



Q Analysis and Compensation

NZ 3D Processing

21 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
22. Footprint Removal
23. Diffracted Multiple Removal
24. Common Offset Denoise
25. Q Analysis and Compensation

- **Objective:**

To apply Q value which account for the earth absorption effect for phase compensation.

- **Procedure:**

Window: 500 – 1500ms; 2500 – 4500ms

Q value : 105

Frequency window for analysis: 4 ~ 55Hz

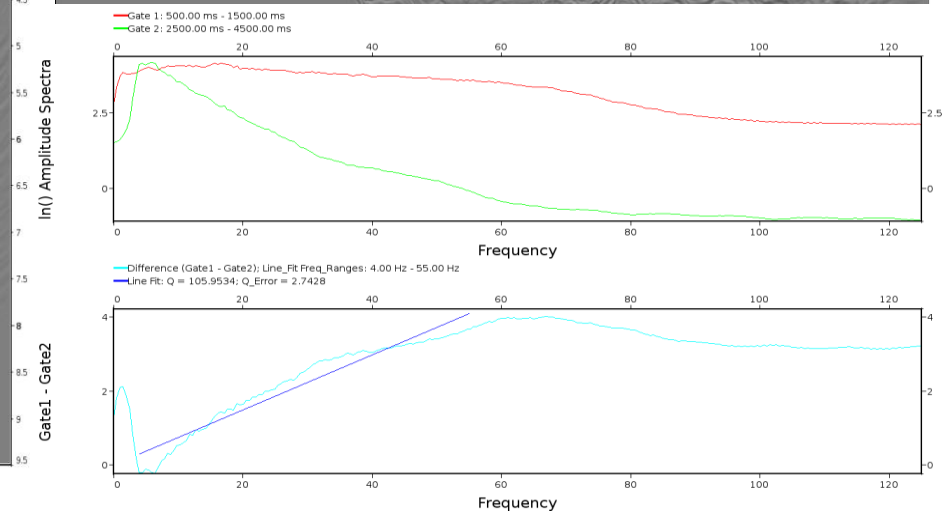
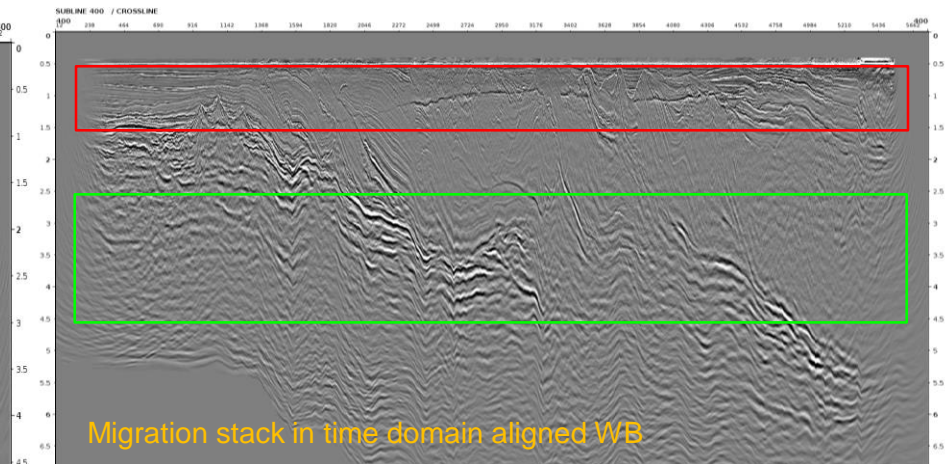
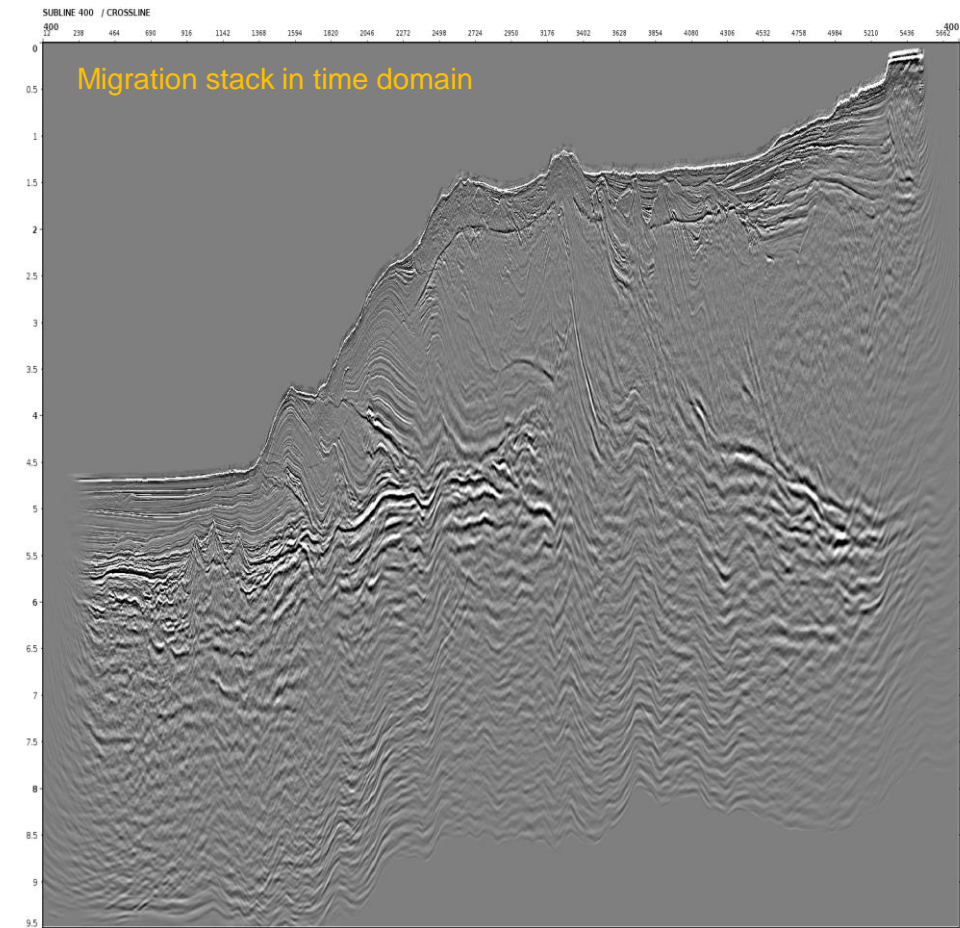
Reference frequency: 35Hz

