



IT5 – Part 2

NZ 3D Processing

21 April 2021

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INSTITUTE FOR GEOPHYSICS



- **Objective:**

To further improve deep velocity, especially in the middle and west part.

- **Procedure:**

Following the previous velocity update, scanning tomography is applied on the east side and deep section. Further high resolution tomography is applied to localized area to fine tune the velocity.

- **Display:**

Velocity, migrated depth full stack & gathers.

- **Observation and Recommendation:**

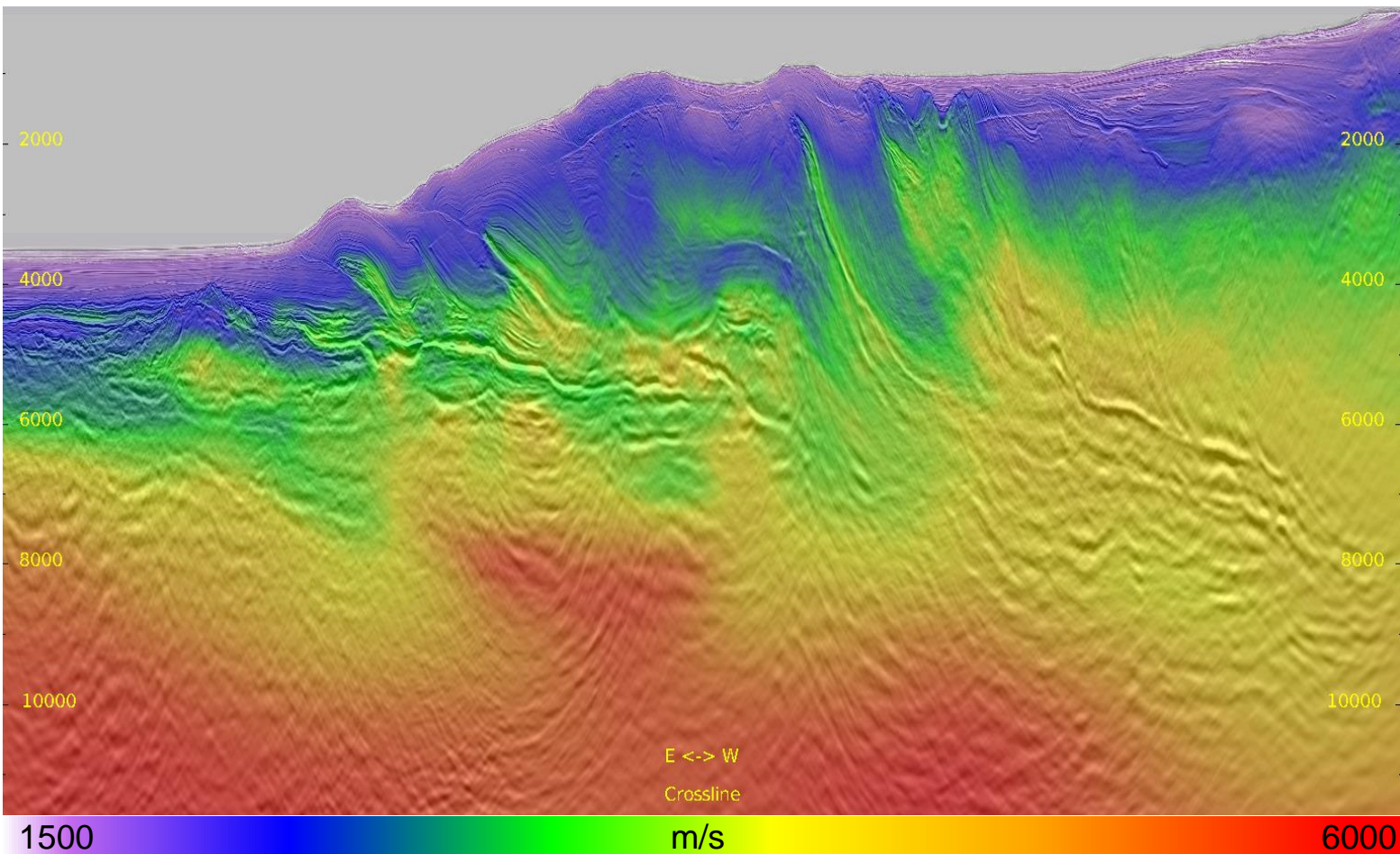
The flatness of the gathers are improved. And events on stack have better focus and continuity. We recommend to use this velocity for final migration.

Velocity Model

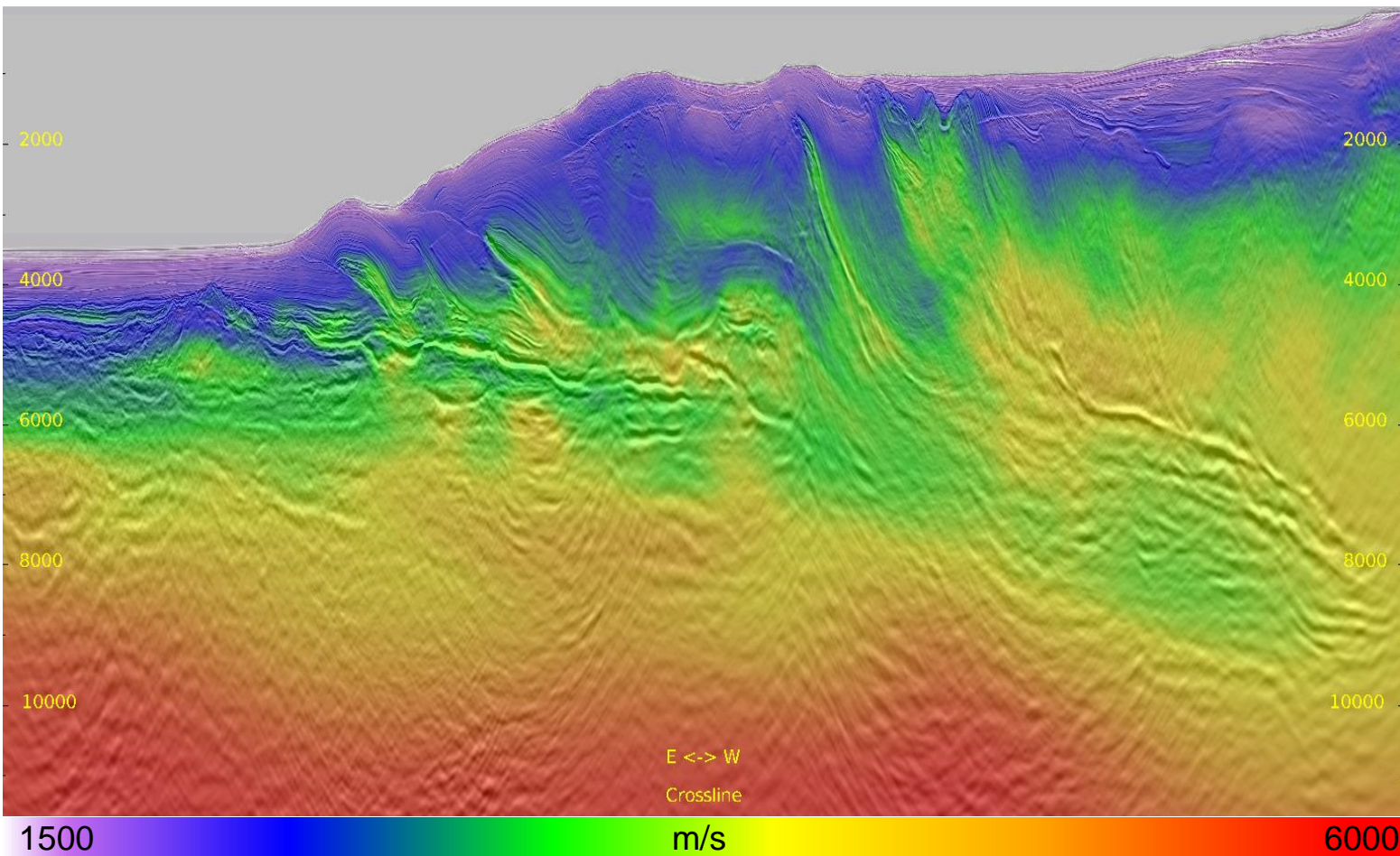


IT5 Preliminary Velocity

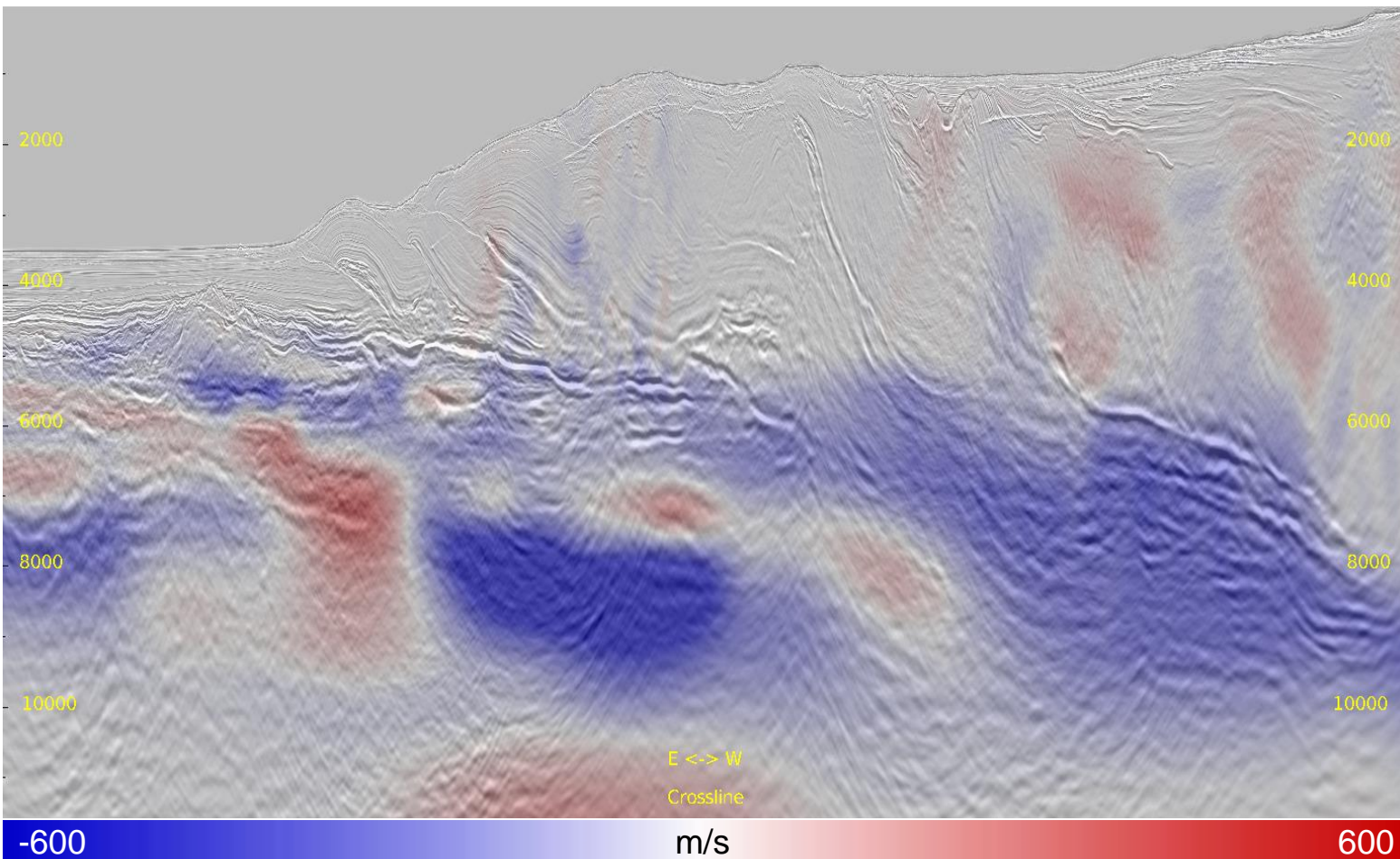
4



- IT5 preliminary velocity.



- IT5 final velocity.



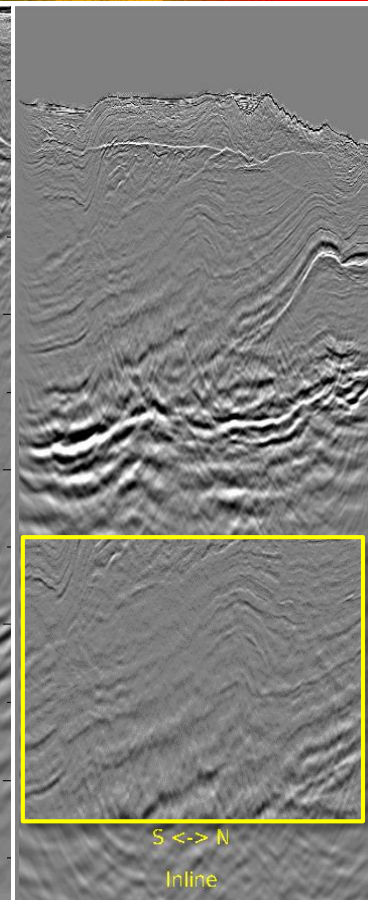
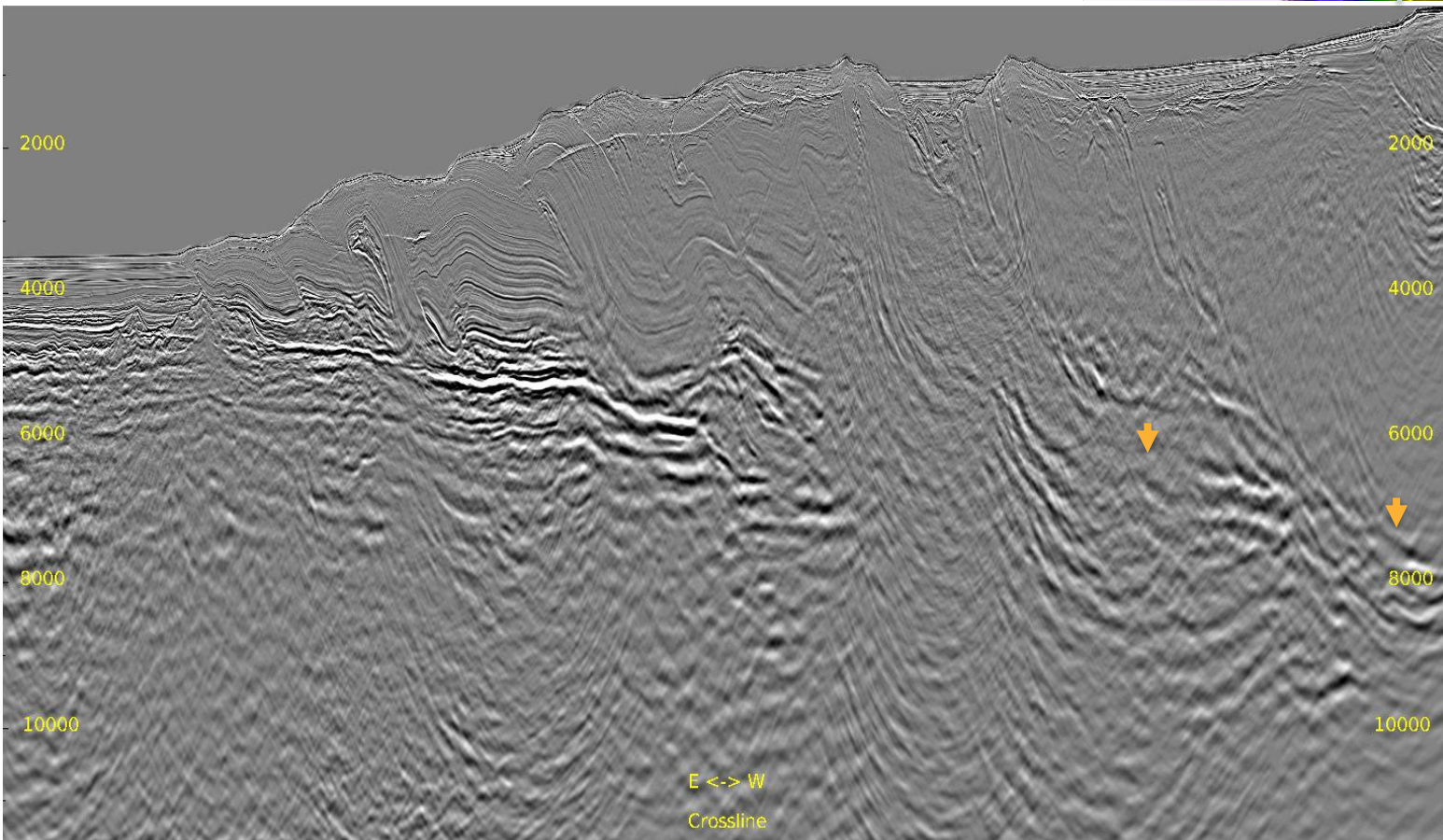
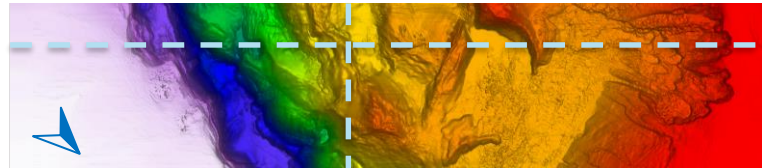
- Localized update on the east side.
- Smoothed scanning tomography on the west side and deep section.

