



Isotropic FWI – Migration QC

NZ 3D Processing

11 November 2020

cgg.com



INSTITUTE FOR GEOPHYSICS



Passion for Geoscience

- **Objective:**

To QC isotropic (ISO) FWI result via depth migration.

- **Procedure:**

The VMB migration input is prepared from the production data after linear noise attenuation. Several key steps were applied to reasonably clean the data. These processes include WCS, RMC, 2D deghost, 3D demultiple, and some simple denoise. Kirchhoff depth migrations were done with 5 km aperture and down to 15 km. A time variant scale was applied to balance the amplitude for QC purpose.

- **Display:**

Velocity and migrated depth full stack & gathers.

- **Observation and Recommendation:**

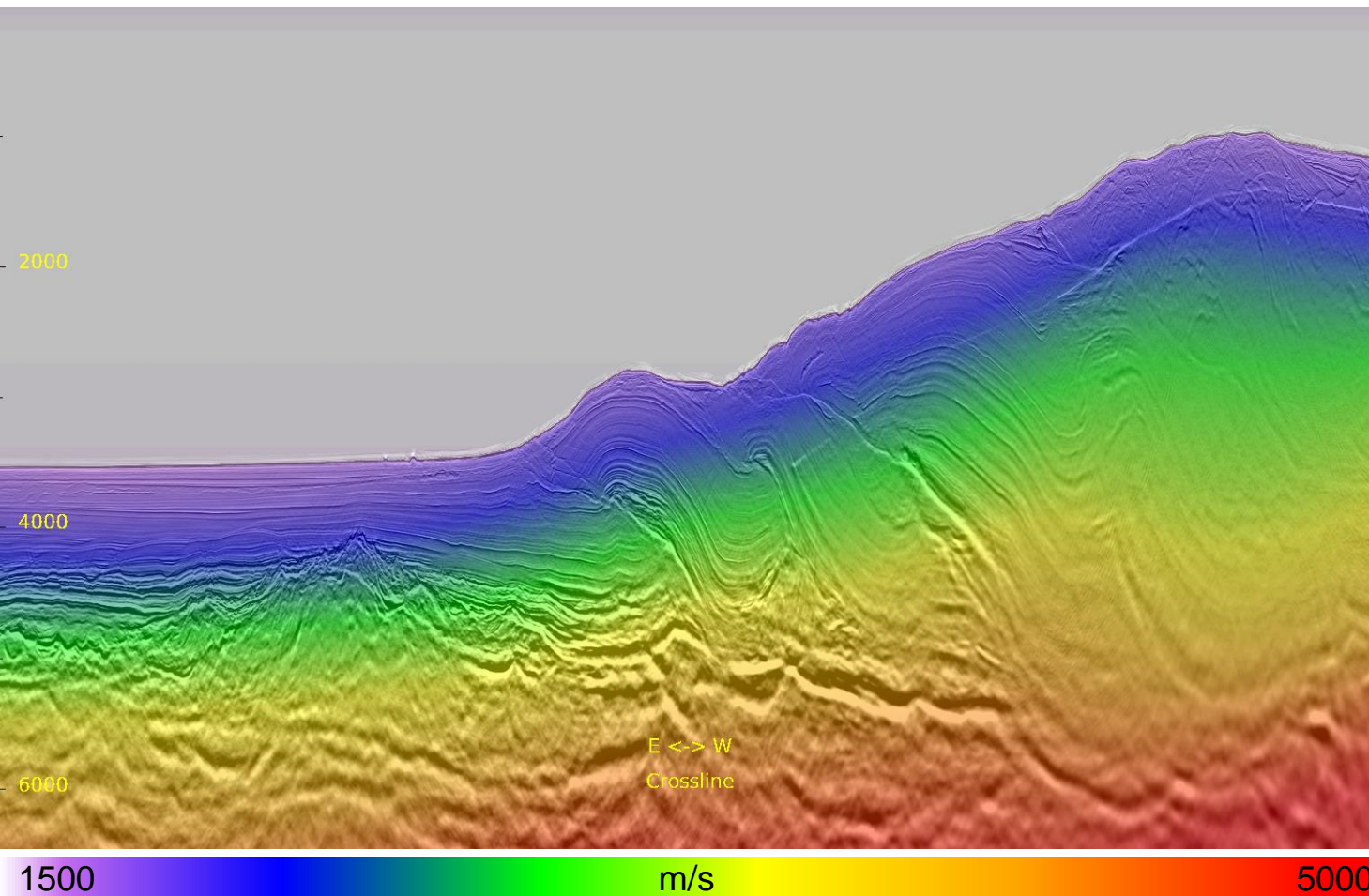
ISO FWI velocity gives overall flatter gathers and improvements on migrated stack, compared to initial velocity. We recommend to move on to ISO tomography.

Velocity Model

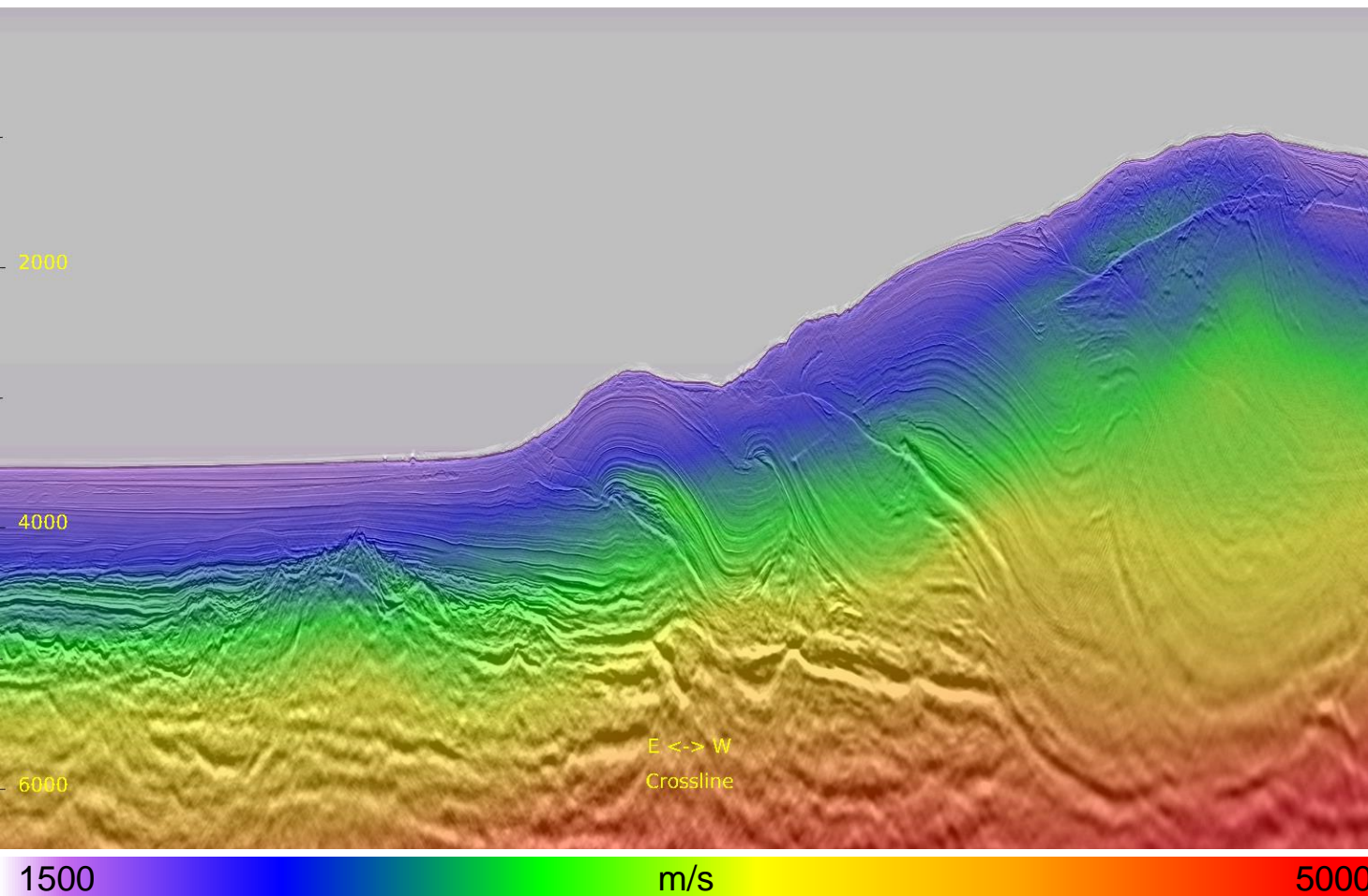


Inline 436 East: Initial Velocity

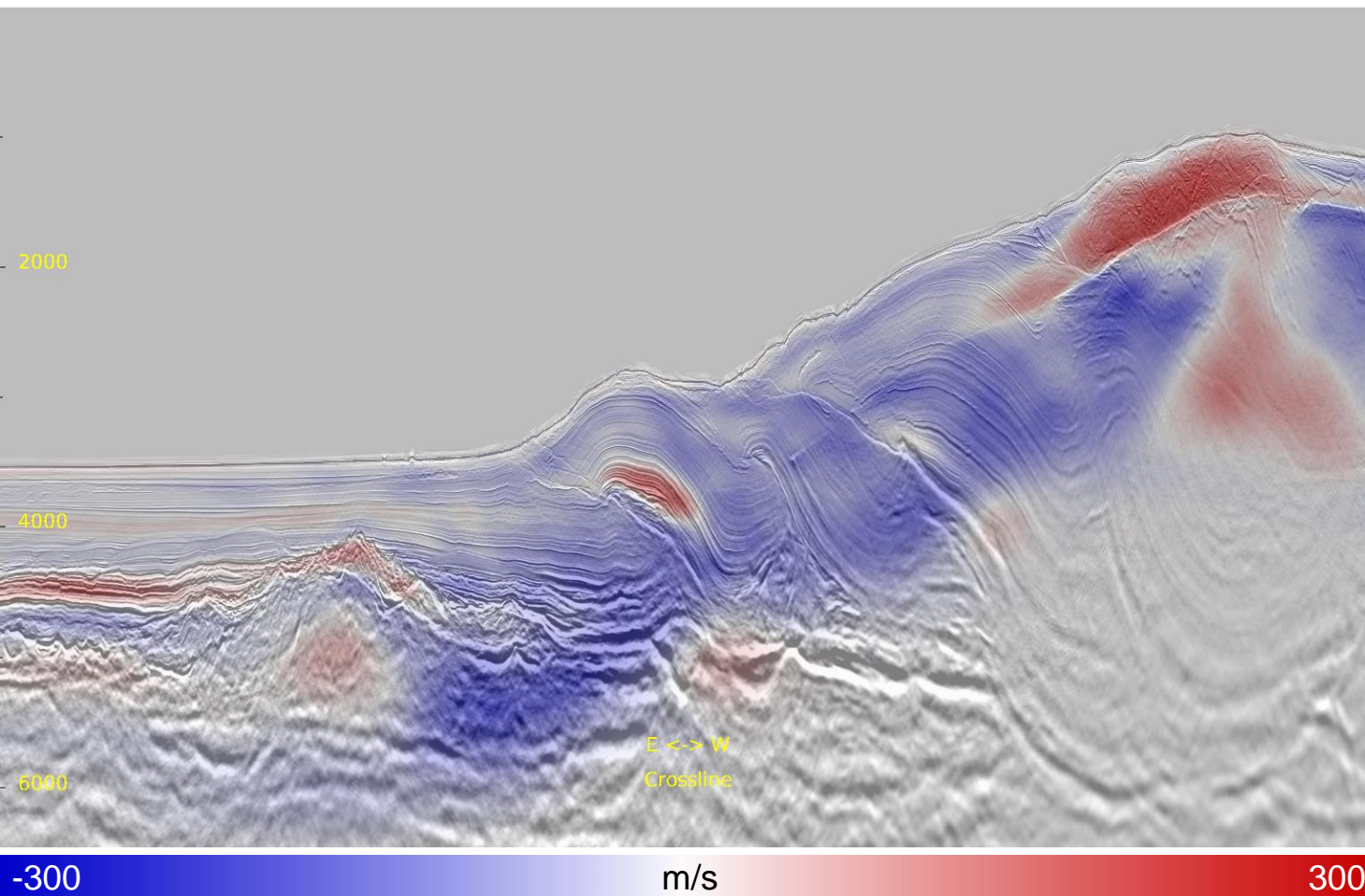
4



- Initial velocity is smooth.