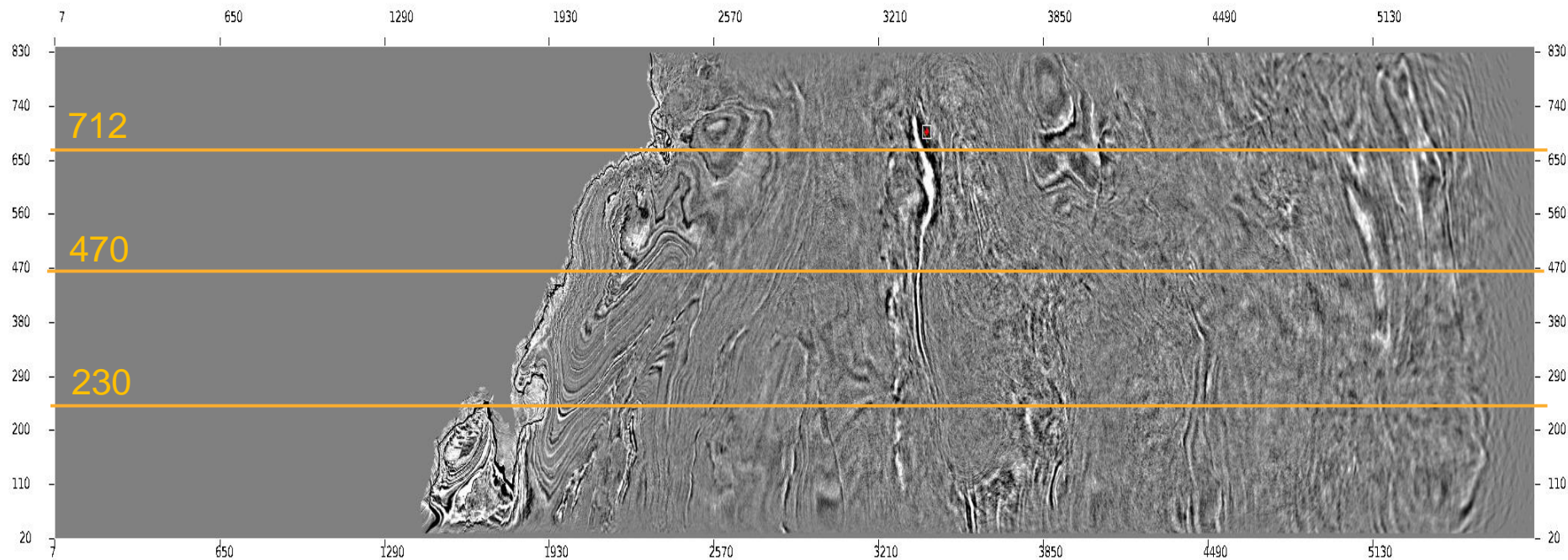
- **Display:**

Stack

- **Observation & Recommendation:**

Phase deviation caused by earth absorption is compensated, meanwhile the structure of event keep the same.