Kirchhoff Depth Migration



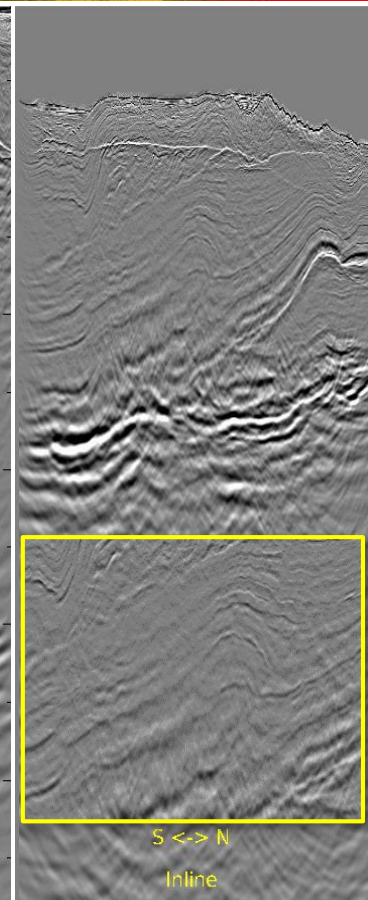
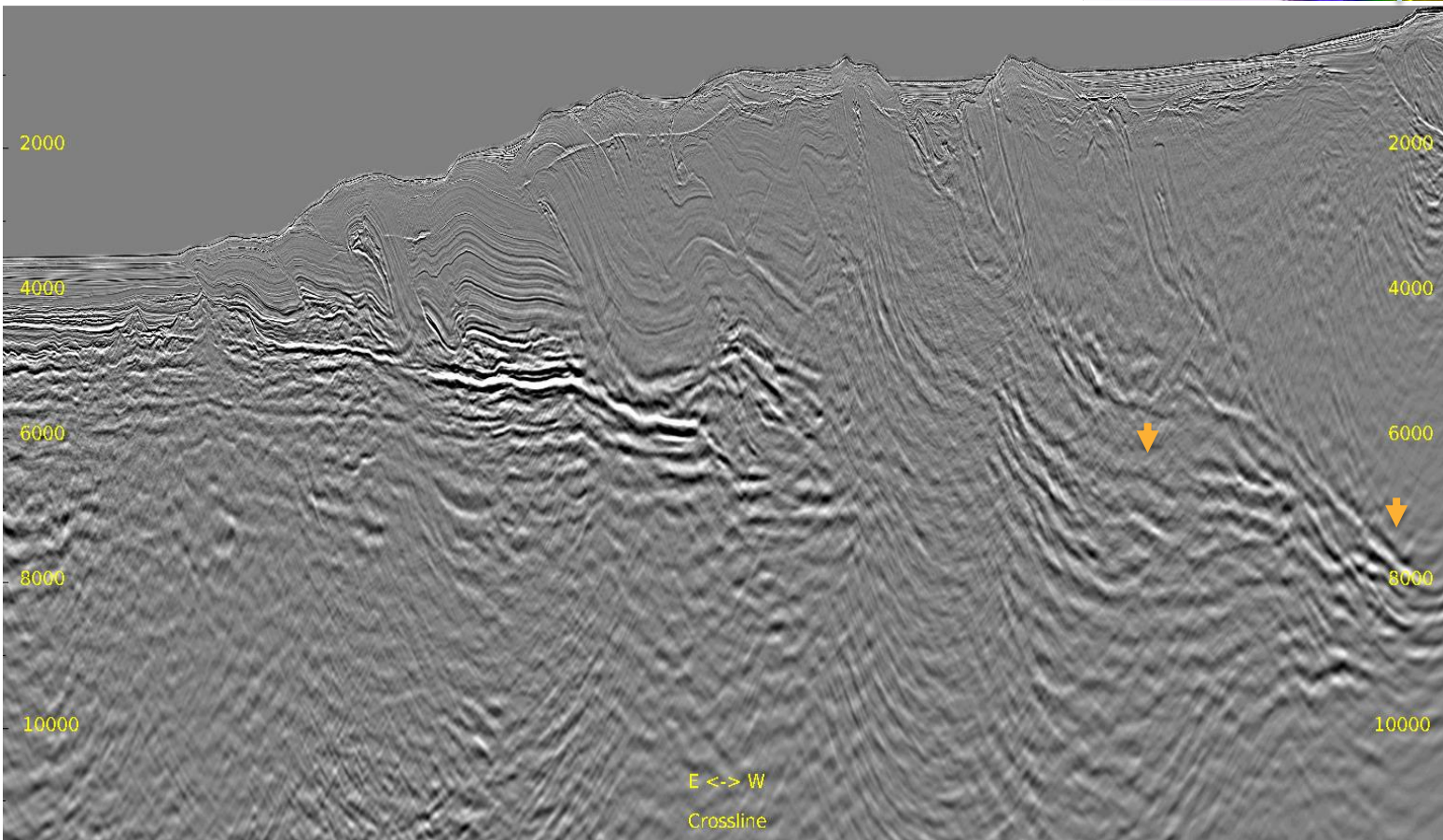
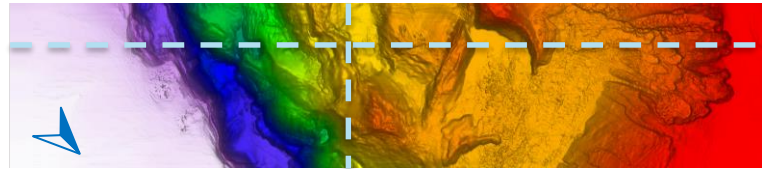
Full Stack: IT5 Preliminary Result

Inline 225 & Crossline 2521



Full Stack: IT5 Final Result

Inline 225 & Crossline 2521

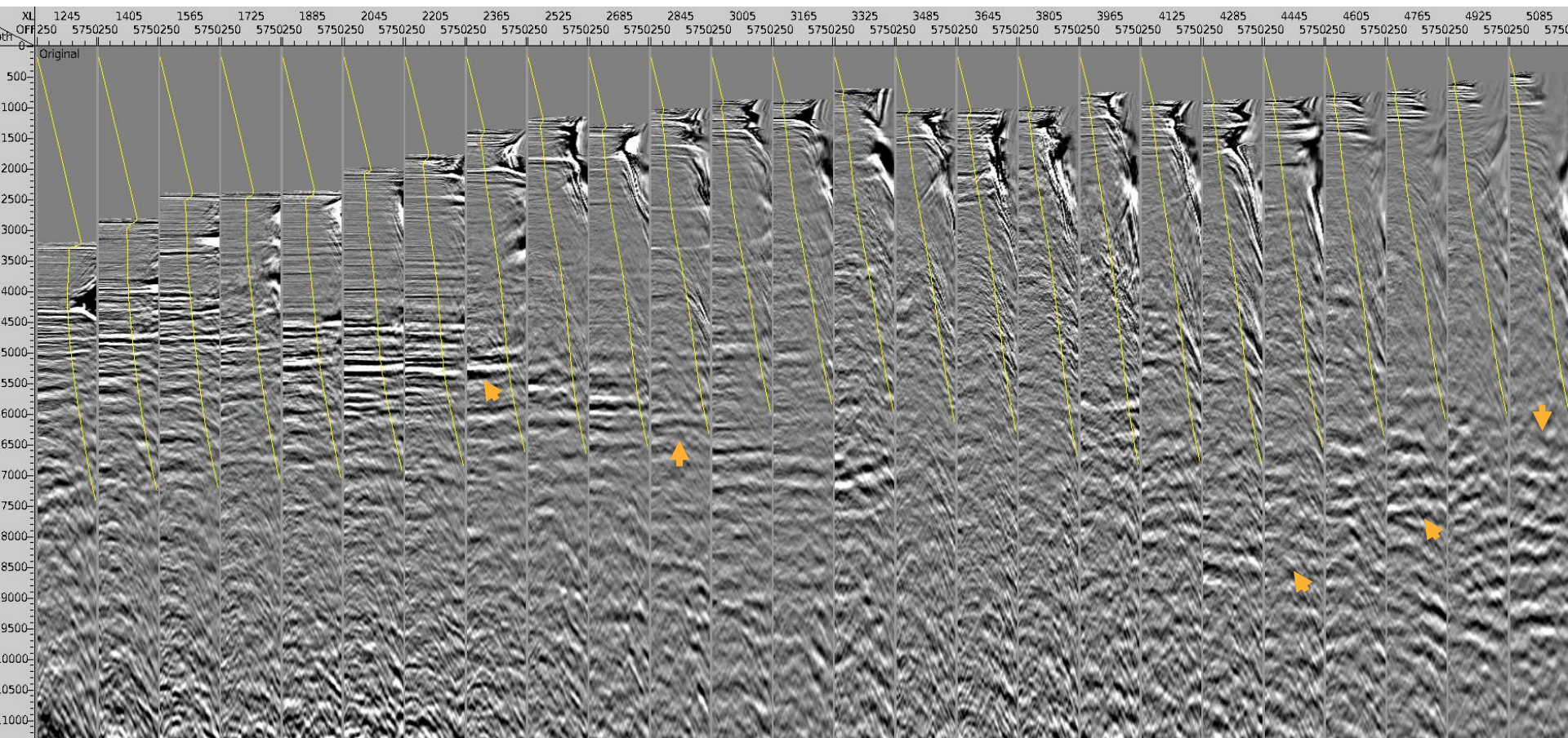




Inline 233 CDP Gathers: IT5 Preliminary Result

— 35° Mute

10

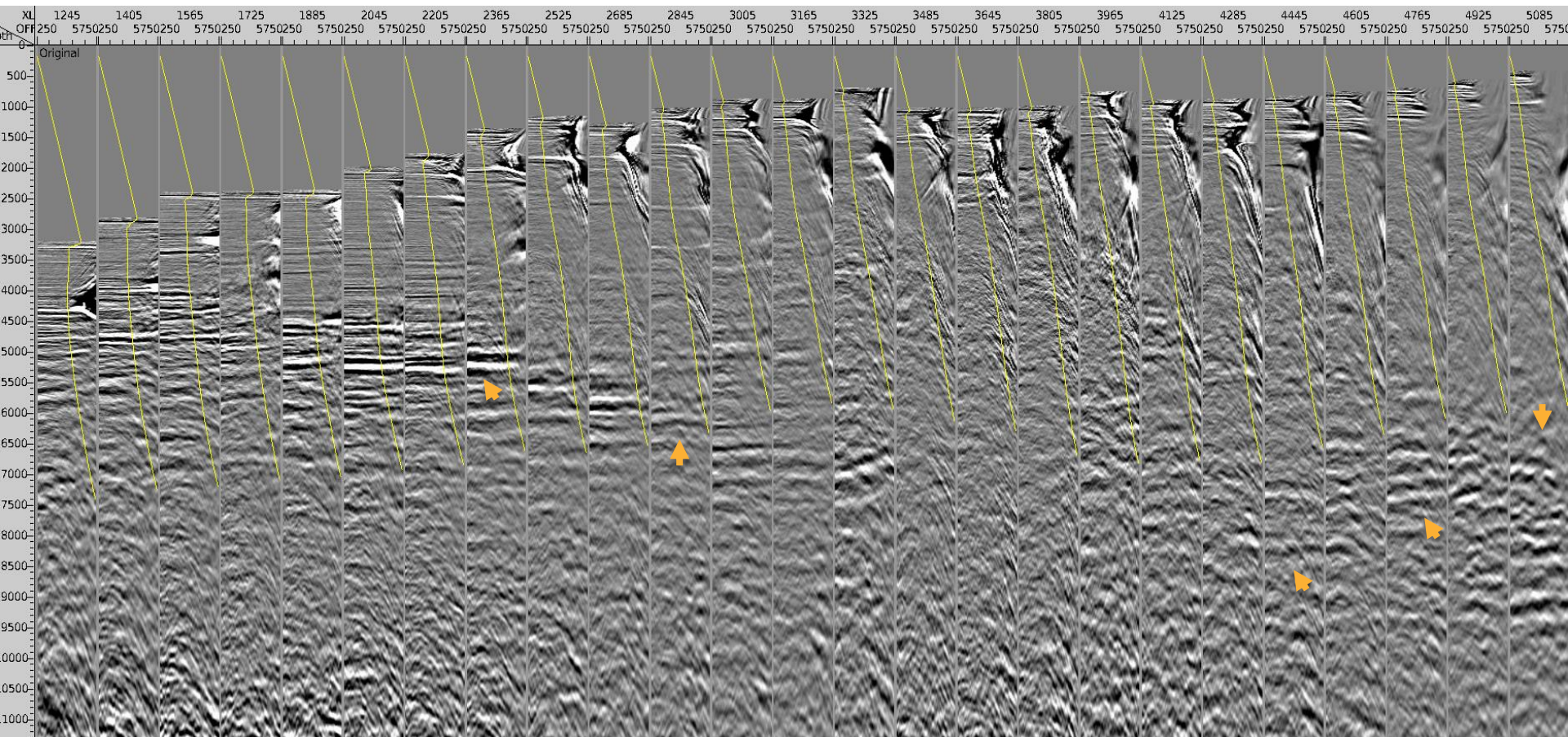




Inline 233 CDP Gathers: IT5 Final Result

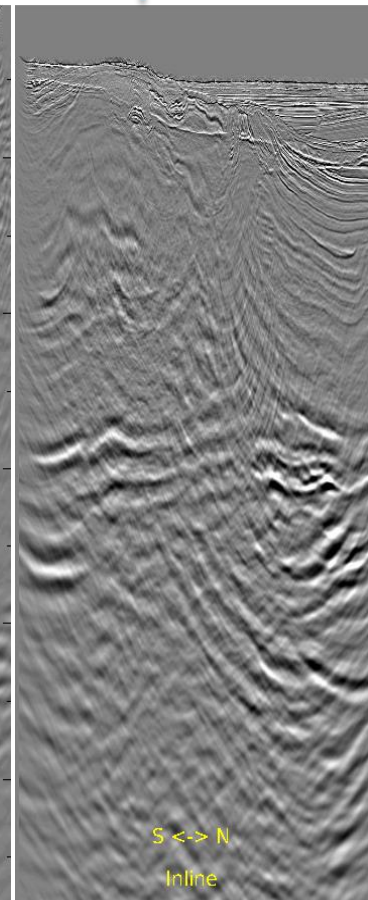
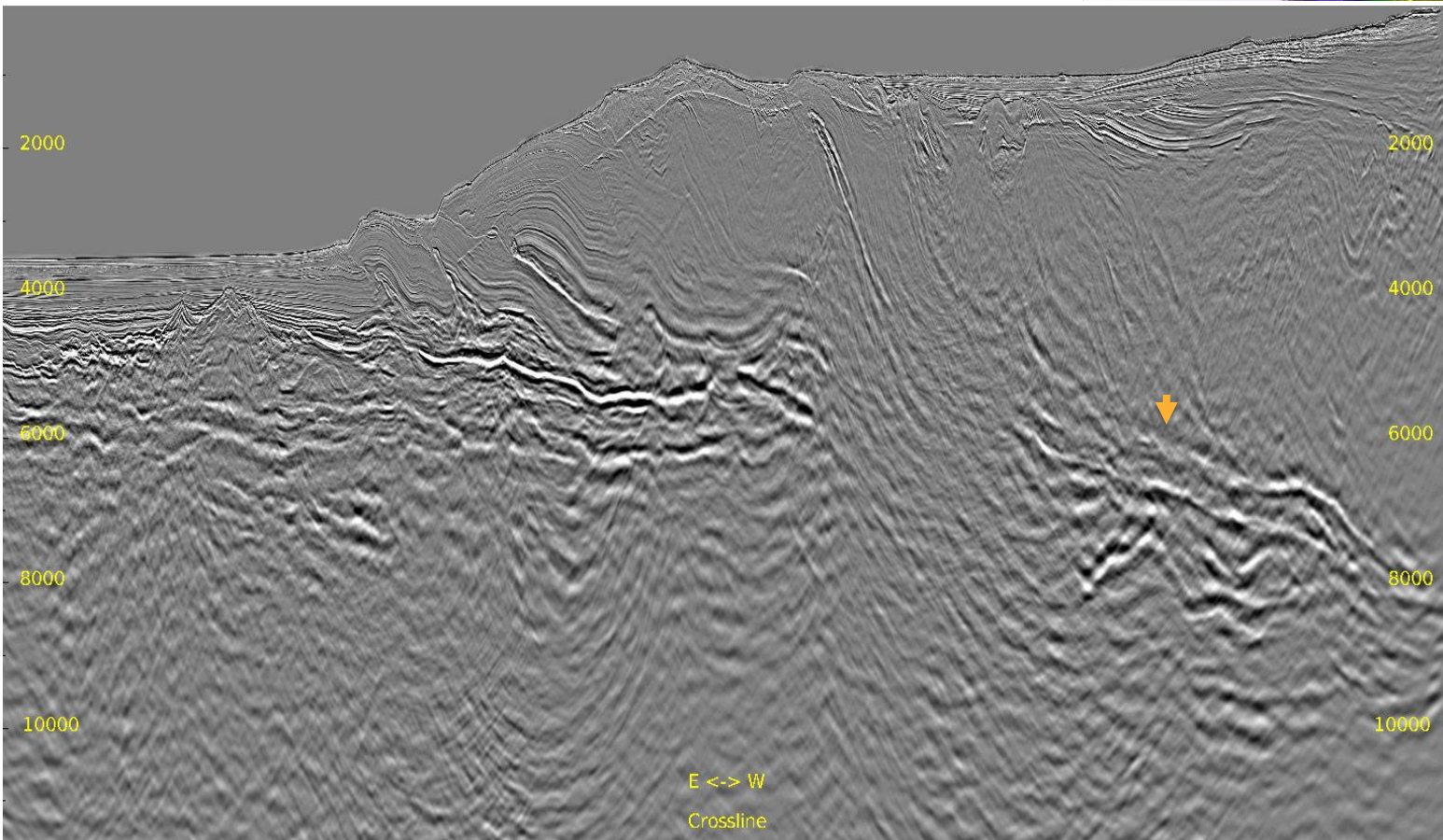
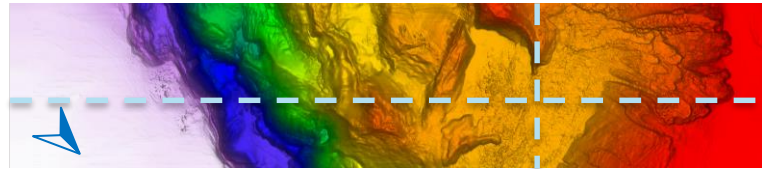
— 35° Mute