- ISO FWI gives reasonable update that follows geology, down to 2km beneath water bottom.

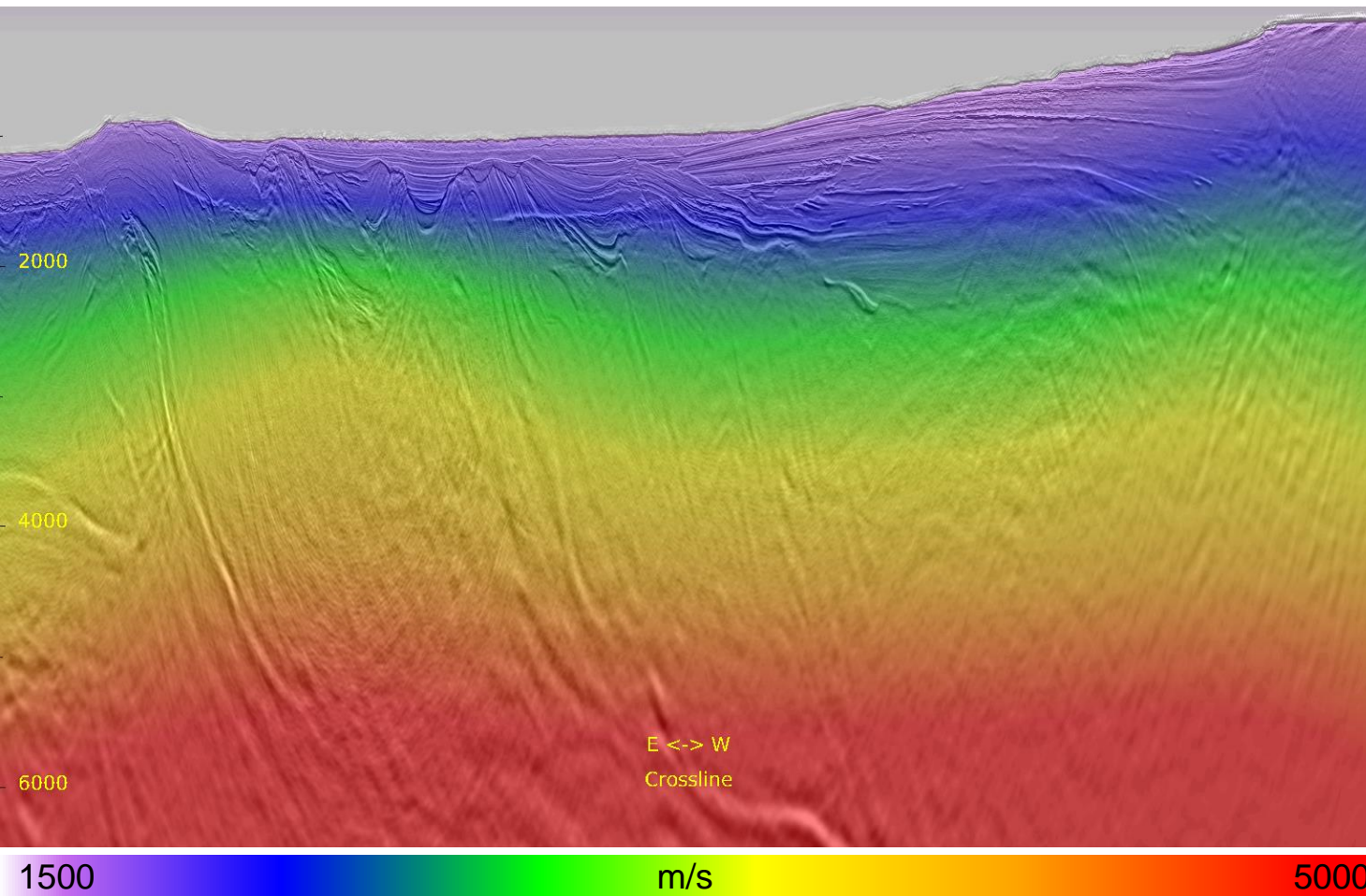


- ISO FWI gives reasonable update that follows geology, down to 2km beneath water bottom.
- The perturbation deeper than 2km beneath water bottom is removed with taper.

