18 AM
10/27/2019
DESKTOP
Connect Manager
processing computer

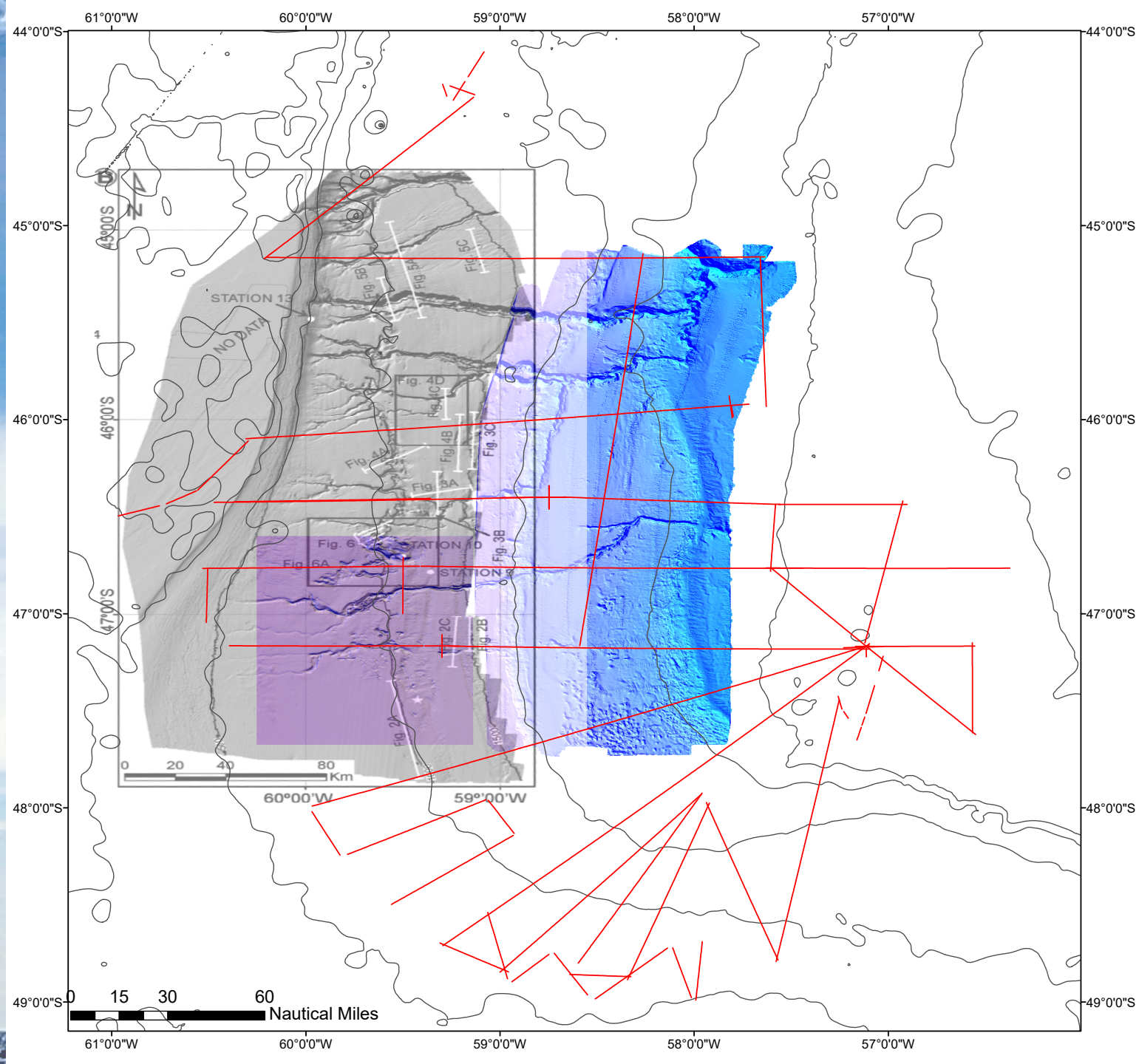
Seismic Processing

Processed in real time