



Radon Demultiple

NZ 3D Processing

07 April 2021

cgg.com



INSTITUTE FOR GEOPHYSICS



Passion for Geoscience

1. Convert to CGG internal format
2. Nav merge / trace edit
3. Low cut filter
4. Time Variant Scaling (TVS) & Resample to 4ms
5. Swell noise attenuation (SNA)
6. Debubble
7. Linear noise attenuation (LNA)
8. Tidal statics correction
9. Water column statics correction
10. Shot & channel scaling
11. Receiver motion correction (RMC)
12. Joint Deghost & Designature
13. Residual Bubble Removal
14. Source Sensor Datum Correction
15. Shallow Water Demultiple
16. Surface Related Multiple Elimination (3D SRME)
17. Simultaneous Subtraction of MWD & SRME
18. Residual linear noise attenuation (residual LNA)
19. Trace regularization & interpolation
20. Velocity Analysis
21. [Radon Demultiple](#)

- **Objective:**

To attenuate residual multiple

- **Procedure:**

The radon de-multiple is applied on CDP gathers (NMO applied).

Start time: WBT+1700 (protect primary diffraction tails).

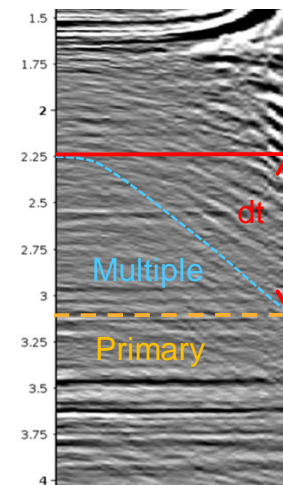
When $dt > 700\text{ms}$, event will be considered as multiples.

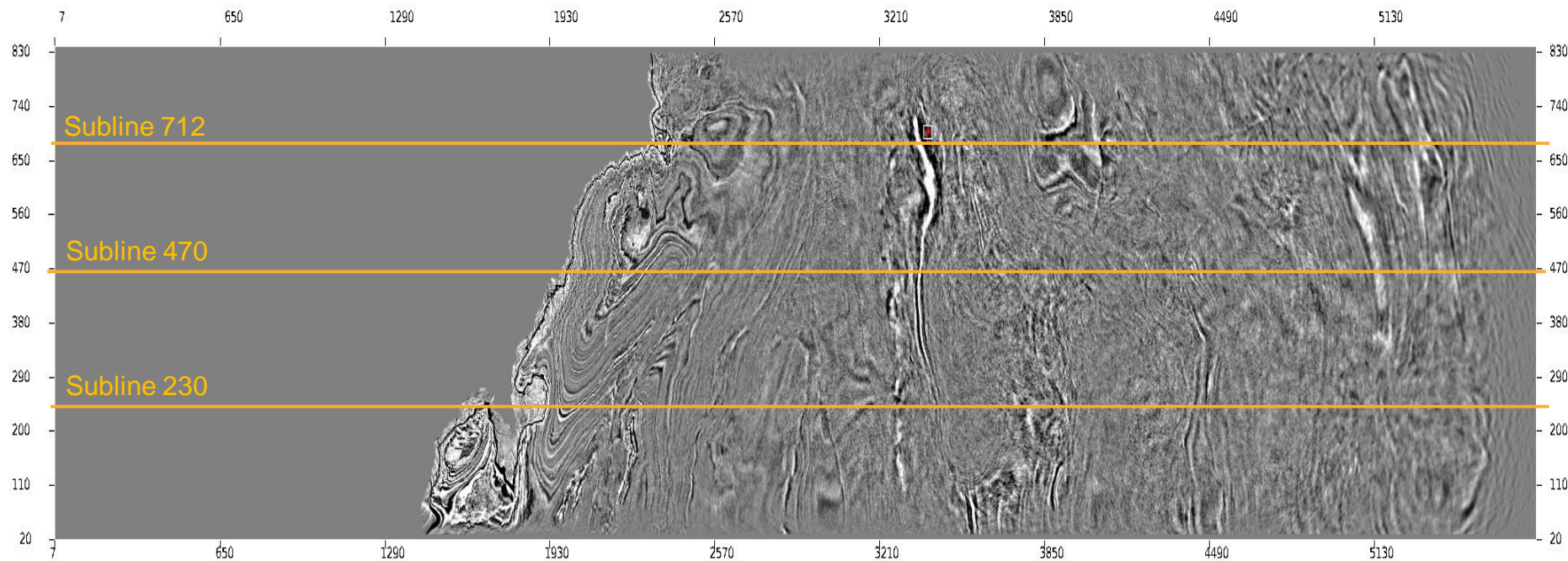
- **Display:**

Stack, CDP gathers.

- **Observation & Recommendation:**

Curling down multiples are removed and primaries are undamaged. We recommended to apply for production.





