Post Migration Denoise

NZ 3D Processing

16 June 2021

INSTITUTE FOR GEOPHYSICS

cgg.com

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Processing flow

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
26. Final TTI Kirchhoff Migration
27. Convert from Depth to Time Domain
28. High Density Automatically Velocity Analysis
29. Radon Demultiple
30. Trim Static Correction
31. Post Migration Denoise

Outline

- **Objective:**

  To further attenuate noise energy on post migration dataset.

- **Procedure:**

  Noise attenuation is applied on common offset domain.
  Target noise – migration swing & residual diffracted multiple.
  Noise are separated by primary dipping information.

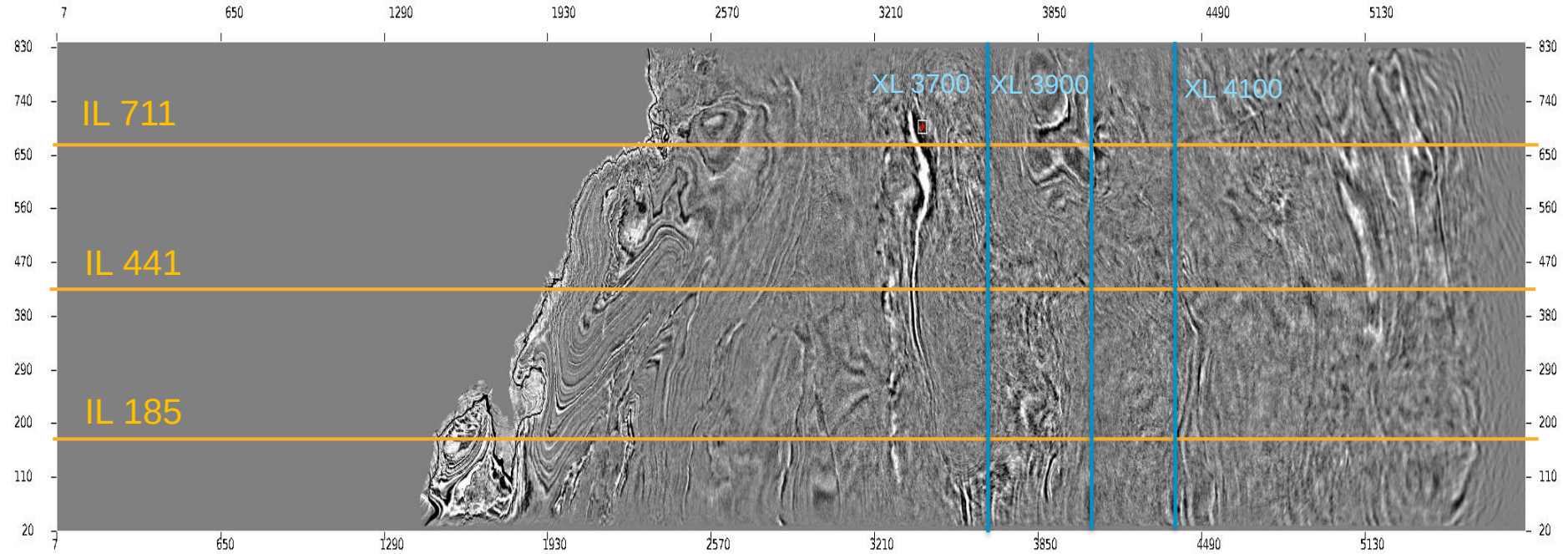
- **Display:**

  Depth stack (subline & crossline).

- **Observation & Recommendation:**

  Migration swing energy is reduced, residual diffracted multiple energy is attenuated while primaries is preserved. We recommend to apply post migration denoise for production.