Subline



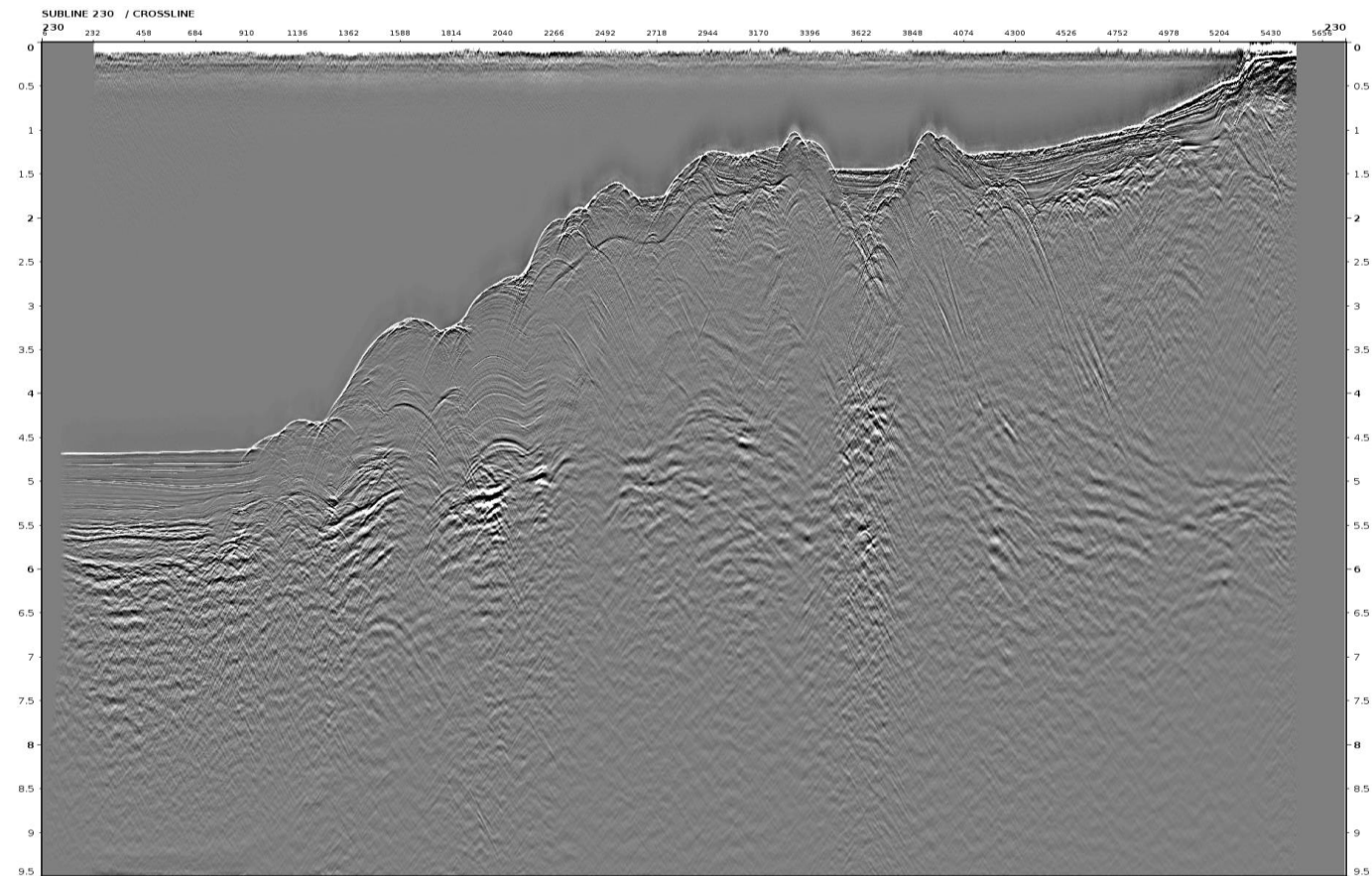
Crossline

Stack

- subline 230
- subline 470
- subline 712