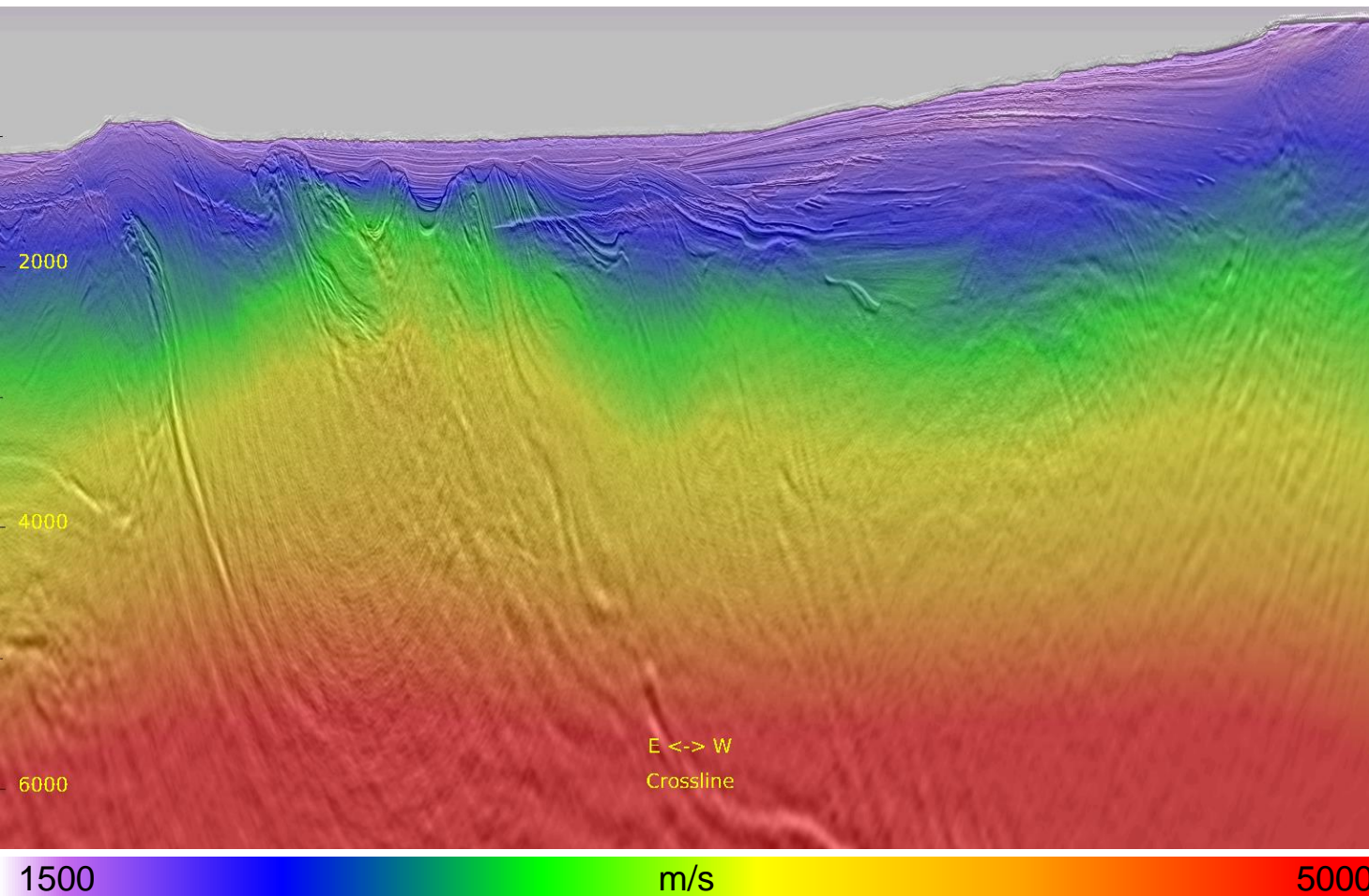


Inline 436 West: Initial Velocity

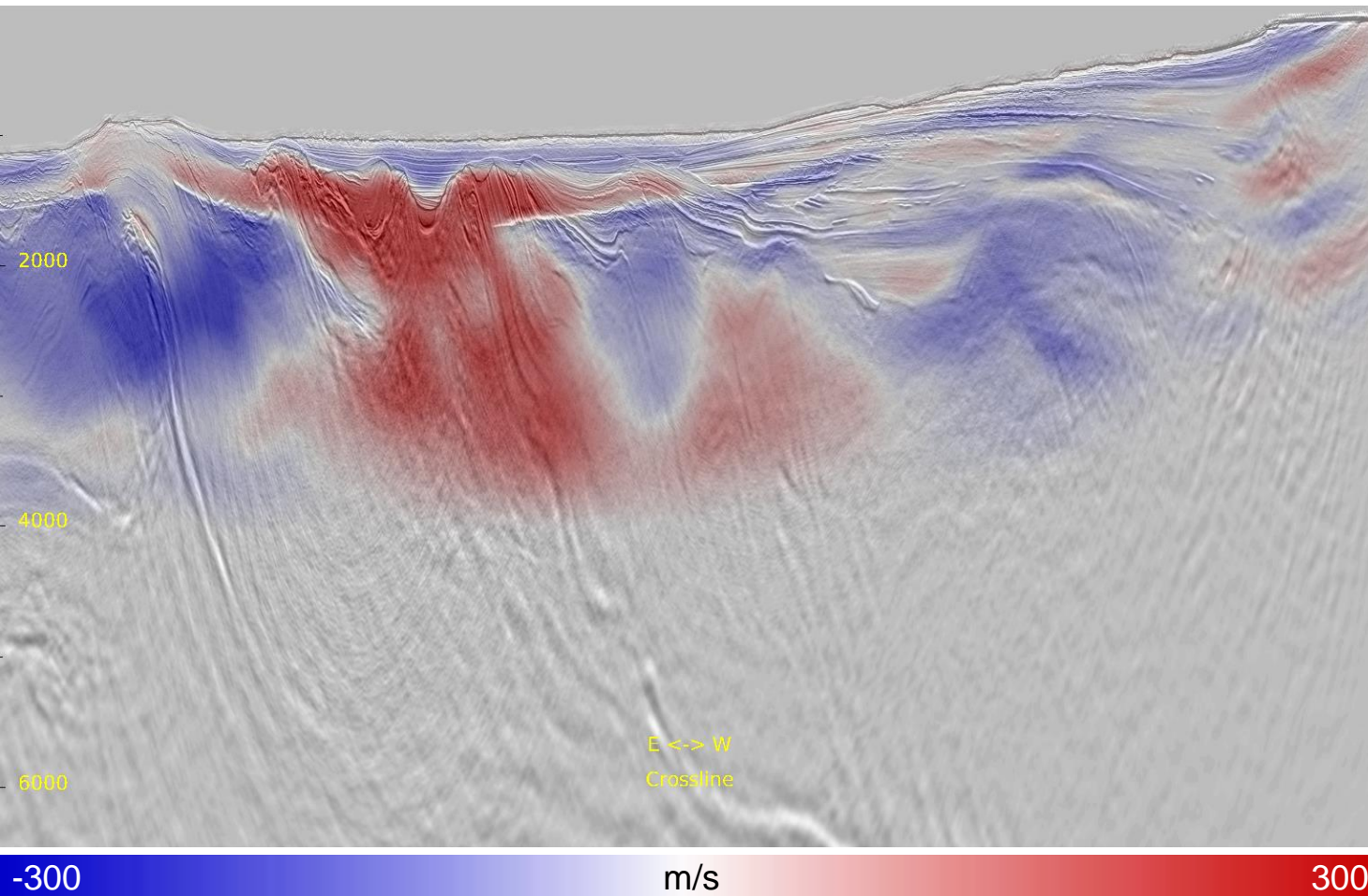
7



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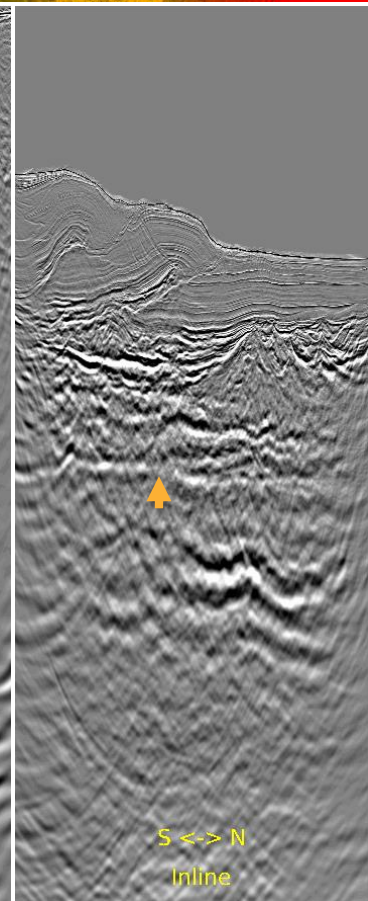
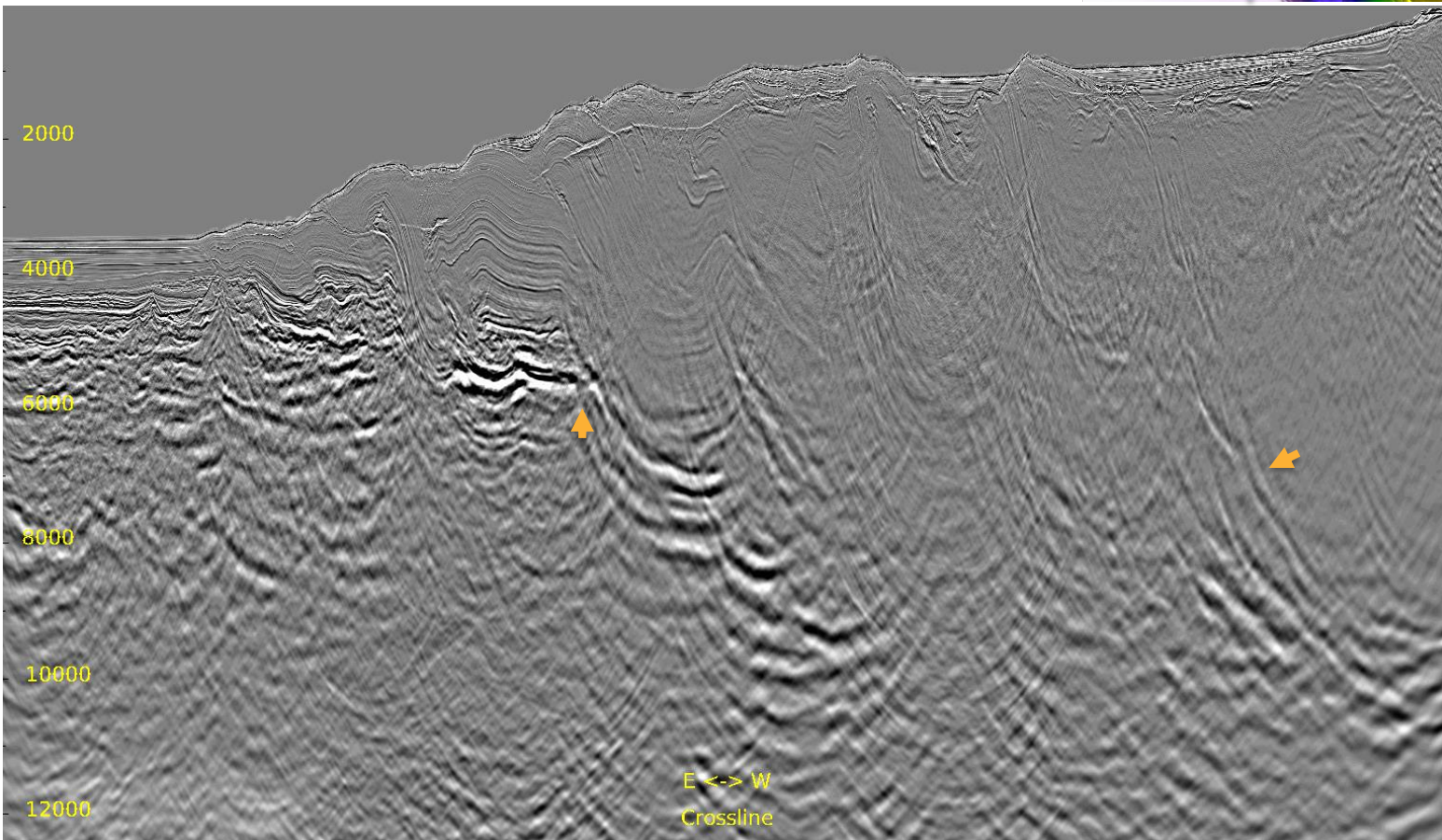
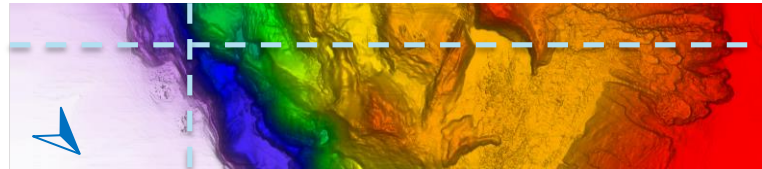
Kirchhoff Depth Migration





Full Stack: Initial

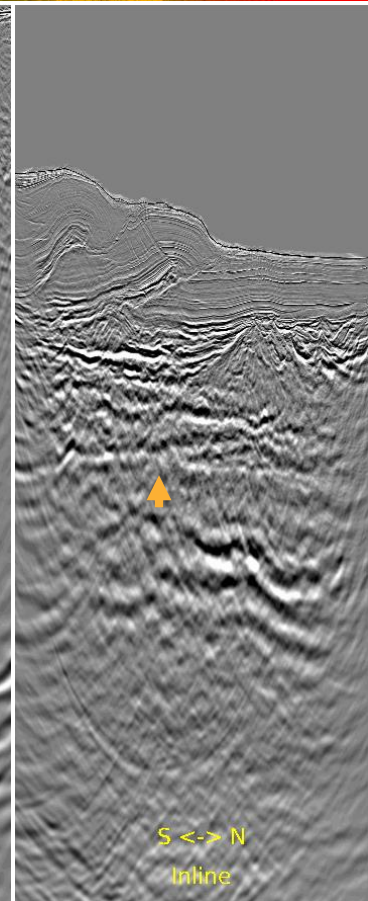
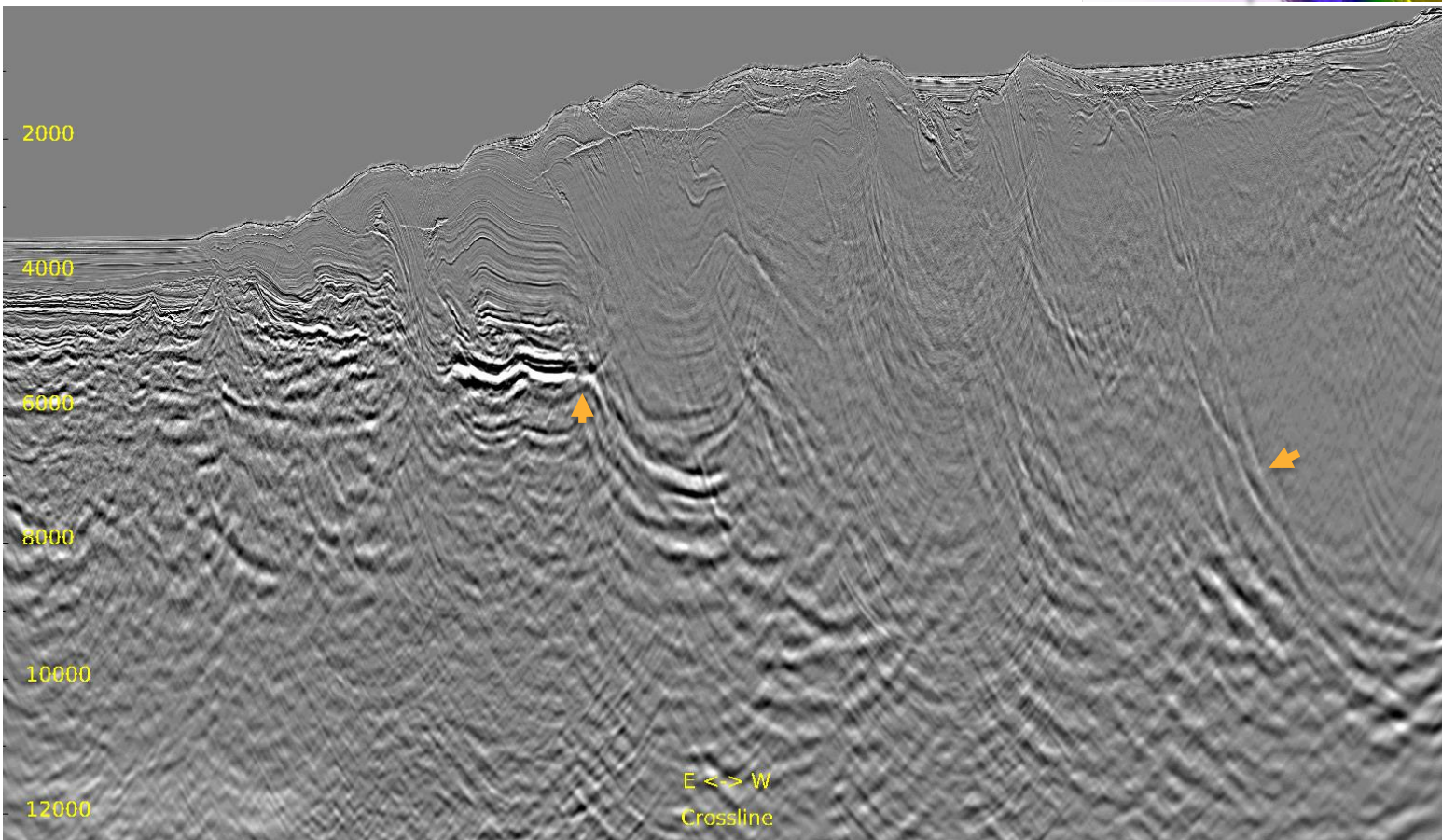
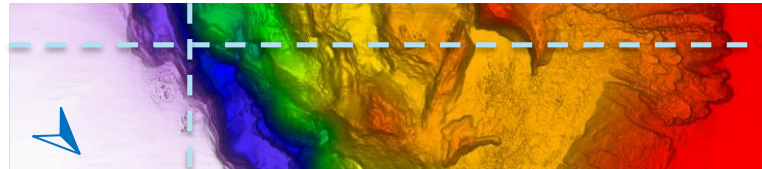
Inline 236 & Crossline 1540





