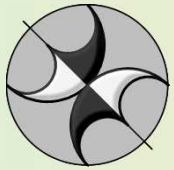
Seismic Processing in Tesseral



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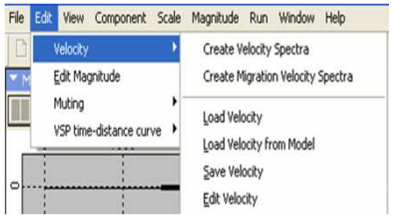
Seismic Imaging for post-stack interpretation

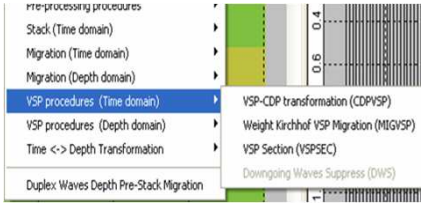
Are oriented to processing of synthetic gathers produced by the package. Inside the package you can also process real seismic profile records in *SEGY* format.

"Velocity"

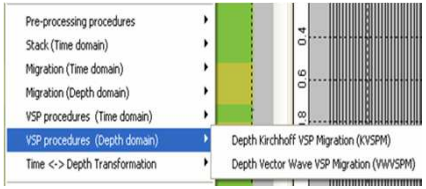


*"**Create Velocity Spectra**"*
(creation of velocity spectra for processing in time domain)
*"**Create Migration Velocity Spectra**"*
(creation of velocity spectra for processing in depth domain)
Etc ….

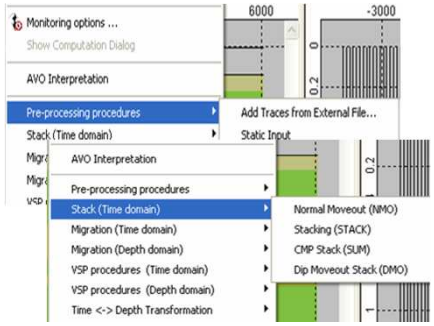
"VSP procedures (Time domain)"



"VSP procedures (Depth domain)"

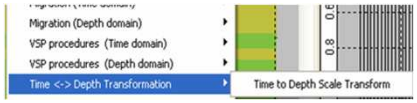


"Pre-processing"

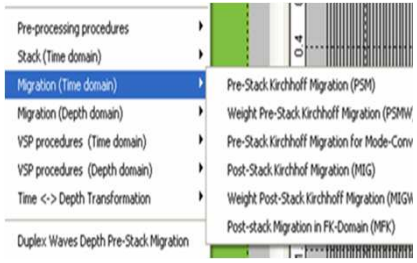


"Static Input"
"Gathering" (seismic gather conversions to different gather types)
"Stack (Time domain)" (gather summation in time domain)
Etc …

"Time <-> Depth Transformation"



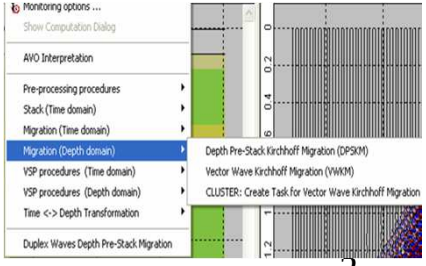
"Migration (Time domain)"



"Pre-Stack Kirchhoff Migration"
"Weight Pre-Stack Kirchhoff Migration"
"Pre-Stack Kirchhoff Migration for PS-waves"
(pre-stack Kirchhoff migration for converted waves)
"Post-Stack Kirchhoff Migration"
Etc…