on the ship using Seismic Unix

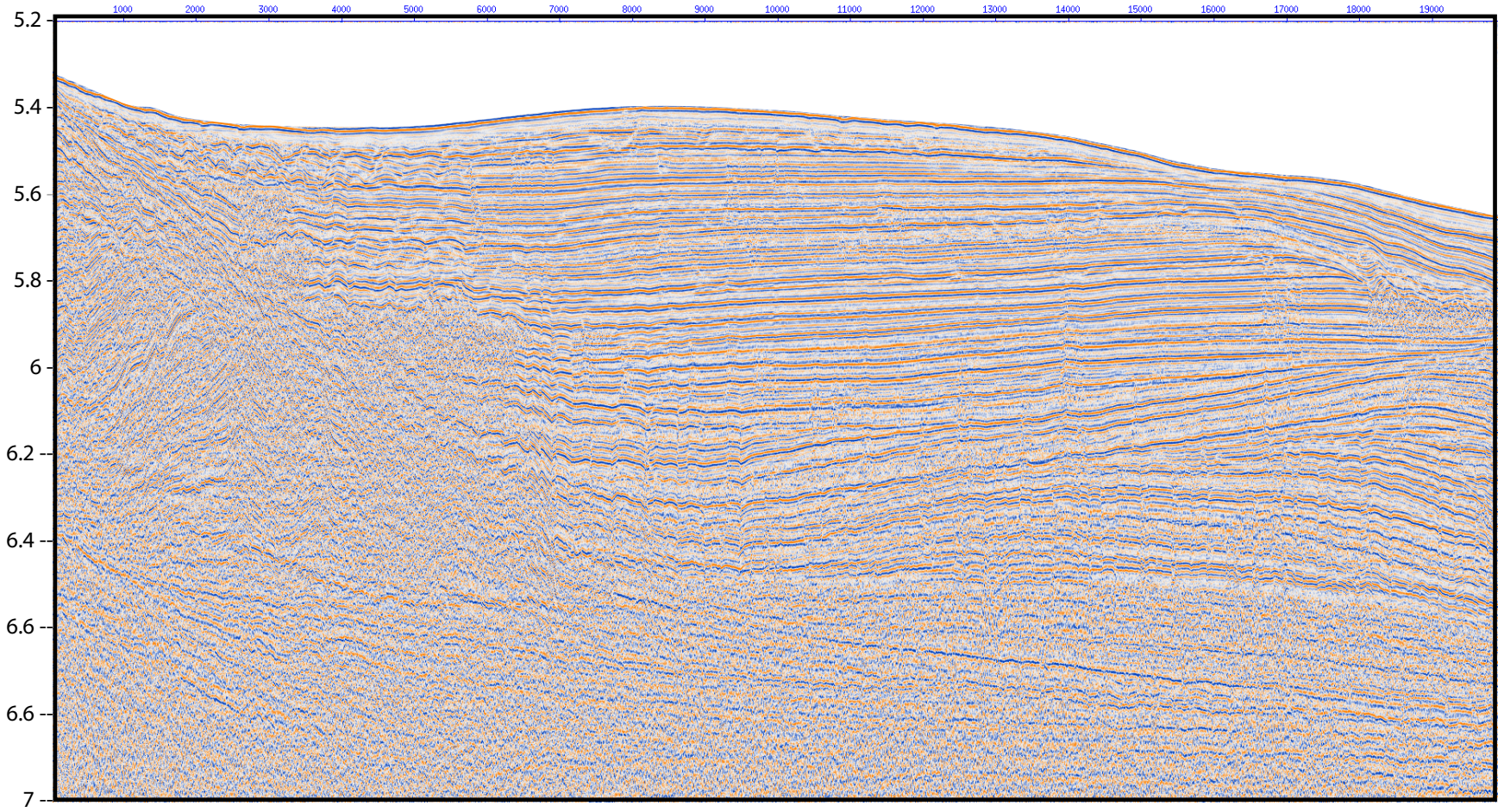
Dell precision 7540. 64GB of RAM and 2TB (SSD) of storage. XEON processor