11



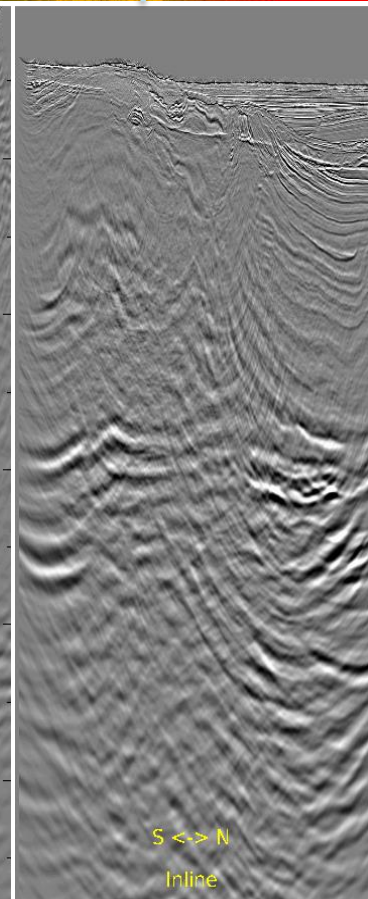
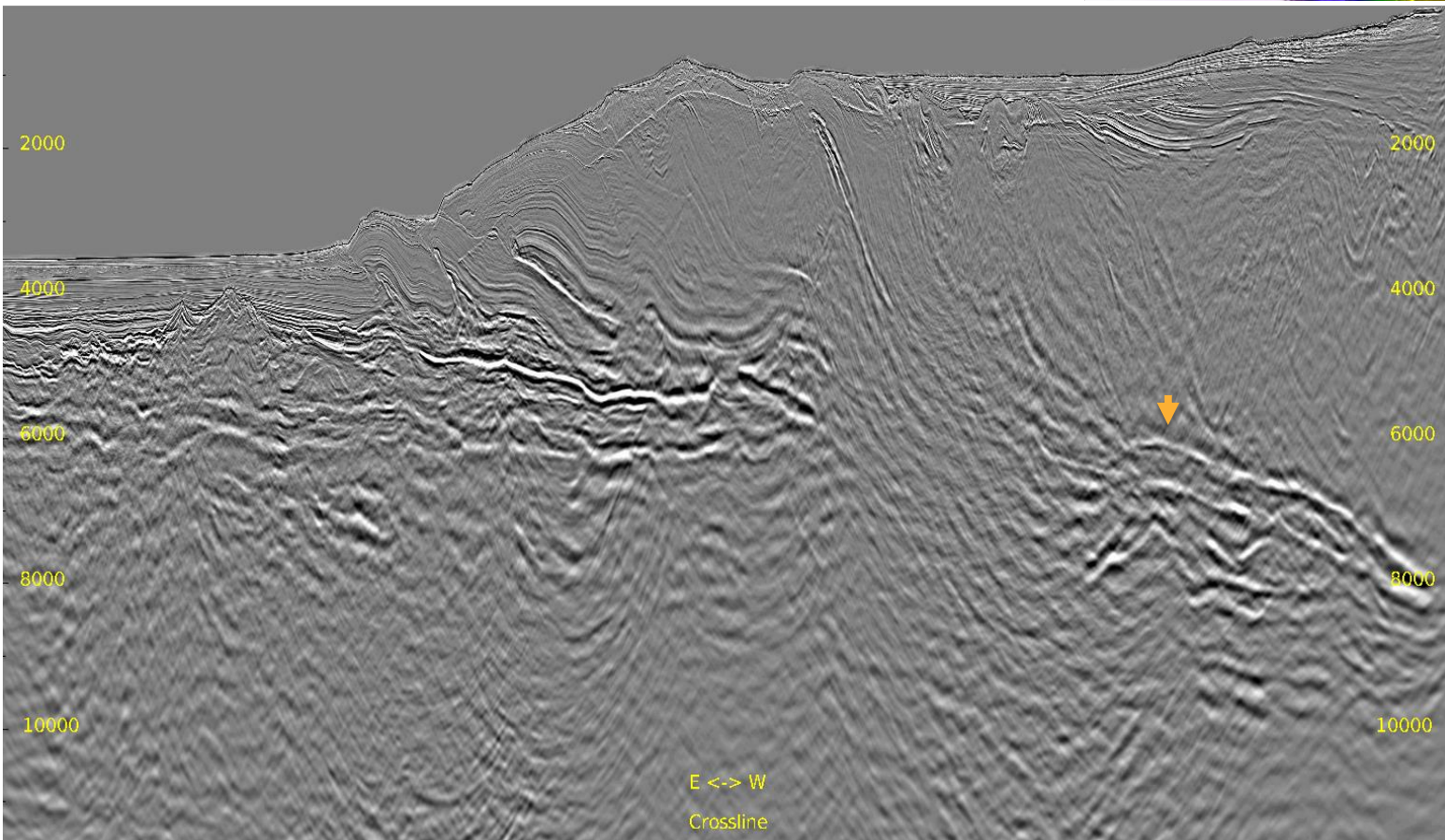
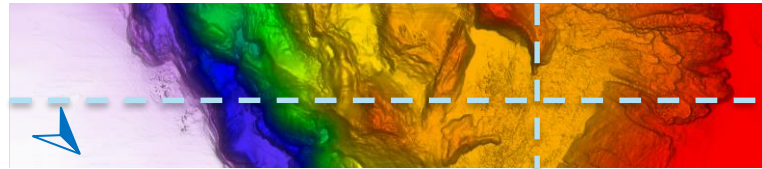
Full Stack: IT5 Preliminary Result