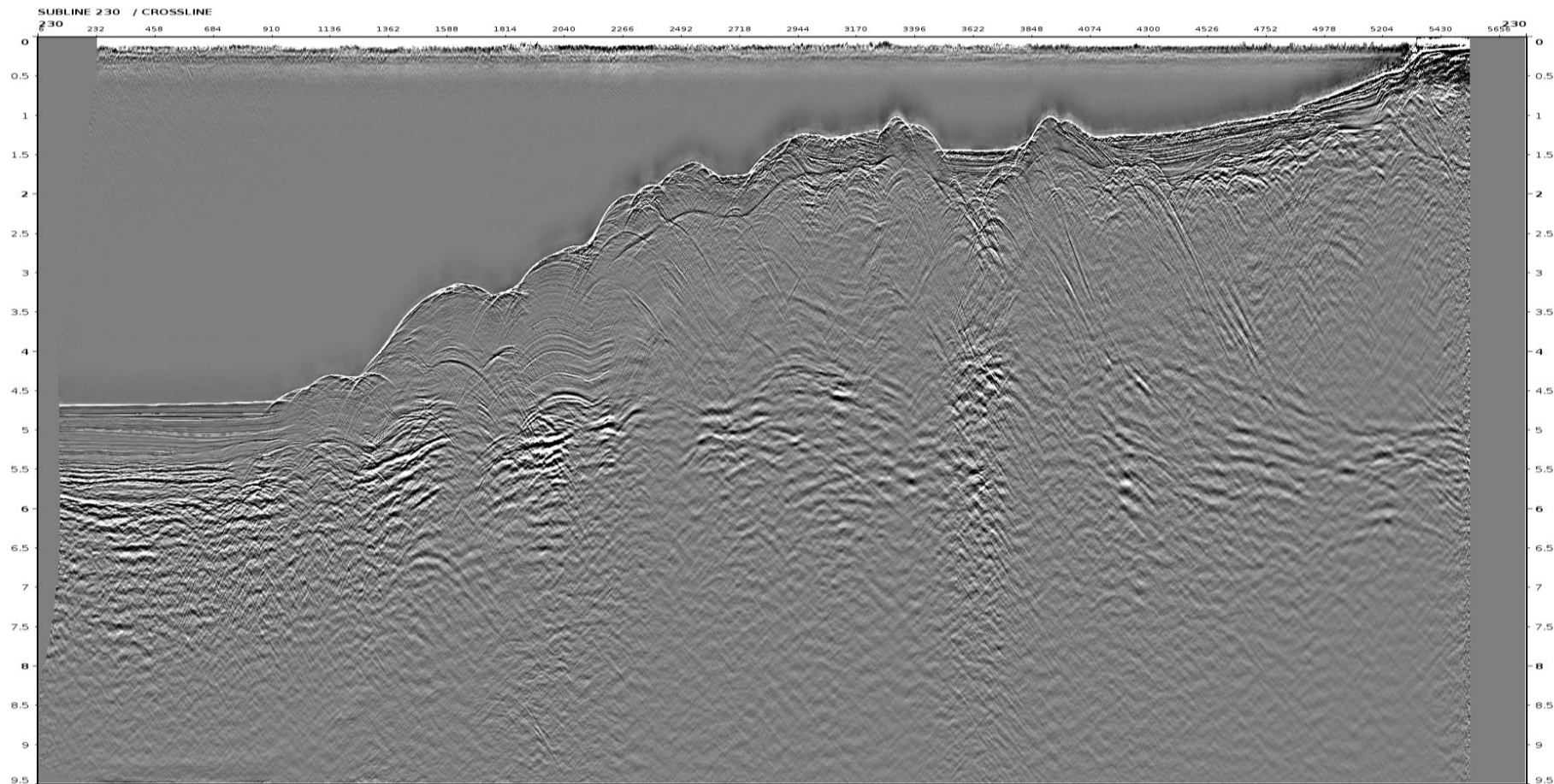
Subline

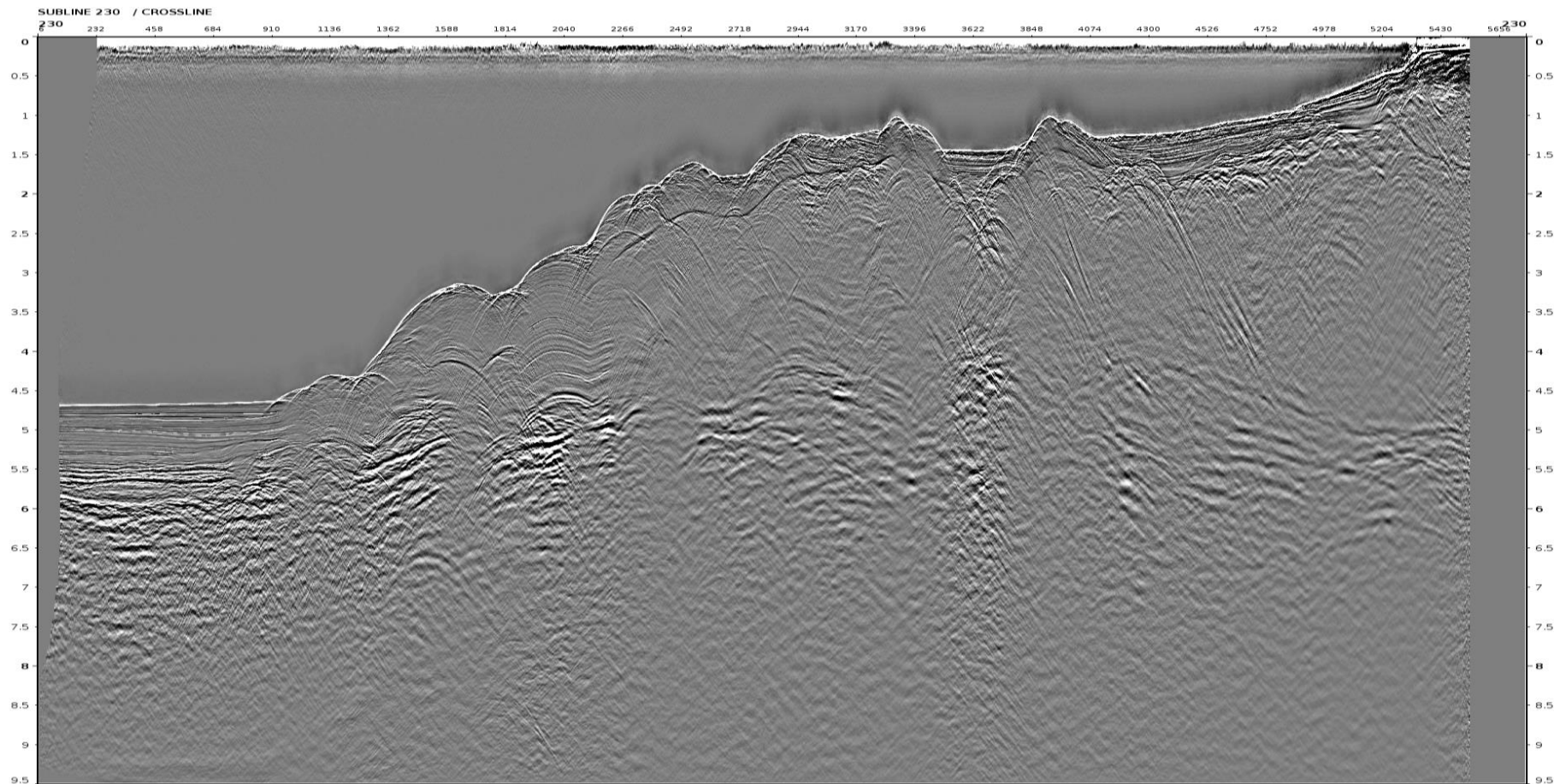


Crossline

Stack

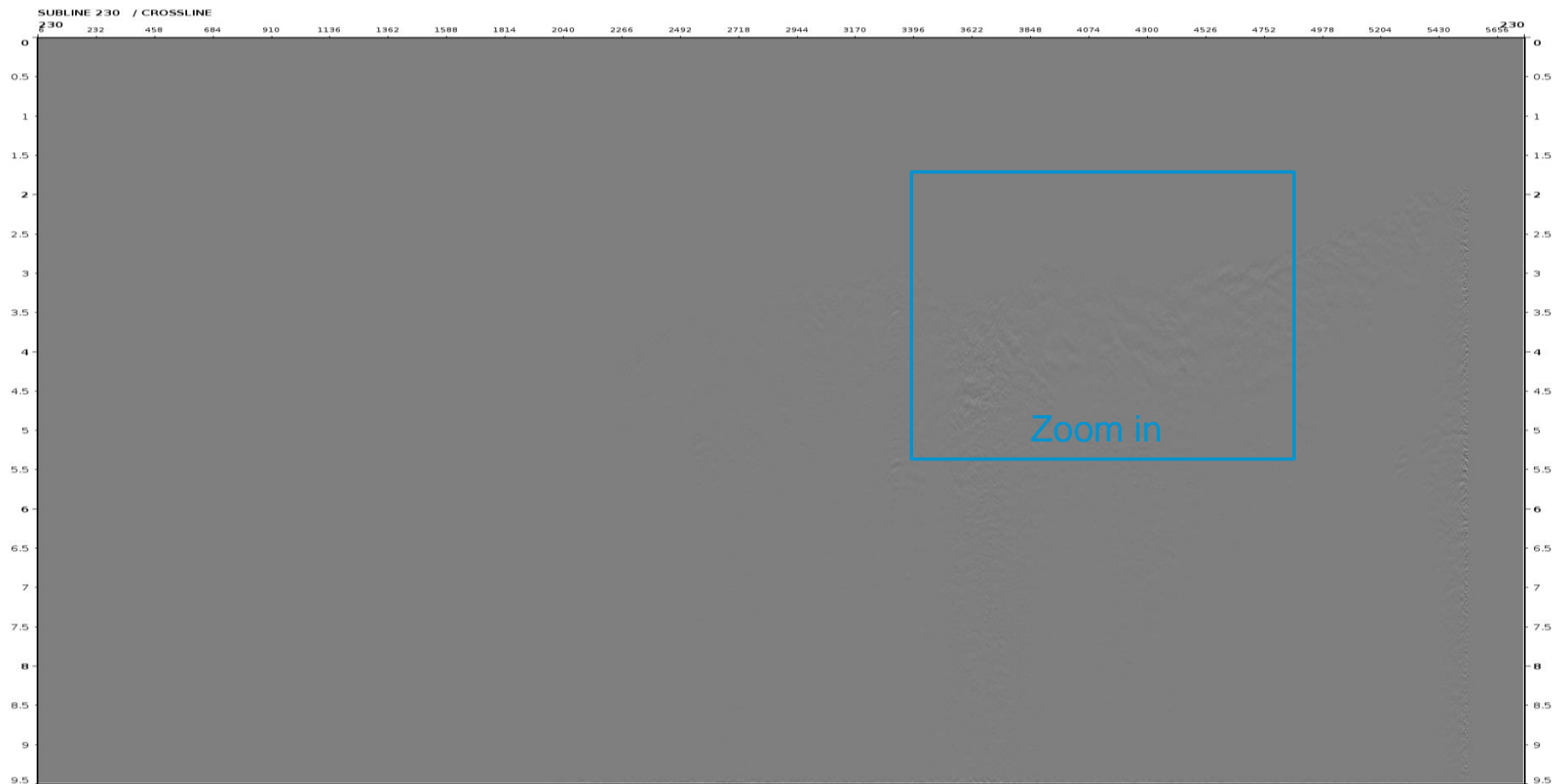
- subline 230
- subline 470
- subline 712