Test location



Subline

Crossline

IL 185

- Depth stack

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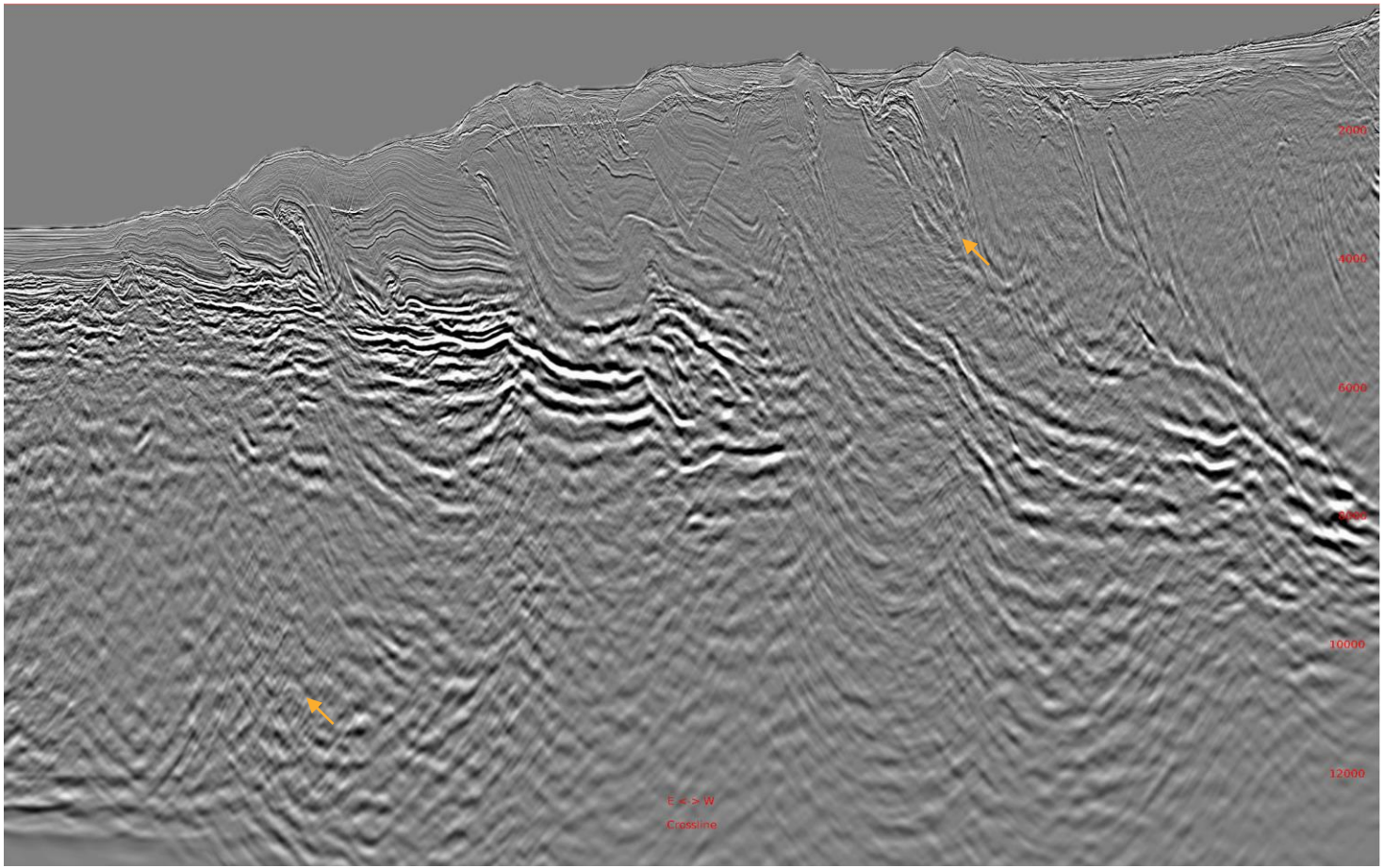