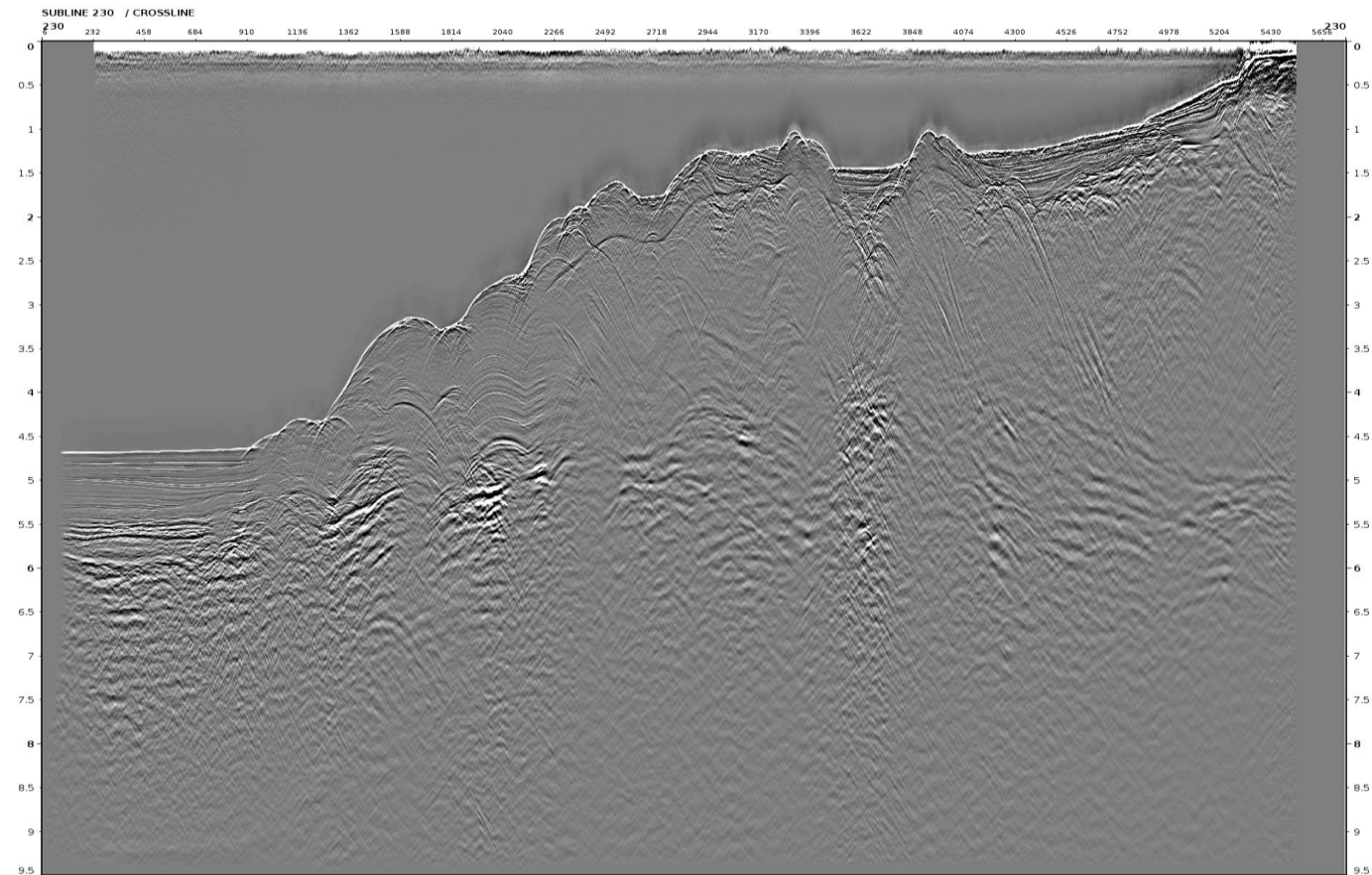
Stack before Q Phase Compensation