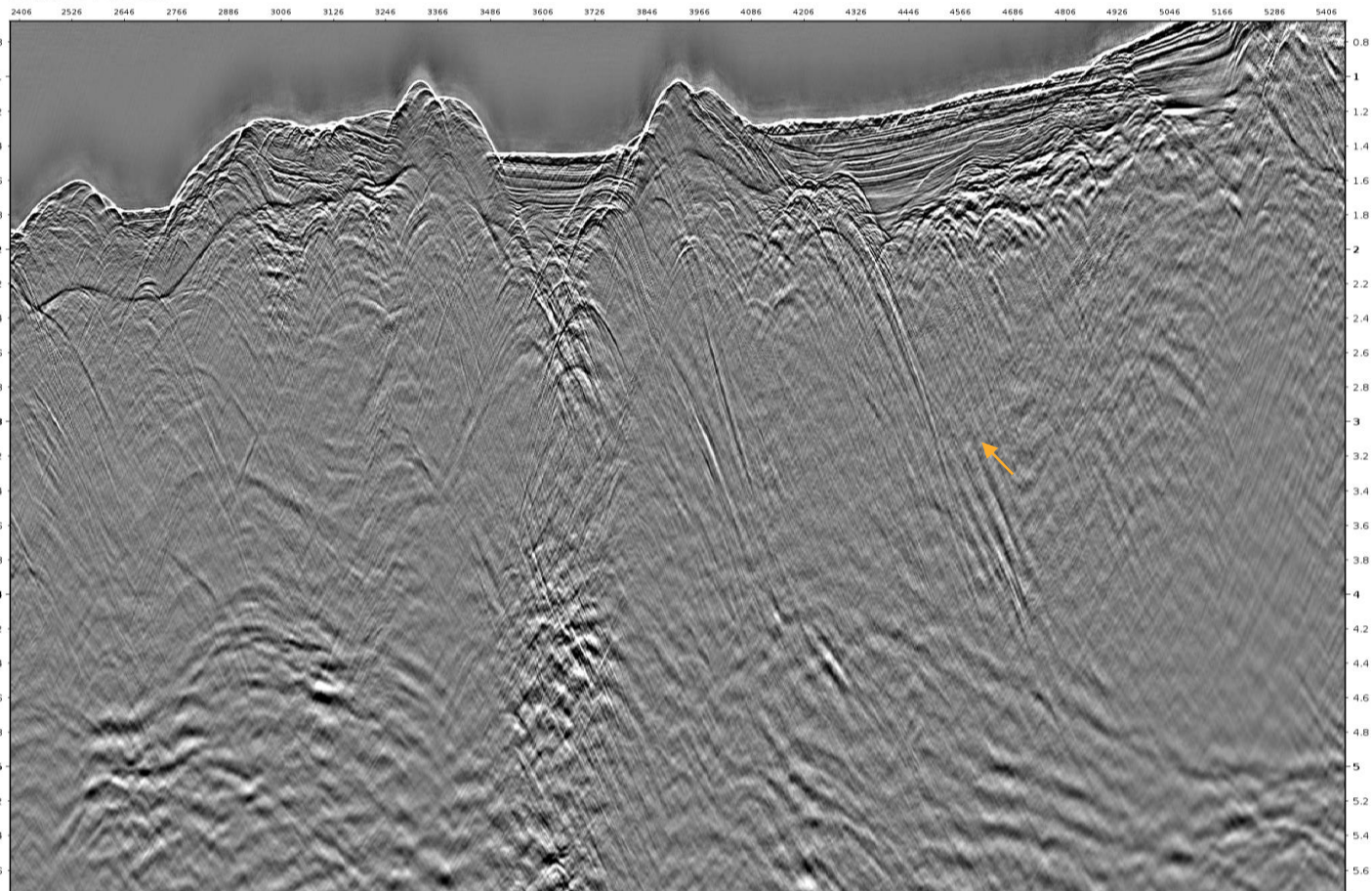
Difference before - after





Zoom in Stack before Radon

SUBLINE 230 / CROSSLINE

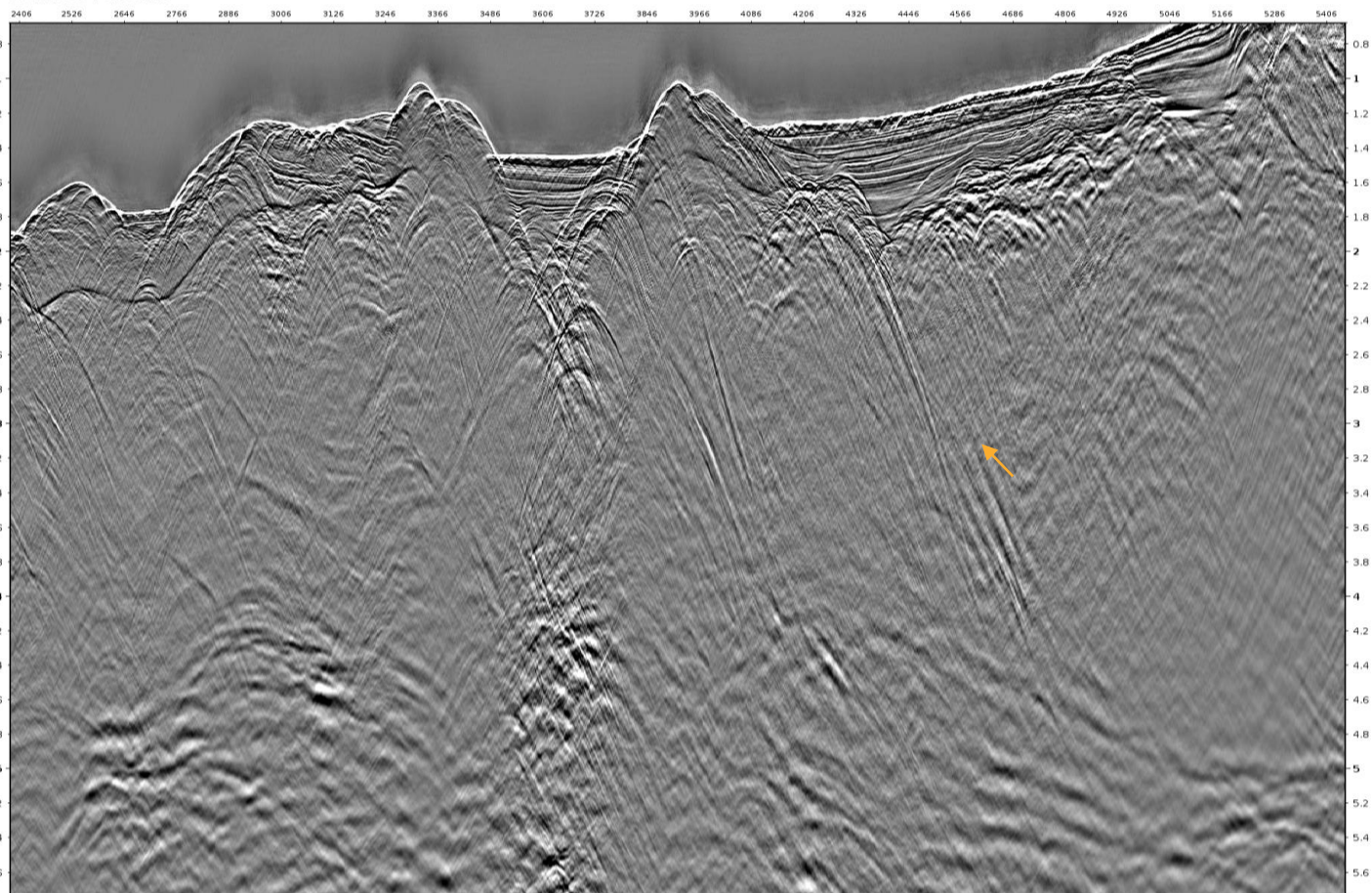




Zoom in Stack after Radon

10

SUBLINE 230 / CROSSLINE

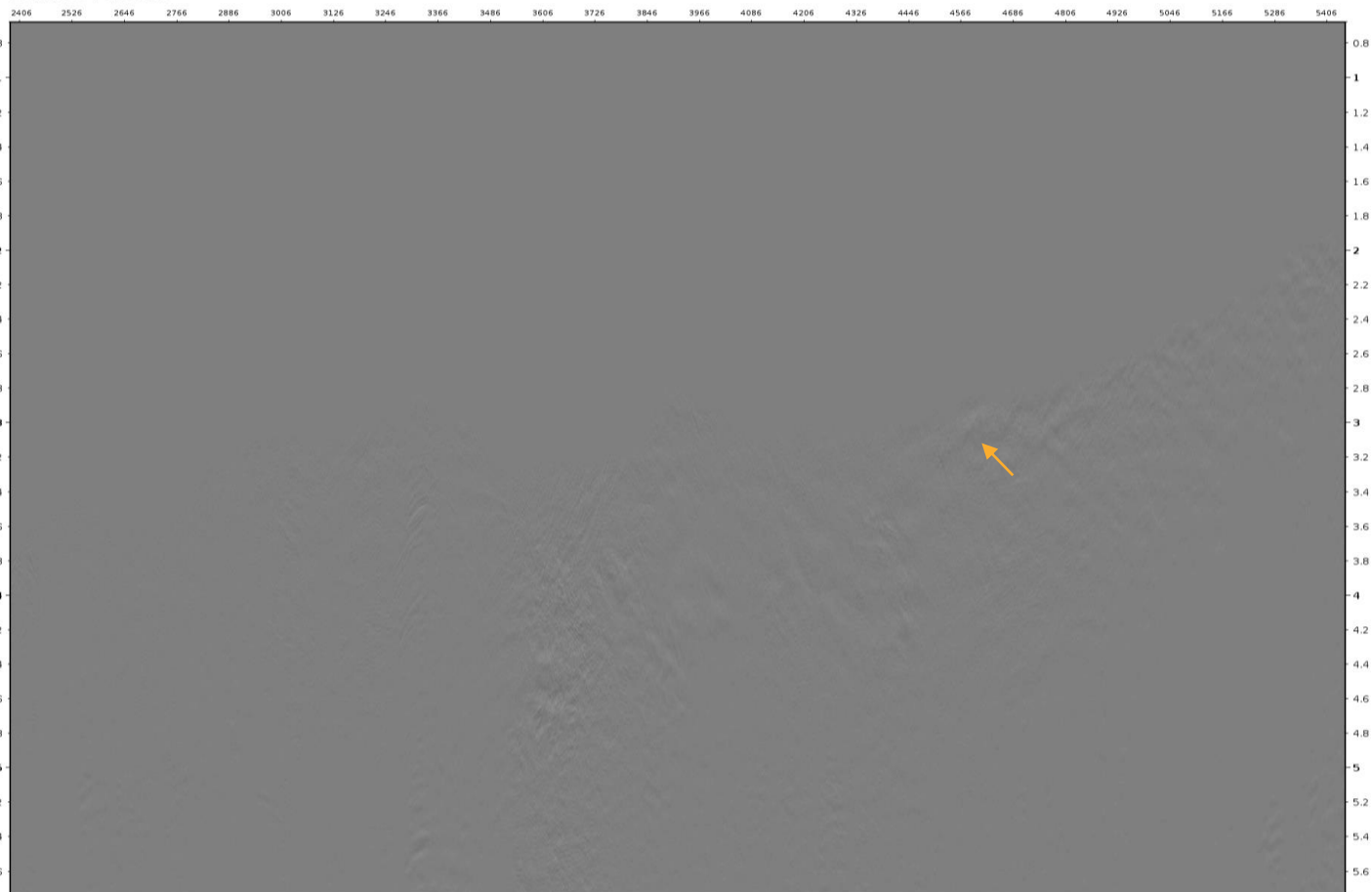




Difference before - after

11

SUBLINE 230 / CROSSLINE

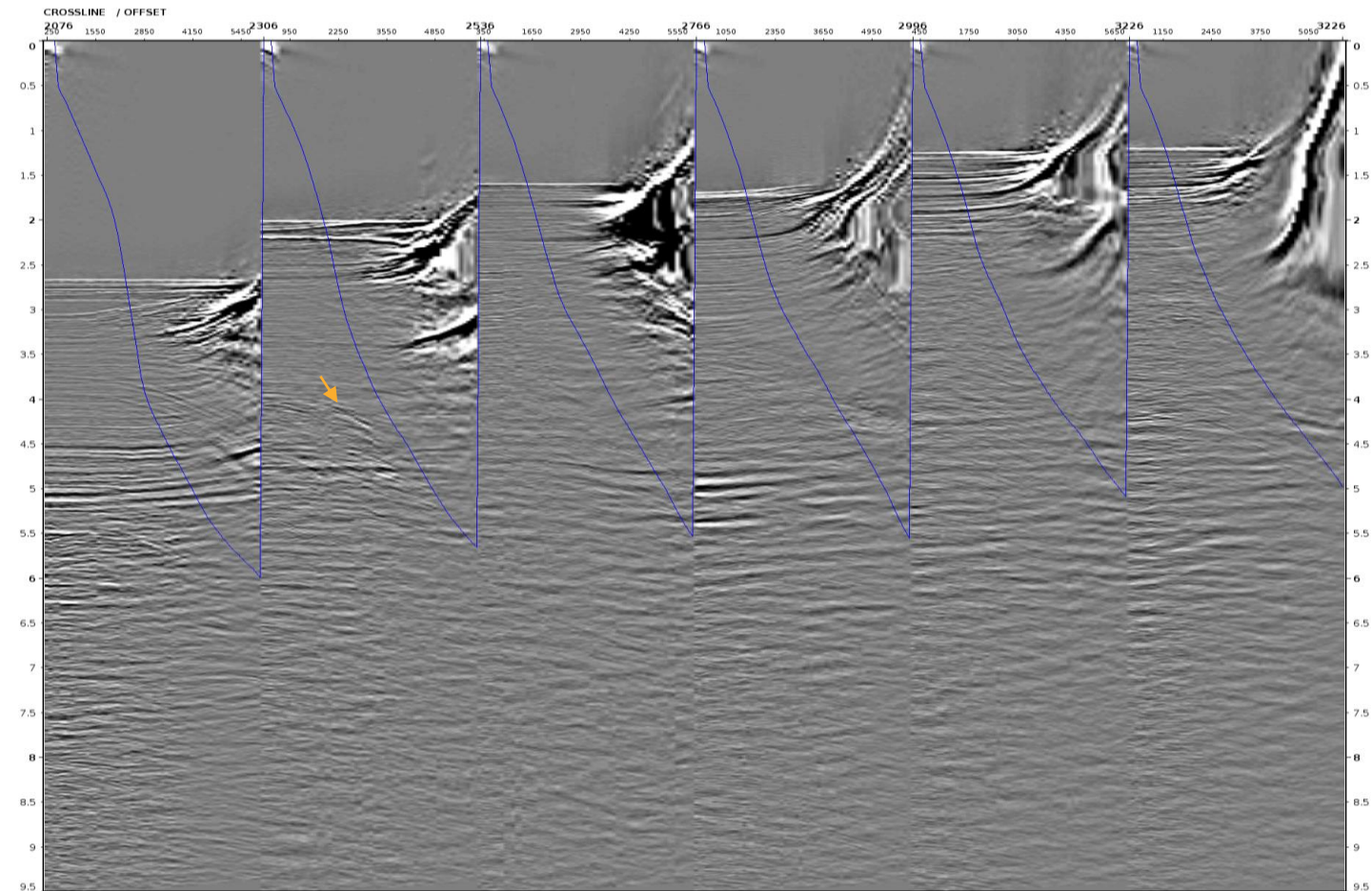


CDP Gathers

- subline 230
- subline 470
- subline 712

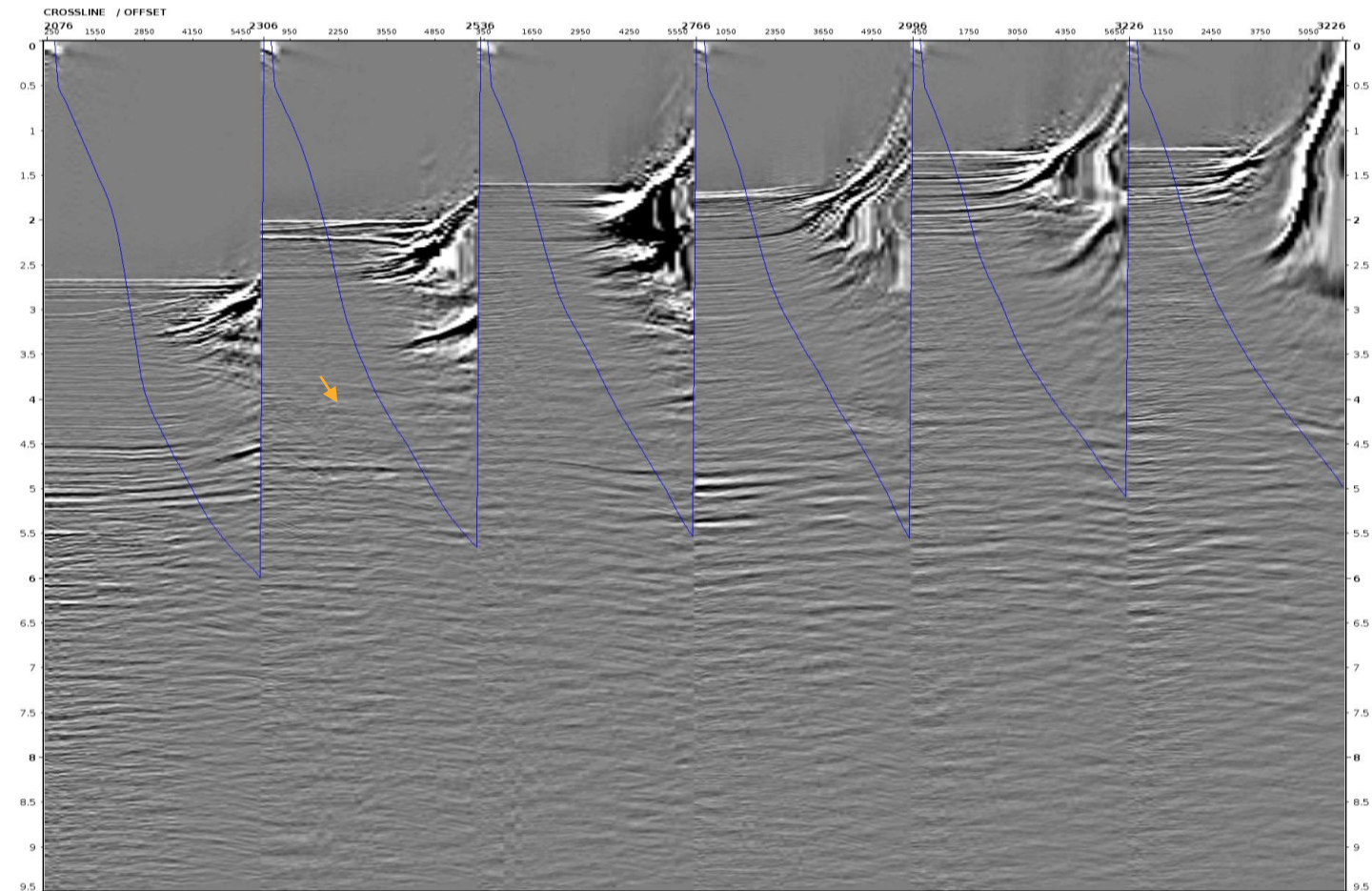


Passion for Geoscience



- Curling down multiples are observed on CDP gathers.

---- 35° angel mute



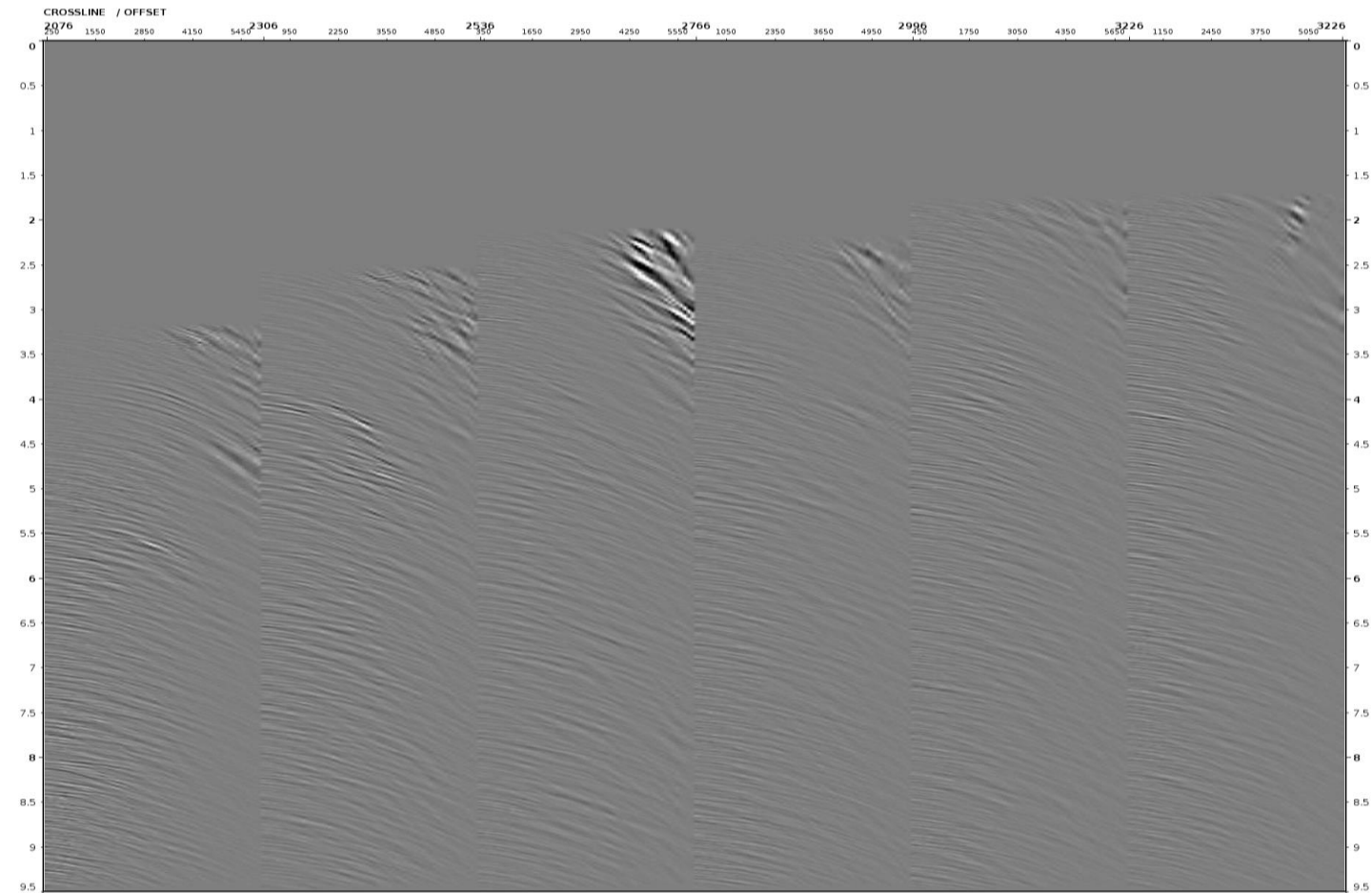
- Curling down multiples are attenuated after Radon demultiple.