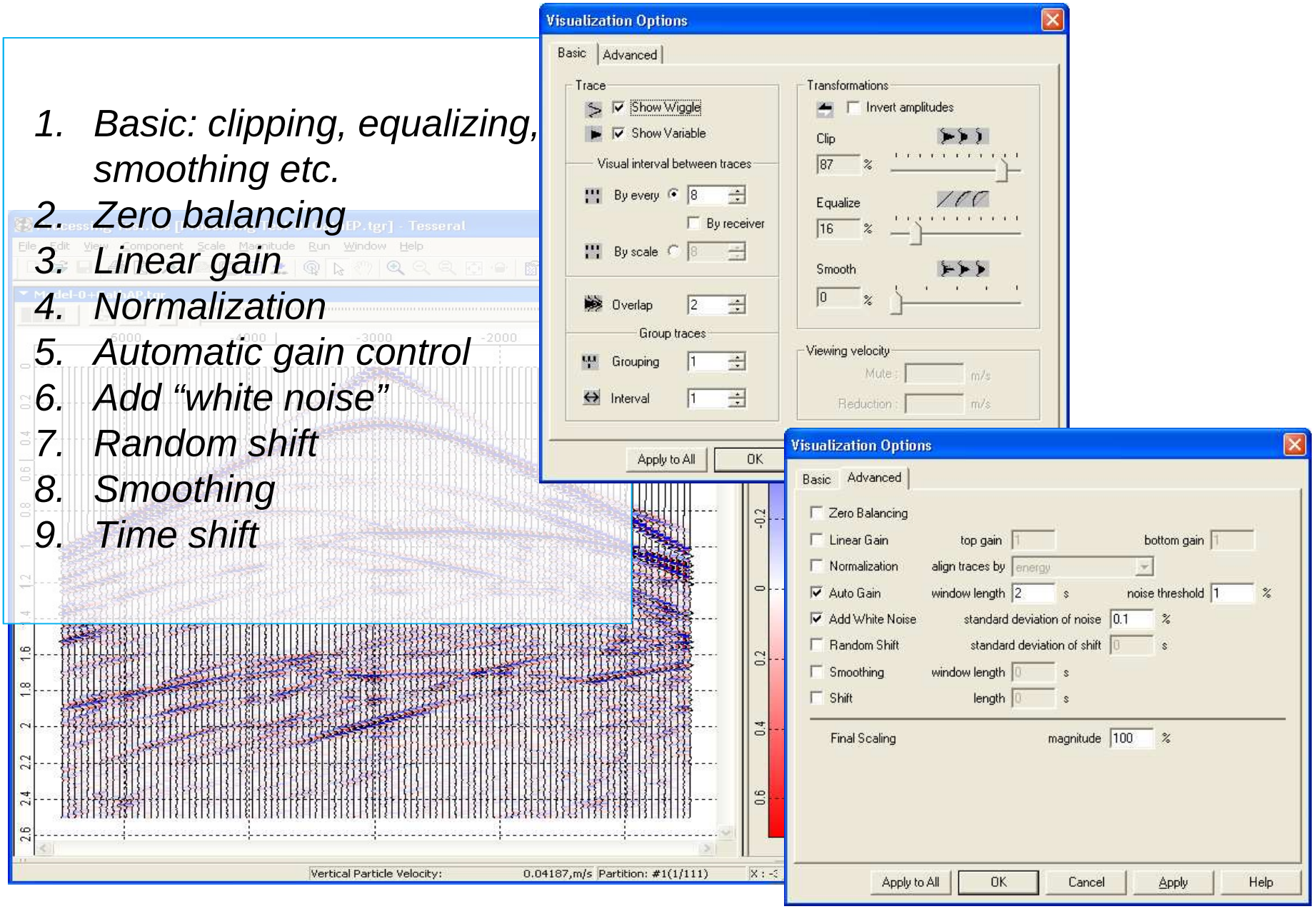
Depth Pre-Stack Kirchhoff Migration"
(Eikonal based)
"Vector Wave Kirchhoff Migration"
(vector wave equation based)
"Cluster: Create Task for Vector Wave Migration"
(creating script for VWKM processing on cluster)

"Migration (Depth domain)"