Full Stack: ISO FWI

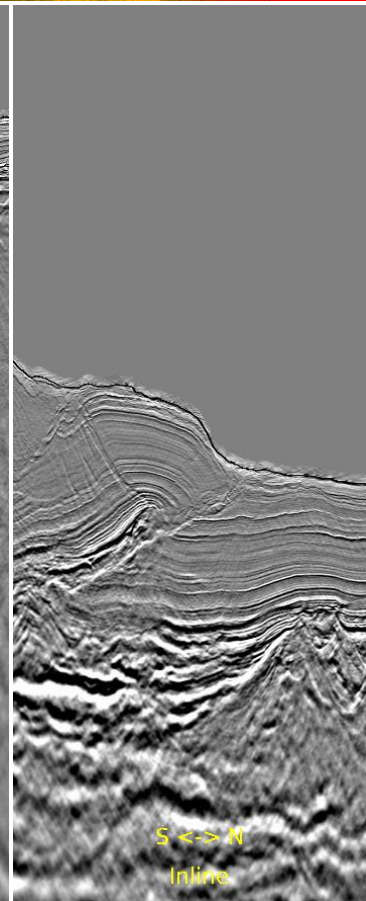
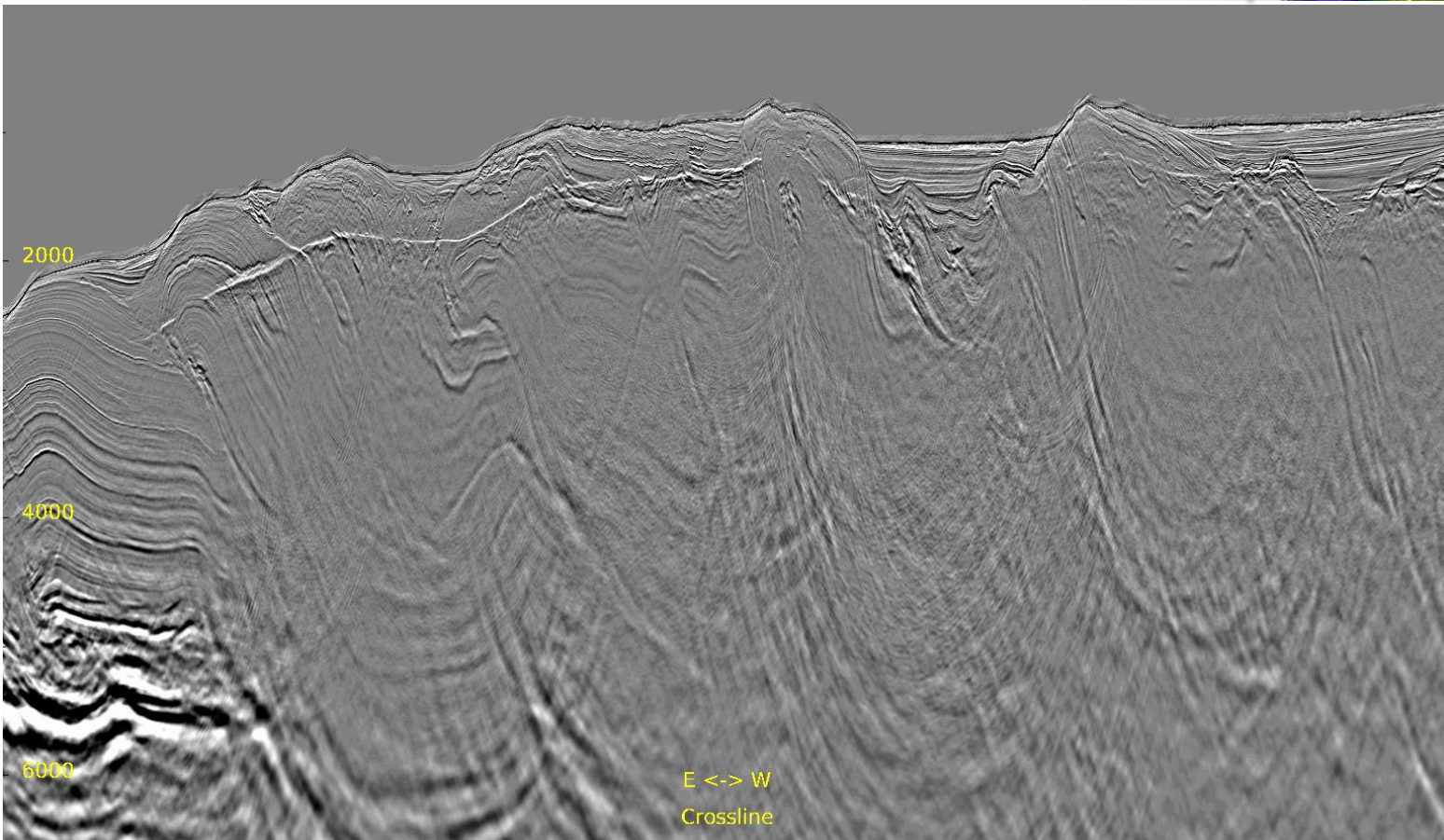
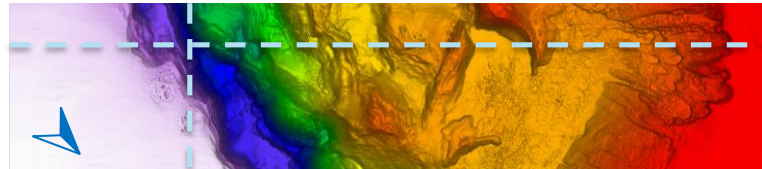
Inline 236 & Crossline 1540





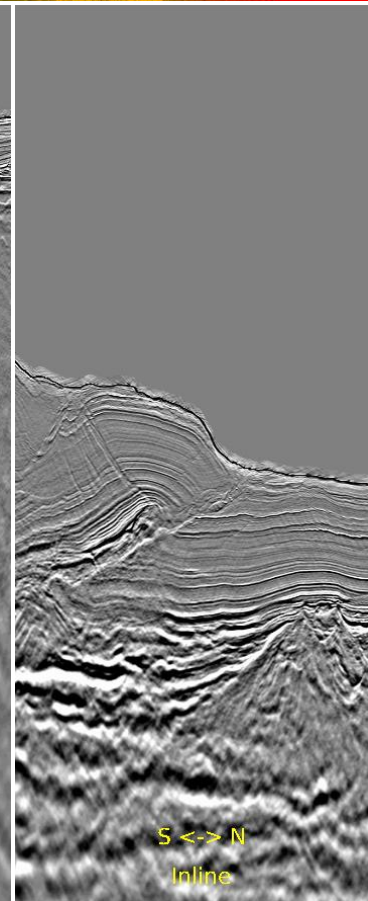
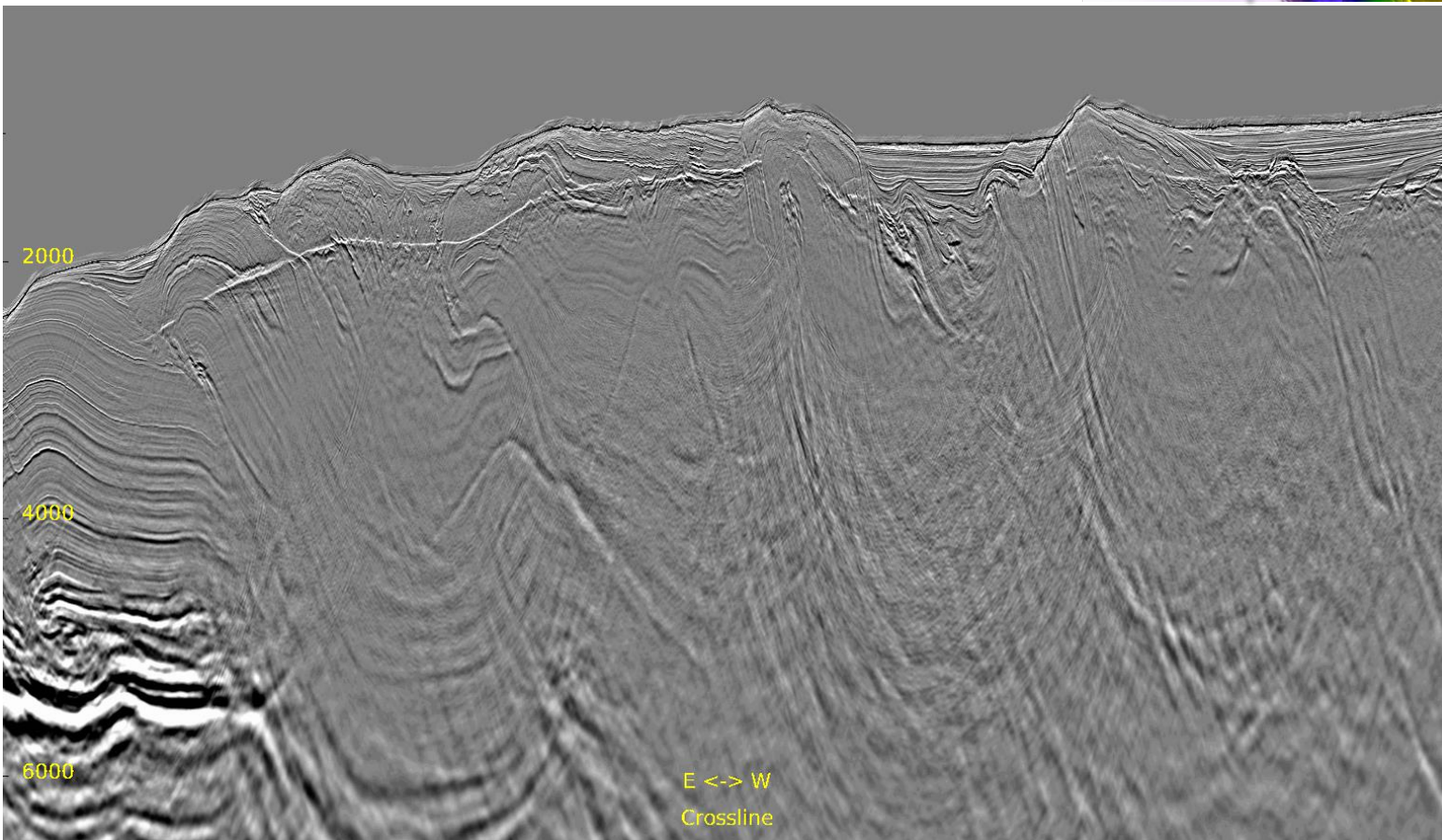
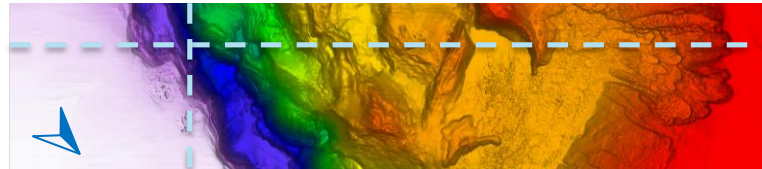
Zoomed Full Stack: Initial