---- 35° angle mute



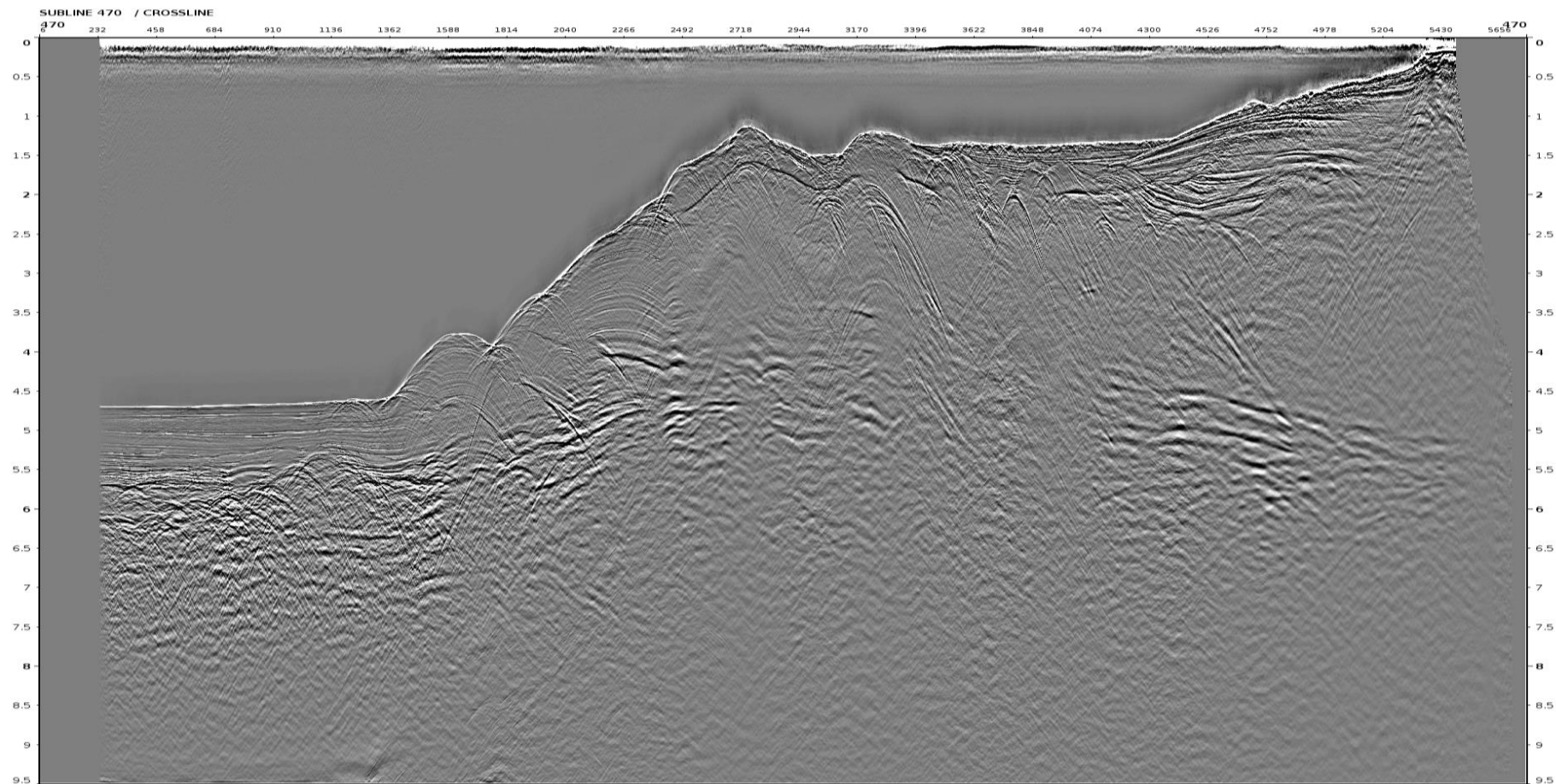
Difference before - after

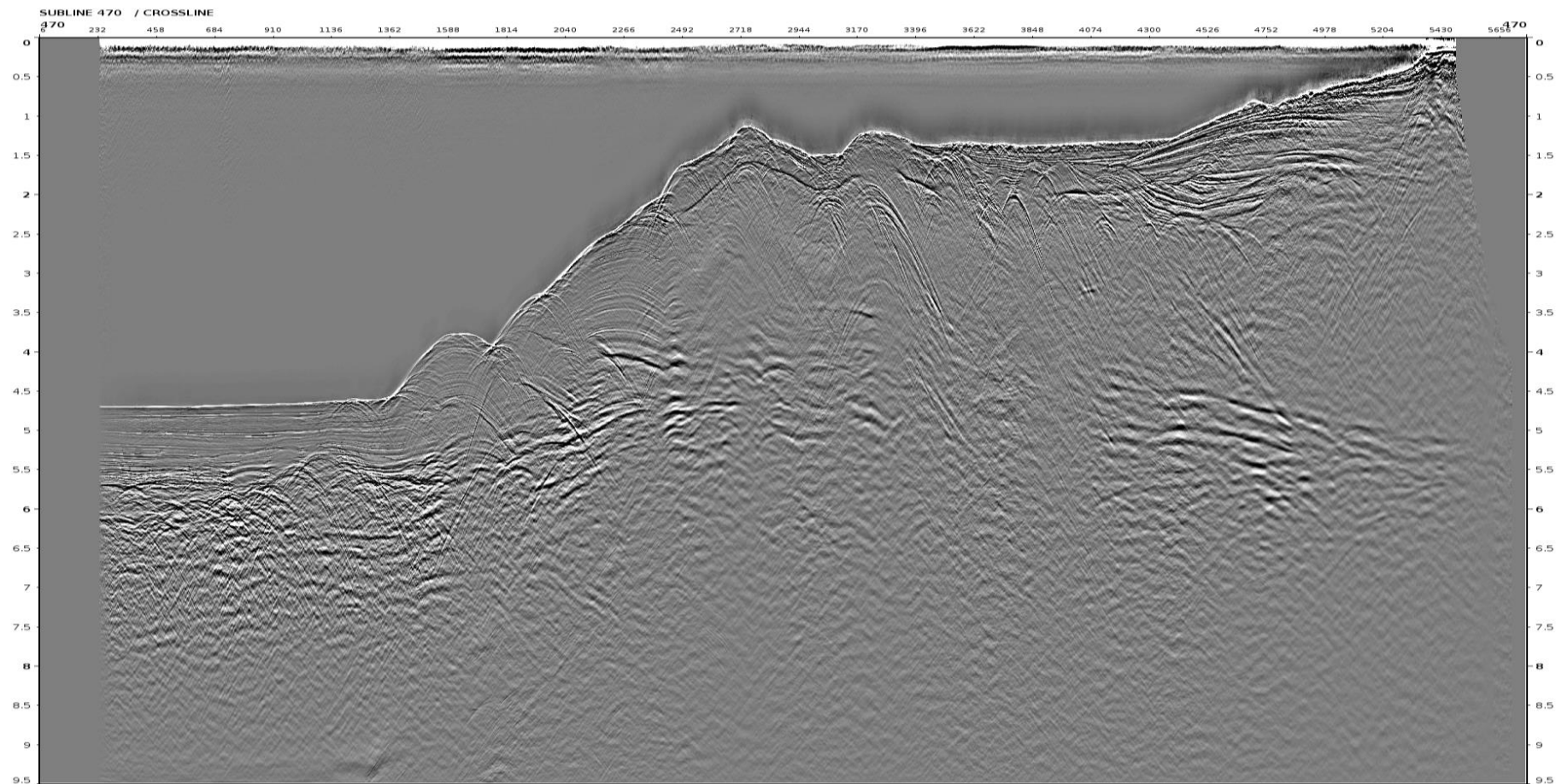
15



Stack

- subline 230
- subline 470
- subline 712

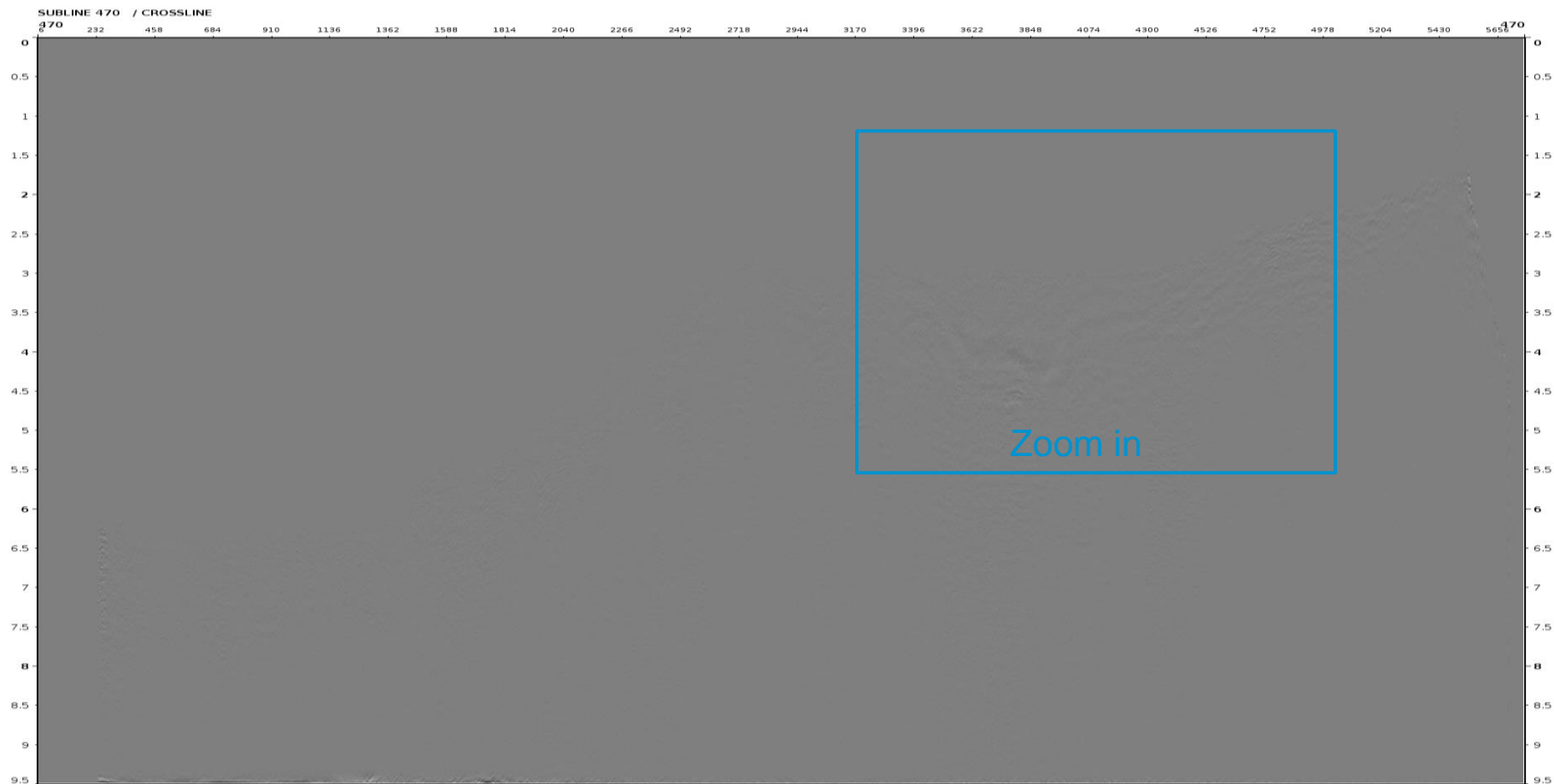






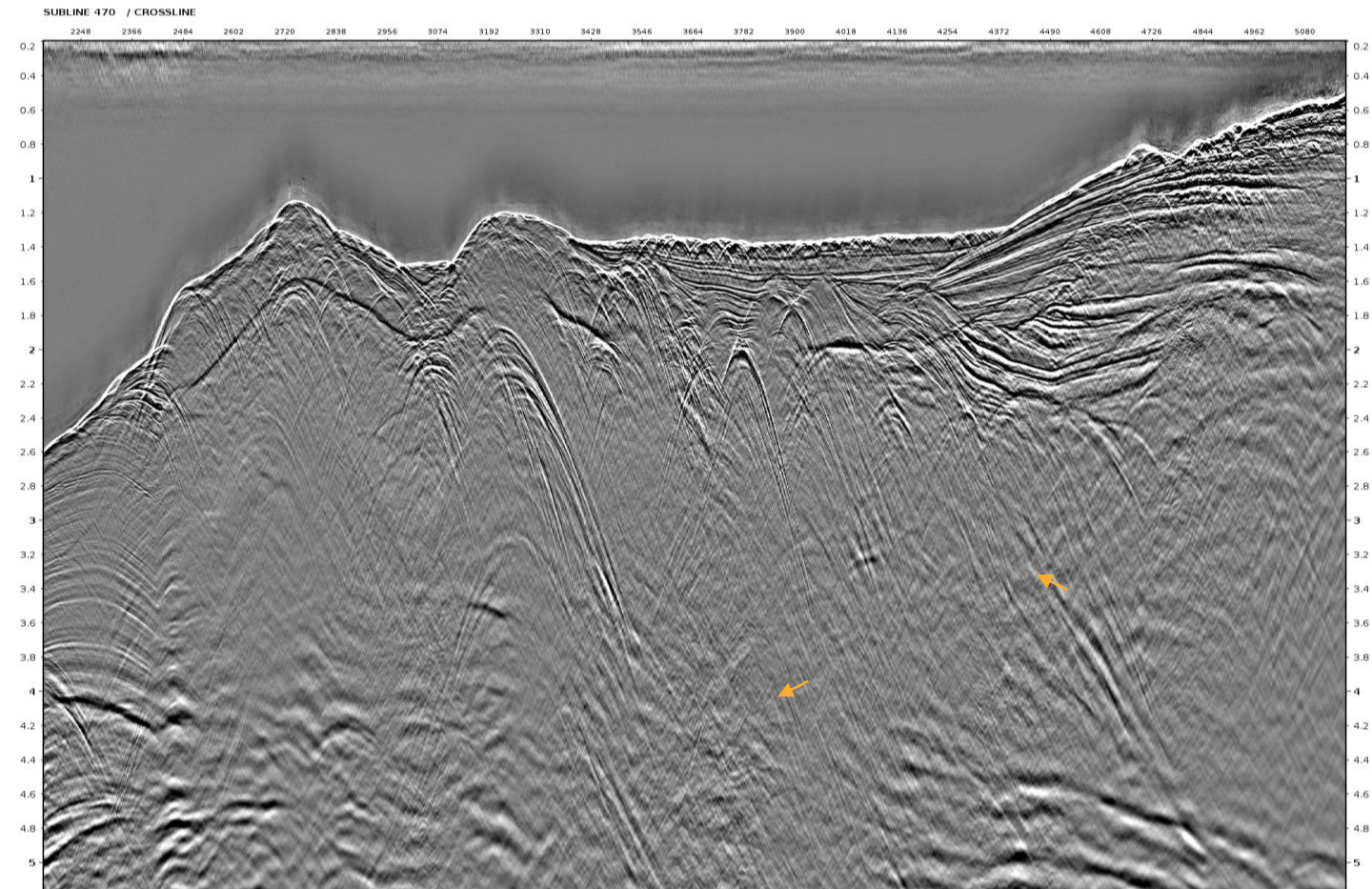
Difference before - after

19