Some lines are up 50 Gb
~ 6 hours on the ship

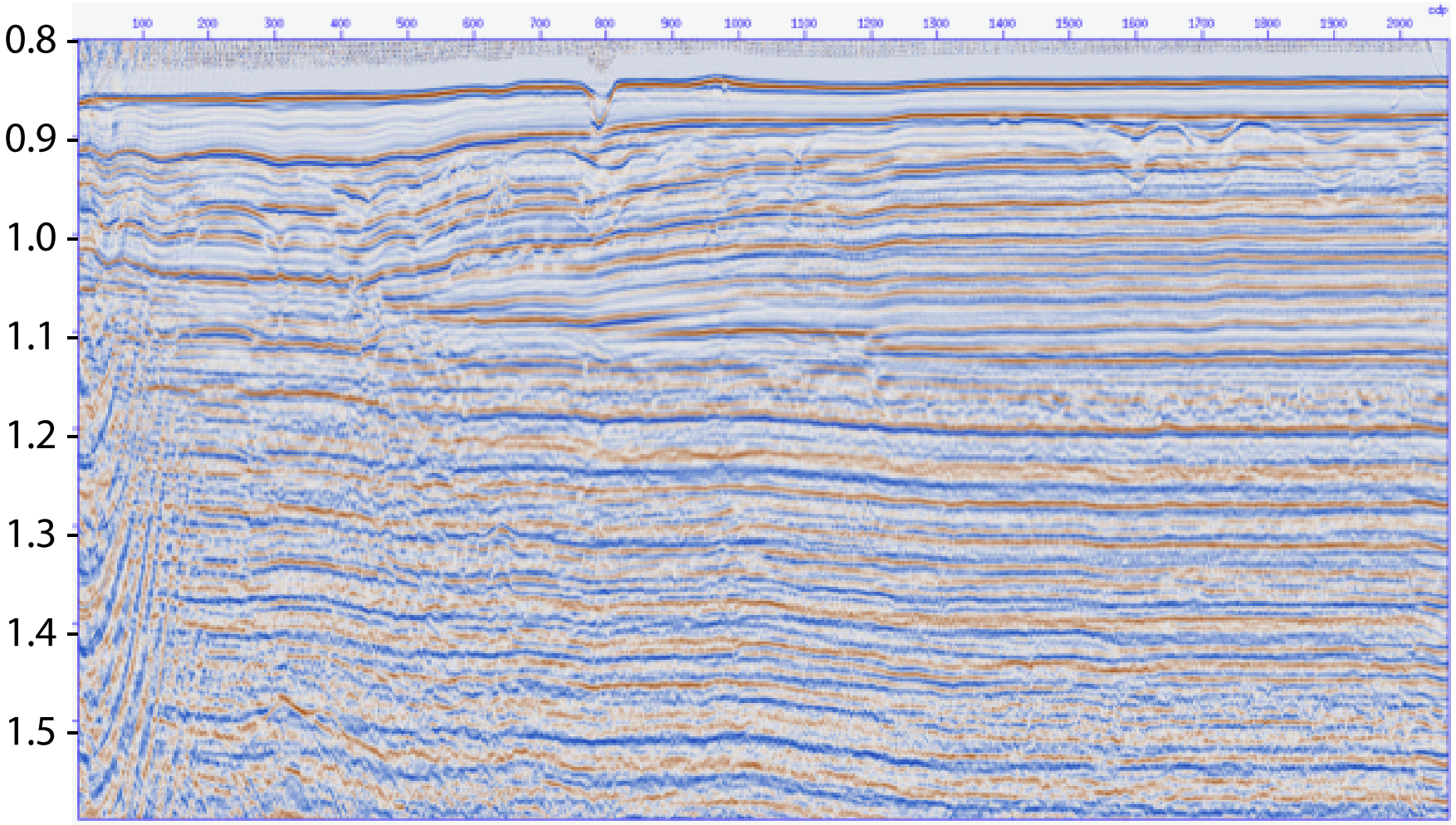
High Speed computing @ RU