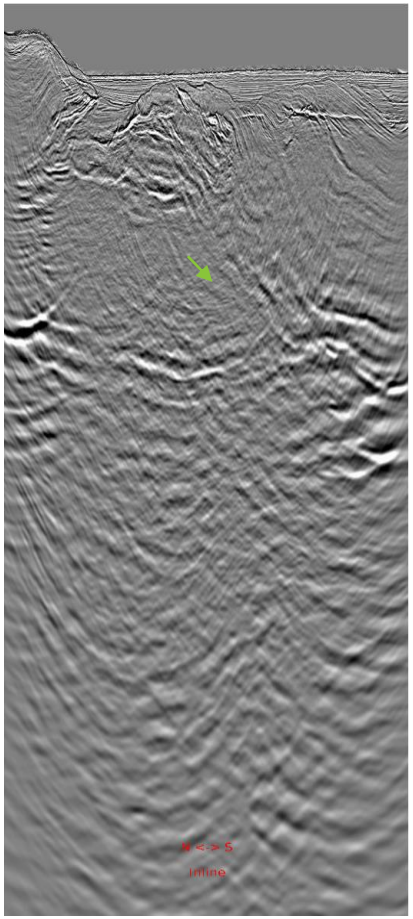
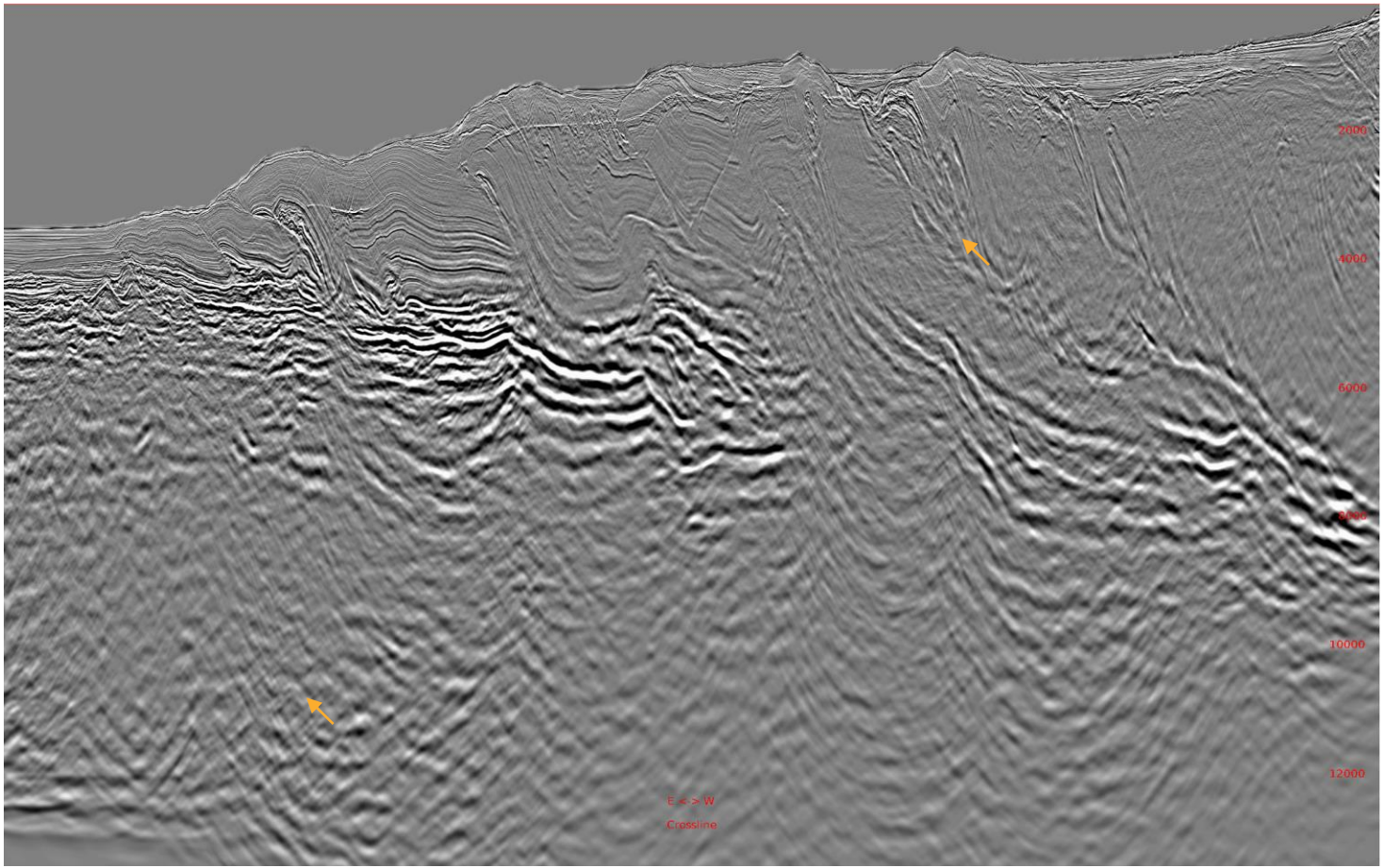
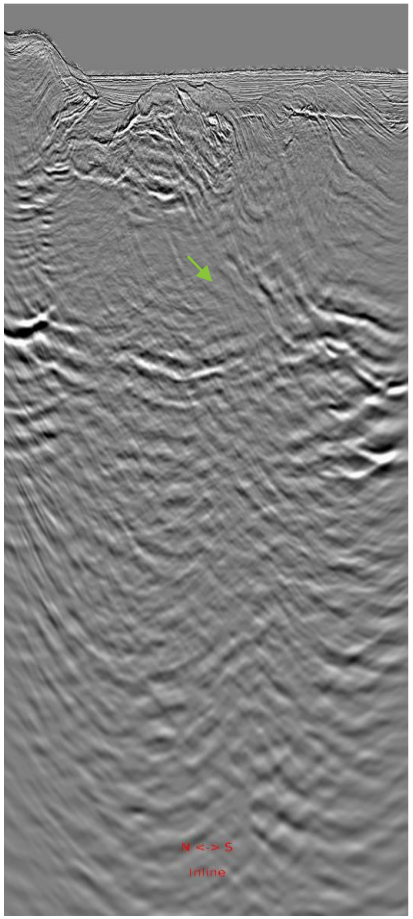
Depth Stack IL 185 & XL 3700 before Denoise