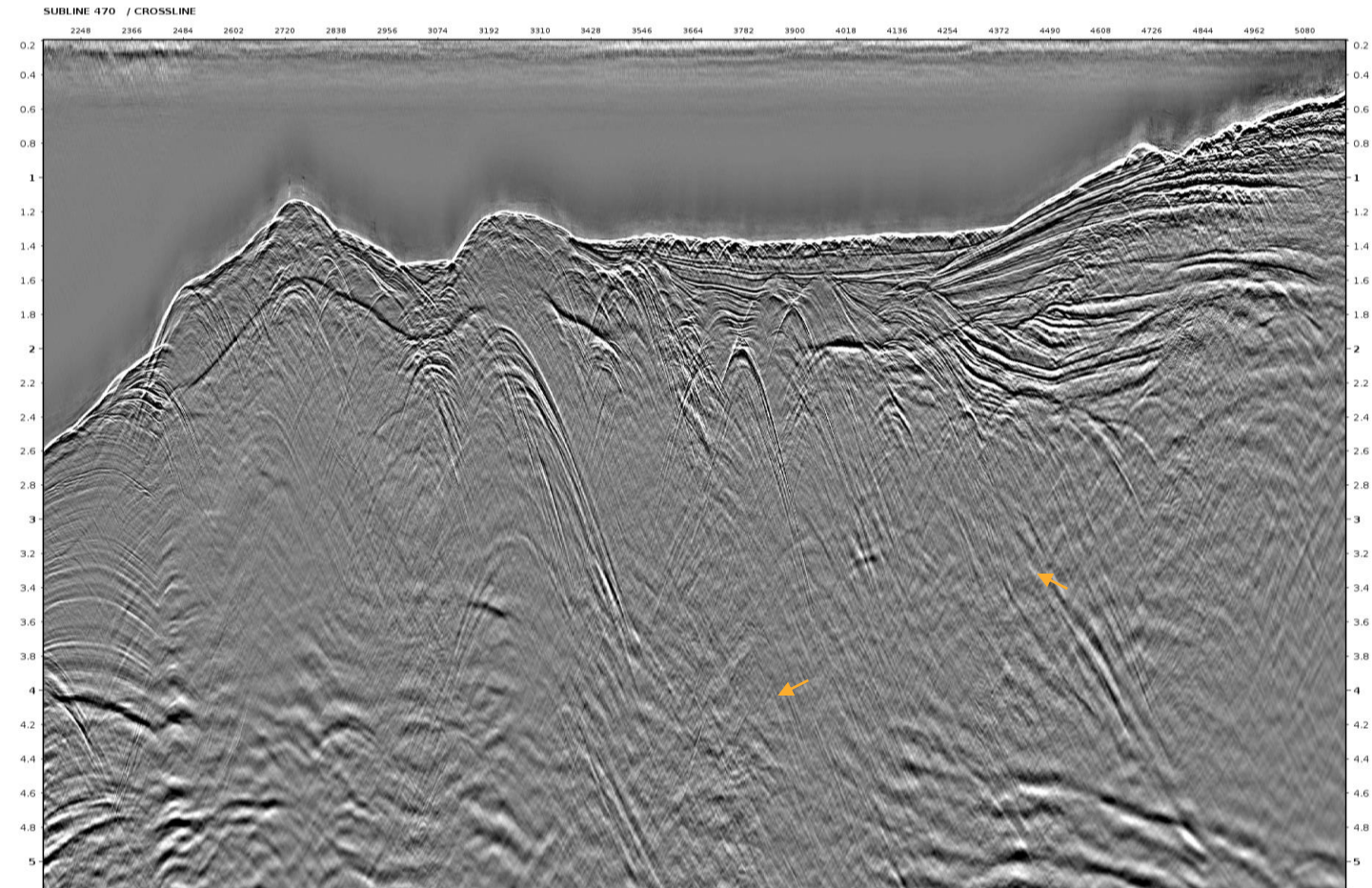


Zoom in Stack before Radon





Zoom in Stack after Radon



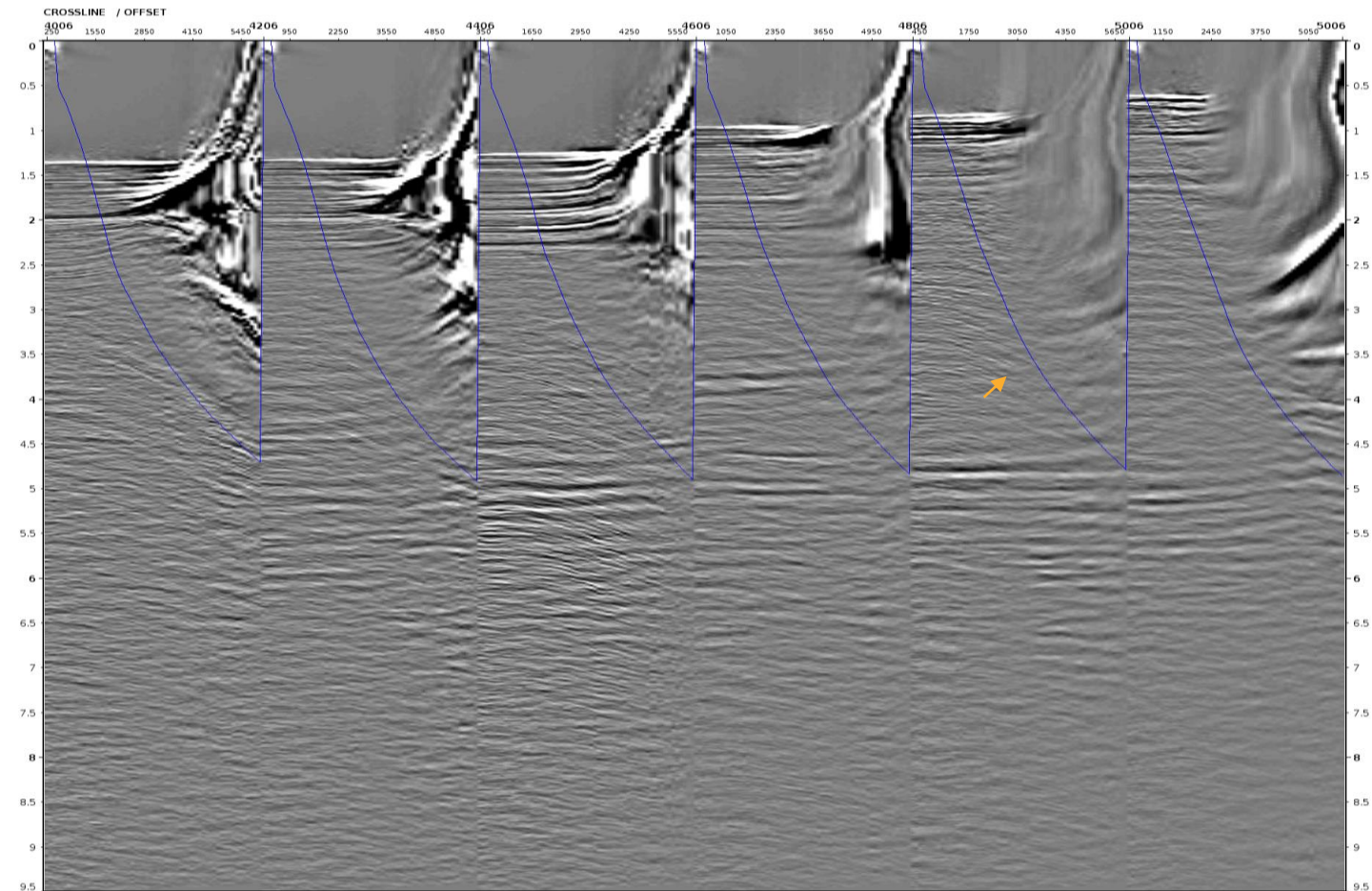


Difference before - after



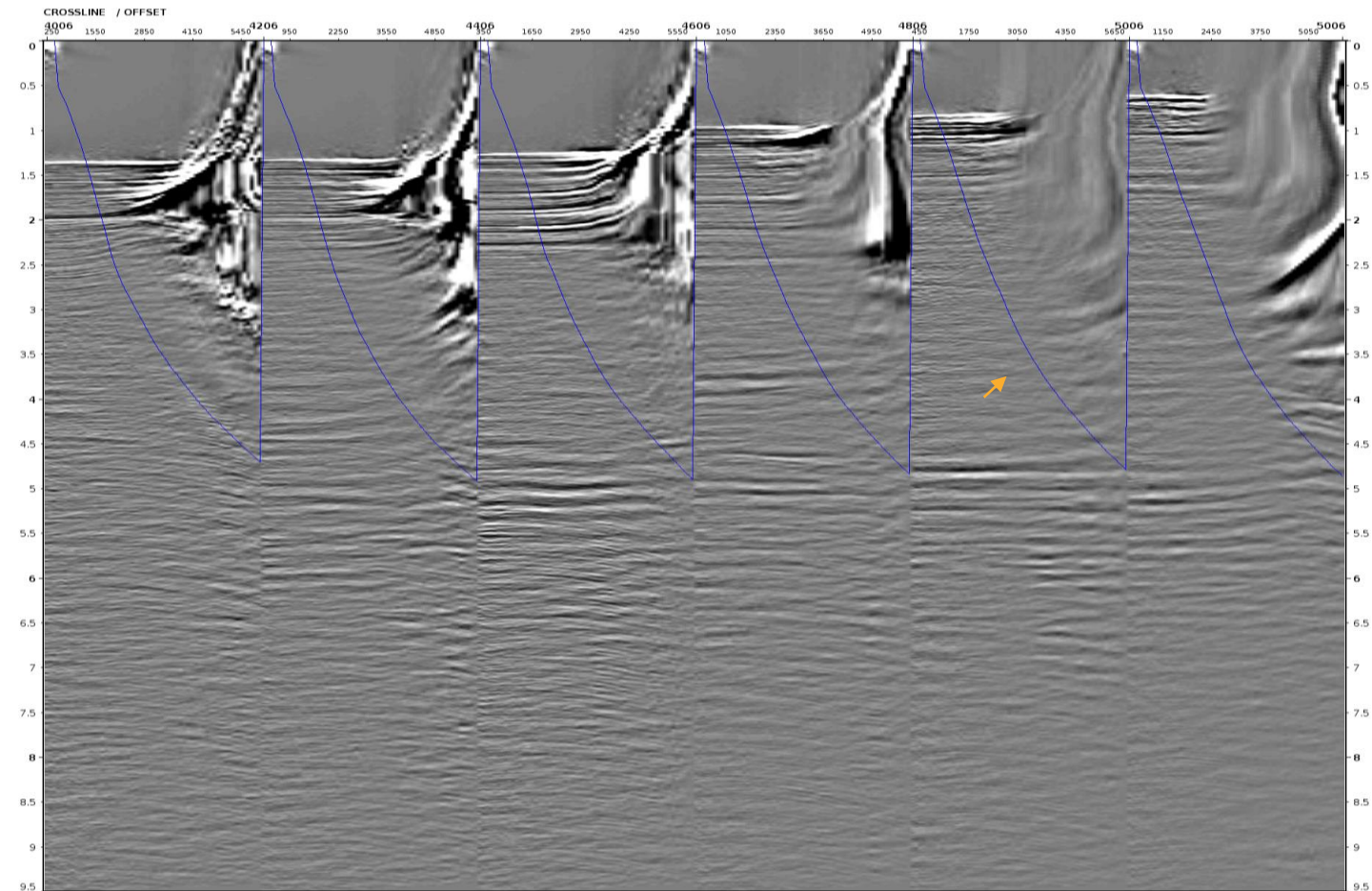
CDP Gathers

- subline 230
- subline 470
- subline 712



- Curling down multiples are observed on CDP gathers.