Inline 500 & Crossline 3931



Full Stack: IT5 Final Result

Inline 500 & Crossline 3931

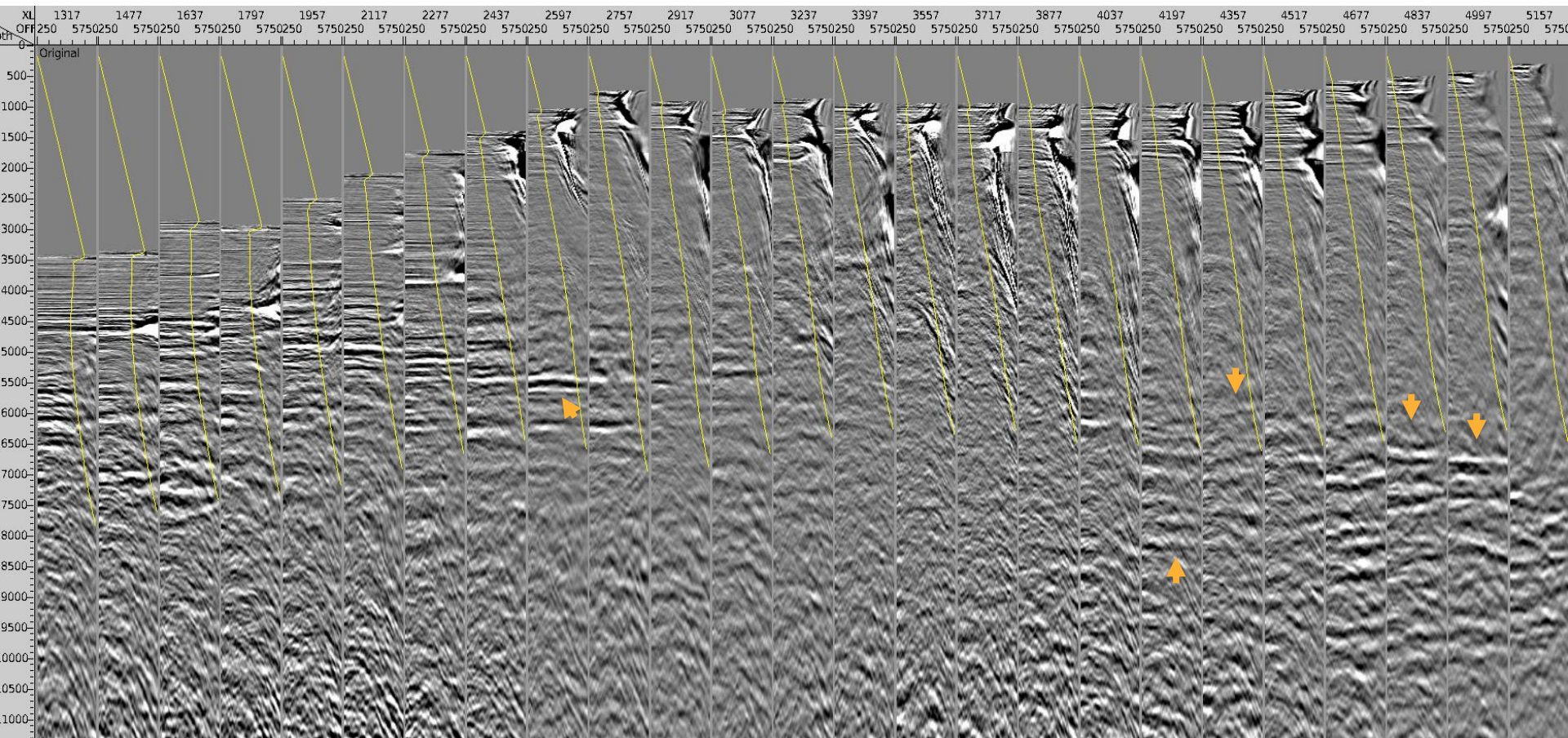




Inline 500 CDP Gathers: IT5 Preliminary Result

— 35° Mute

14

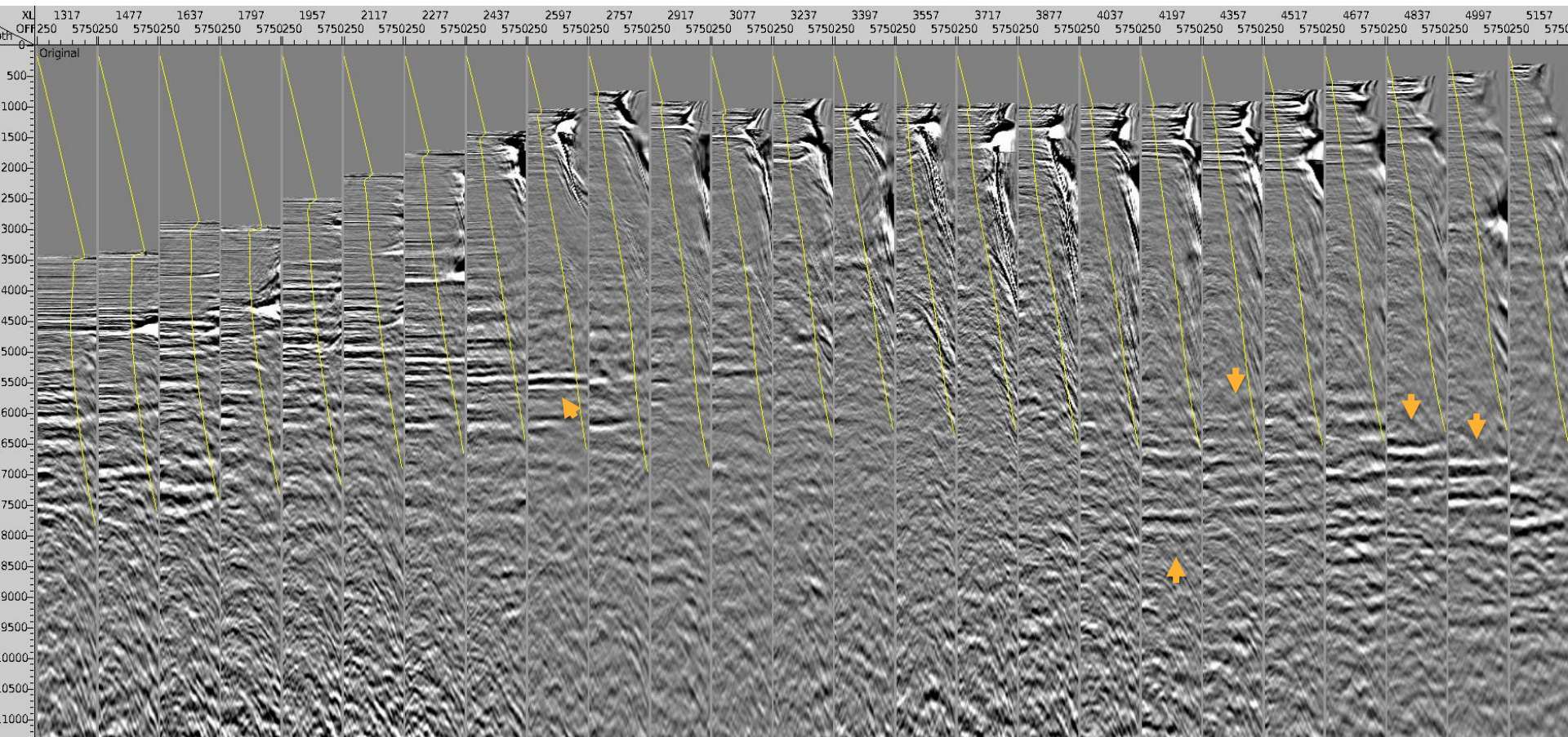




Inline 500 CDP Gathers: IT5 Final Result

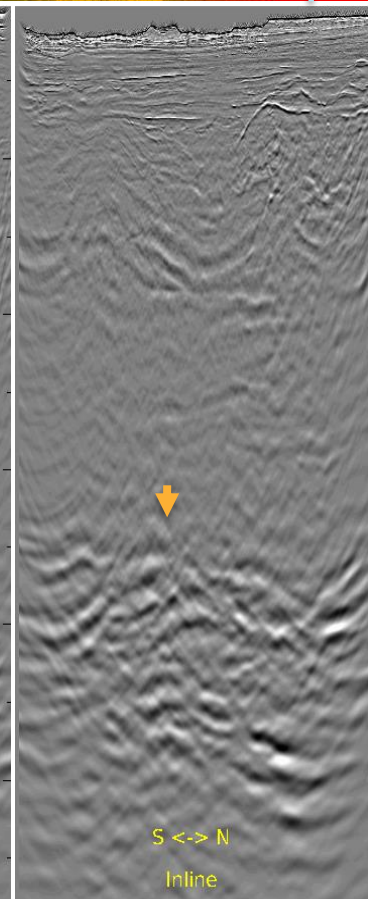
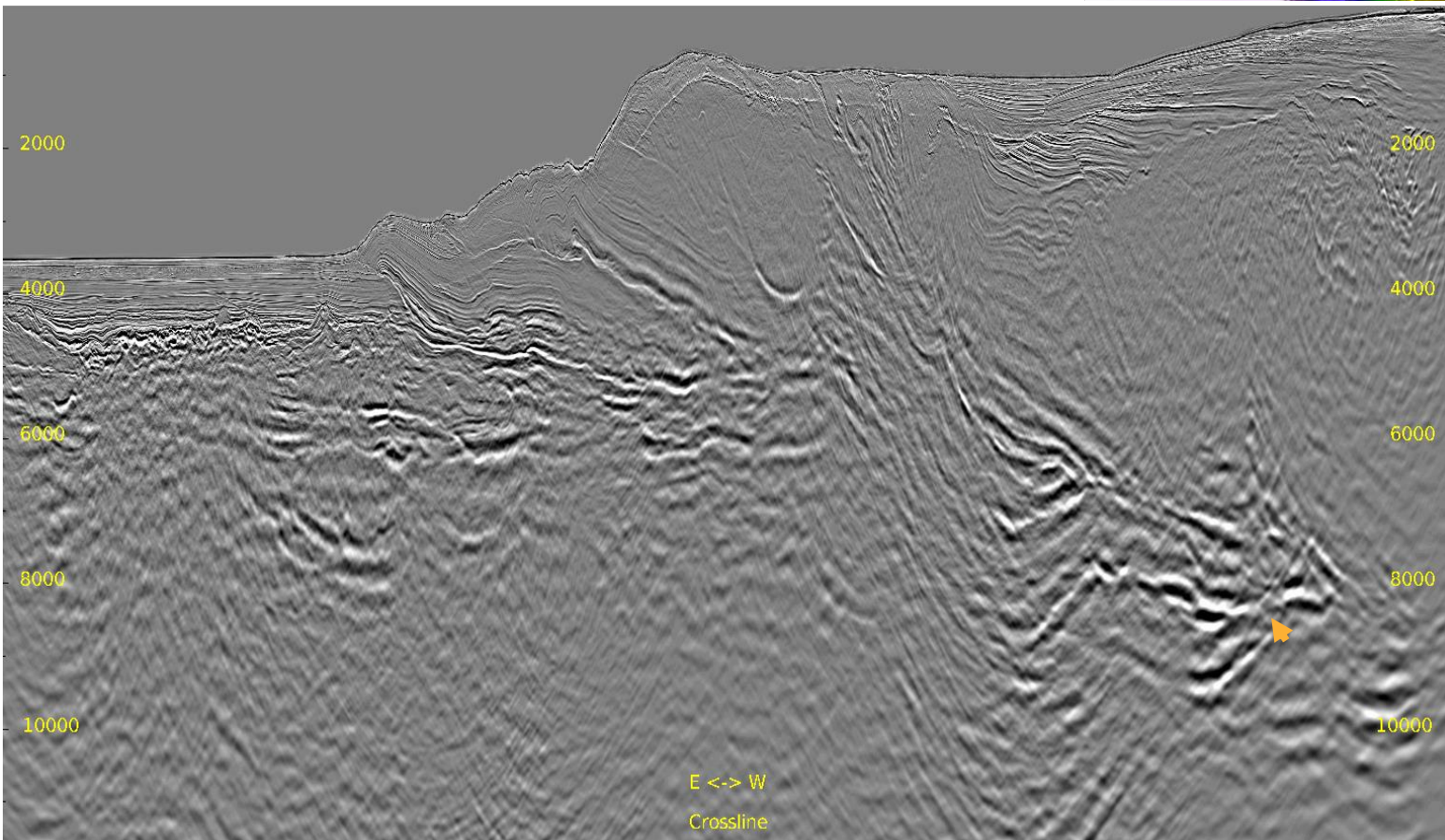
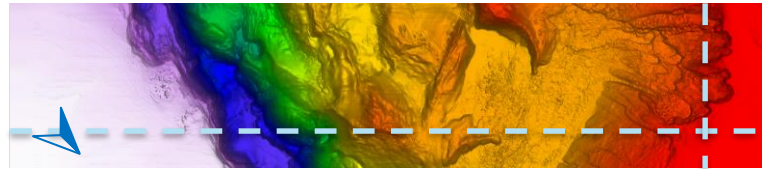
— 35° Mute

15



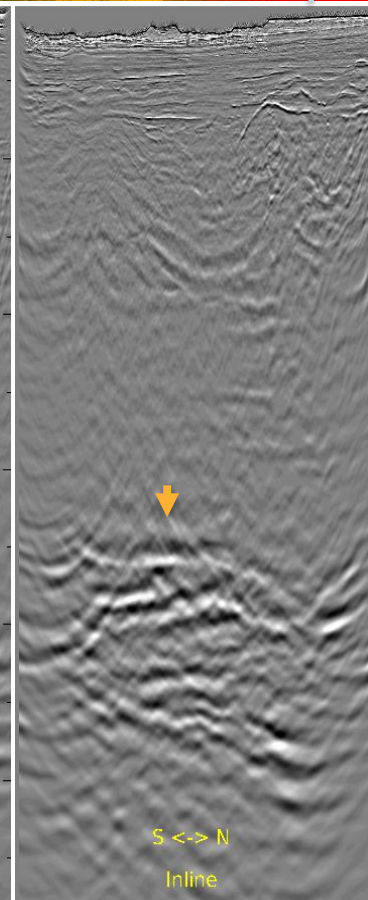
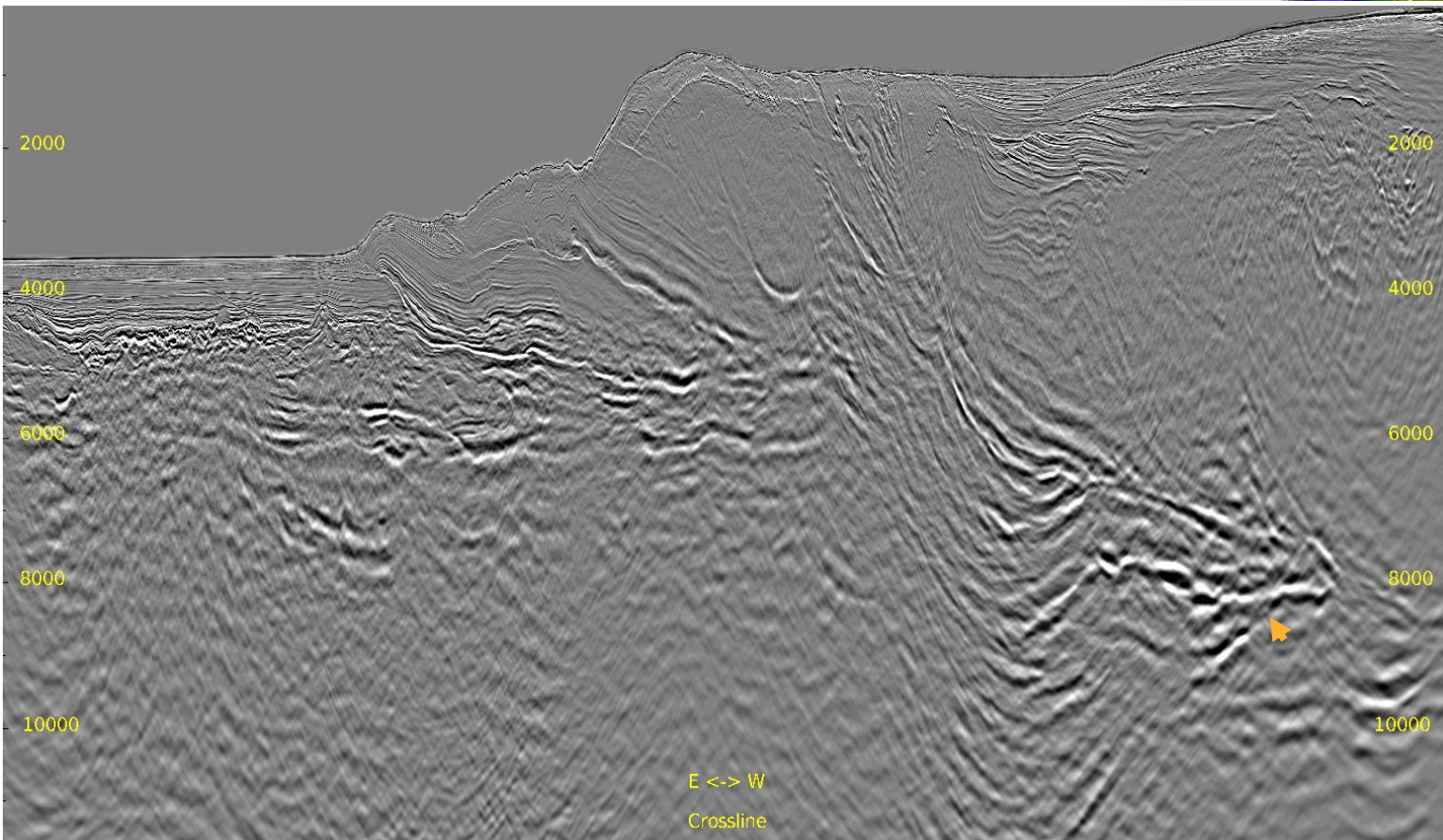
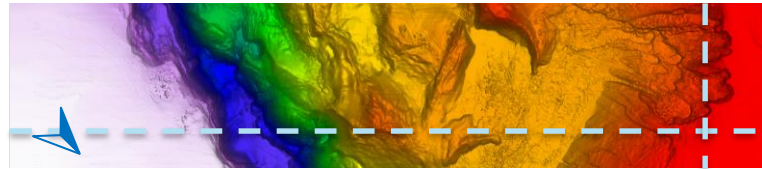
Full Stack: IT5 Preliminary Result