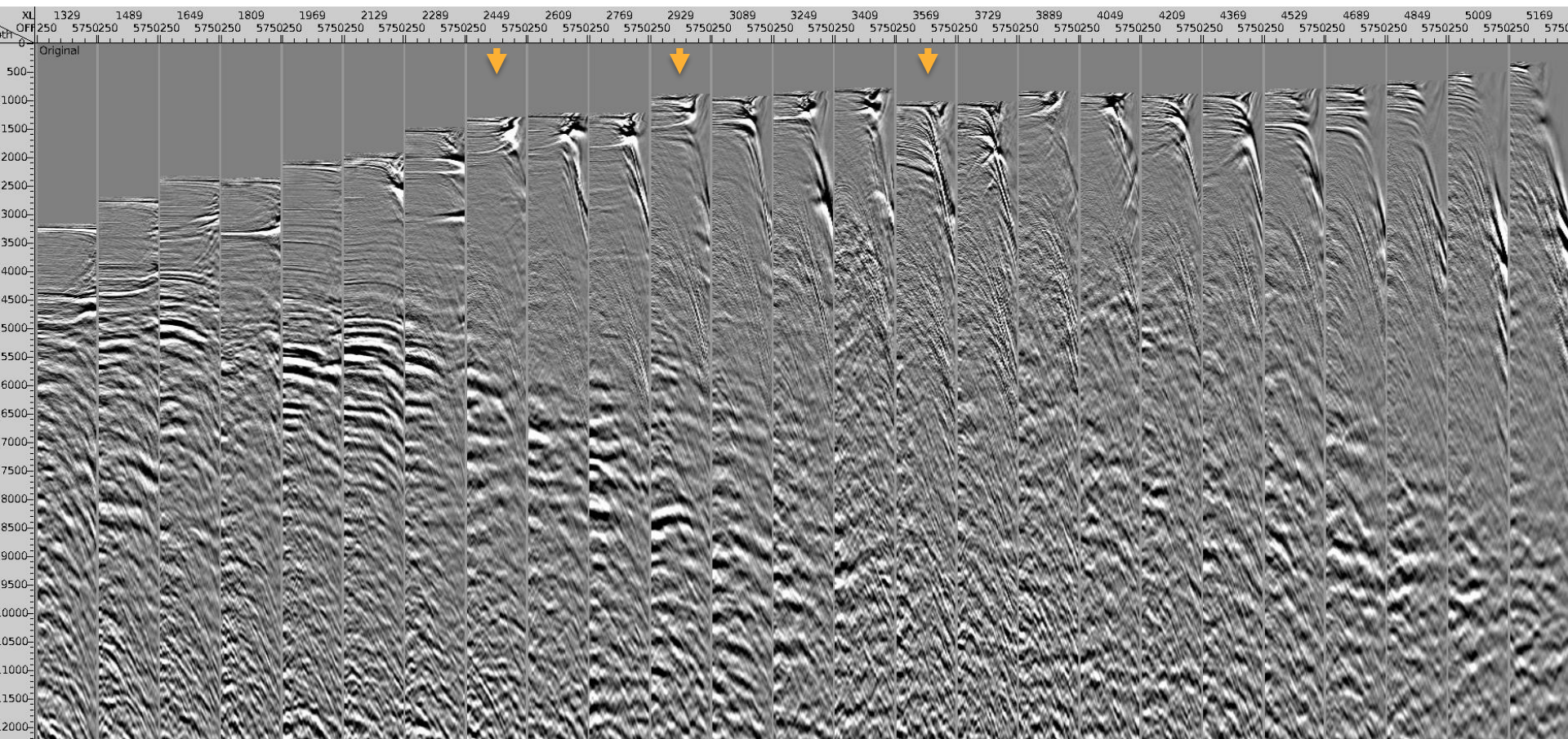
Inline 236 & Crossline 1540

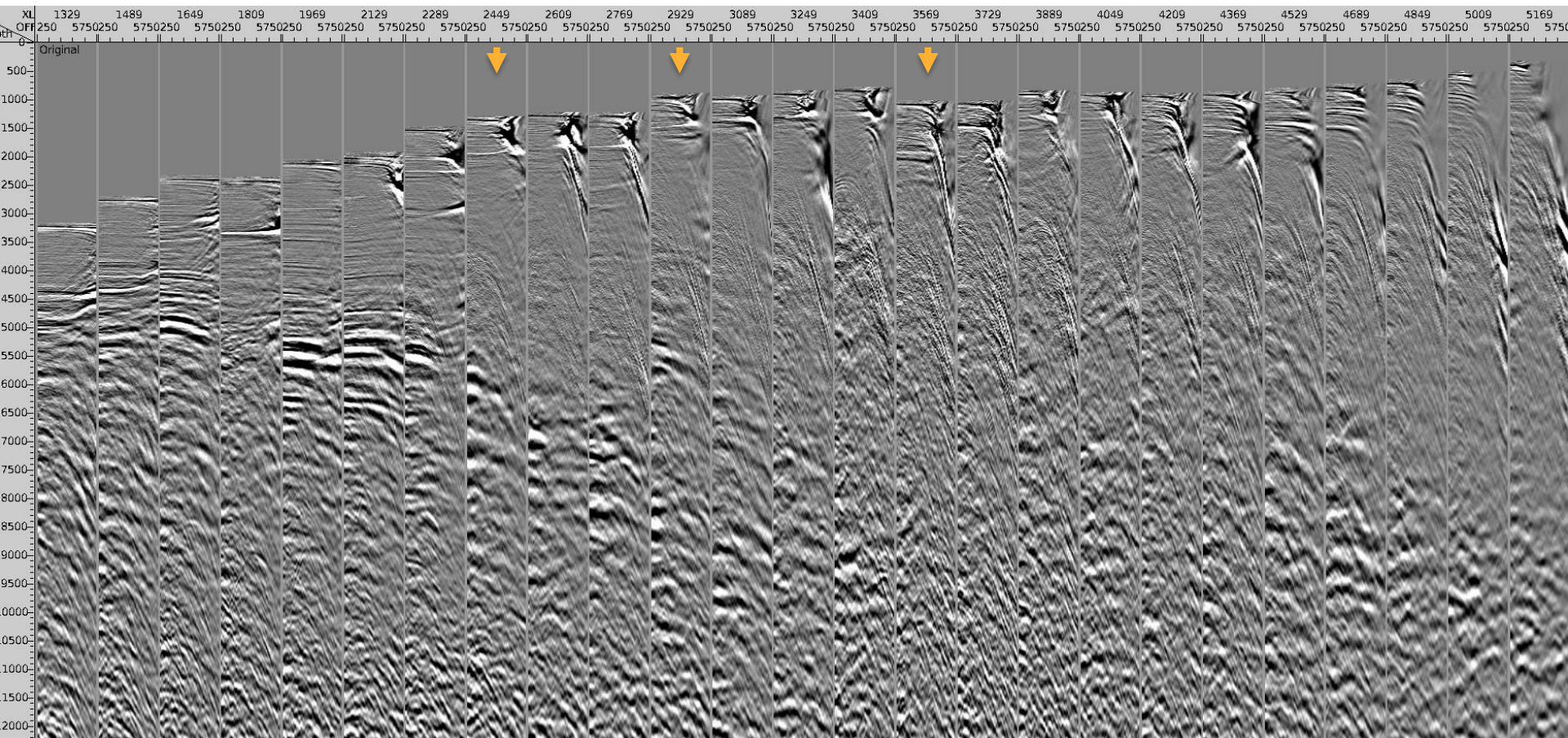


Zoomed Full Stack: ISO FWI

Inline 236 & Crossline 1540

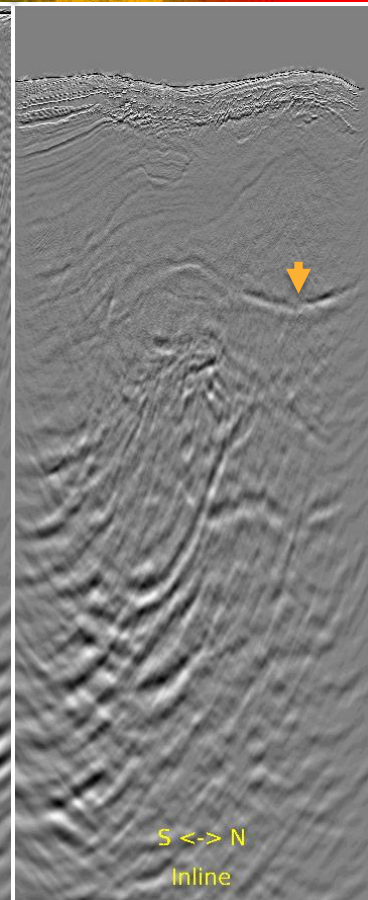
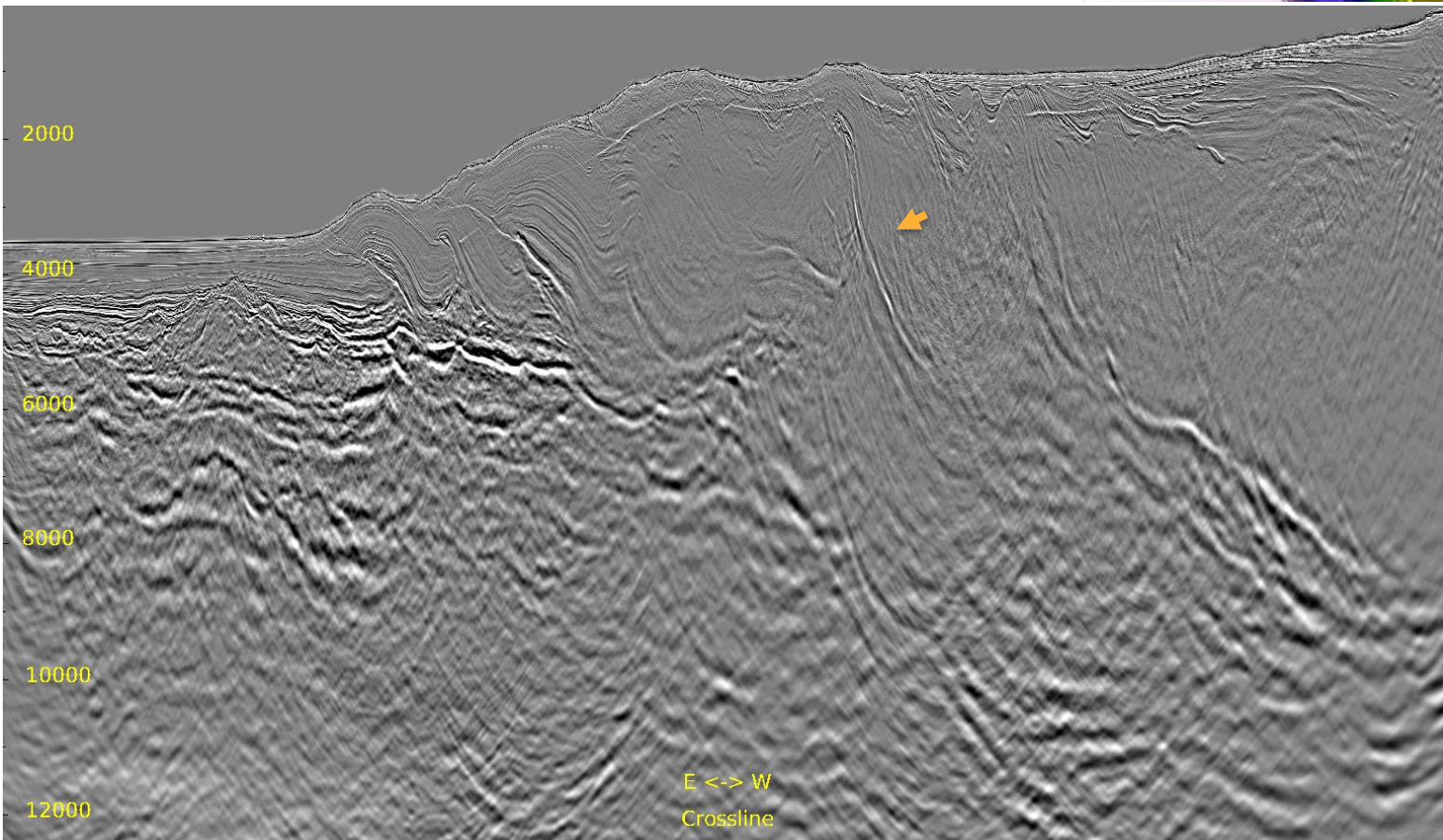
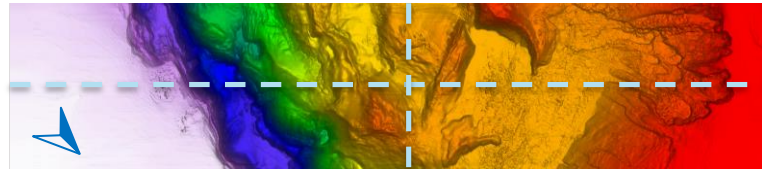






Full Stack: Initial

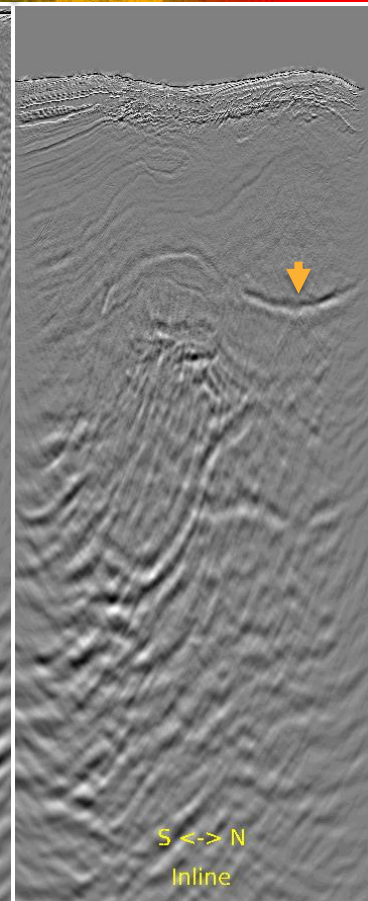
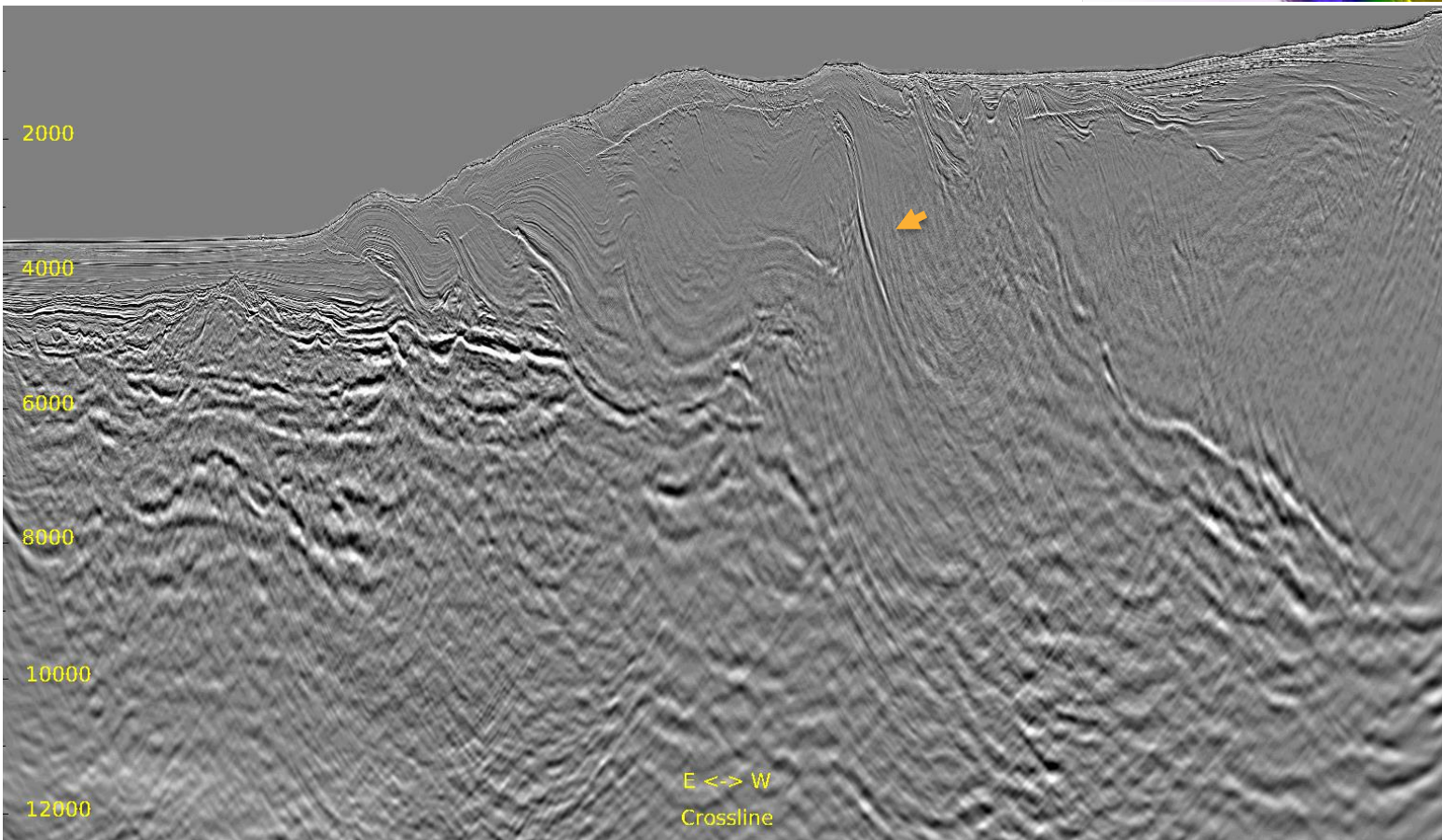
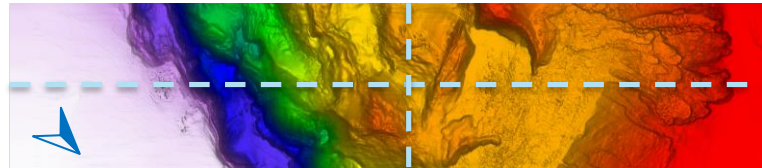
Inline 436 & Crossline 3040