---- 35° angle mute



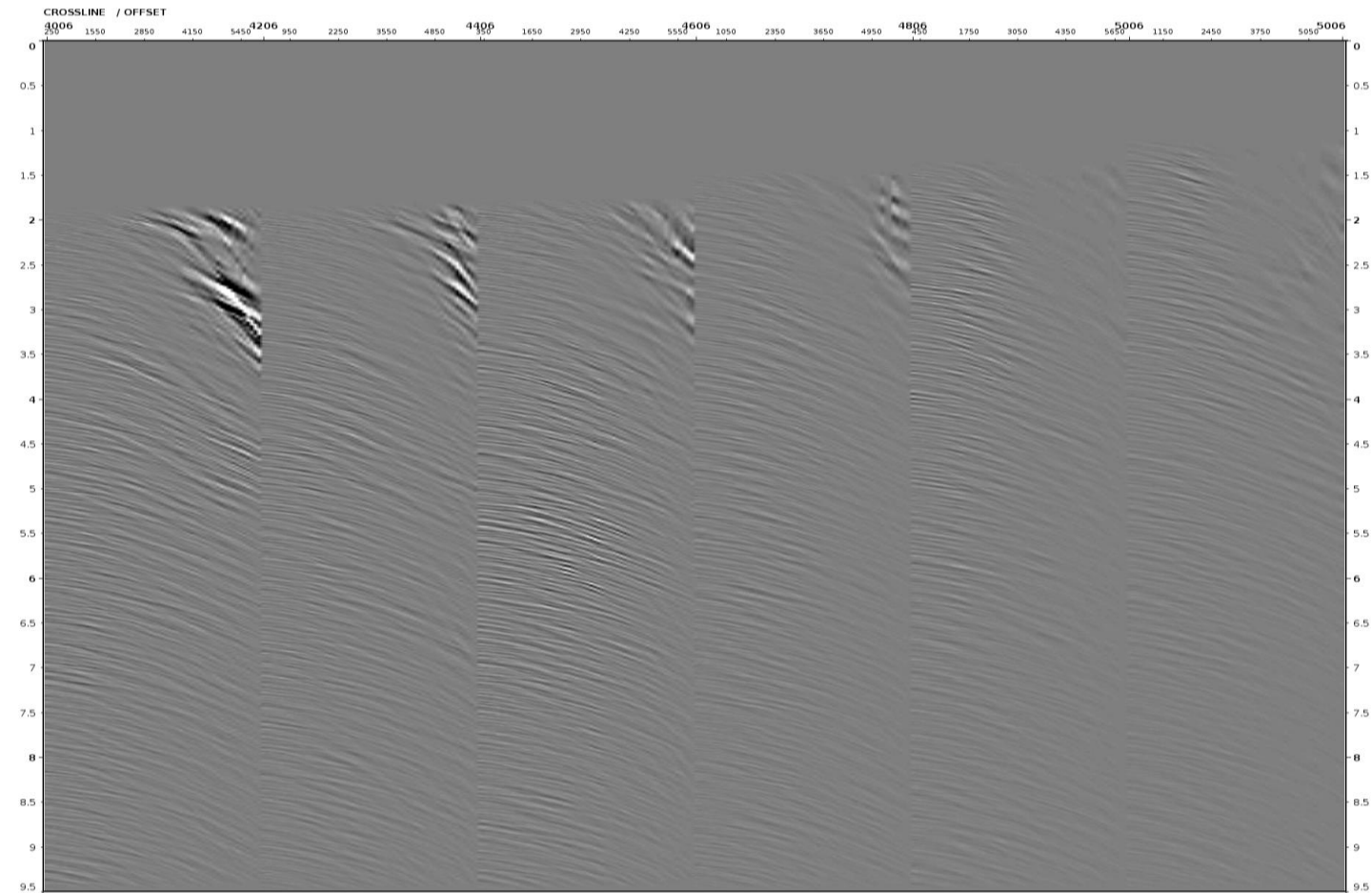
- Curling down multiples are attenuated after radon demultiple.