Inline 636 & Crossline 5159



Full Stack: IT5 Final Result

Inline 636 & Crossline 5159

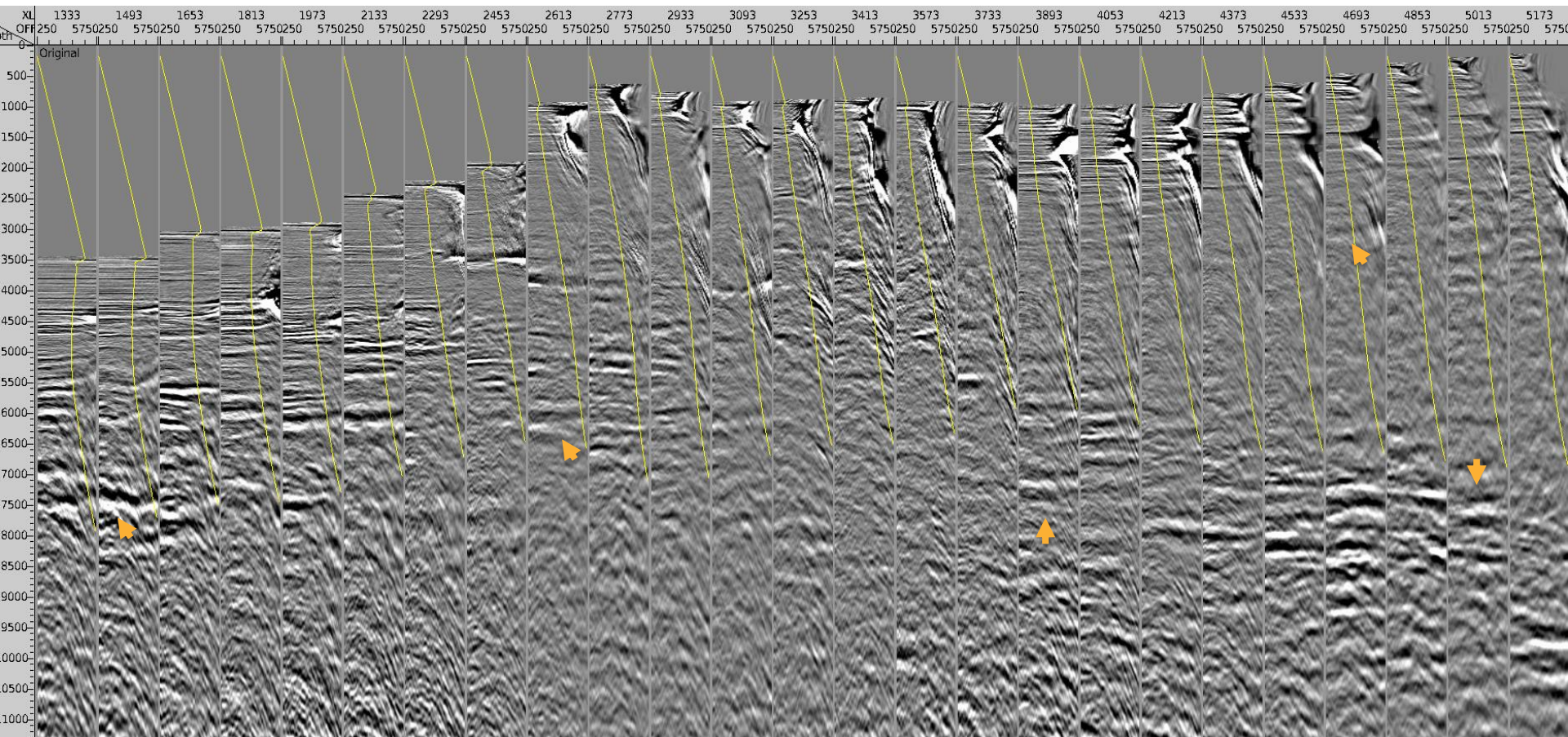




Inline 636 CDP Gathers: IT5 Preliminary Result

— 35° Mute

18

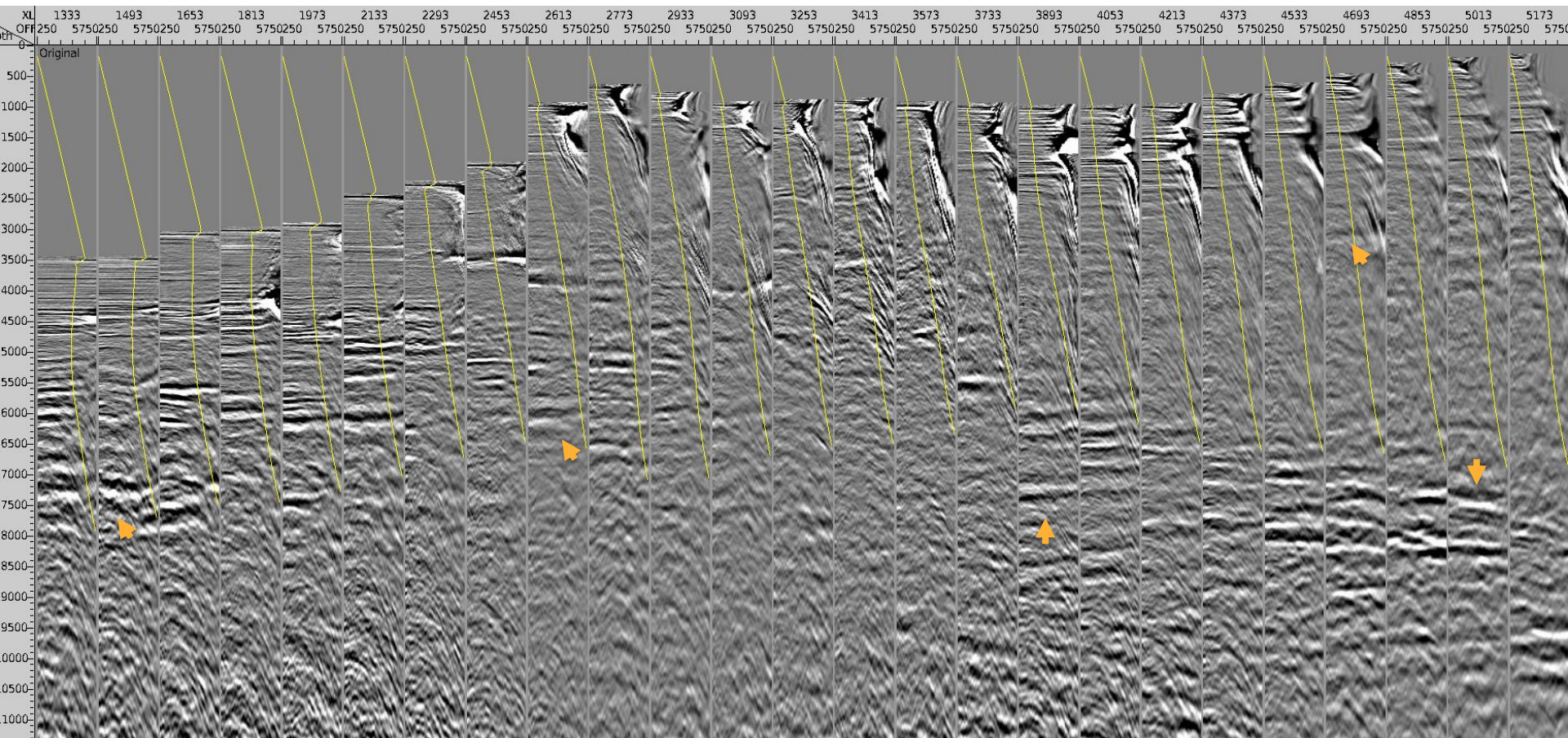




Inline 636 CDP Gathers: IT5 Final Result

— 35° Mute

19



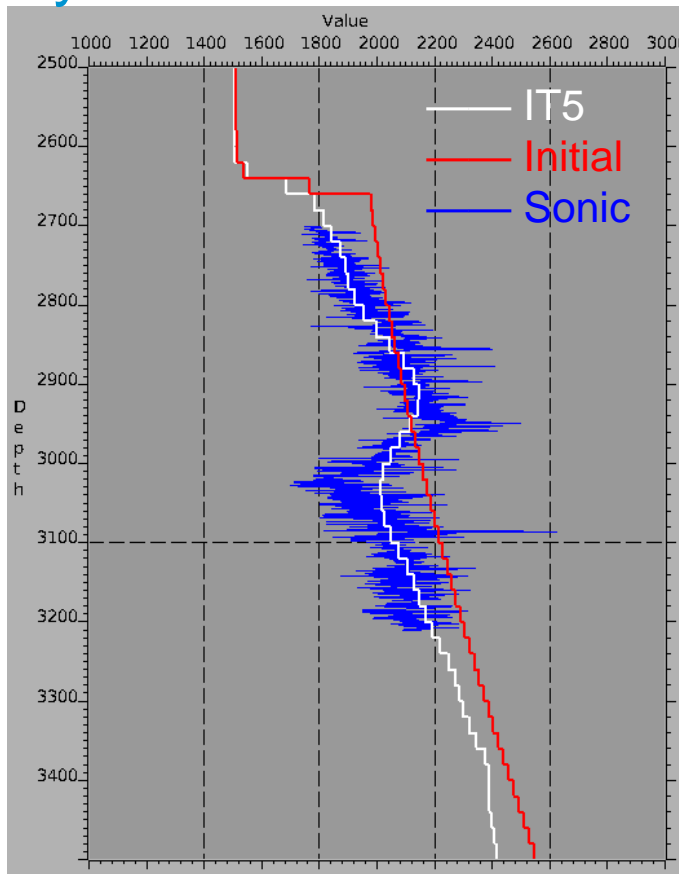
VMB Summary

Initial VS IT5 Final

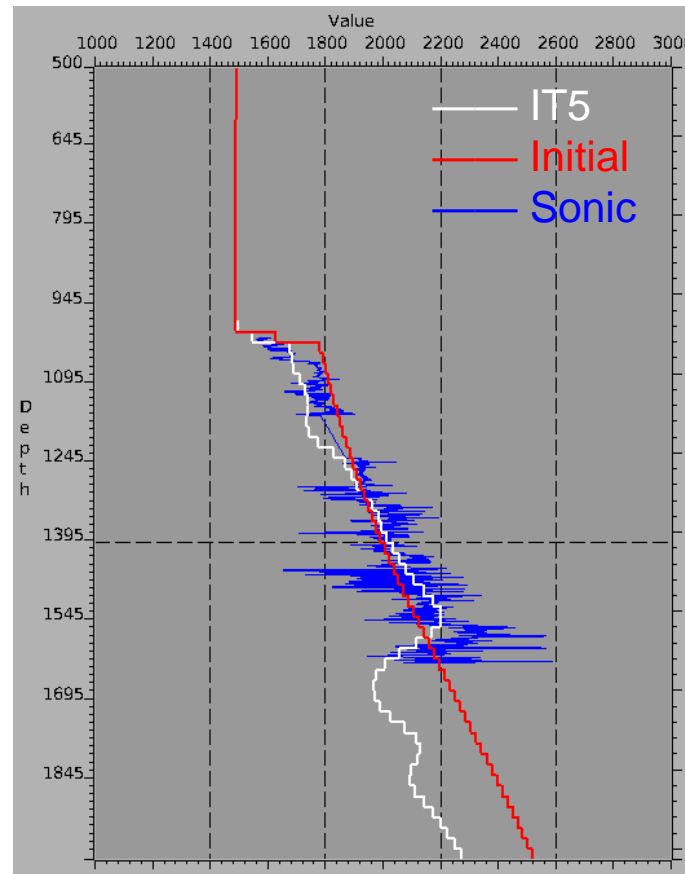


Velocity Profile at Well Location

21



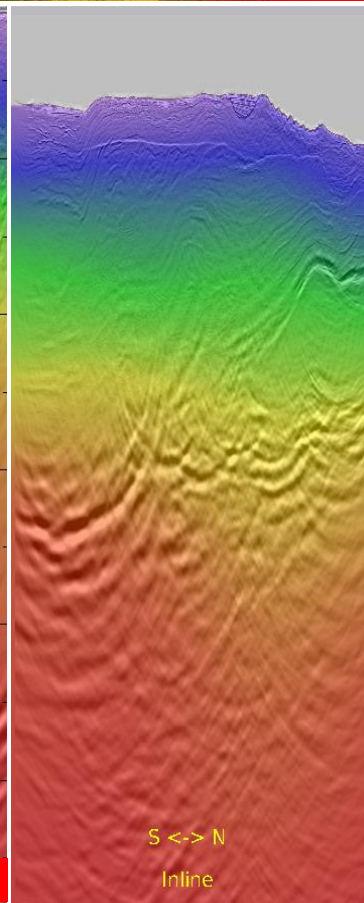
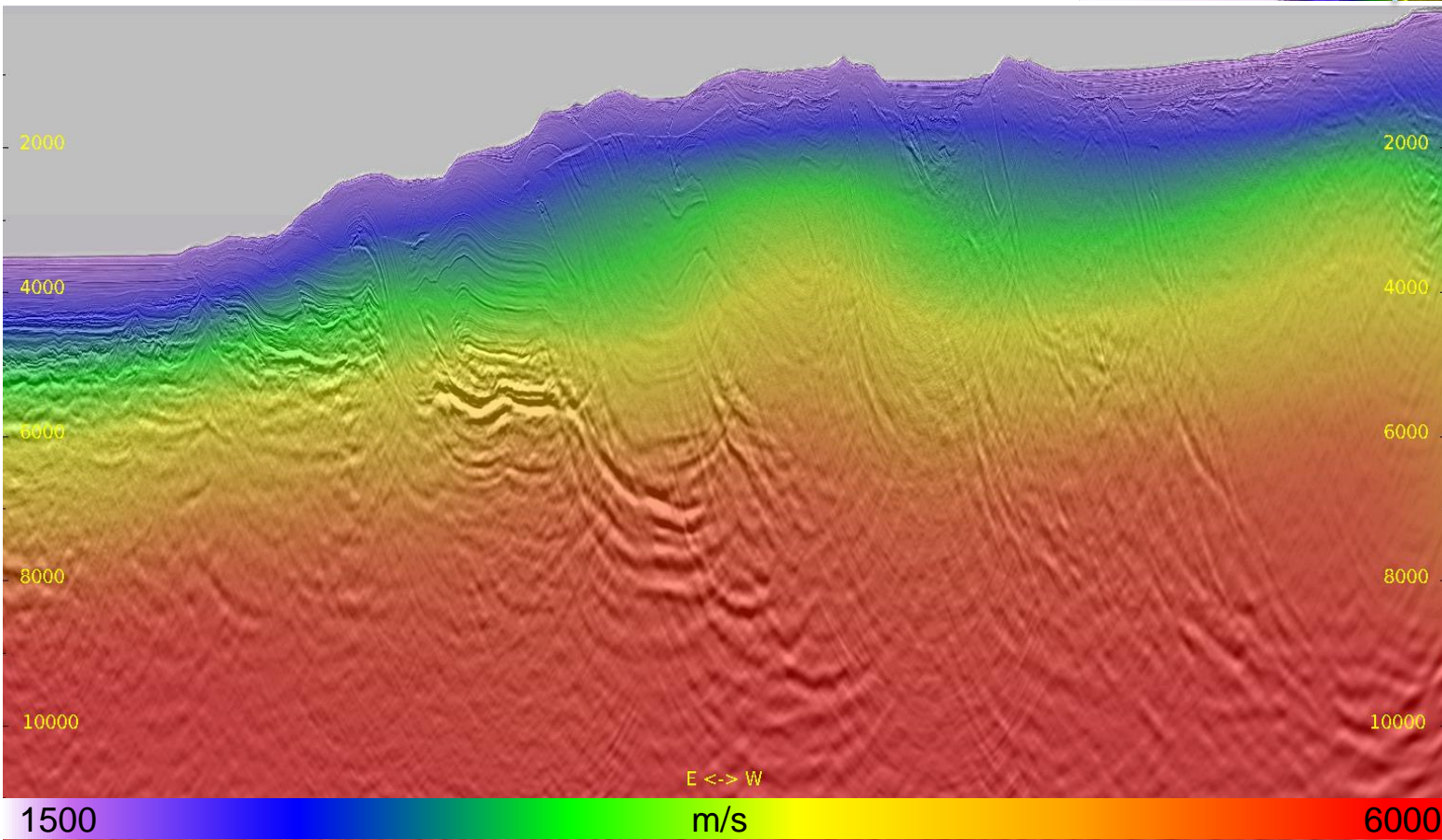
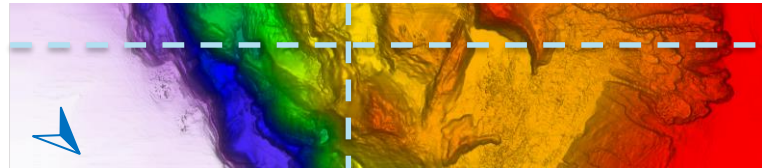
Well U1518B



Well U1519A

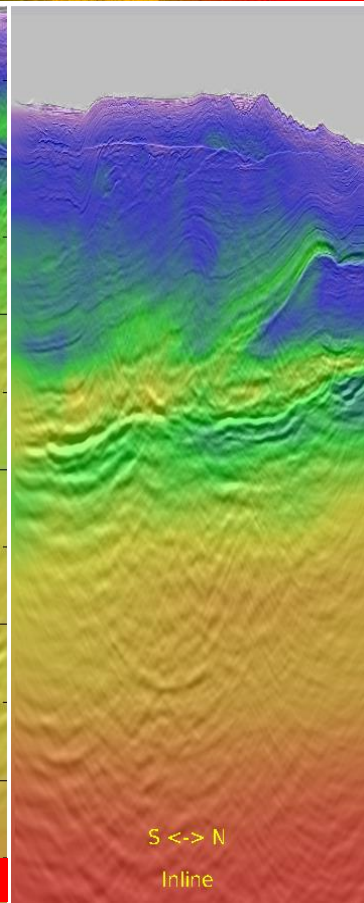
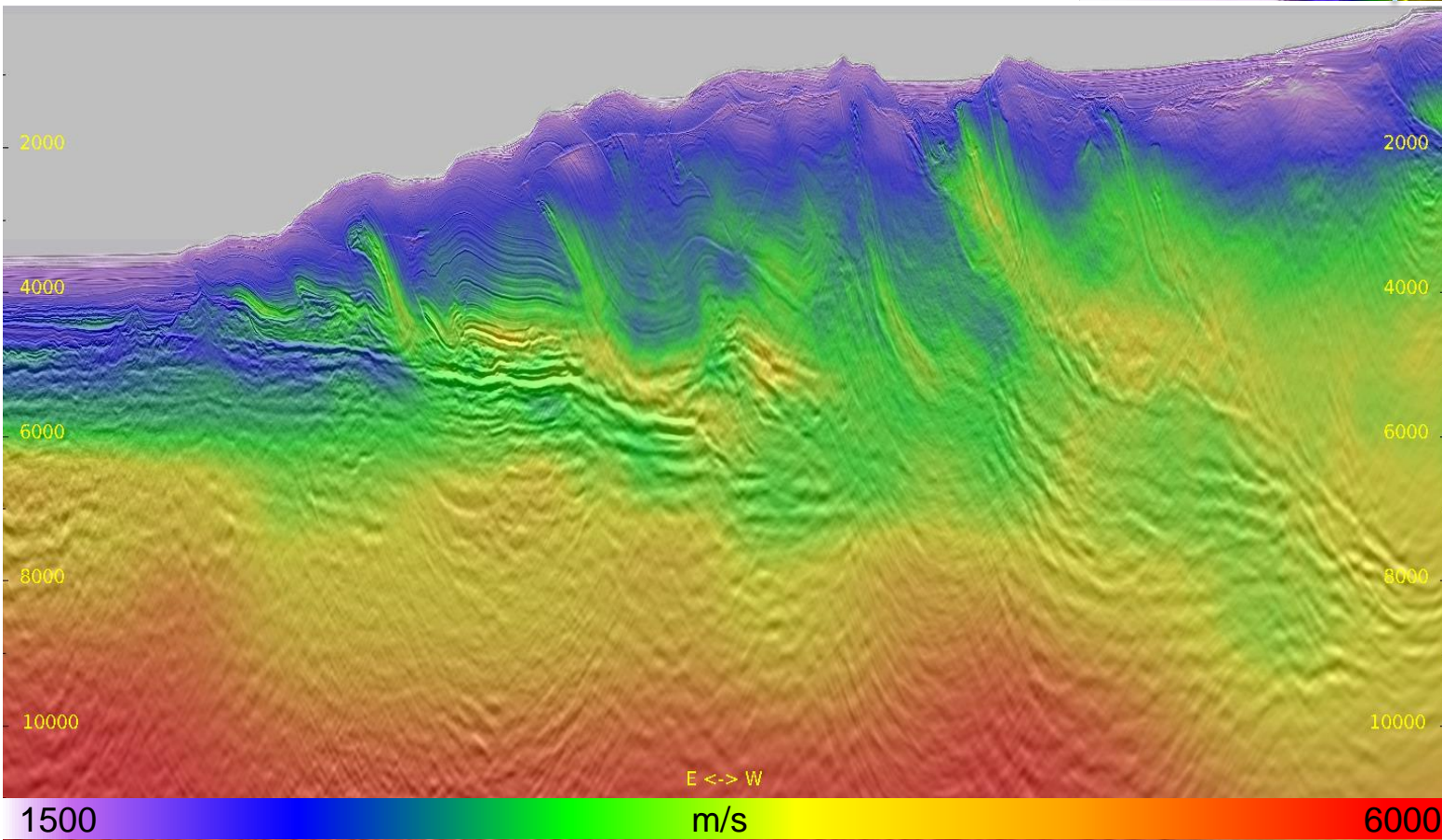
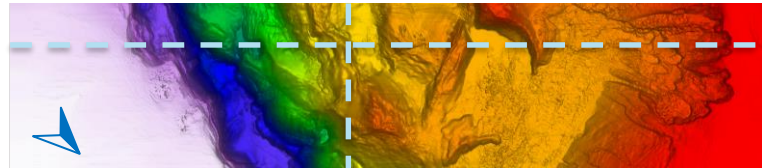
Full Stack: Initial Velocity

Inline 225 & Crossline 2521



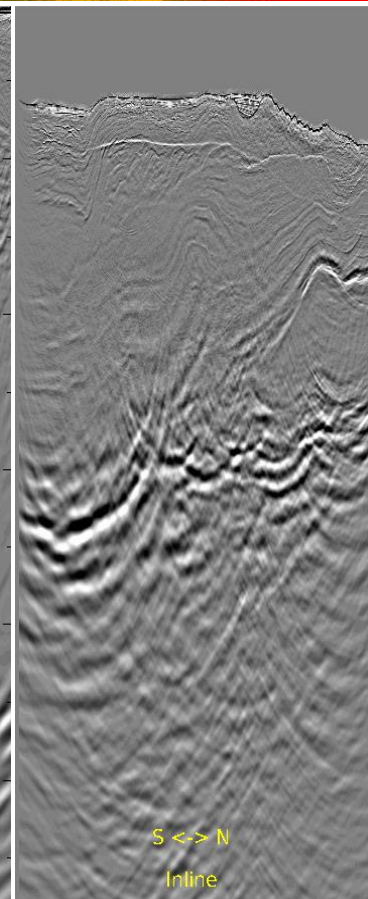
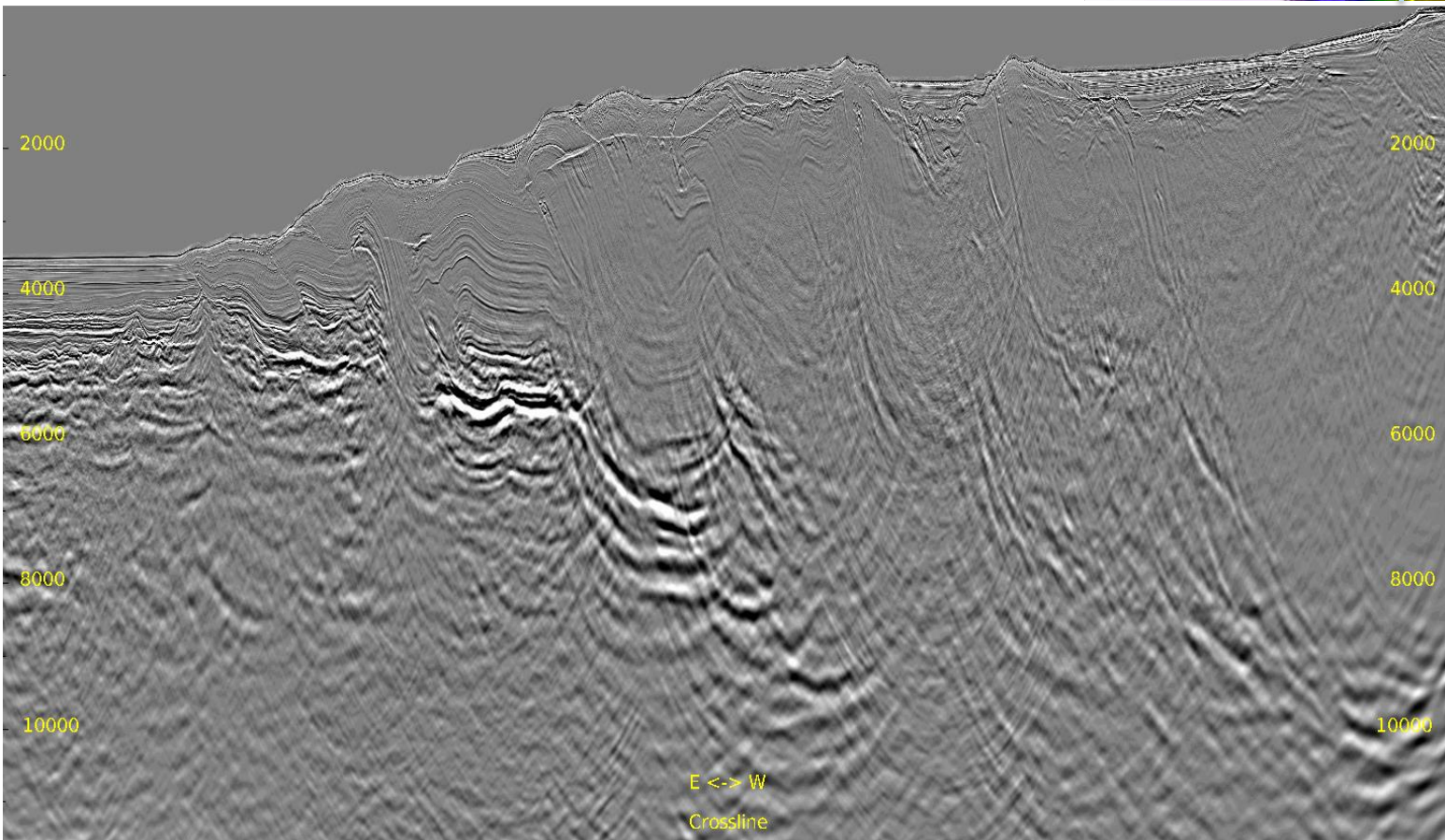
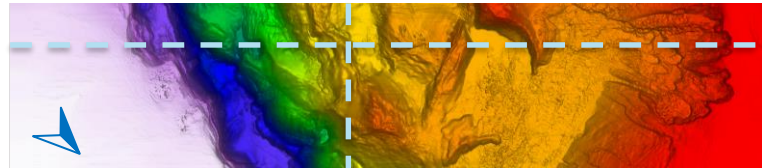
Full Stack: IT5 Final Velocity