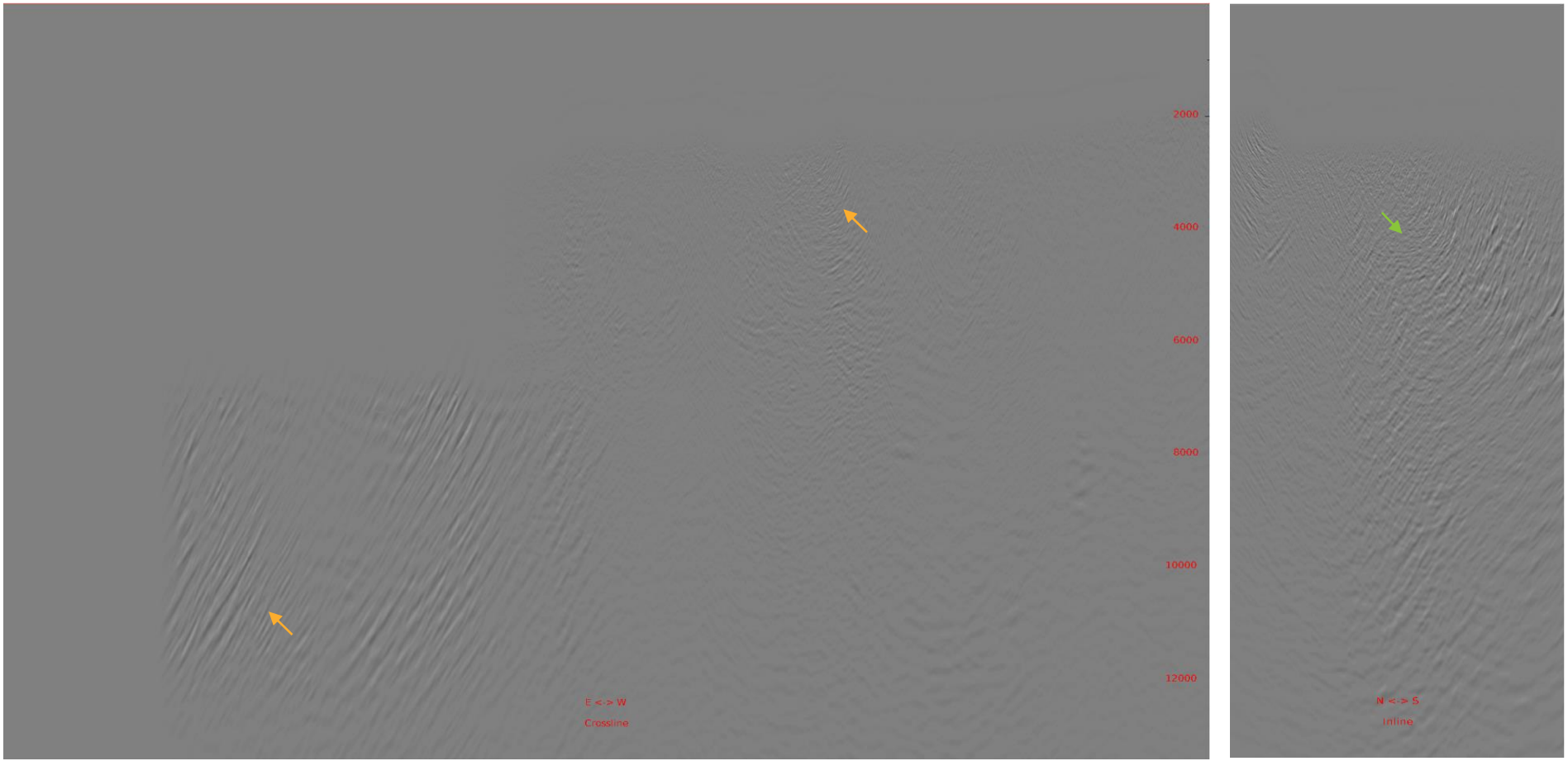


Depth Stack IL 185 & XL 3700 after Denoise





Difference before – after



IL 441

- Depth stack

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