~ 1 hour



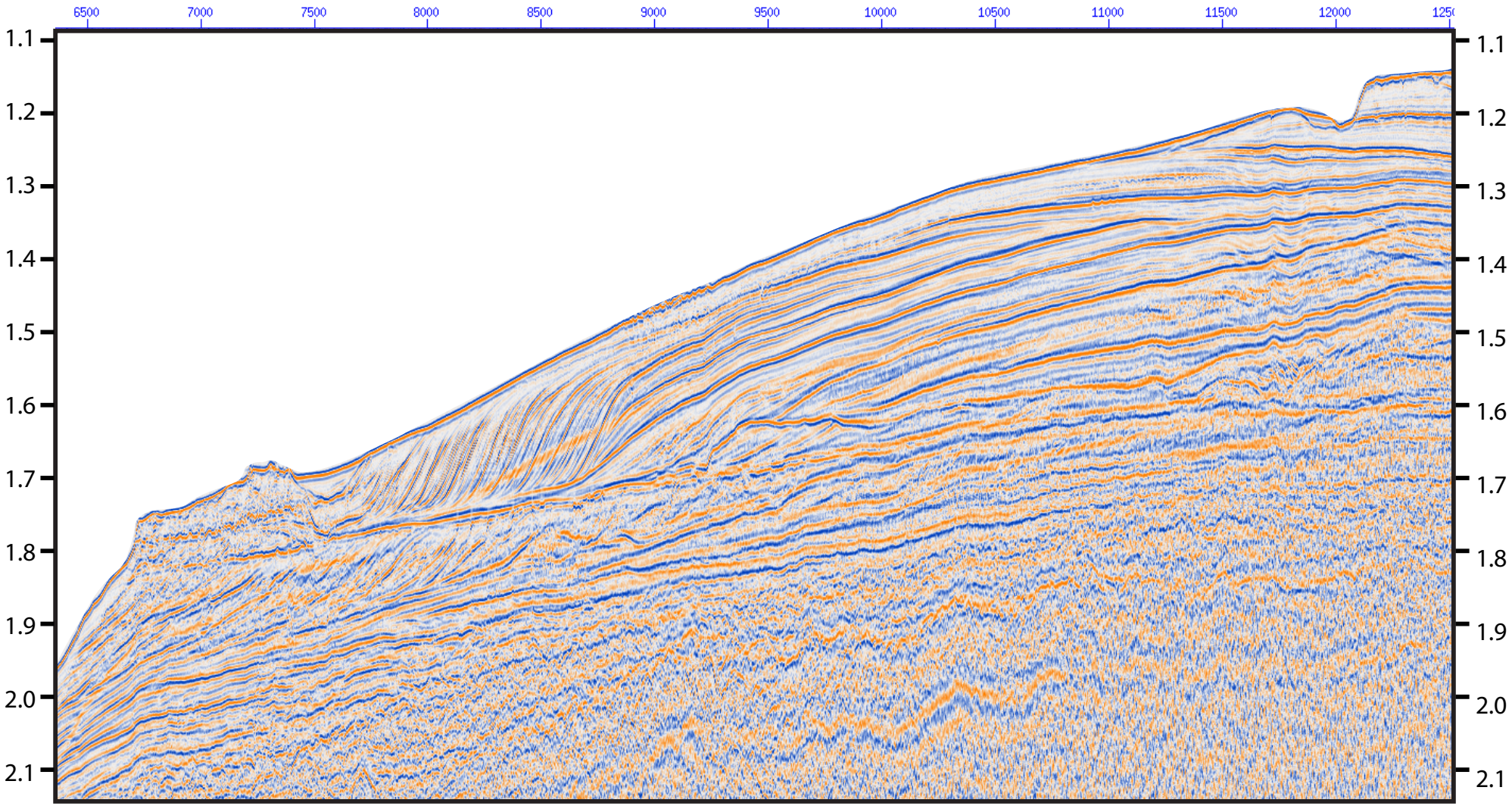
Off the Ship Results – Image 1.2 to 1.5 sec