Inline 225 & Crossline 2521



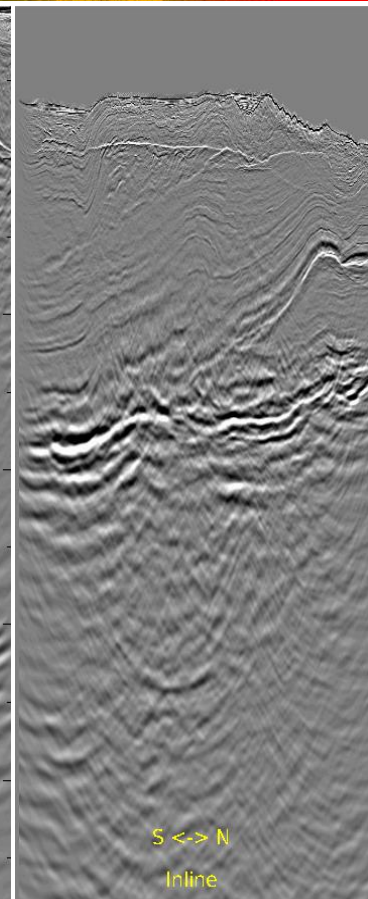
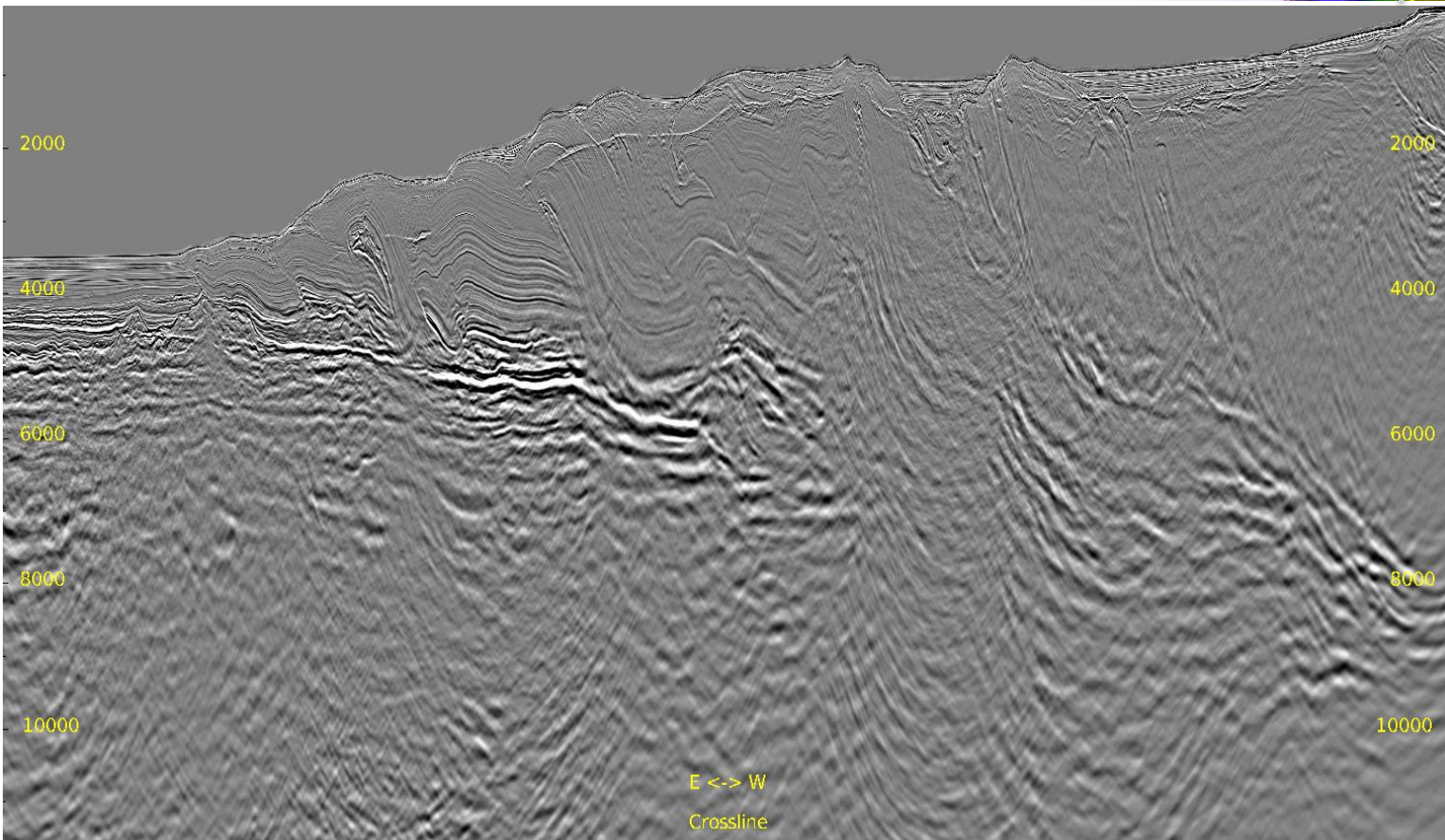
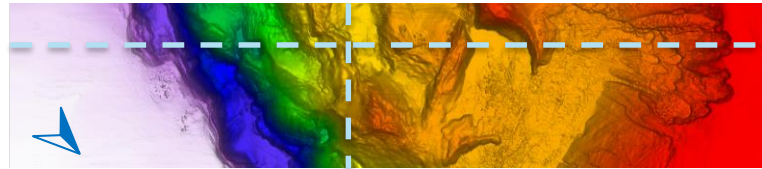
Full Stack: Initial

Inline 225 & Crossline 2521



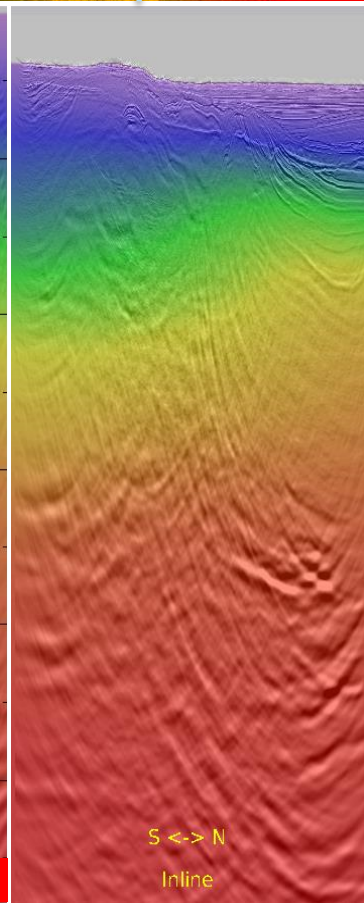
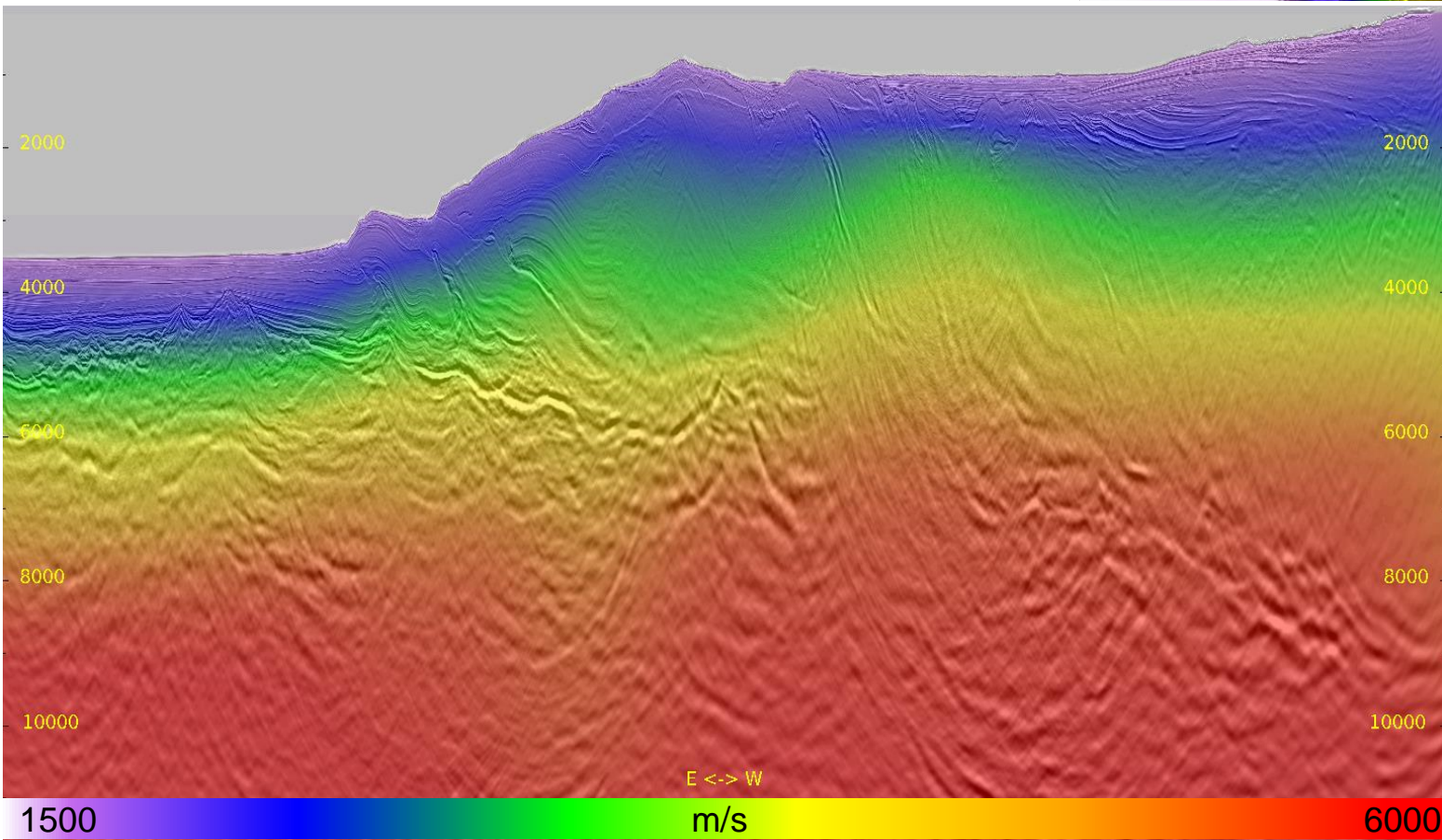
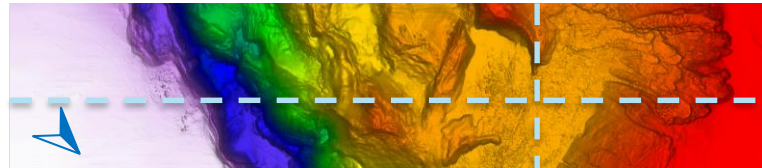
Full Stack: IT5 Final

Inline 225 & Crossline 2521



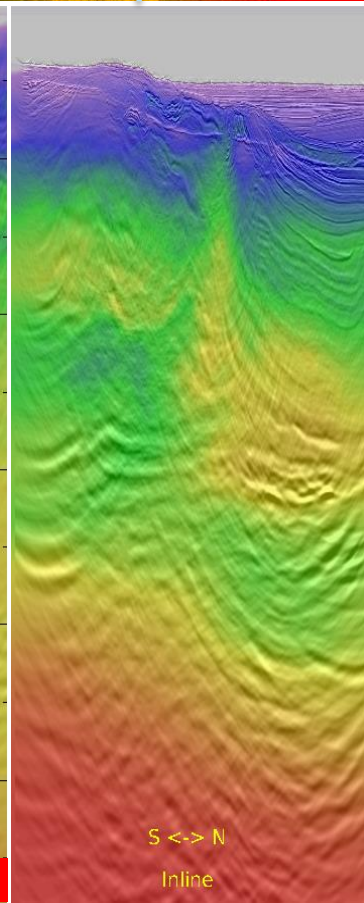
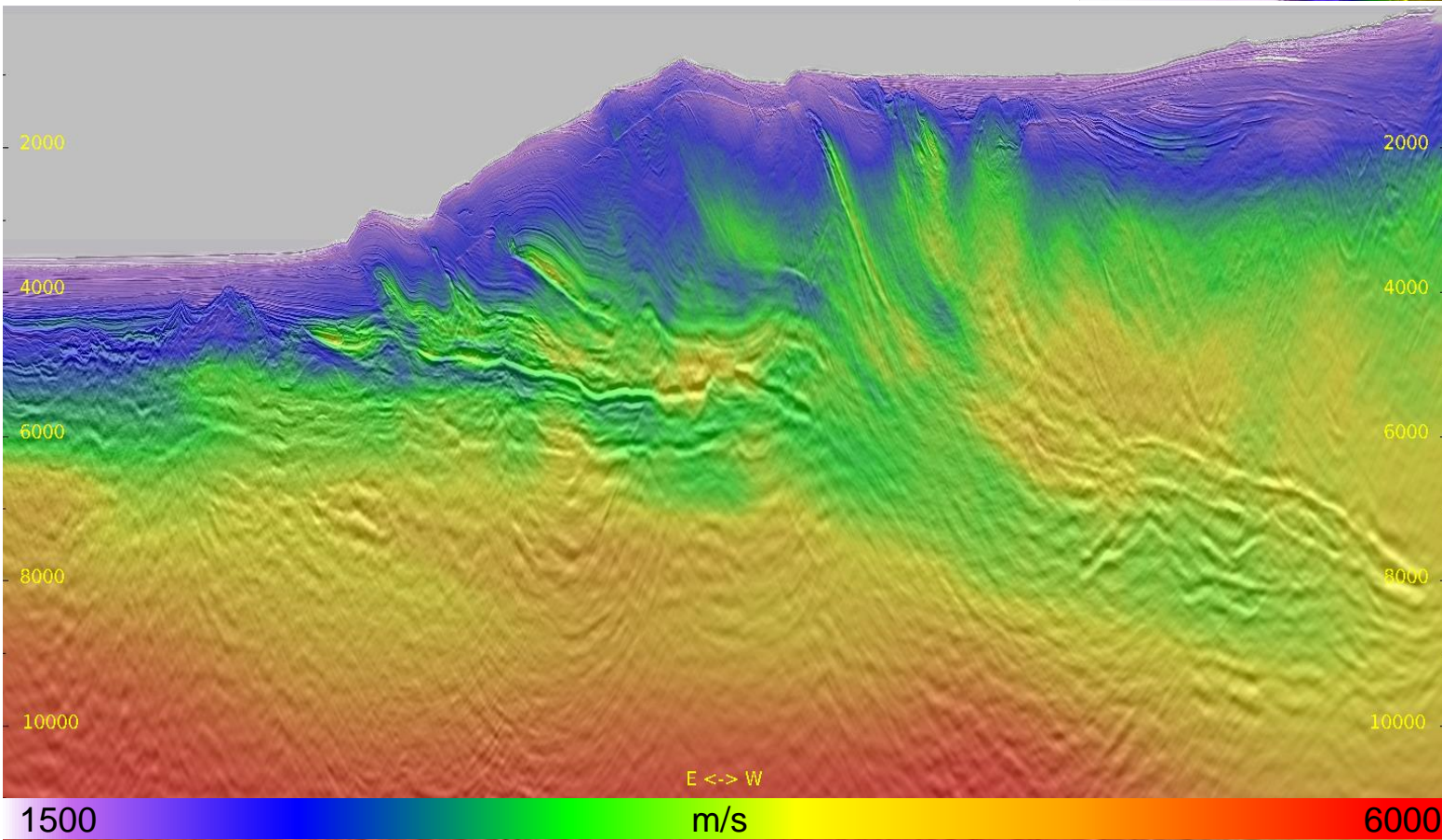
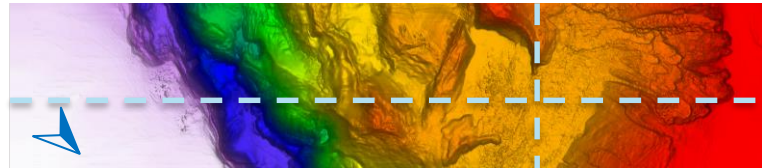
Full Stack: Initial Velocity