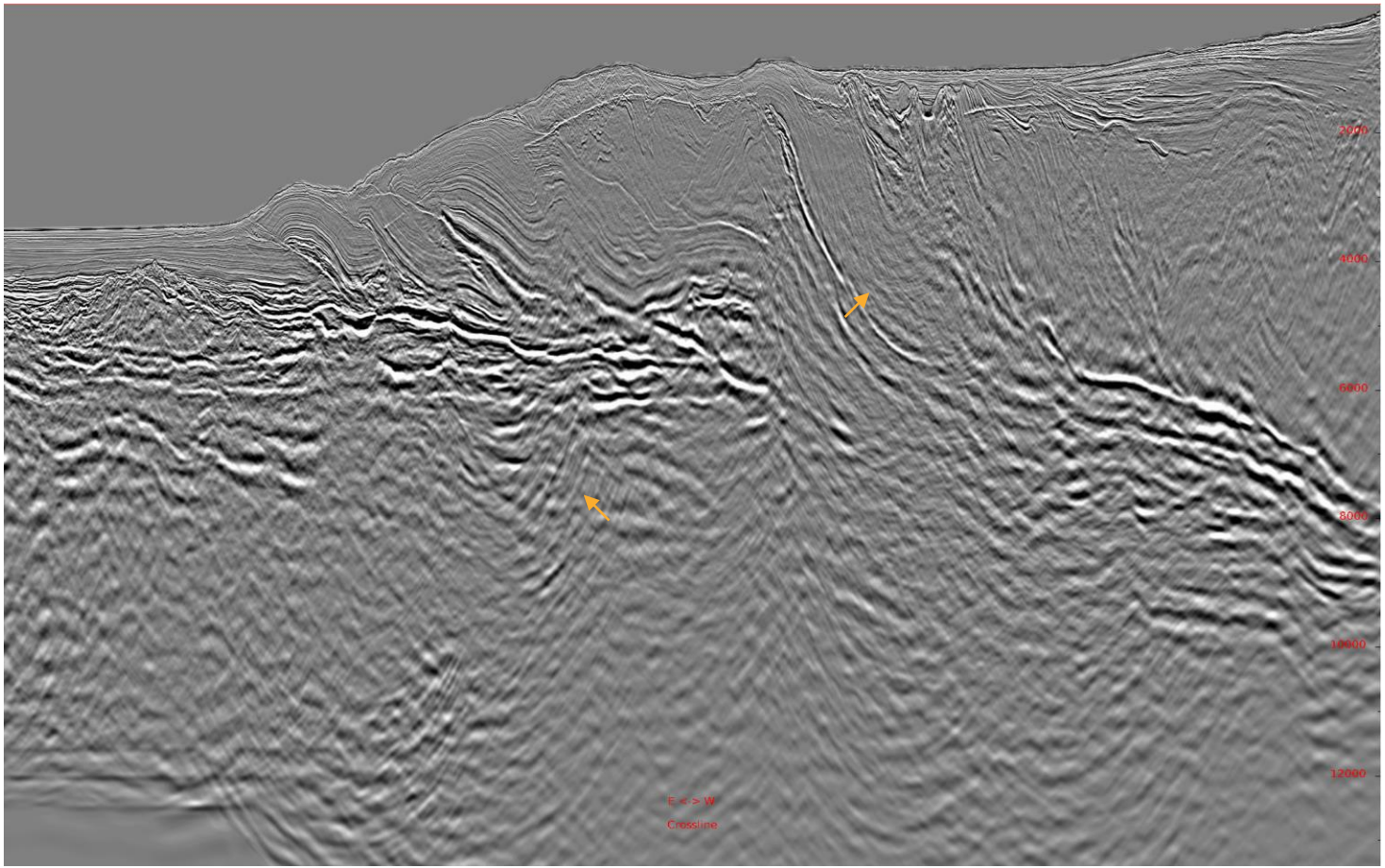
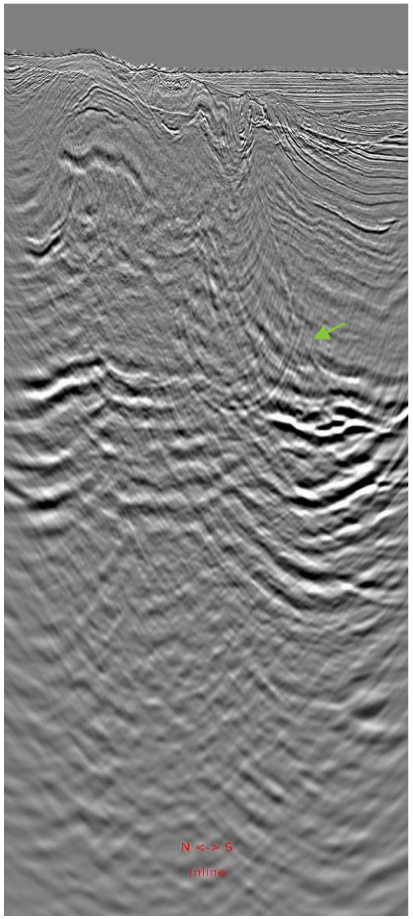
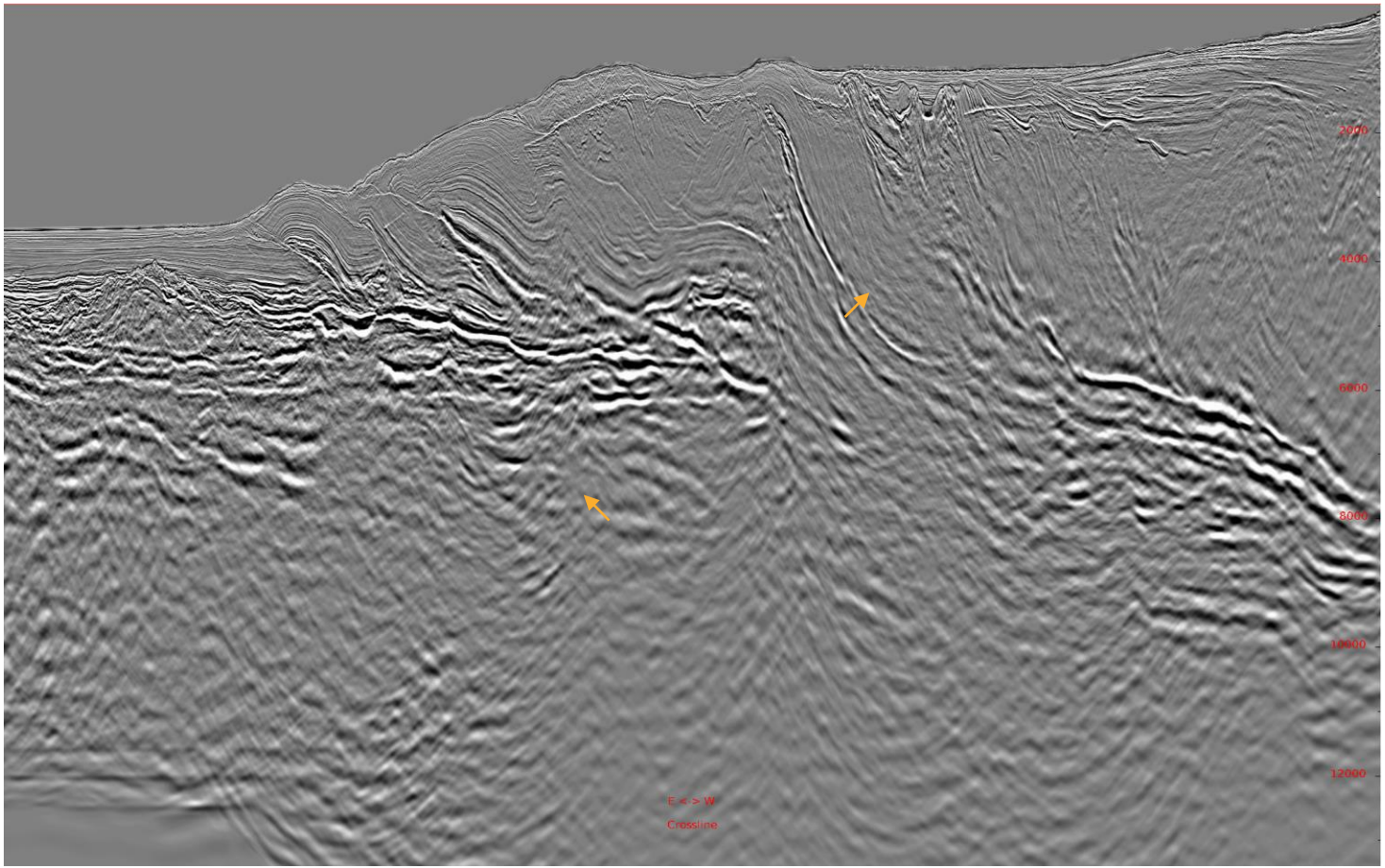
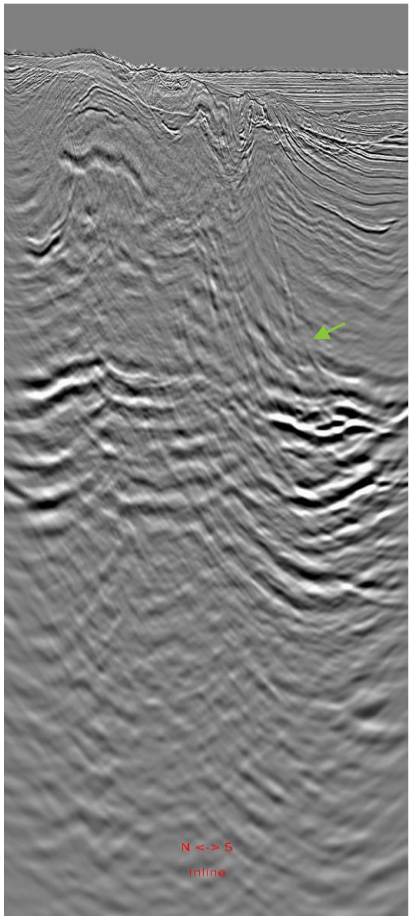
Depth Stack IL 441 & XL 3900 before Denoise