Proper Processing should yield more



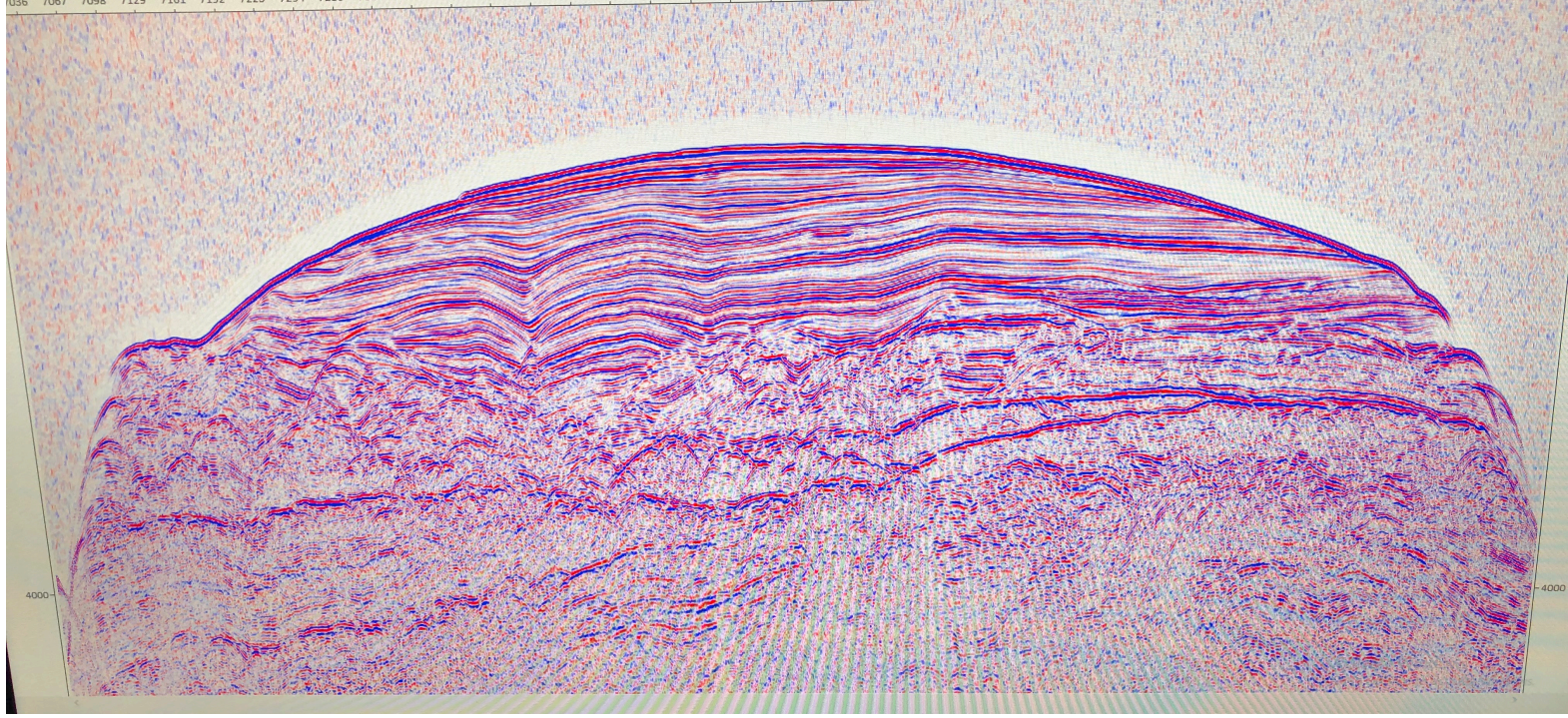
Off the Ship Results – Cretaceous to Eocene