Inline 500 & Crossline 3931



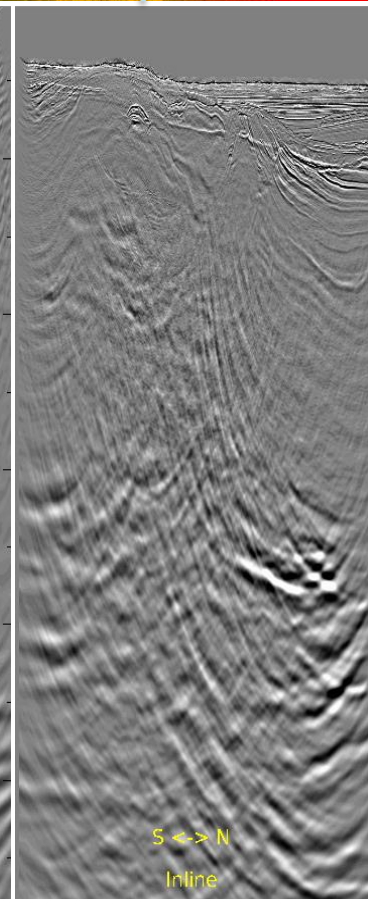
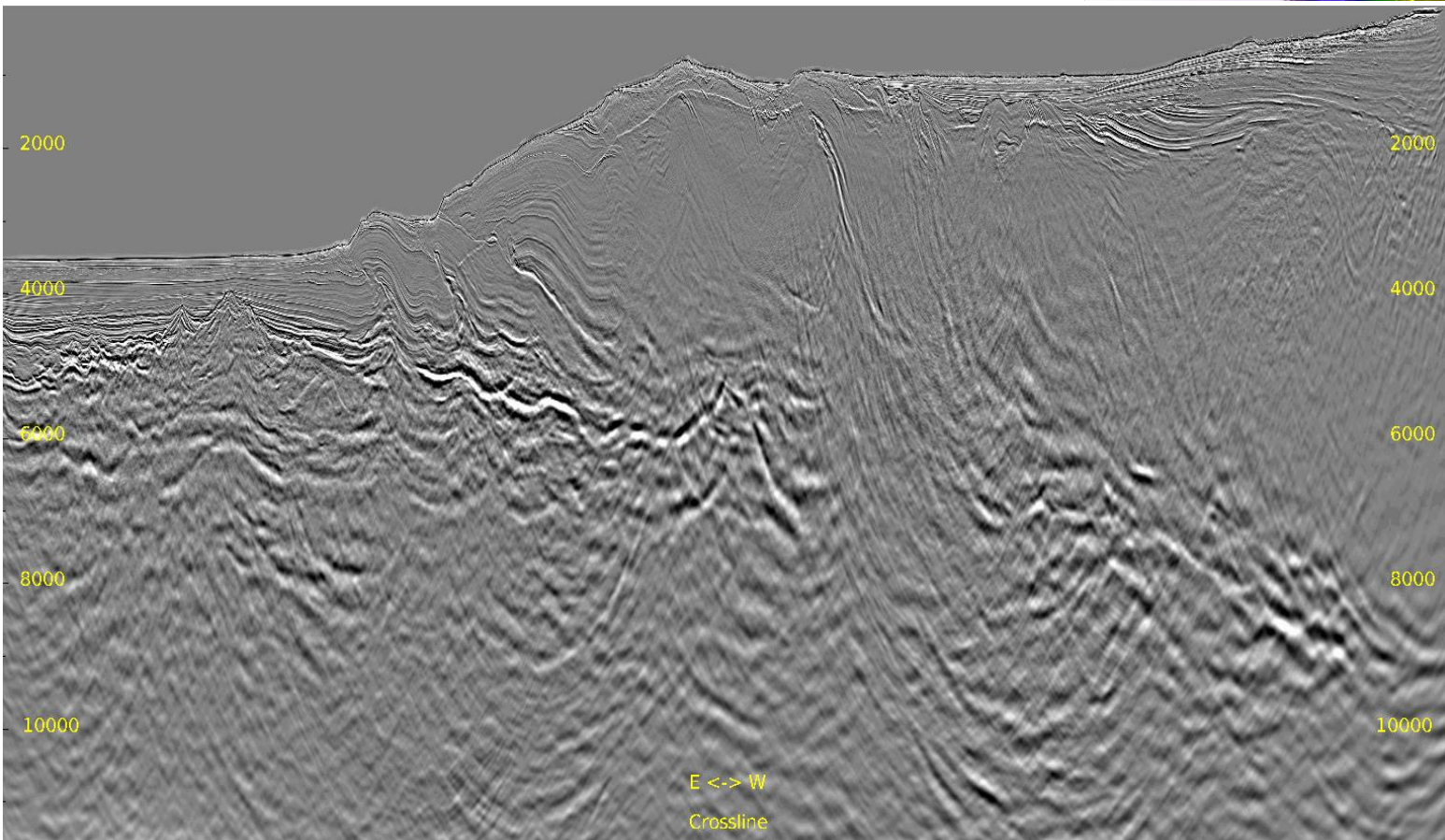
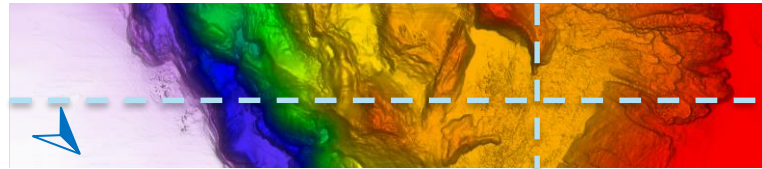
Full Stack: IT5 Final Velocity

Inline 500 & Crossline 3931



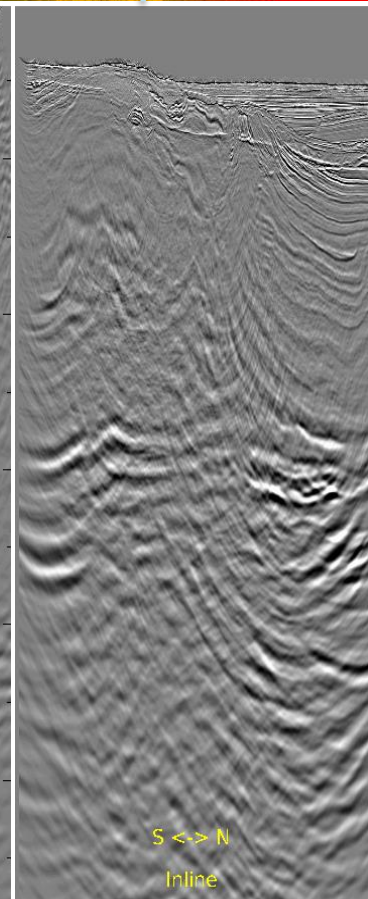
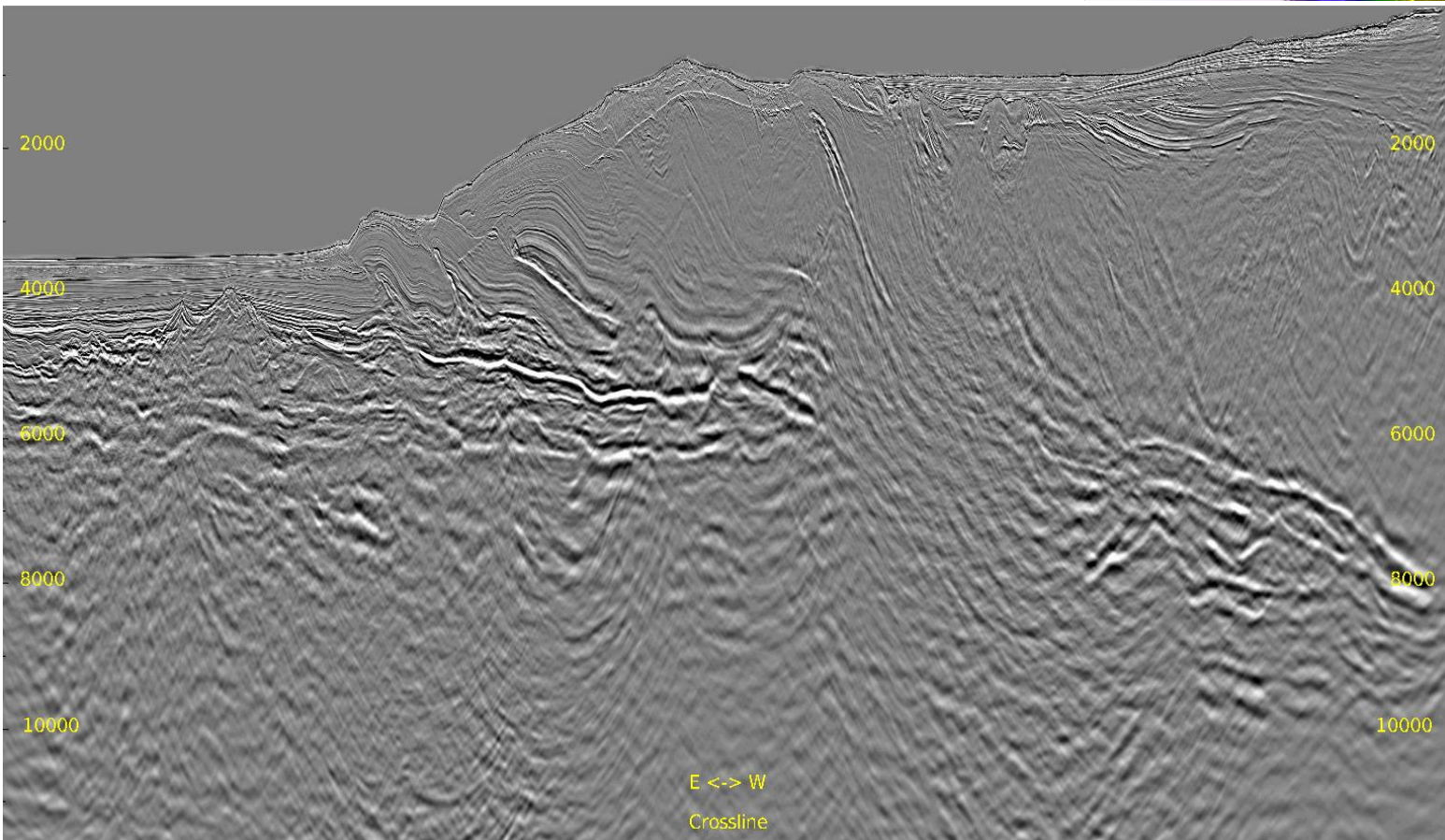
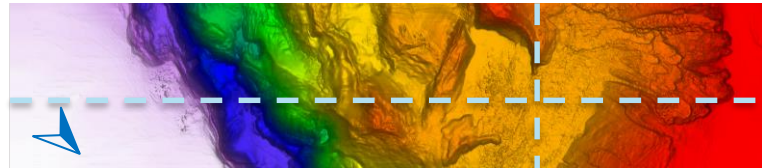
Full Stack: Initial

Inline 500 & Crossline 3931



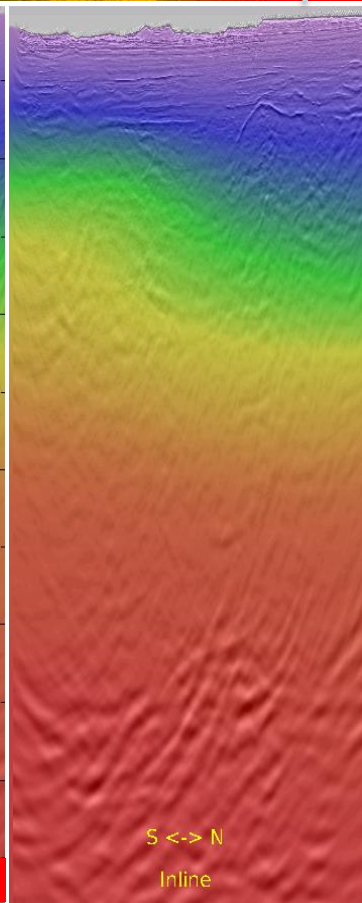
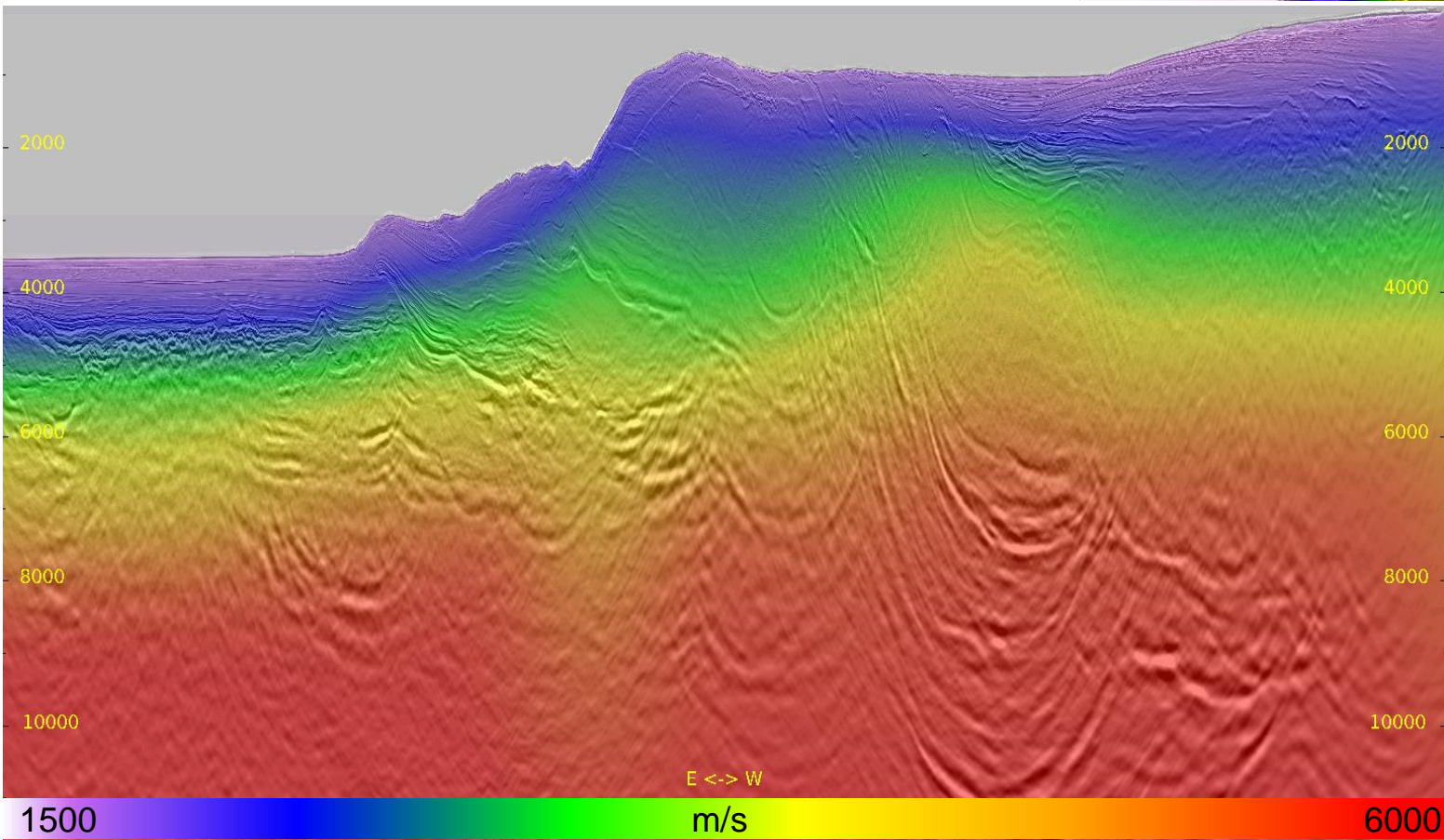
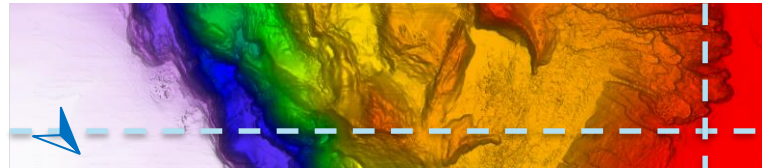
Full Stack: IT5 Final