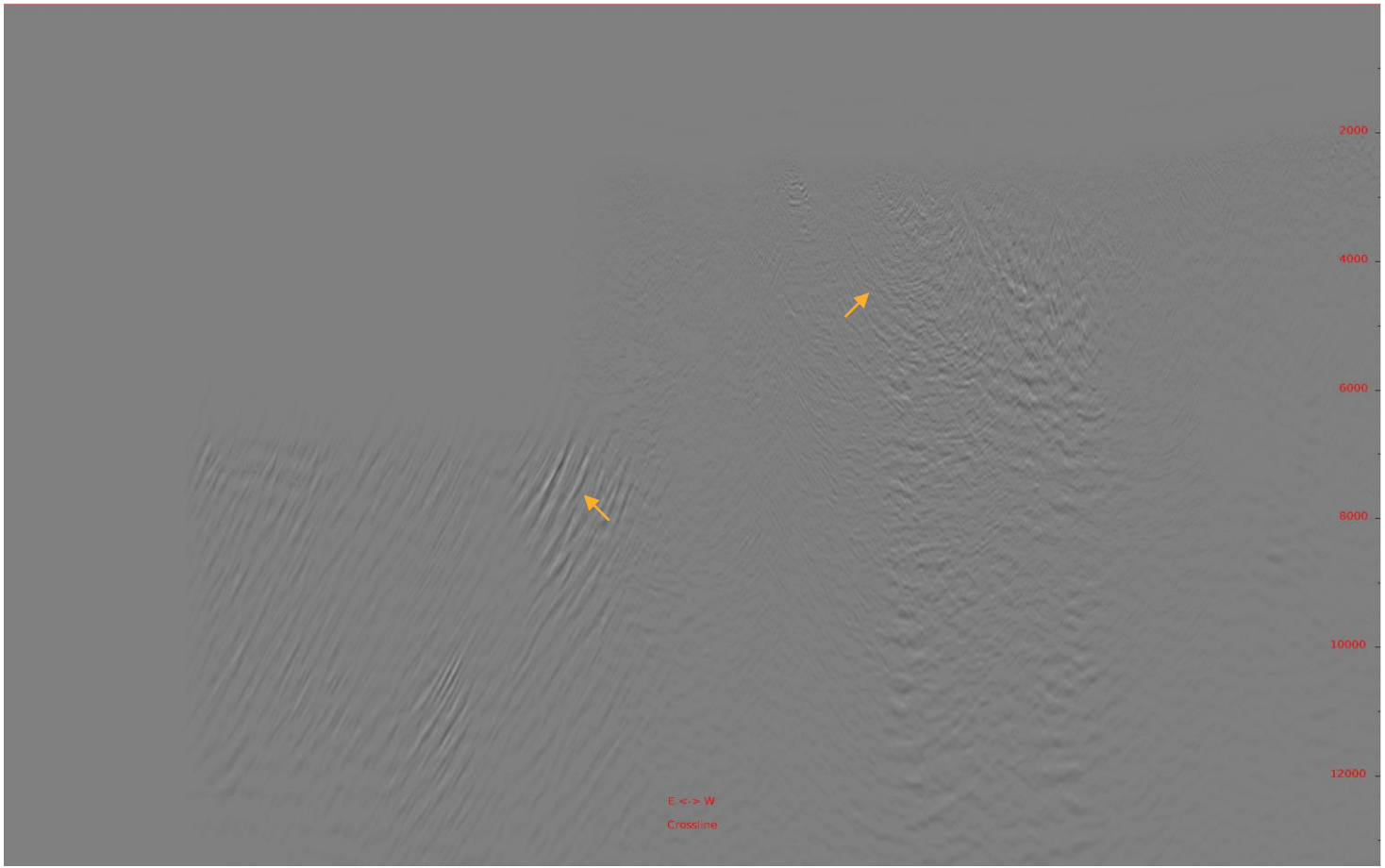


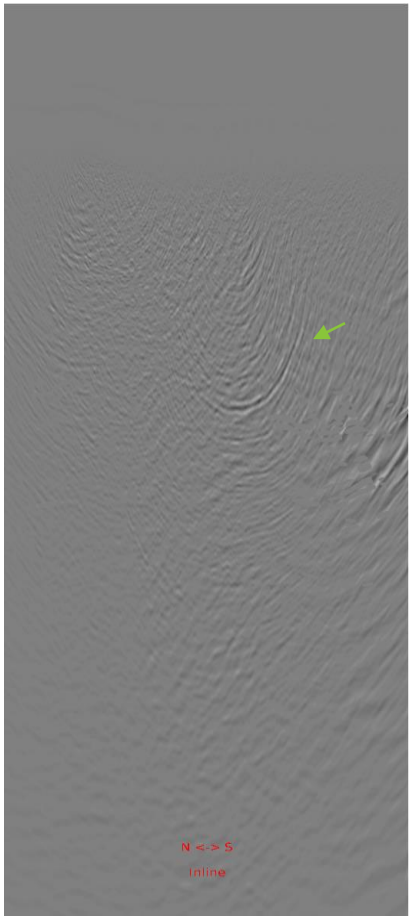
Depth Stack IL 441 & XL 3900 after Denoise