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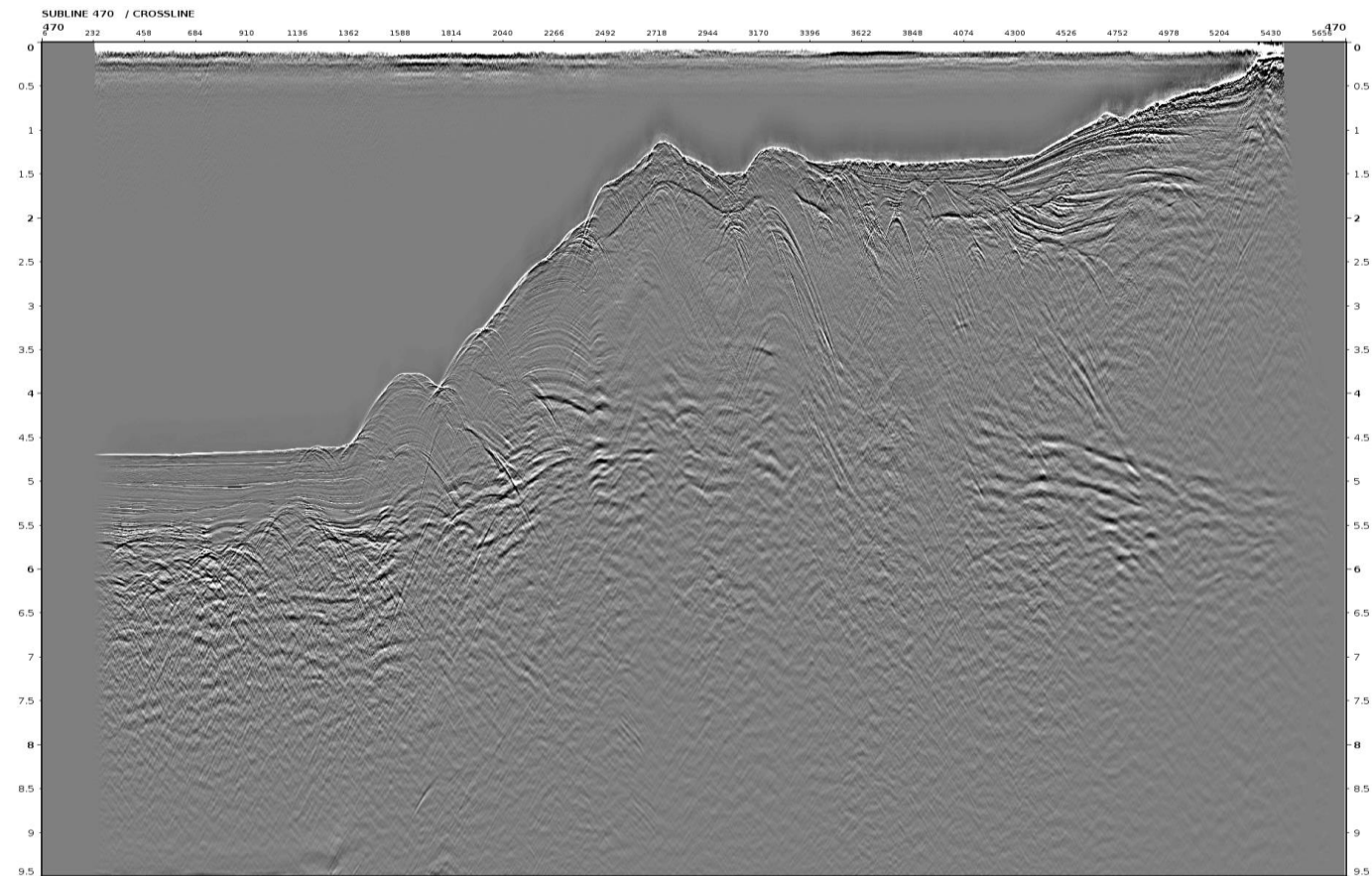
Stack after Q Phase Compensation