Inline 500 & Crossline 3931



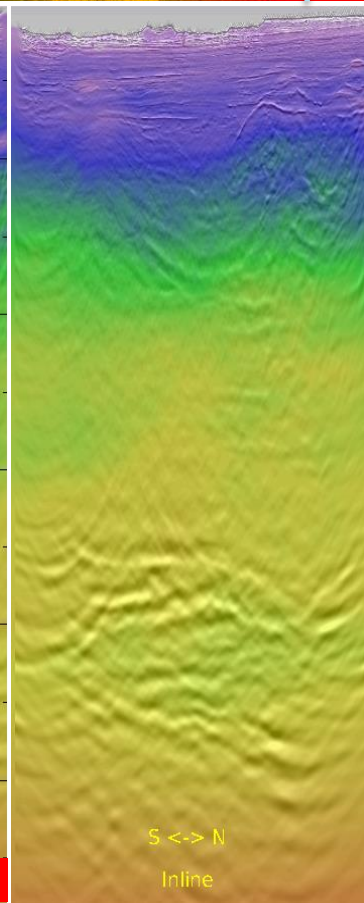
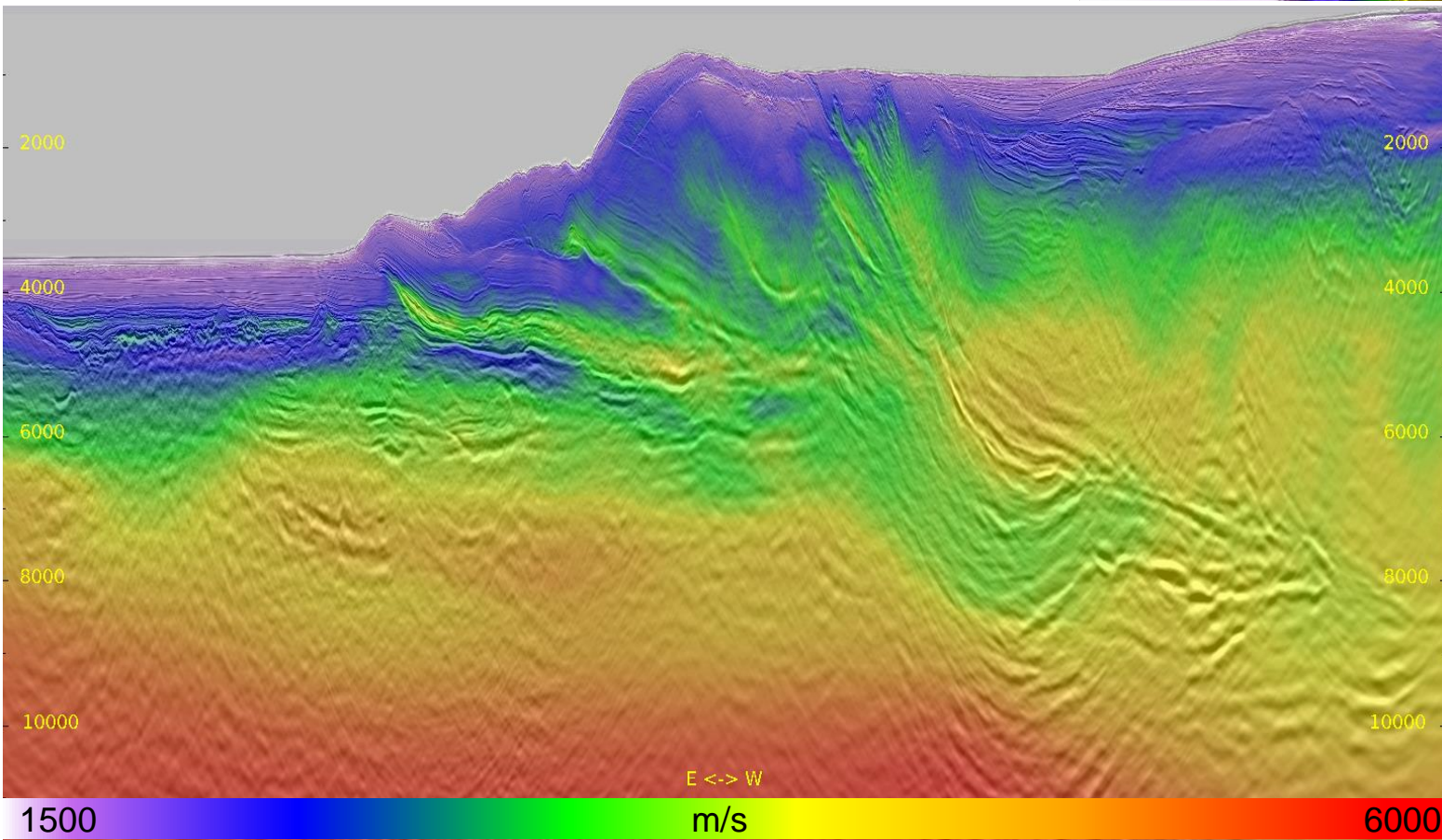
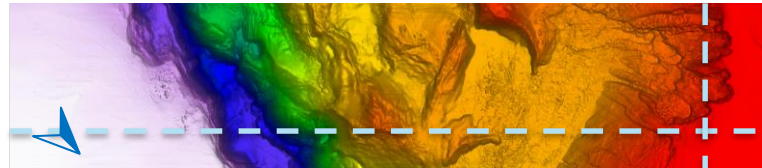
Full Stack: Initial Velocity

Inline 636 & Crossline 5159



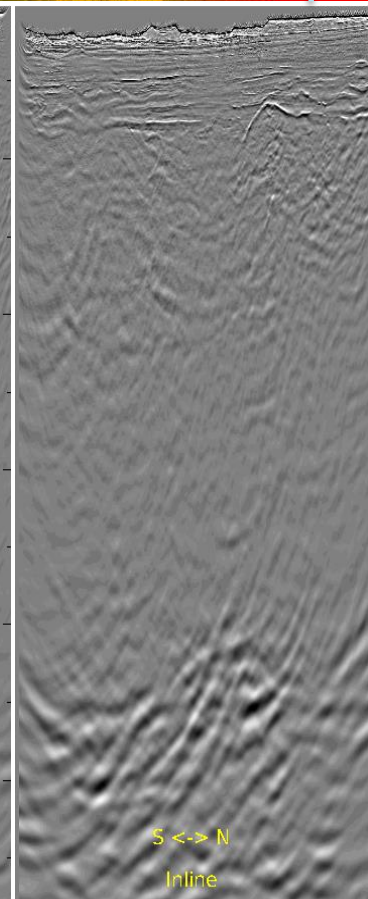
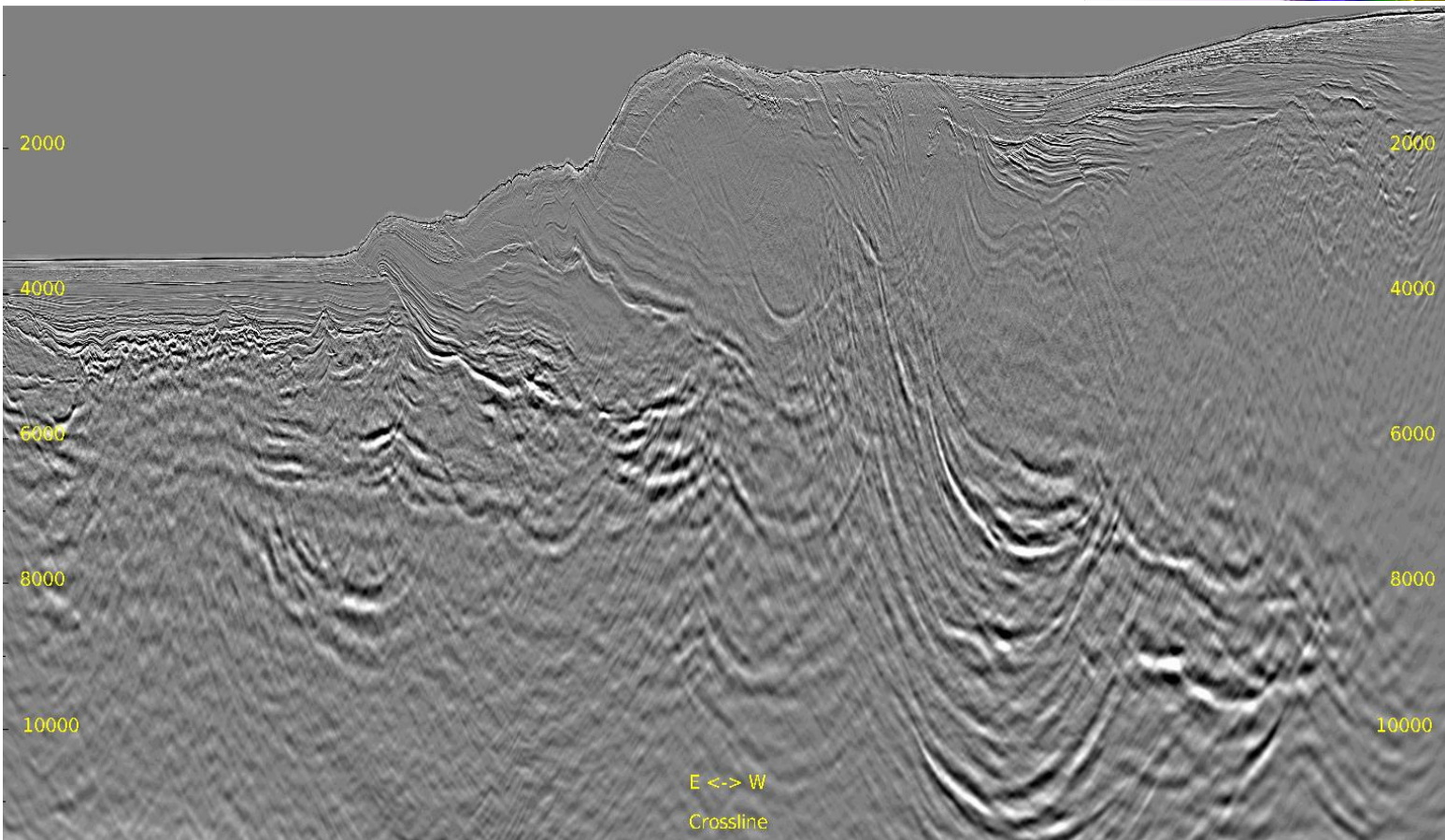
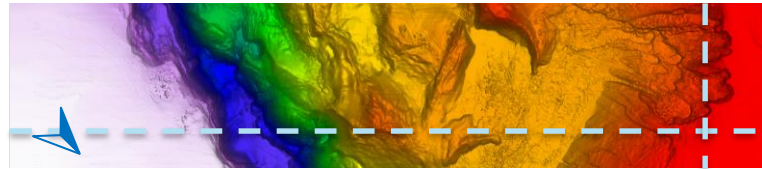
Full Stack: IT5 Final Velocity

Inline 636 & Crossline 5159



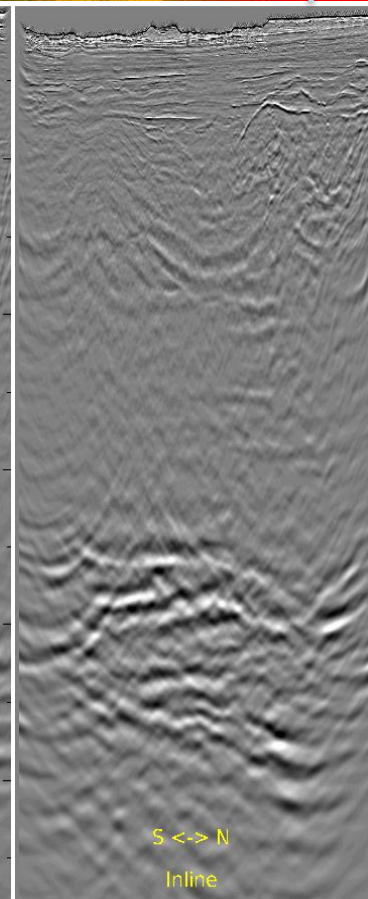
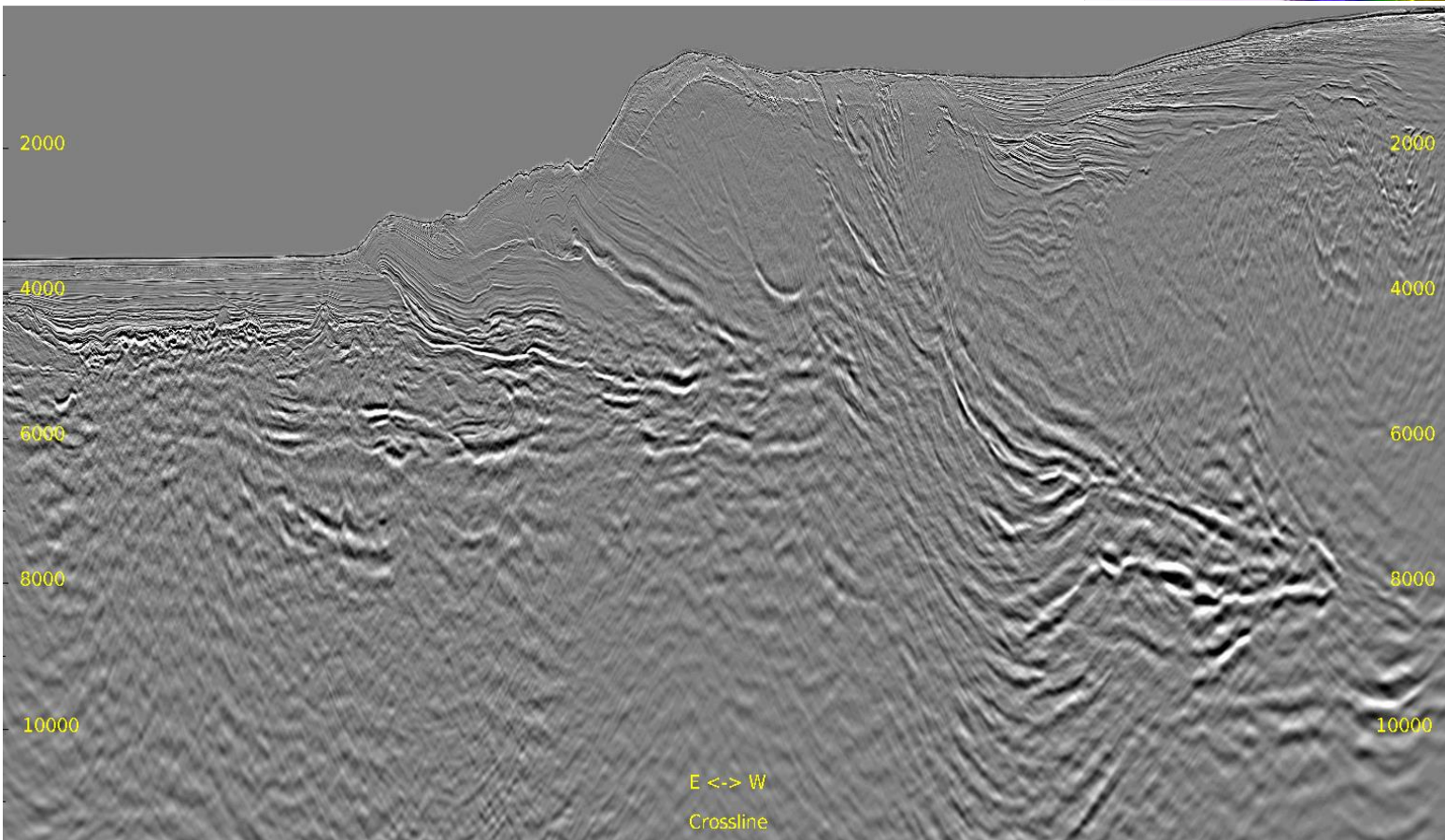
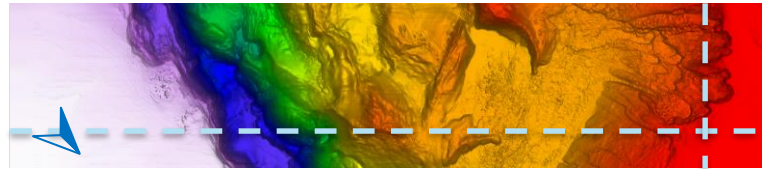
Full Stack: Initial

Inline 636 & Crossline 5159



Full Stack: IT5 Final

Inline 636 & Crossline 5159





- The VMB process results in a high-resolution and more geological velocity that greatly improves the stack image. We recommend to use it for final migration.
- Resulting events are shallower compared to our initial estimation at the start of the project. We recommend the final migration depth to 15km instead of 20km.