Difference before – after





IL 711

- Depth stack

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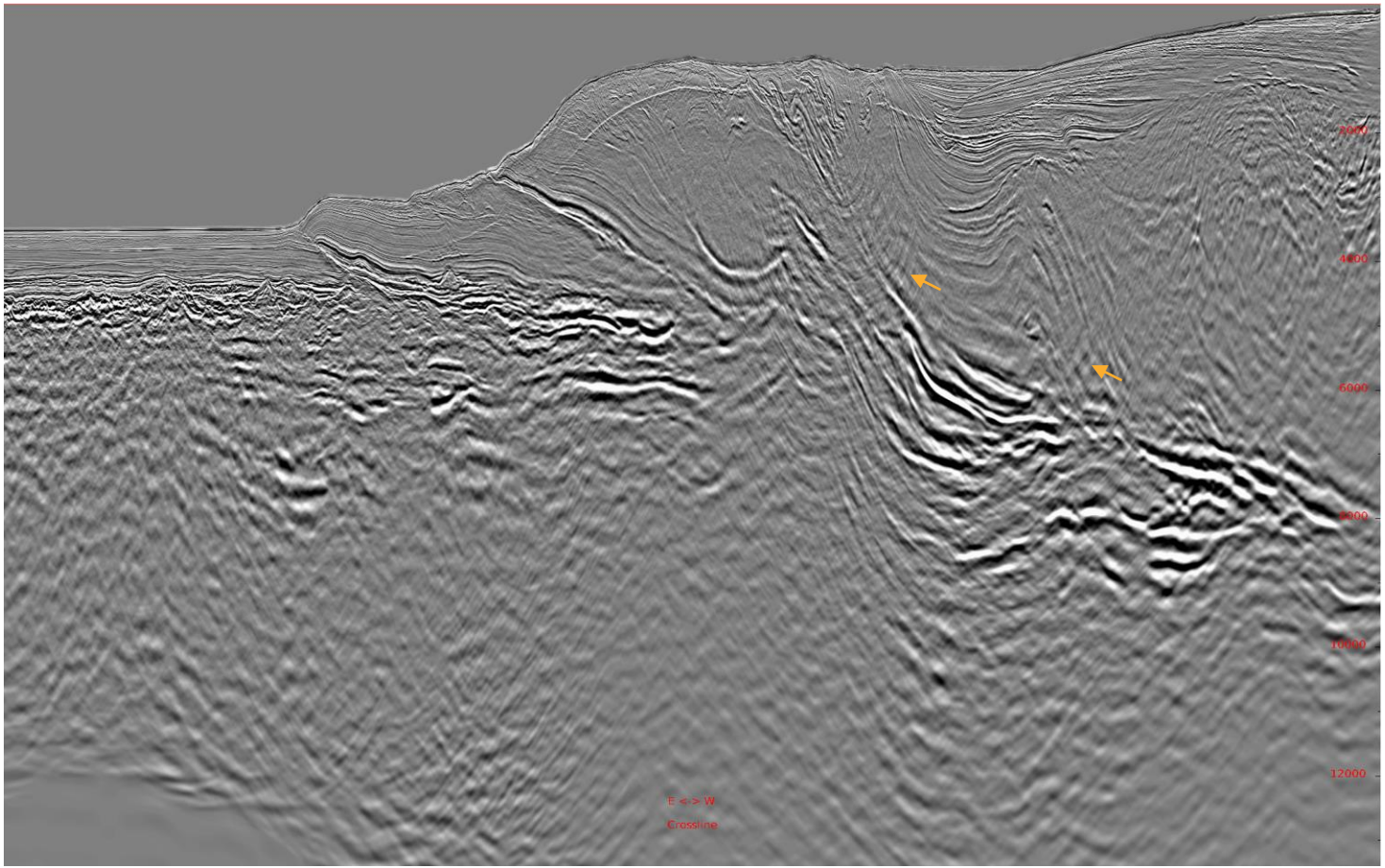
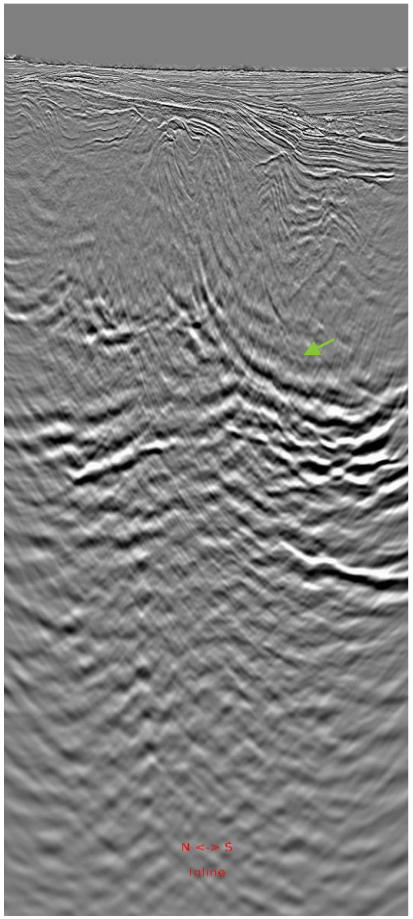
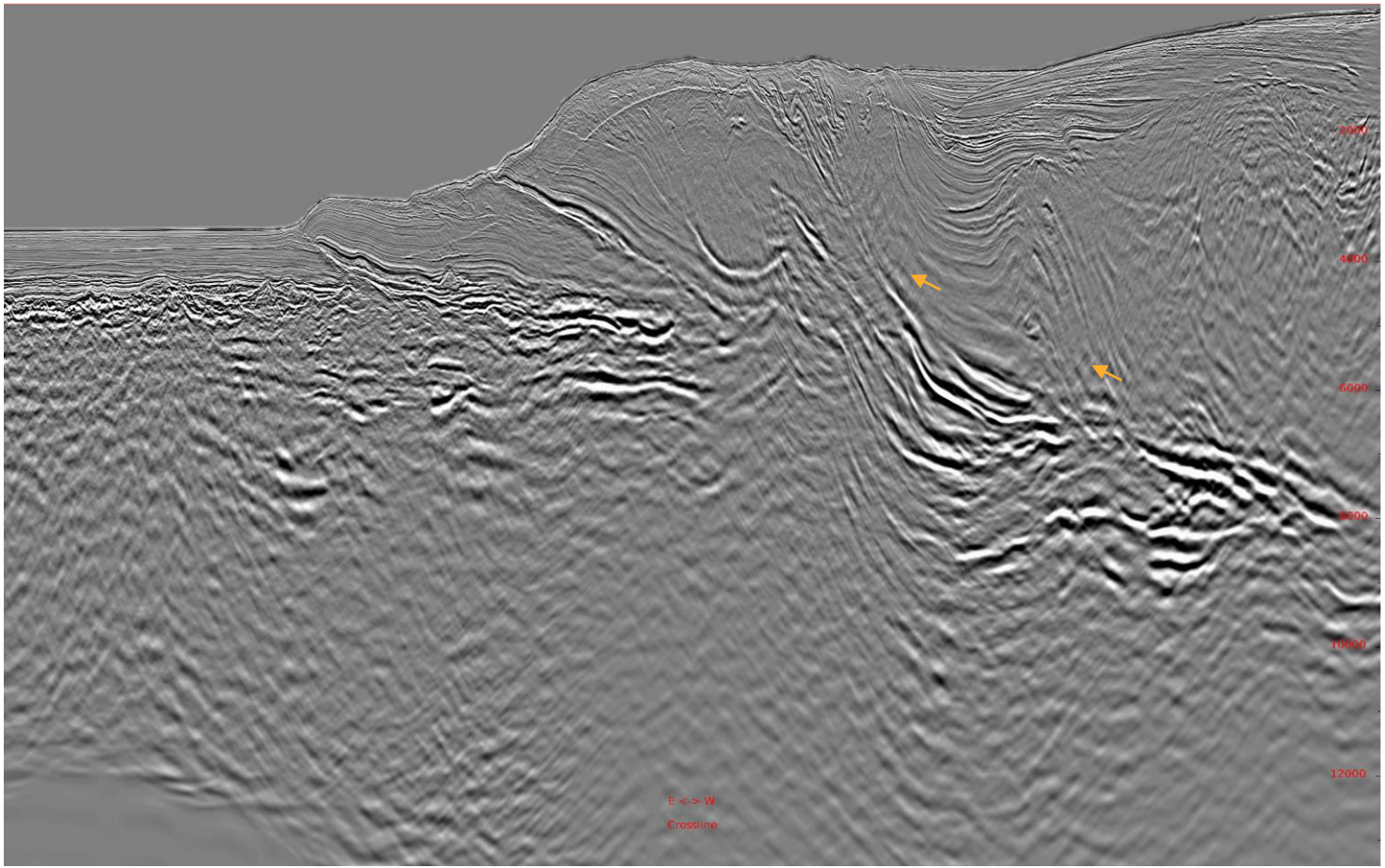
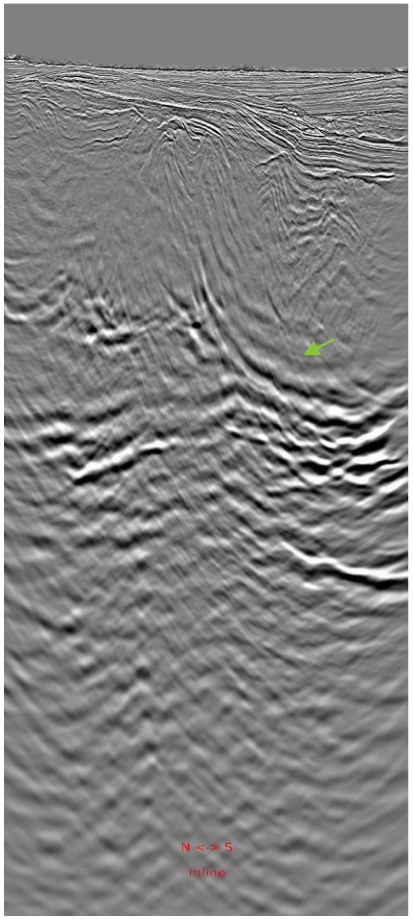
Depth Stack IL 711 & XL 4100 before Denoise