Full Stack: ISO FWI

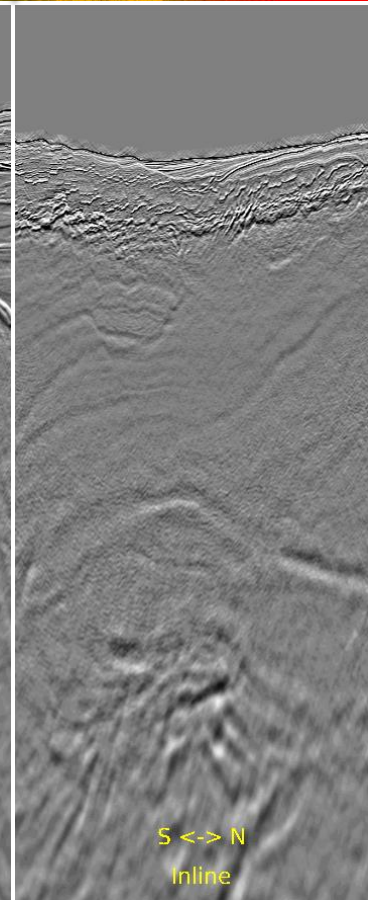
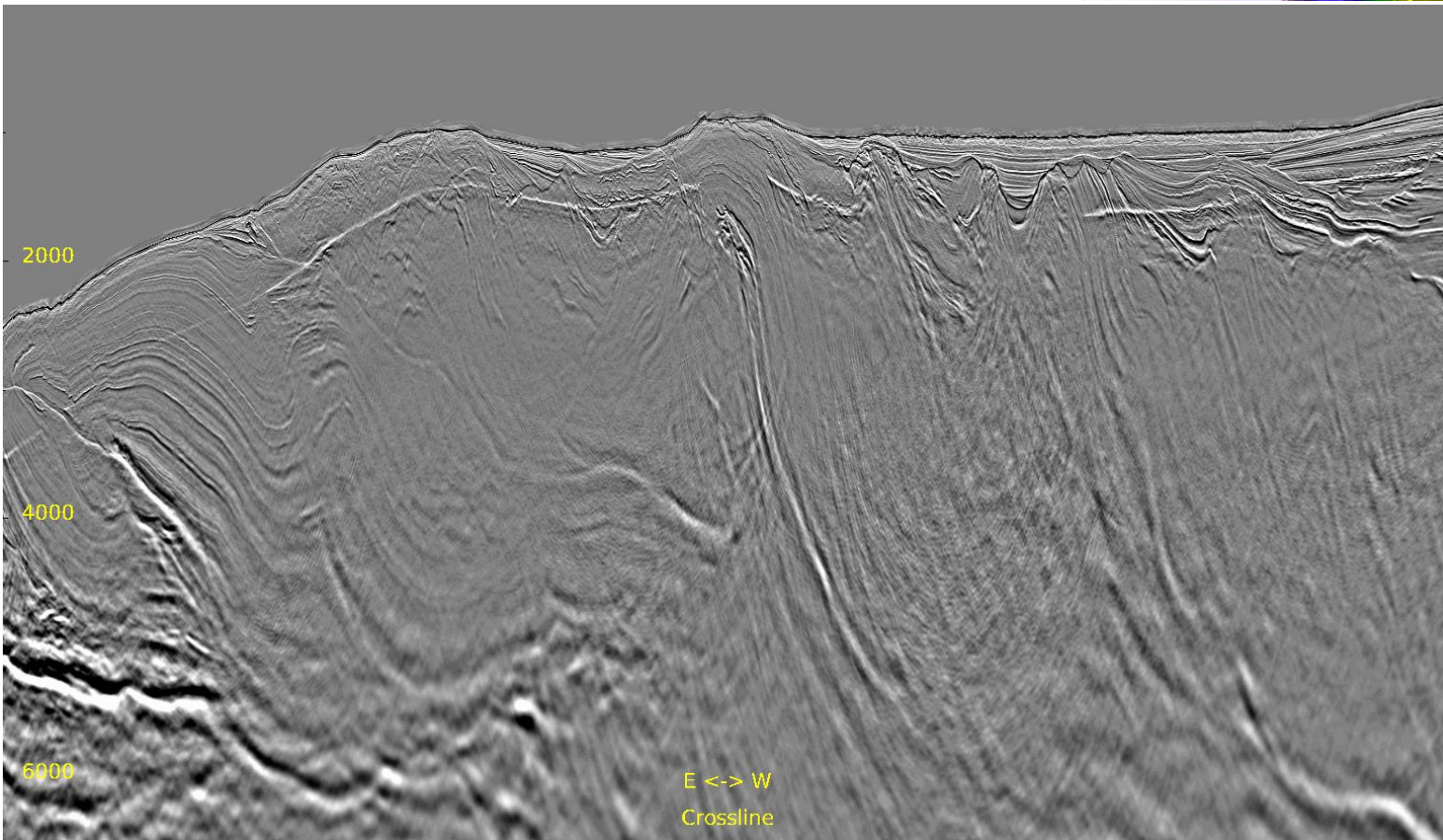
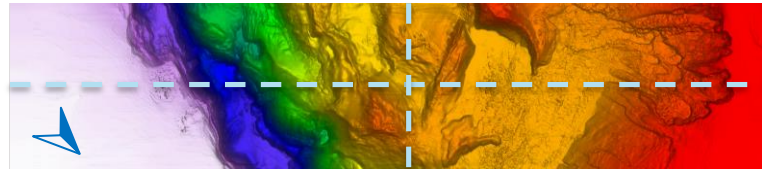
Inline 436 & Crossline 3040





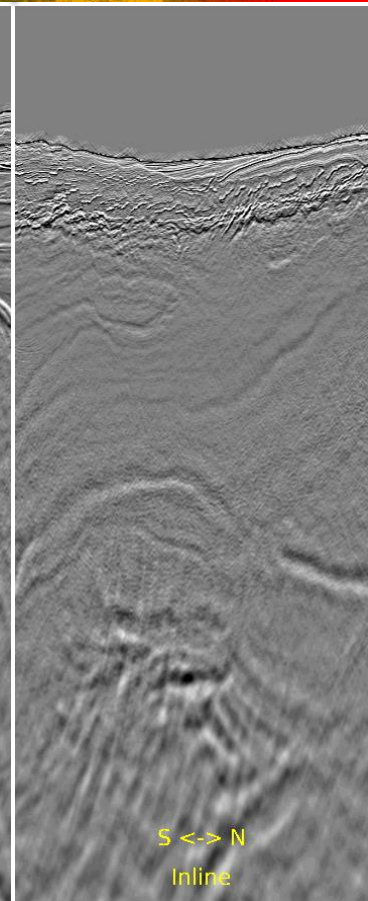
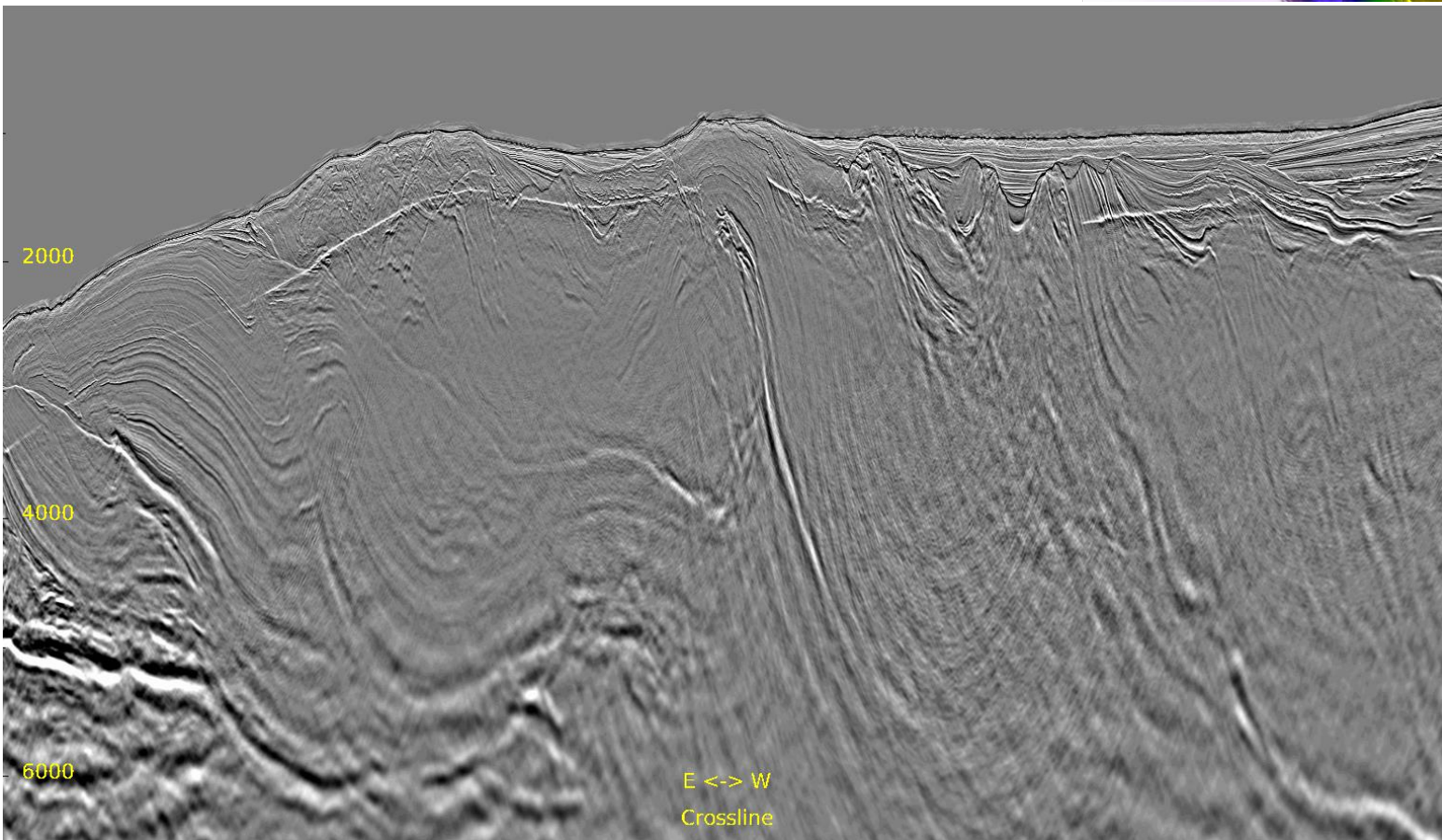
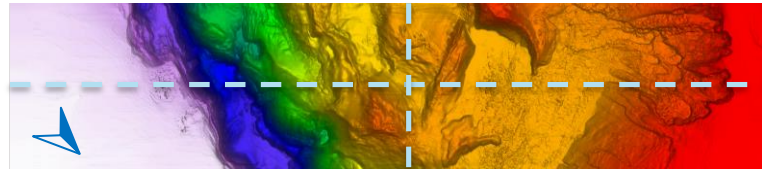
Zoomed Full Stack: Initial