8



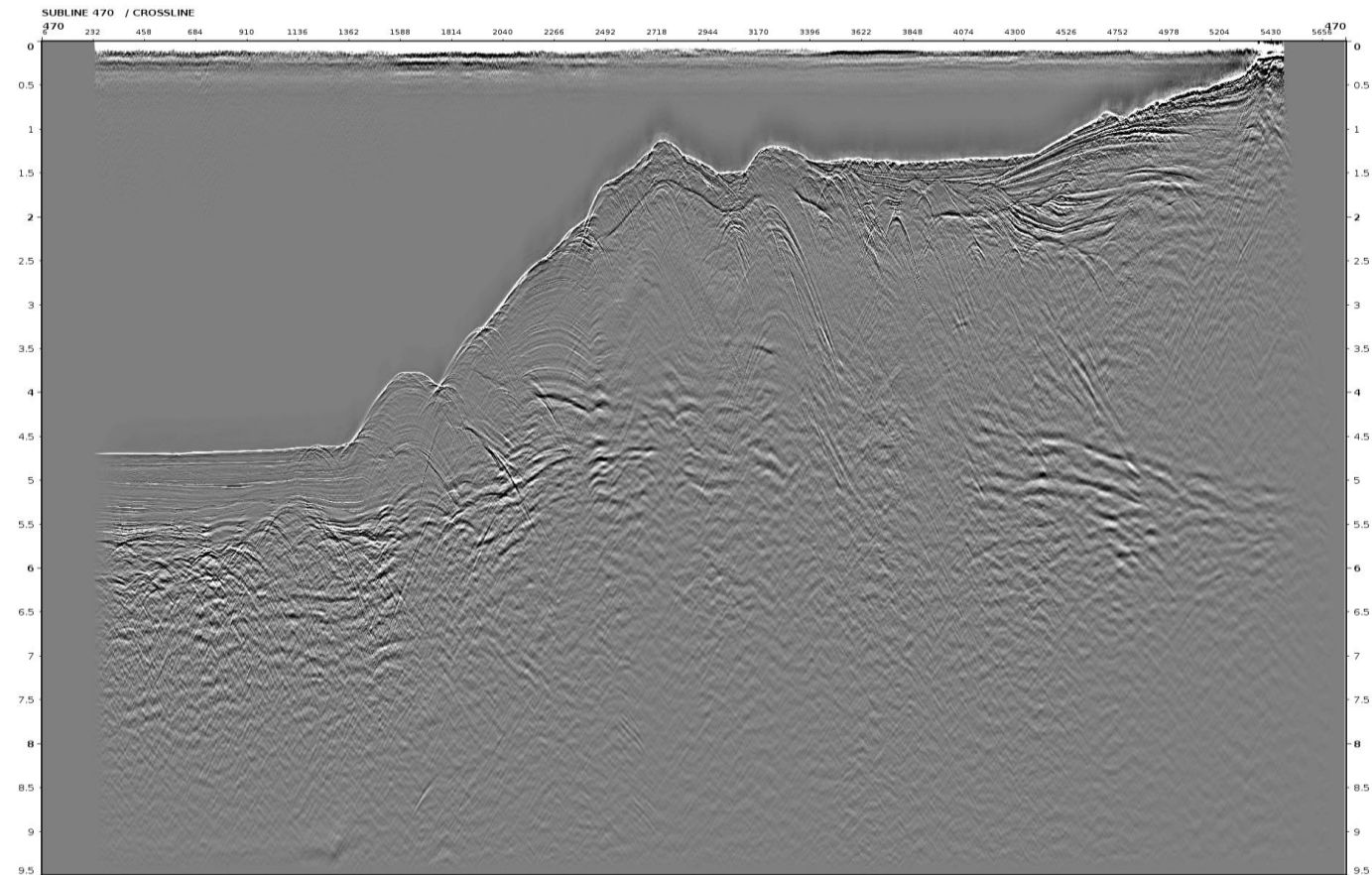
Stack

- subline 230
- **subline 470**
- subline 712



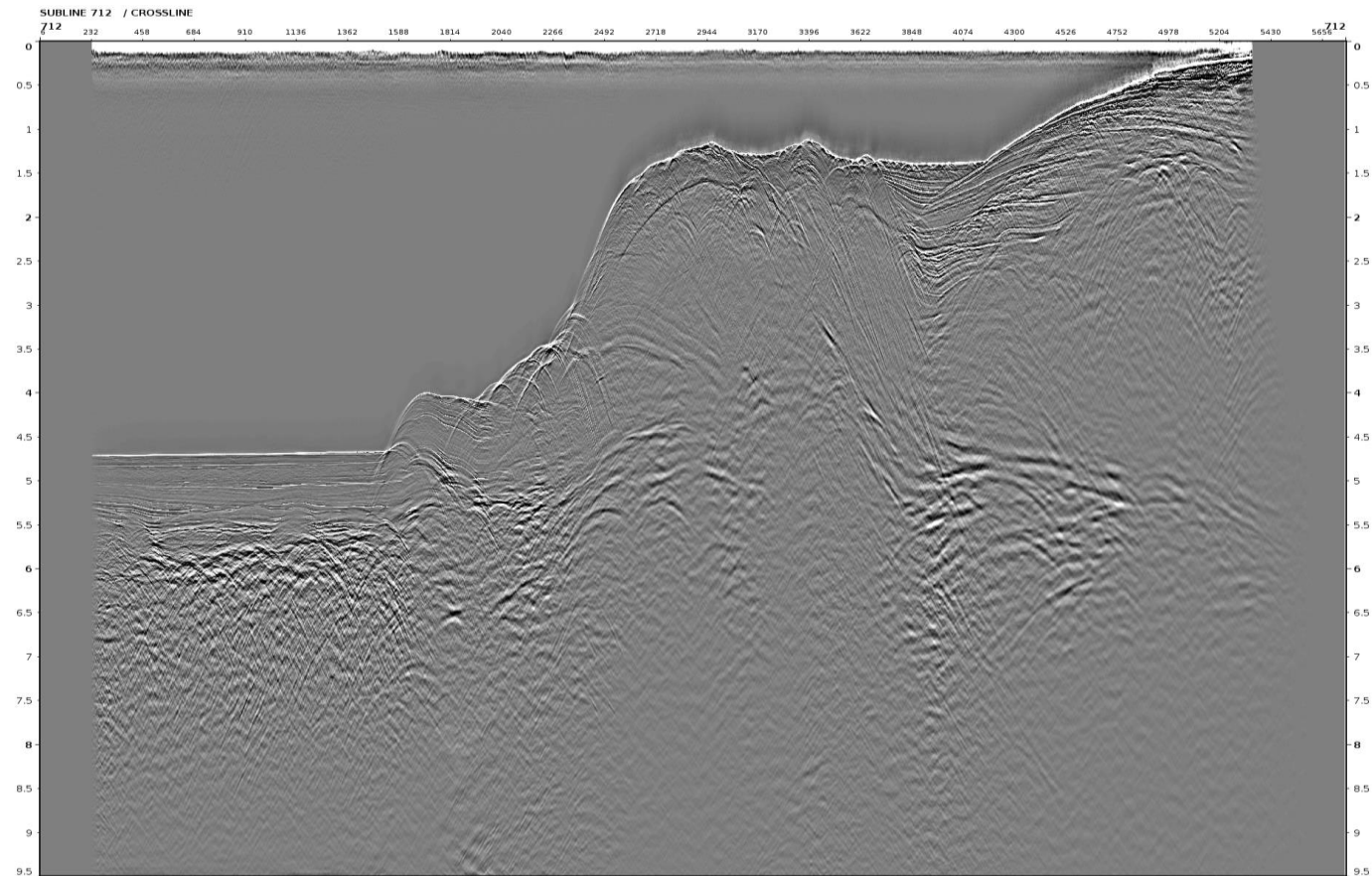
Stack after Q Phase Compensation