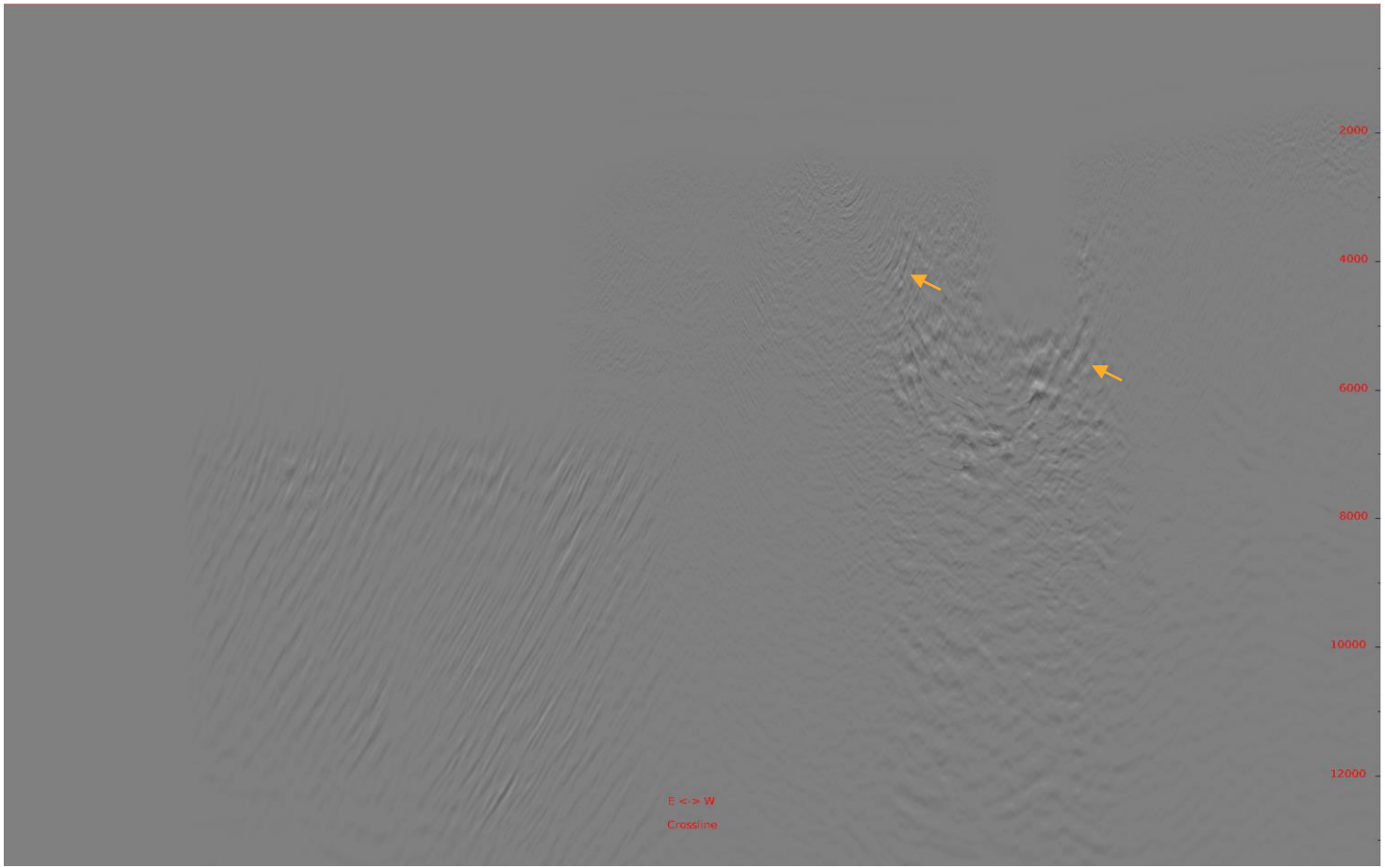


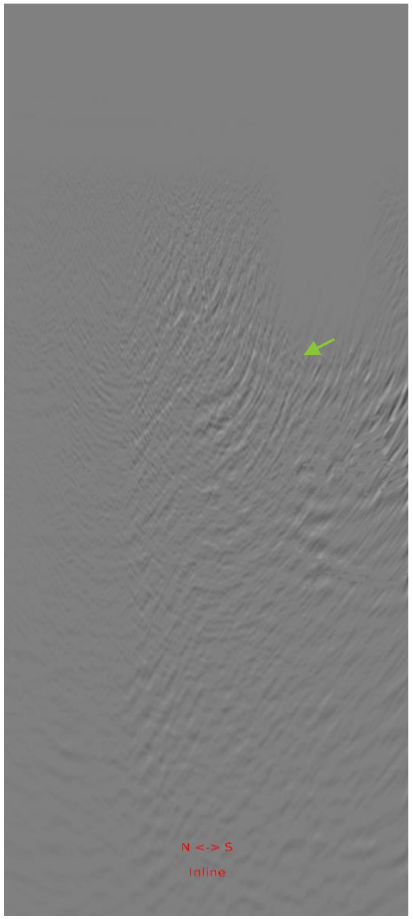
Depth Stack IL 711 & XL 4100 after Denoise





Difference before – after





Summary

- After post migration denoise, migration swing energy is reduced, residual diffracted multiple energy is attenuated while primaries are preserved. We recommend to apply post migration denoise for production.