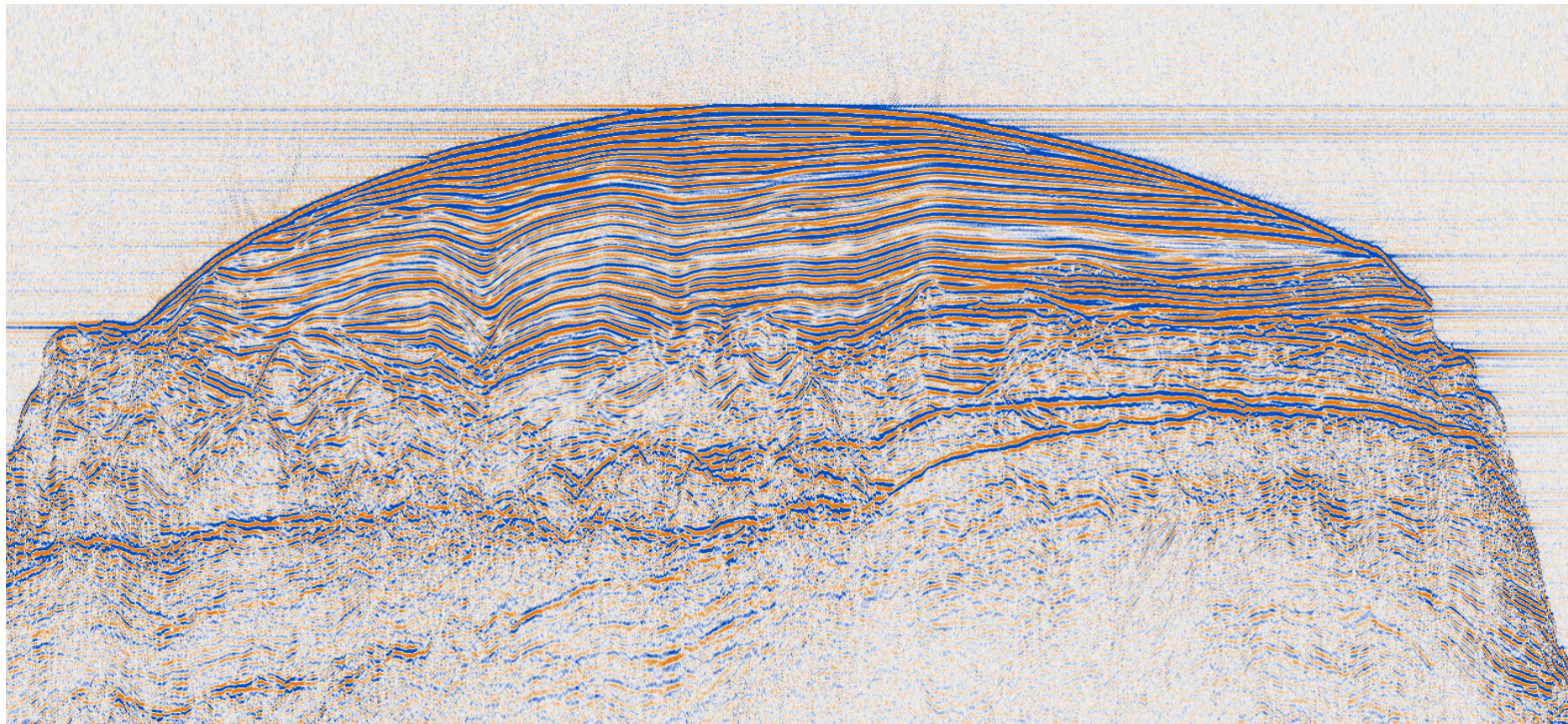


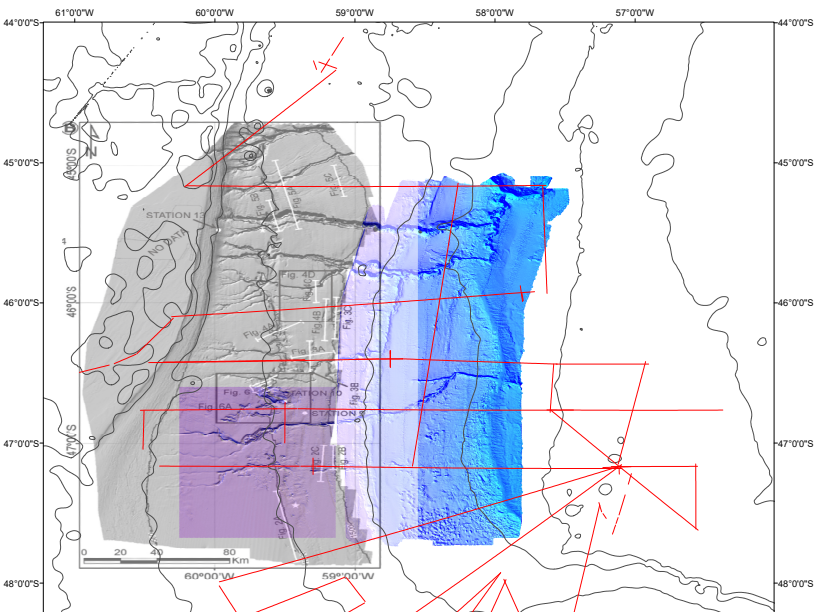
RadExPro

vs

Seismic Unix
(rookies)

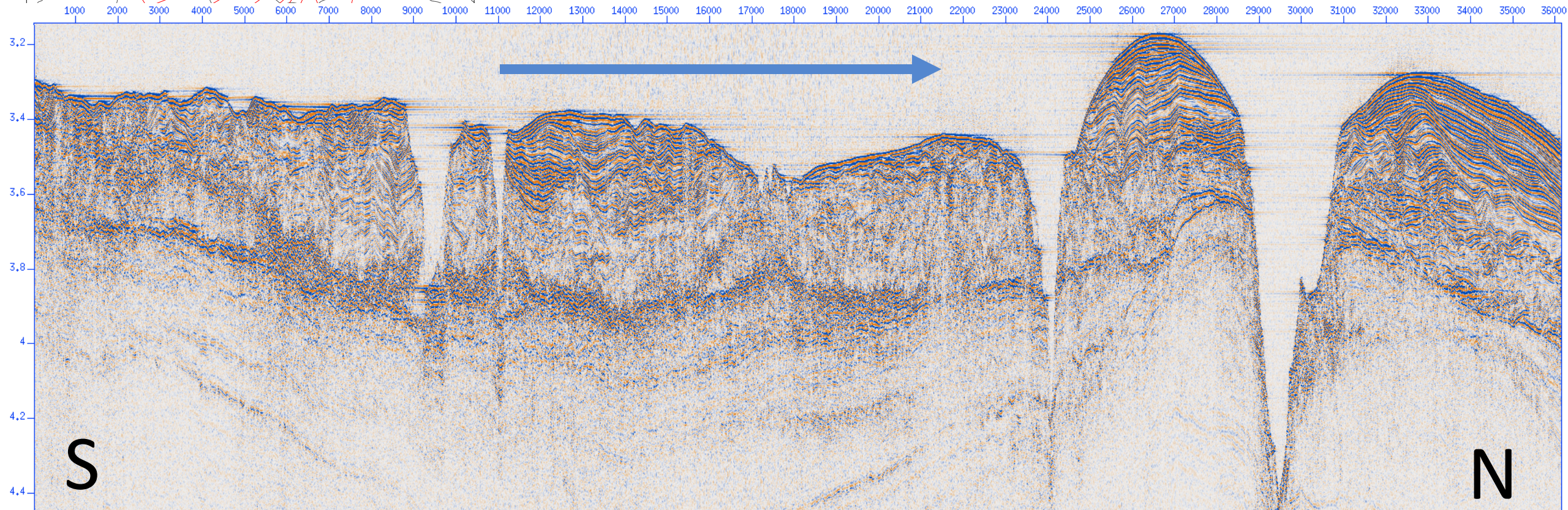






A Little Bit of Science

Current sweep sediments on the upper margin into canyons => carried downslope

Slope change at 2200 m and sediments overflow

S to N Current (UCDW) form drifts