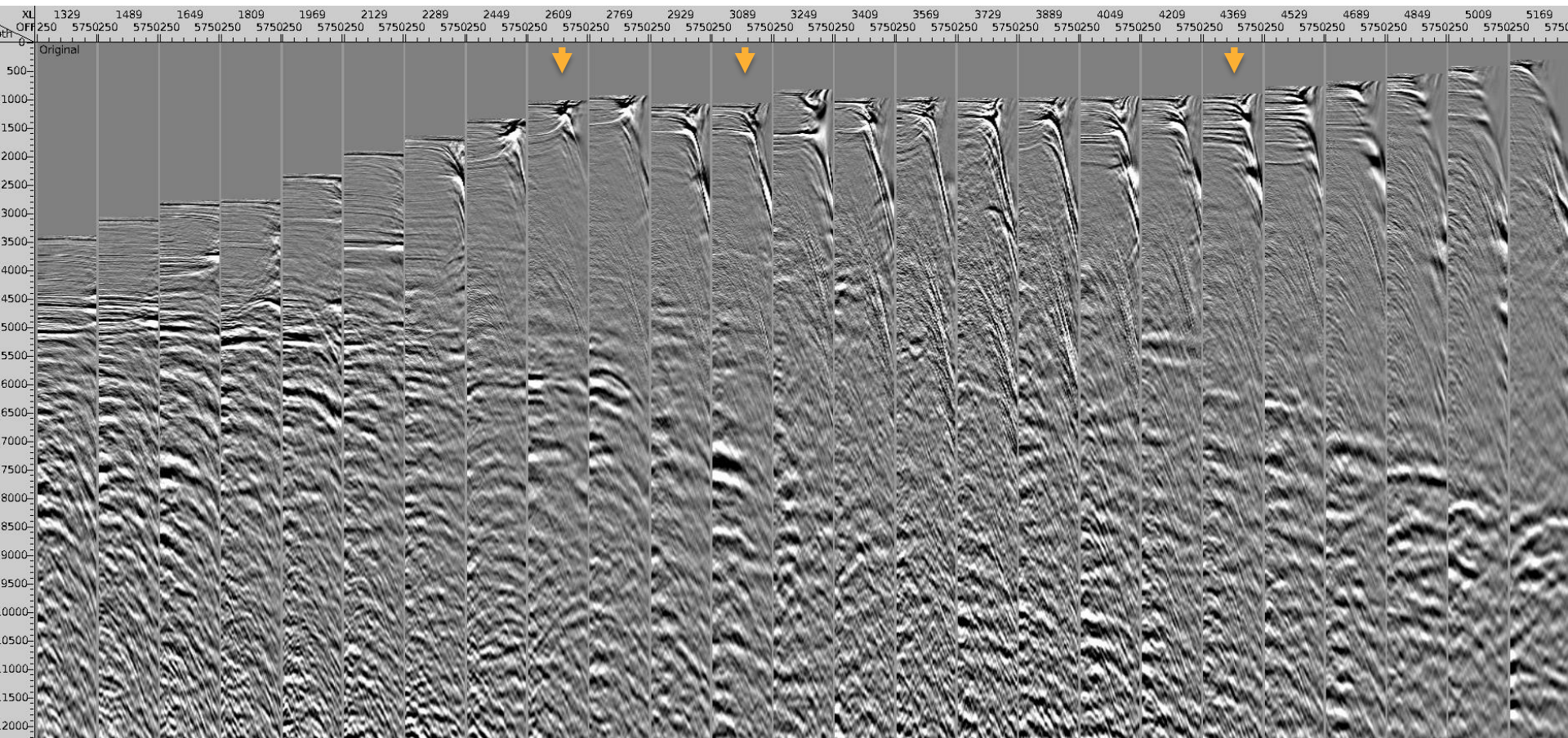
Inline 436 & Crossline 3040

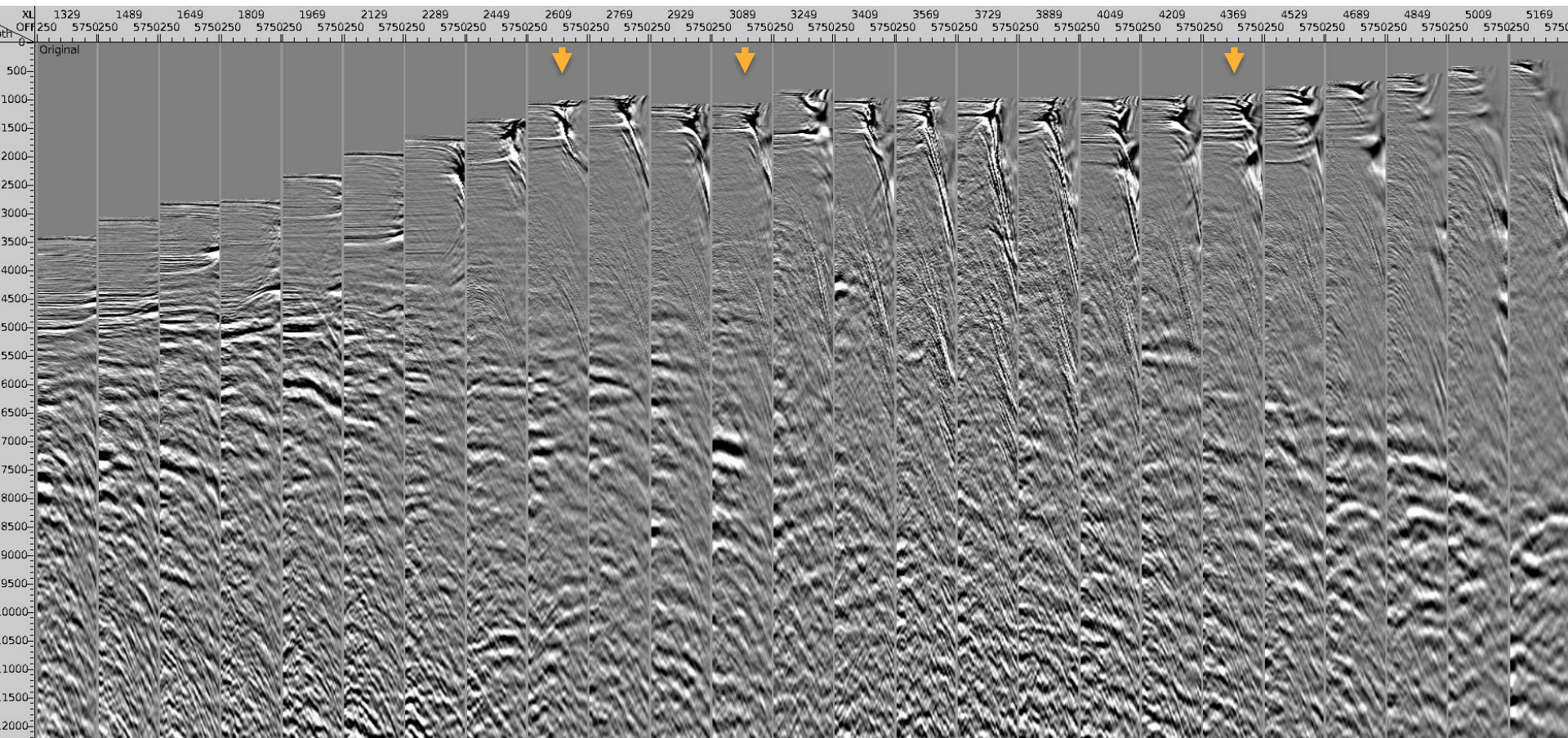


Zoomed Full Stack: ISO FWI

Inline 436 & Crossline 3040



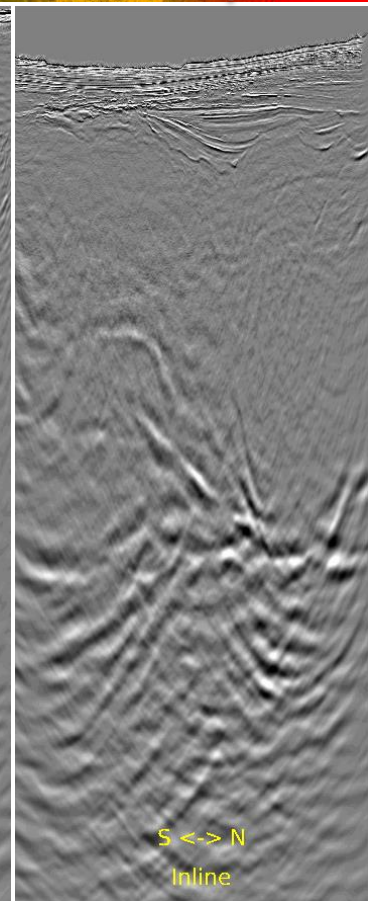
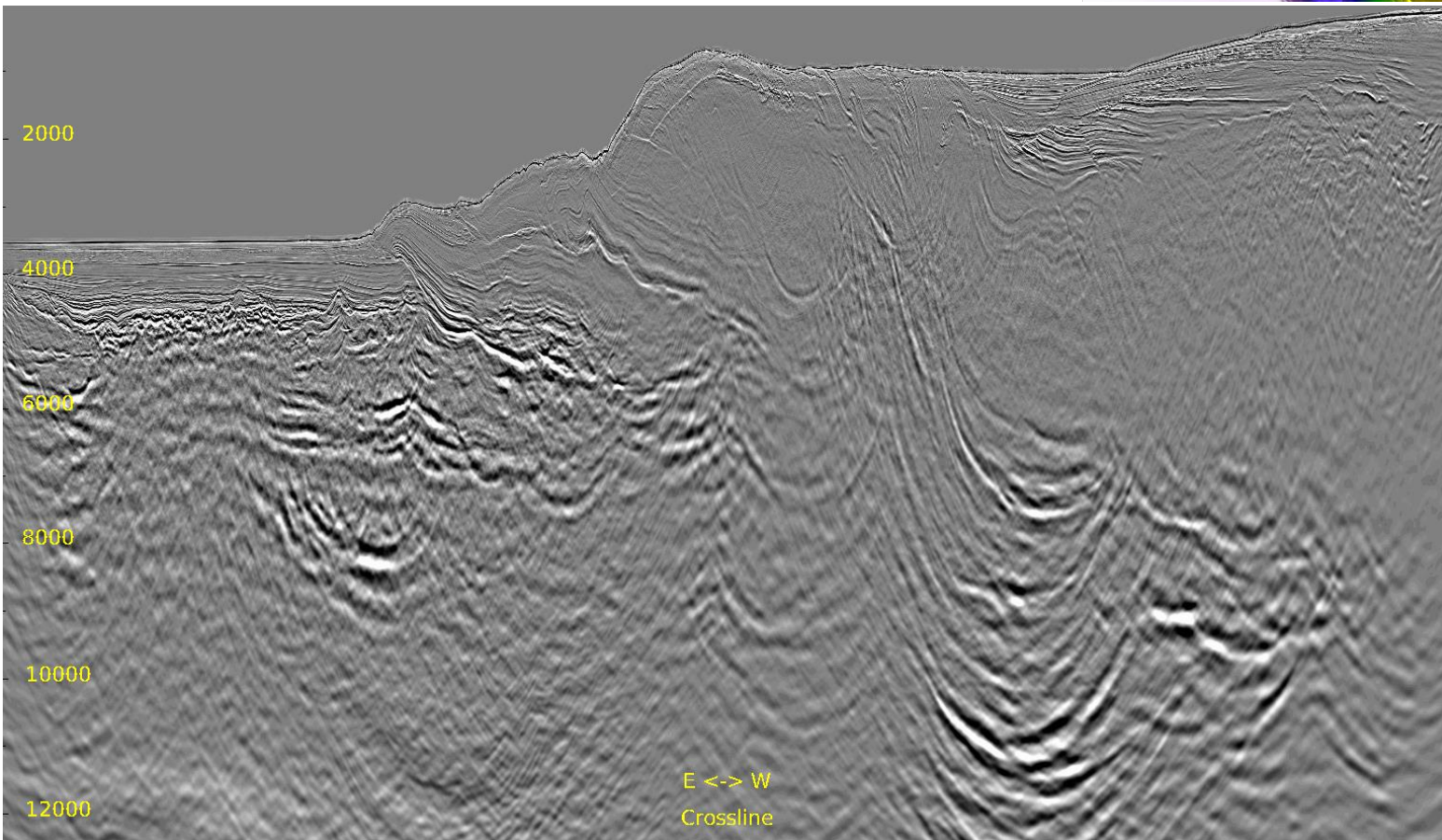
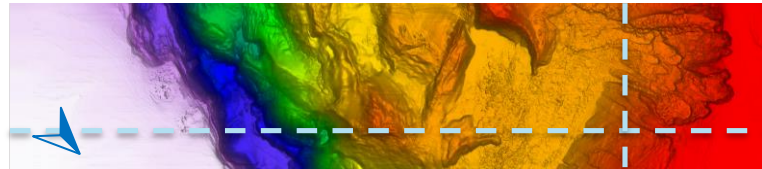