---- 35° angel mute



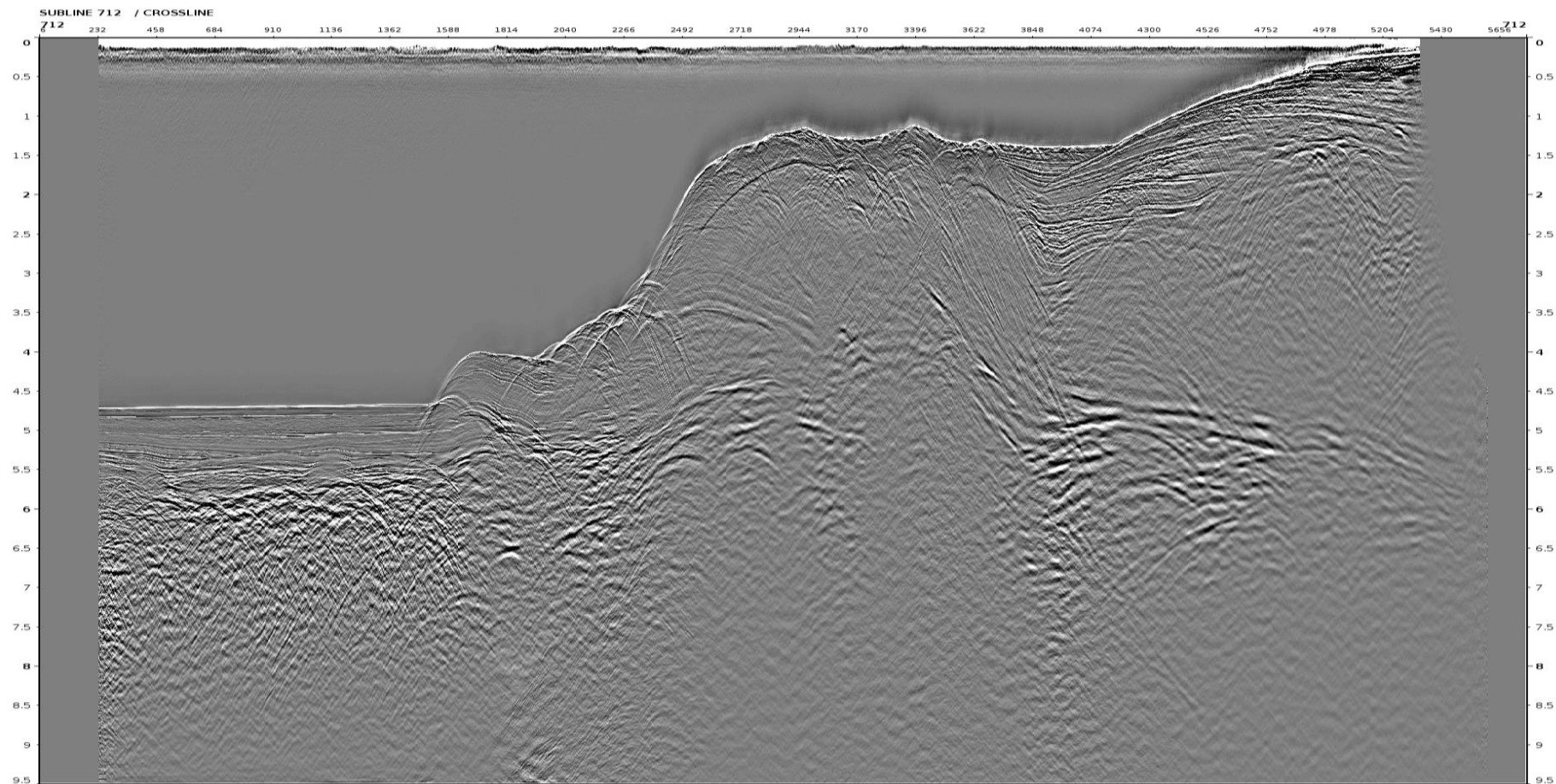
Difference before - after

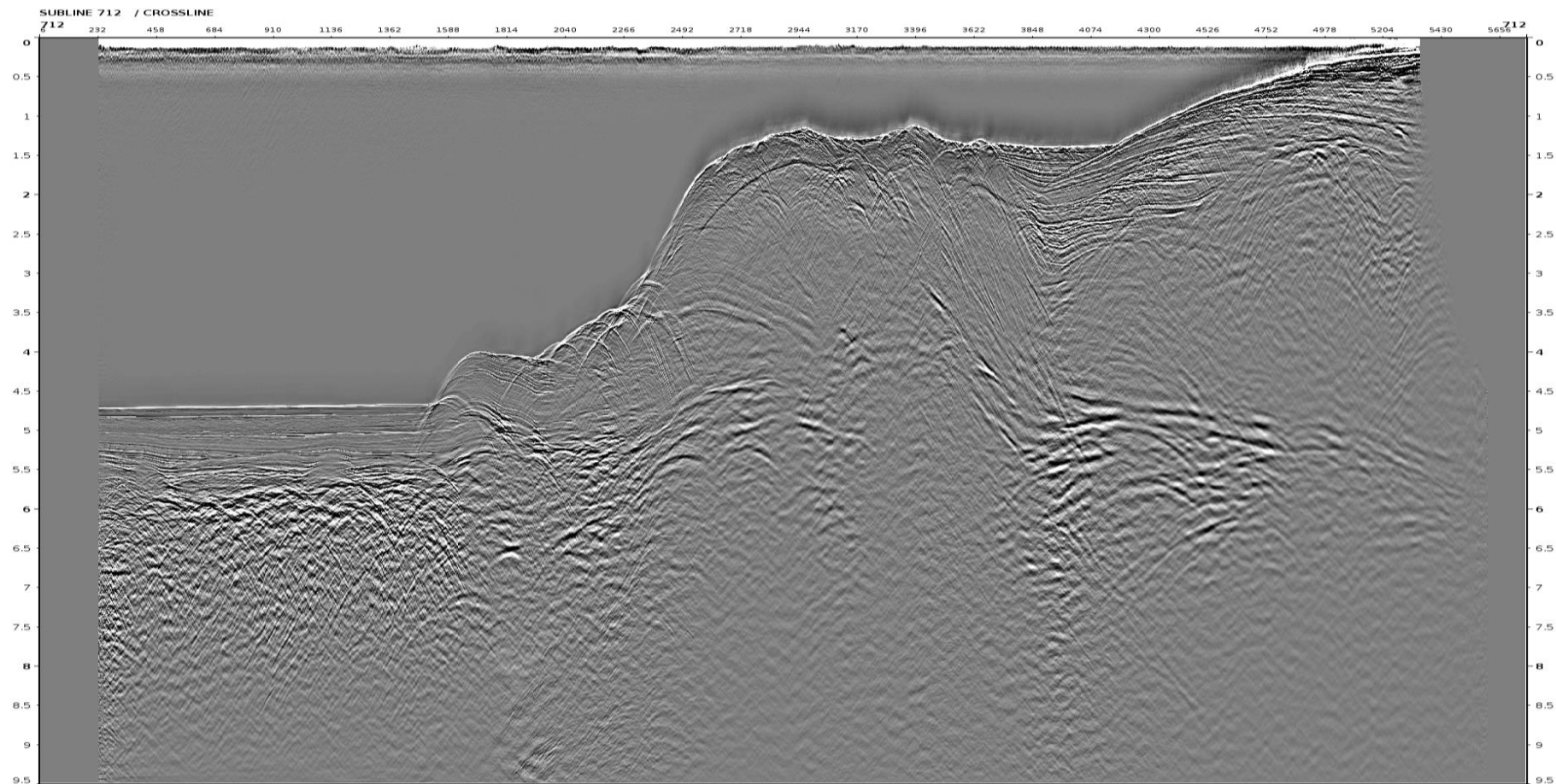
26



Stack

- subline 230
- subline 370
- subline 712

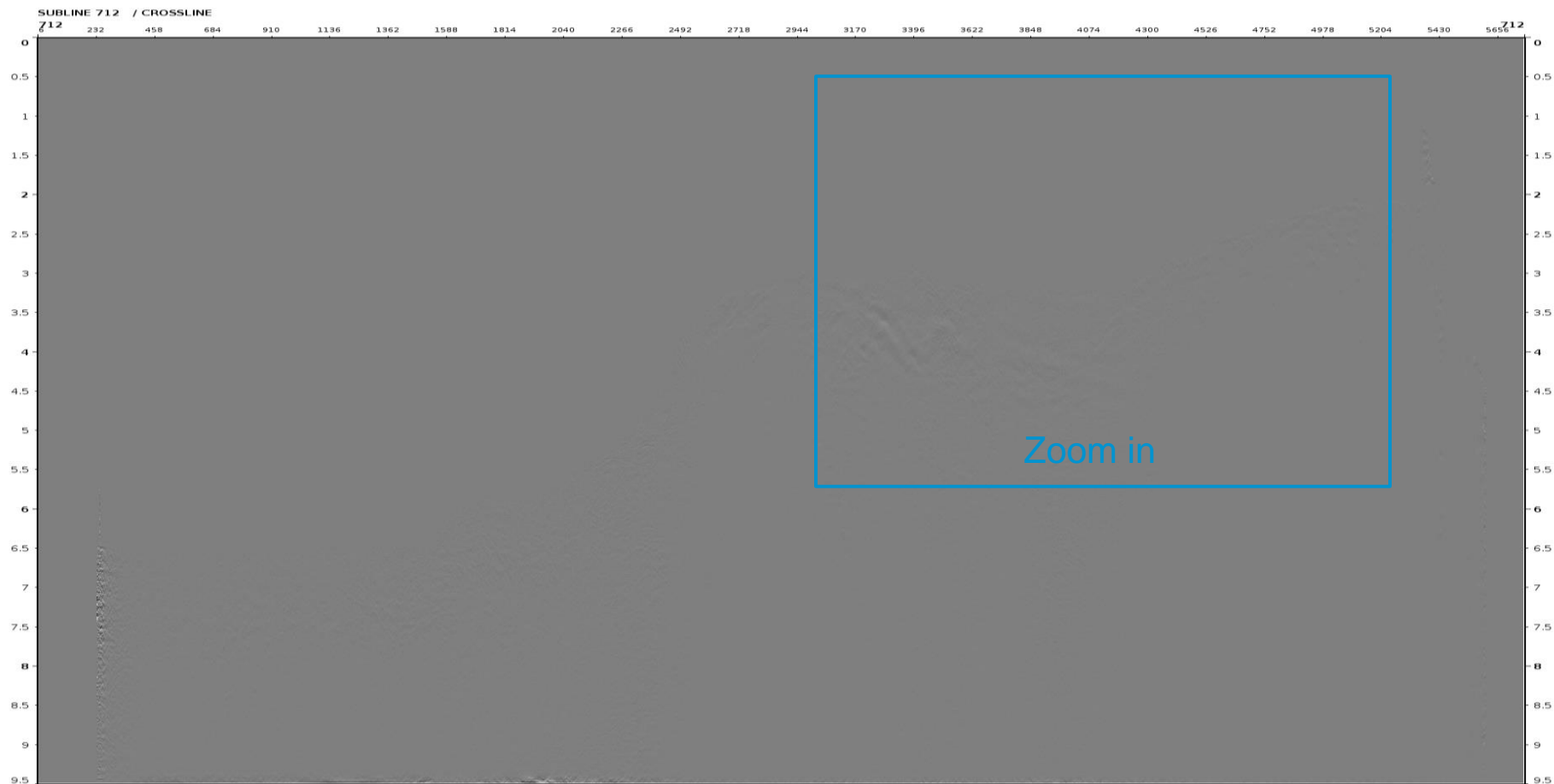






Difference before - after

30

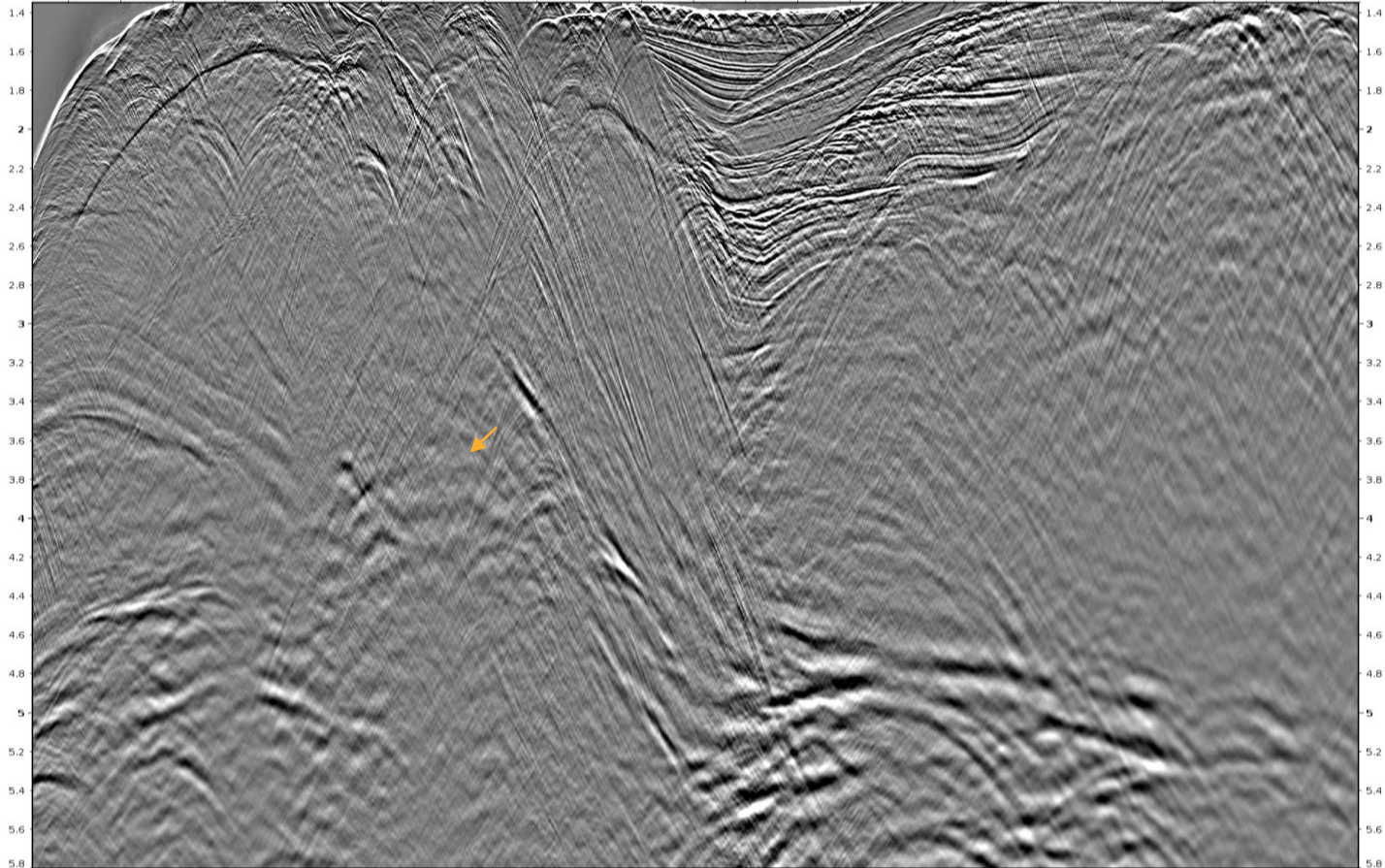




Zoom in Stack before Radon

SUBLINE 712 / CROSSLINE

2550 2656 2762 2868 2974 3080 3186 3292 3398 3504 3610 3716 3822 3928 4034 4140 4246 4352 4458 4564 4670 4776 4882 4988 5094



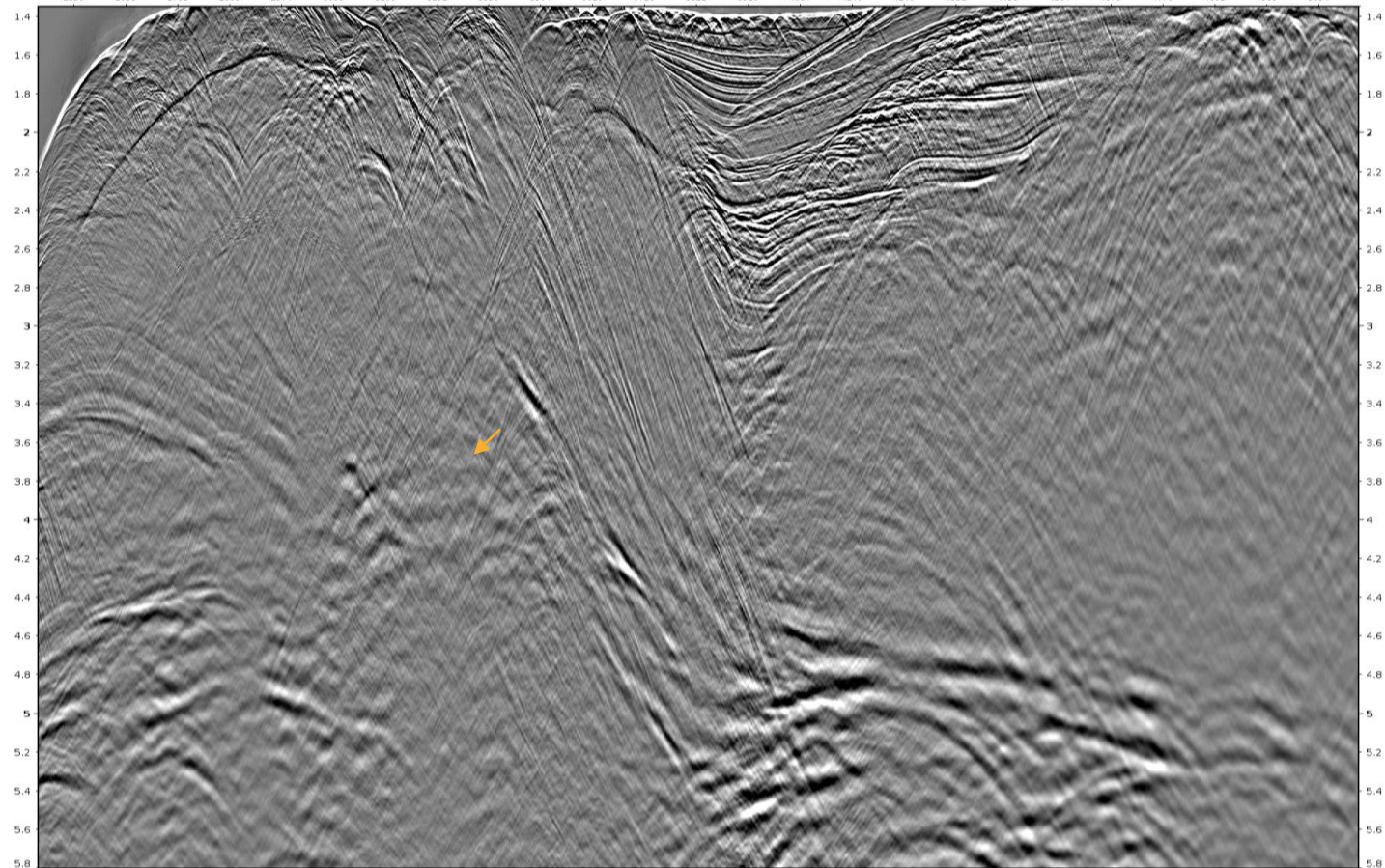


Zoom in Stack after Radon

32

SUBLINE 712 / CROSSLINE

2550 2656 2762 2868 2974 3080 3186 3292 3398 3504 3610 3716 3822 3928 4034 4140 4246 4352 4458 4564 4670 4776 4882 4988 5094