11



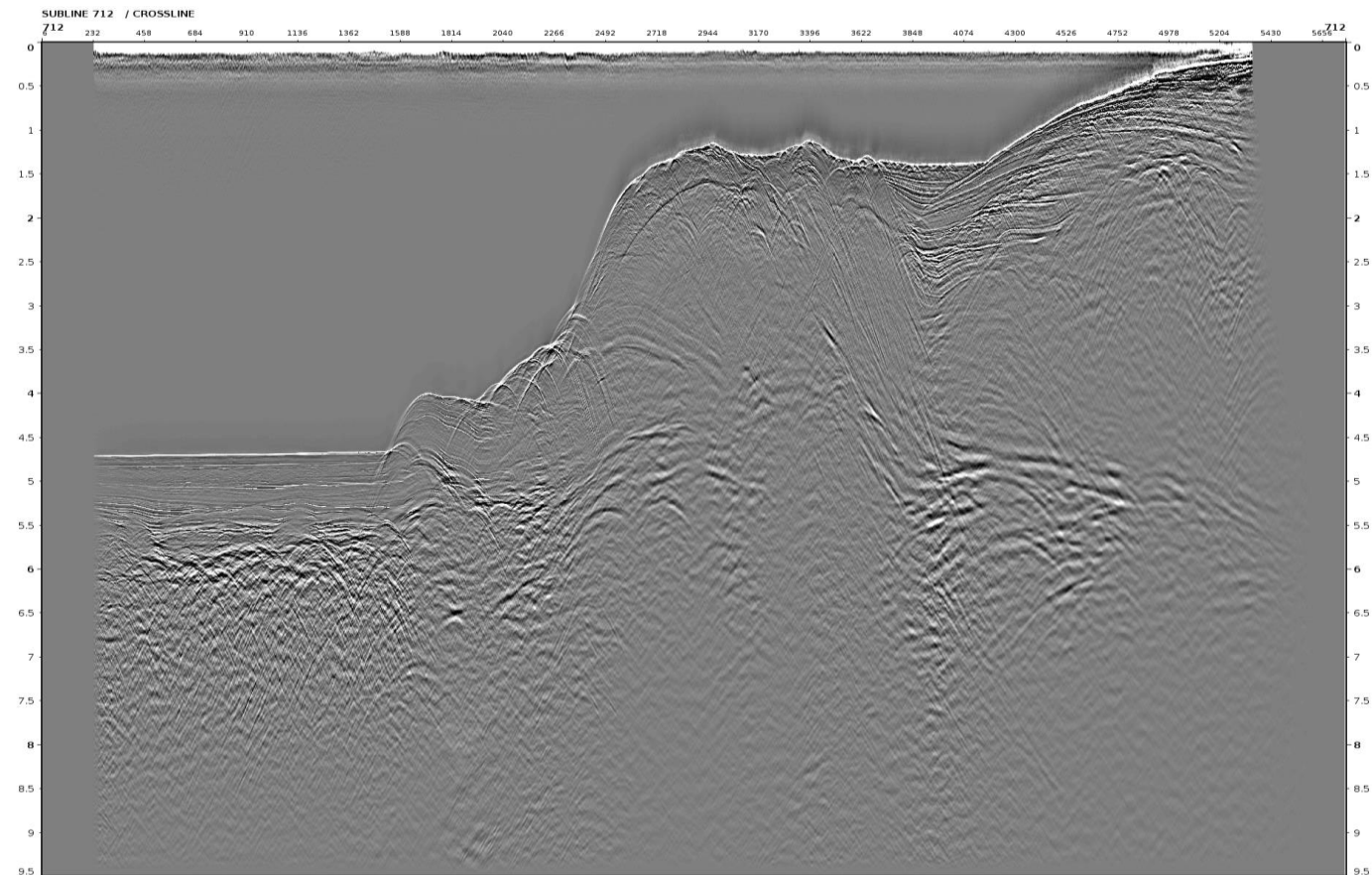
Stack

- subline 230
- subline 470
- subline 712



Stack after Q Phase Compensation

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- Q phase compensates phase deviation caused by the earth absorption.
- We will apply Q amplitude compensation on post migrated dataset.