Full Stack: Initial

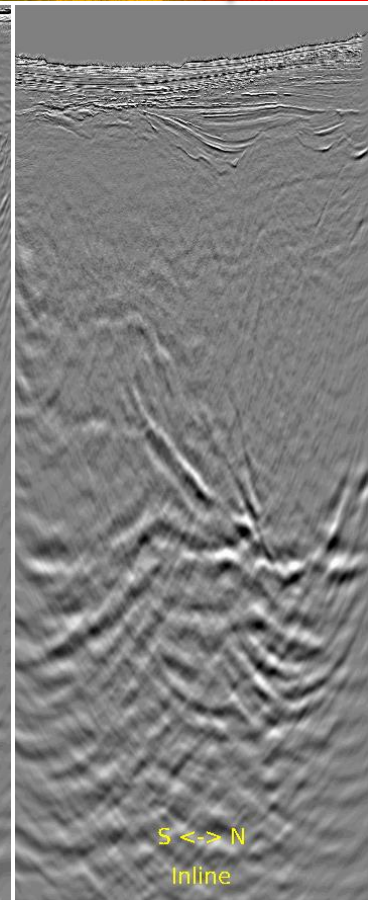
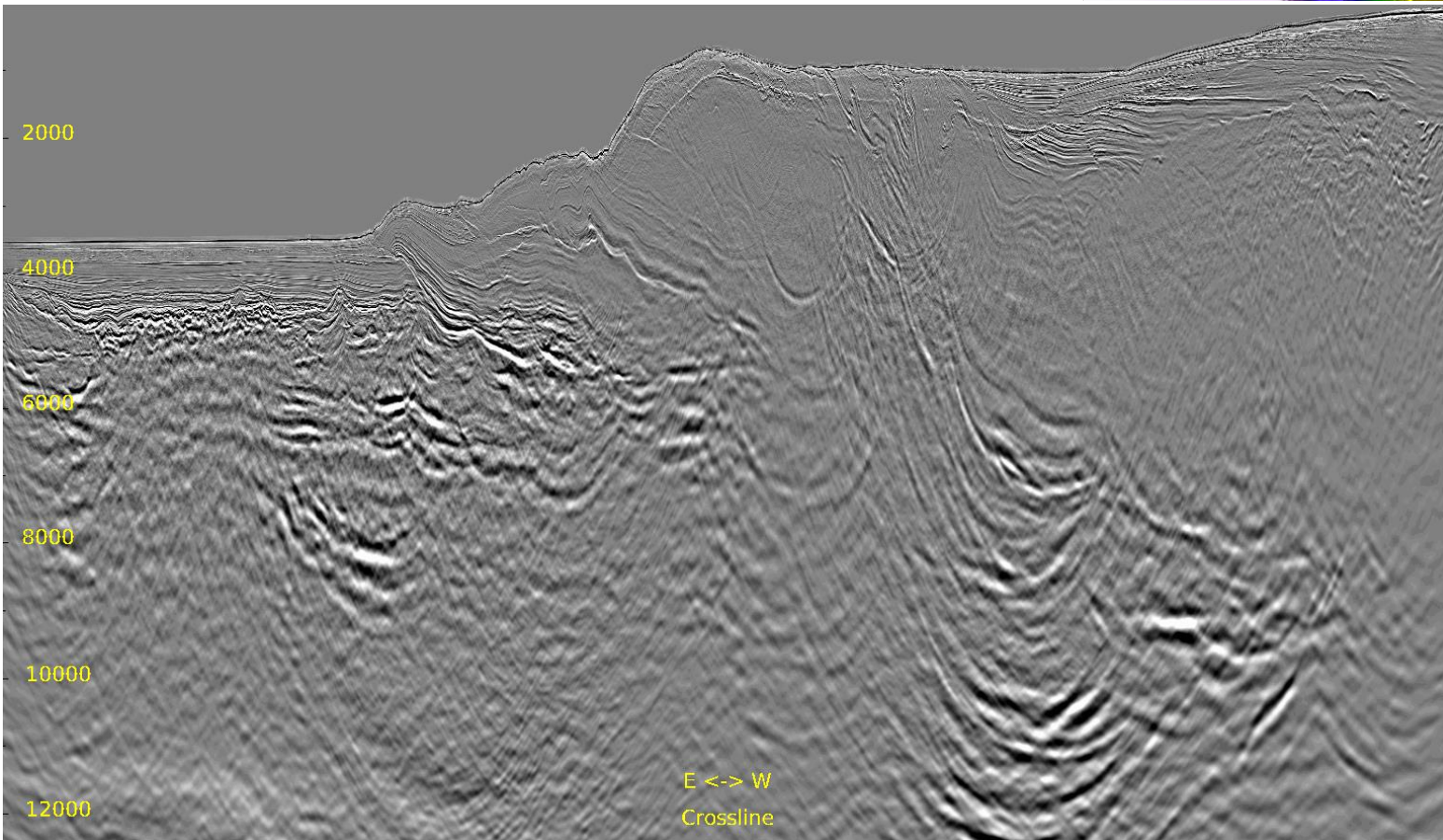
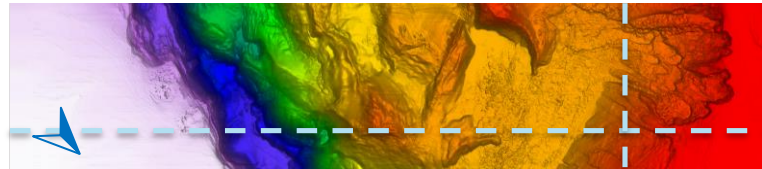
Inline 636 & Crossline 4540





Full Stack: ISO FWI

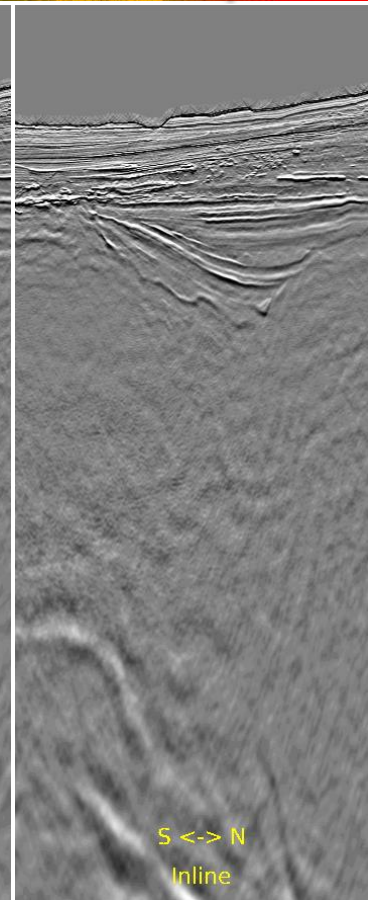
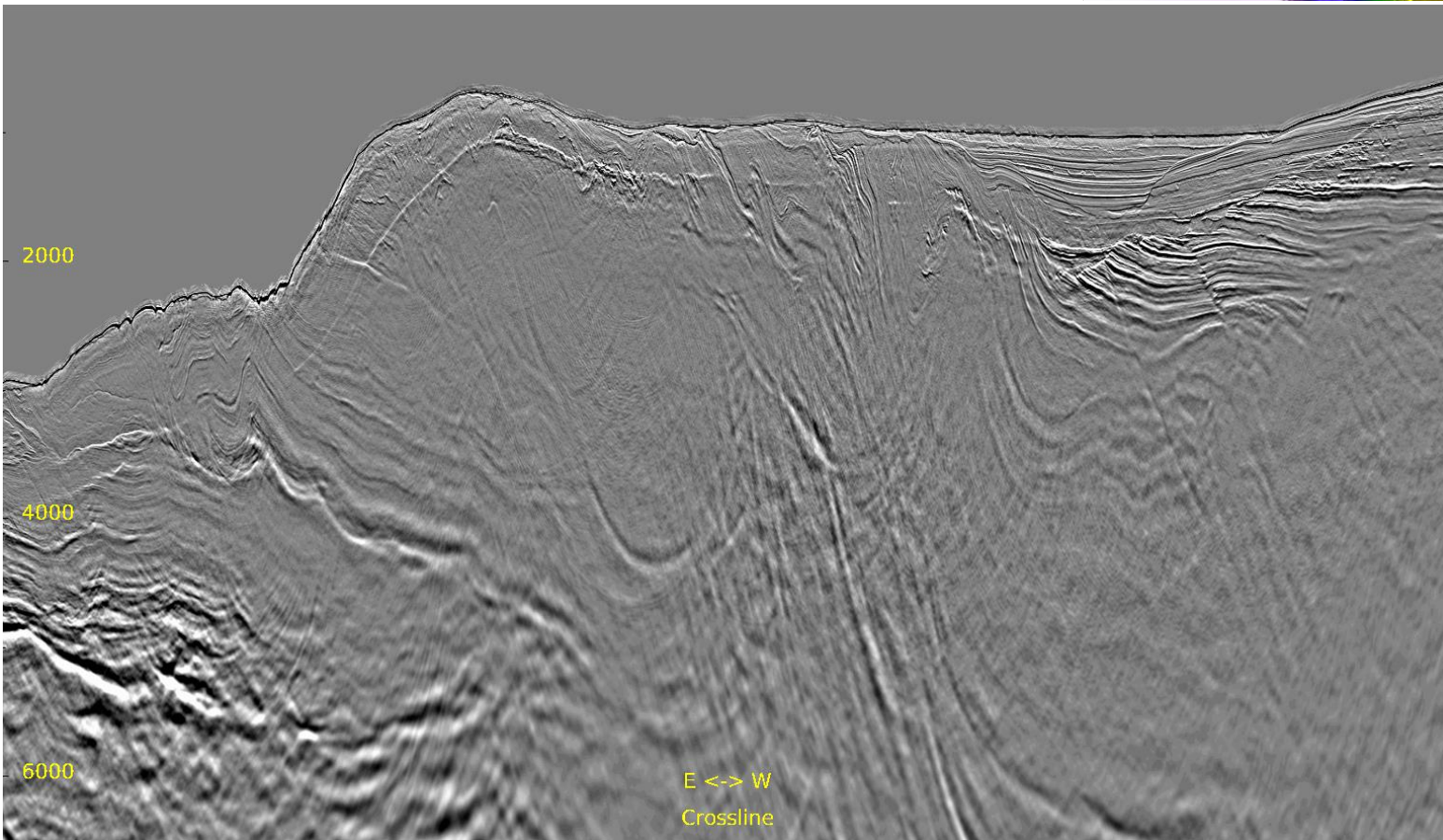
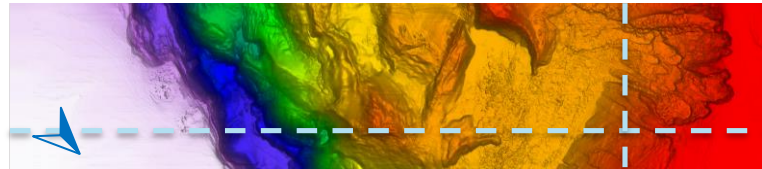
Inline 636 & Crossline 4540





Zoomed Full Stack: Initial

Inline 636 & Crossline 4540



Zoomed Full Stack: ISO FWI

Inline 636 & Crossline 4540