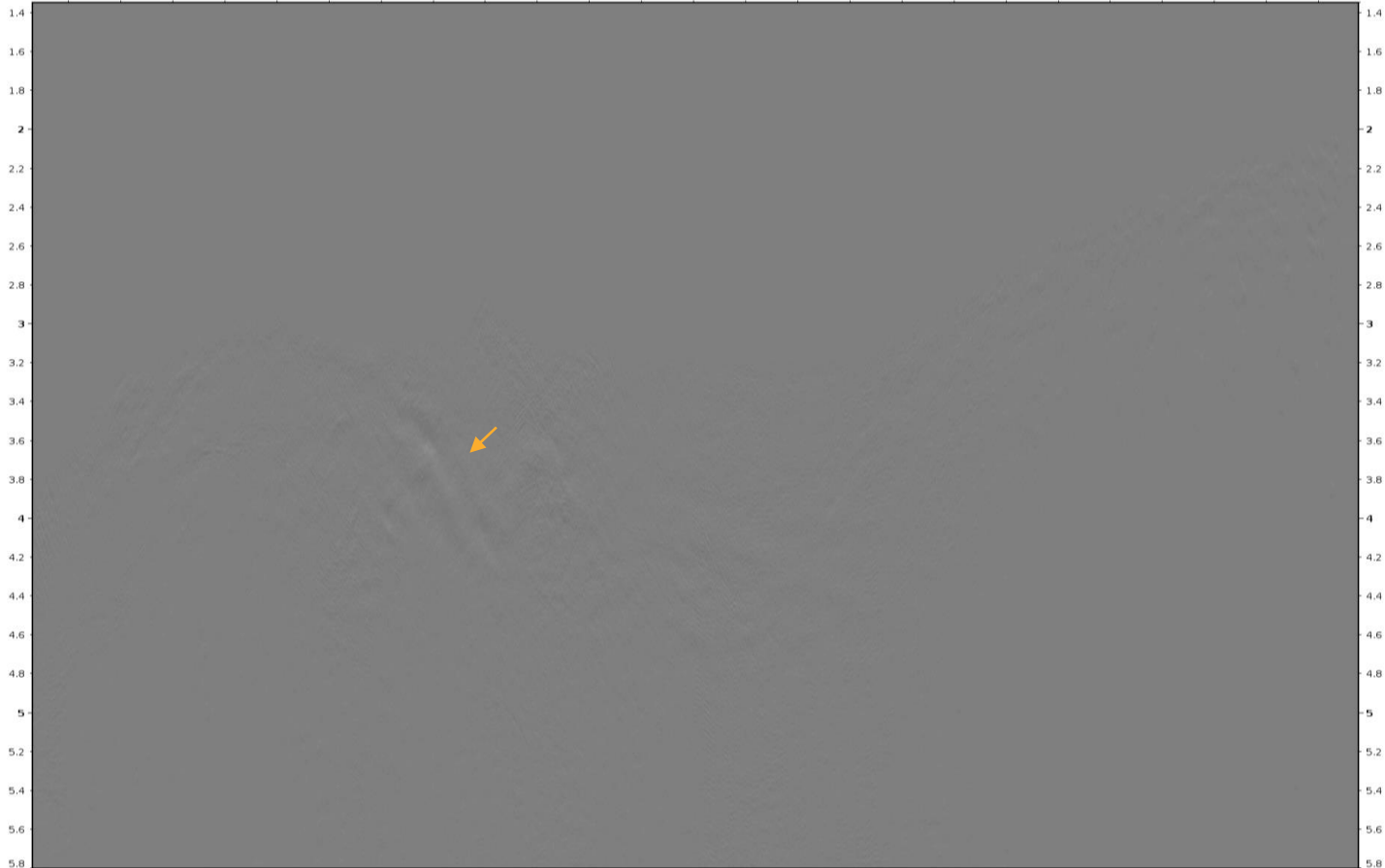




Difference before - after

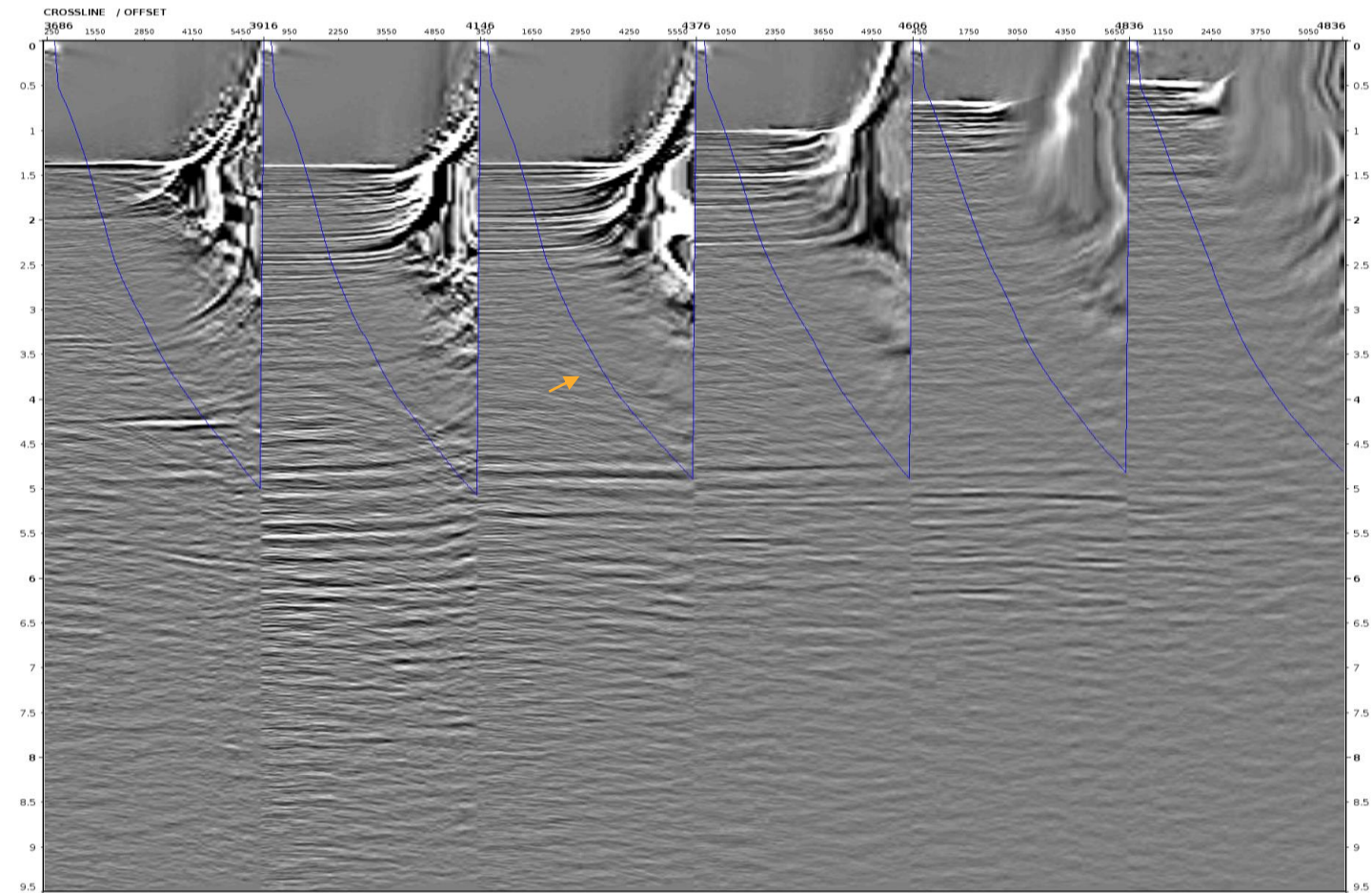
SUBLINE 712 / CROSSLINE

2550 2656 2762 2868 2974 3080 3186 3292 3398 3504 3610 3716 3822 3928 4034 4140 4246 4352 4458 4564 4670 4776 4882 4988 5094



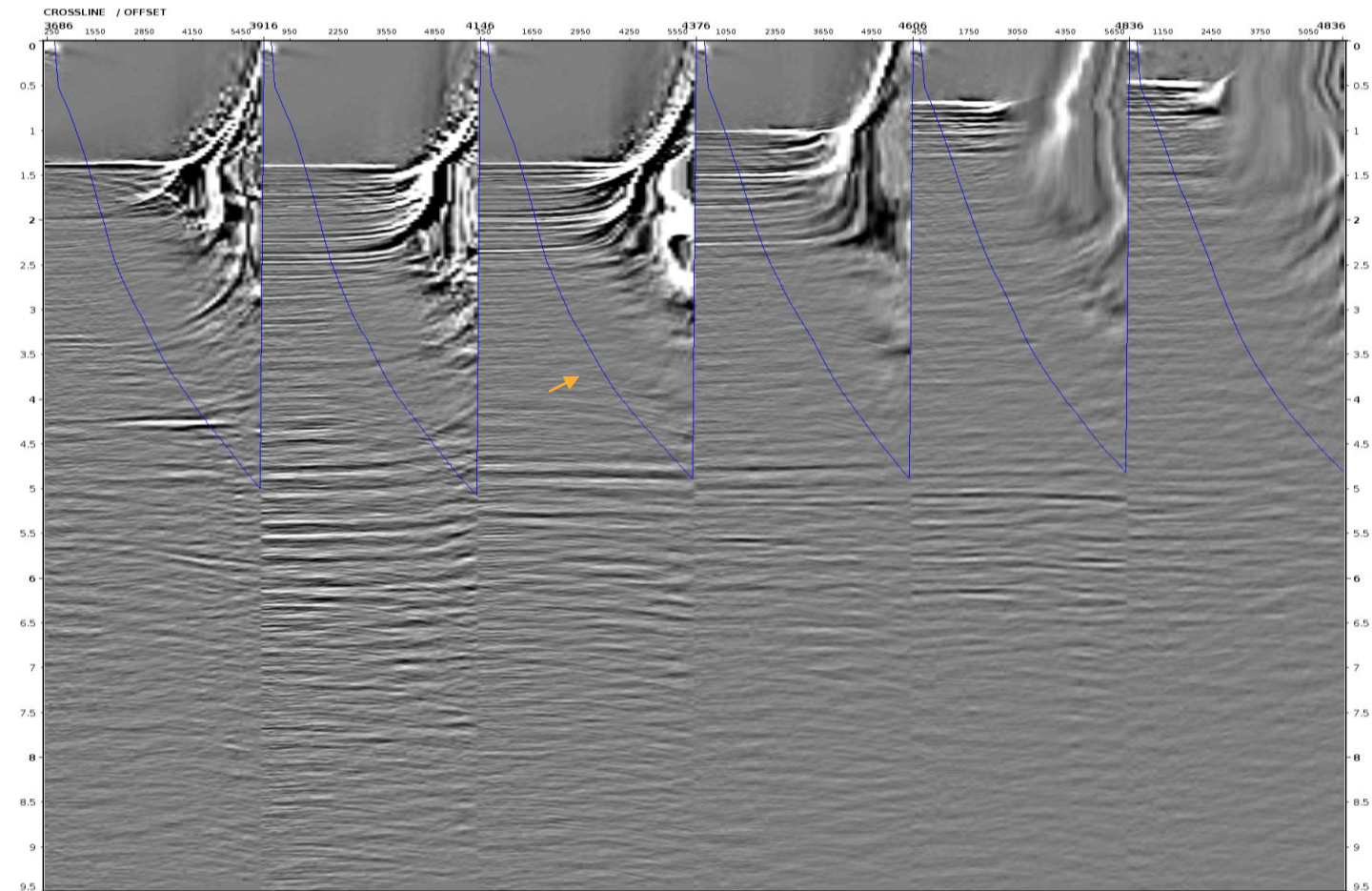
CDP Gathers

- subline 230
- subline 370
- subline 712



- Curling down multiples are observed on CDP gathers.

---- 35° angel mute



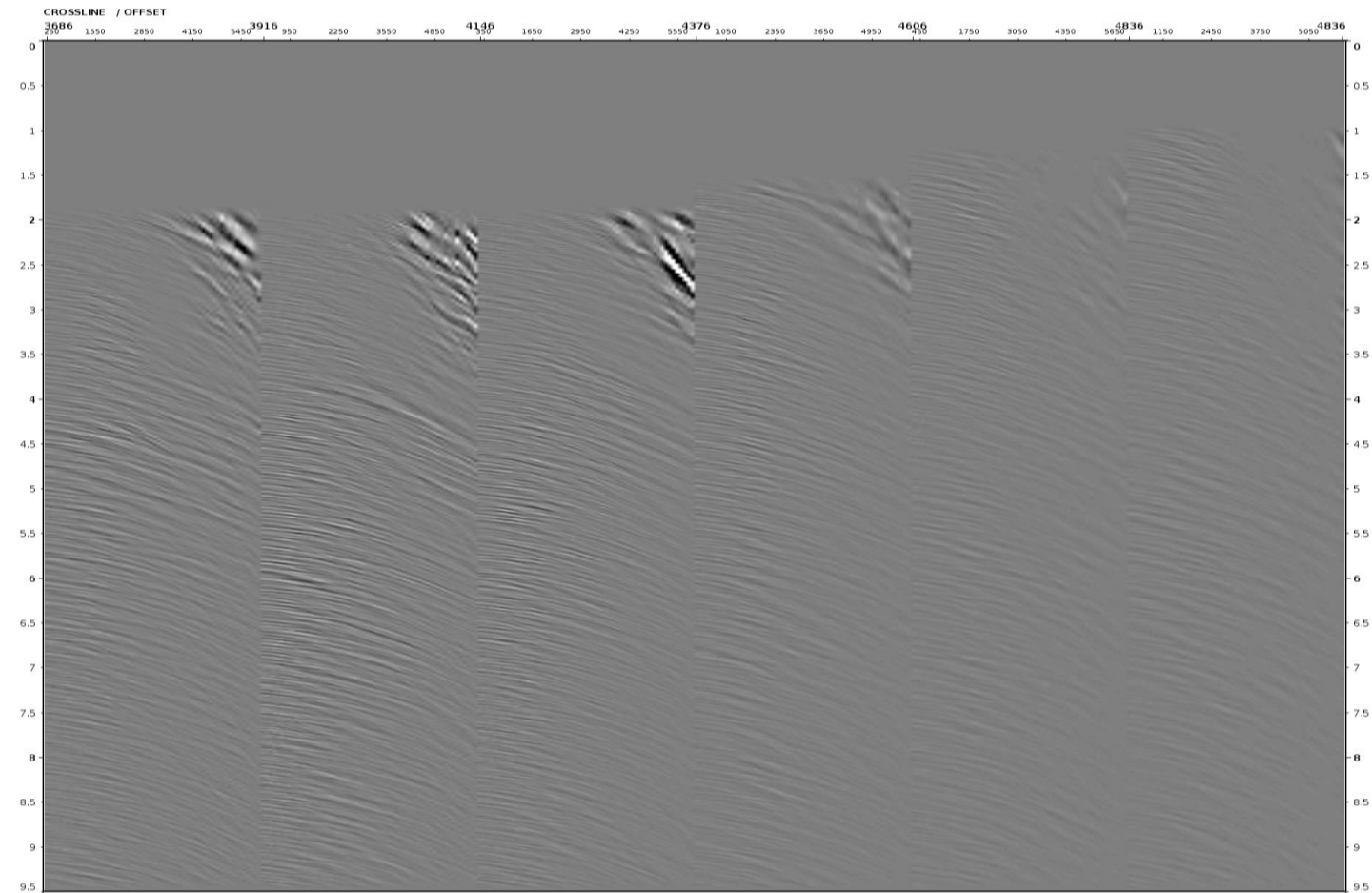
- Curling down multiples are attenuated after Radon demultiple.

---- 35° angel mute



Difference before - after

37



- Radon demultiple remove some curling down multiples on CDP gathers. Residuals will be removed after migration.