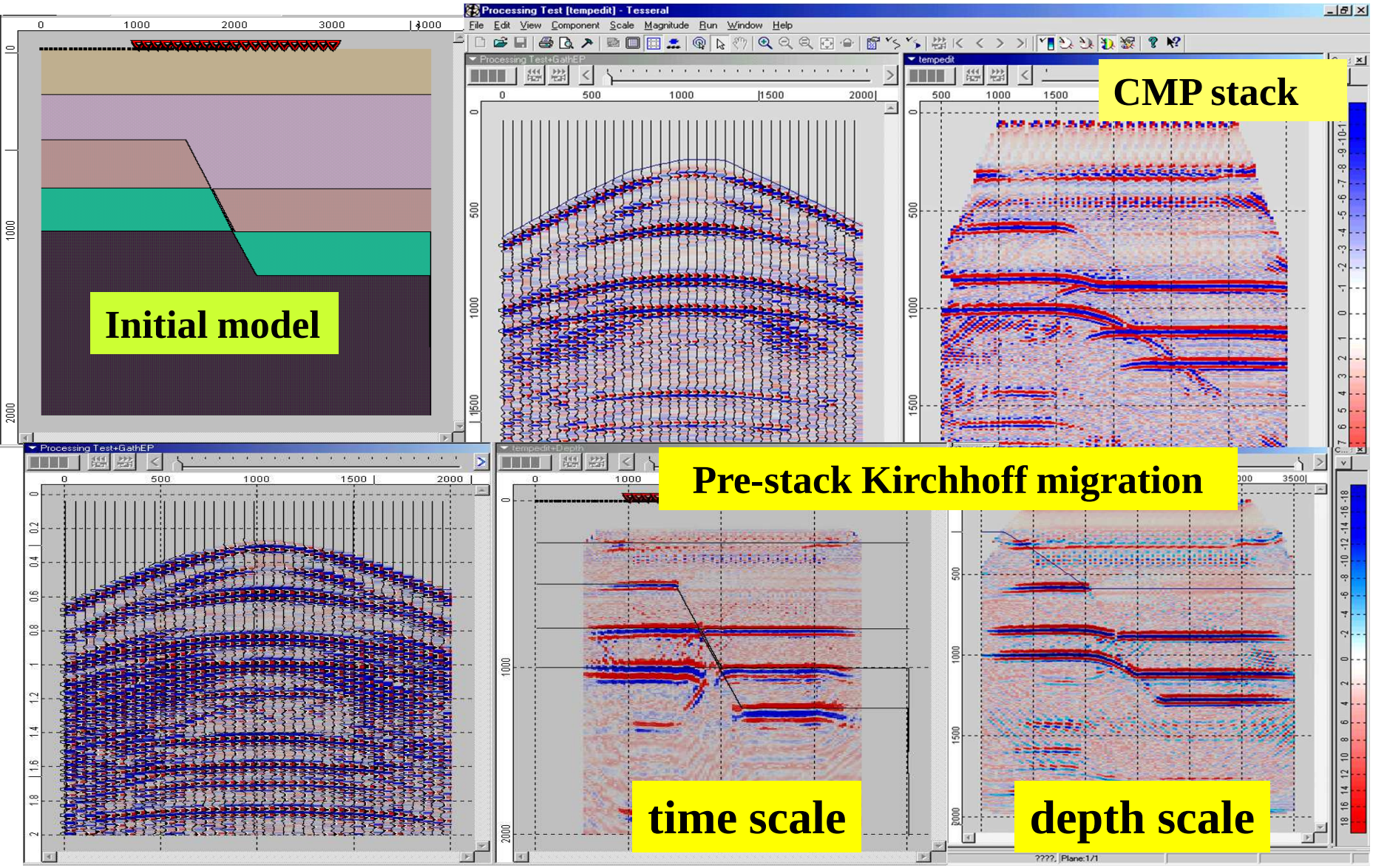


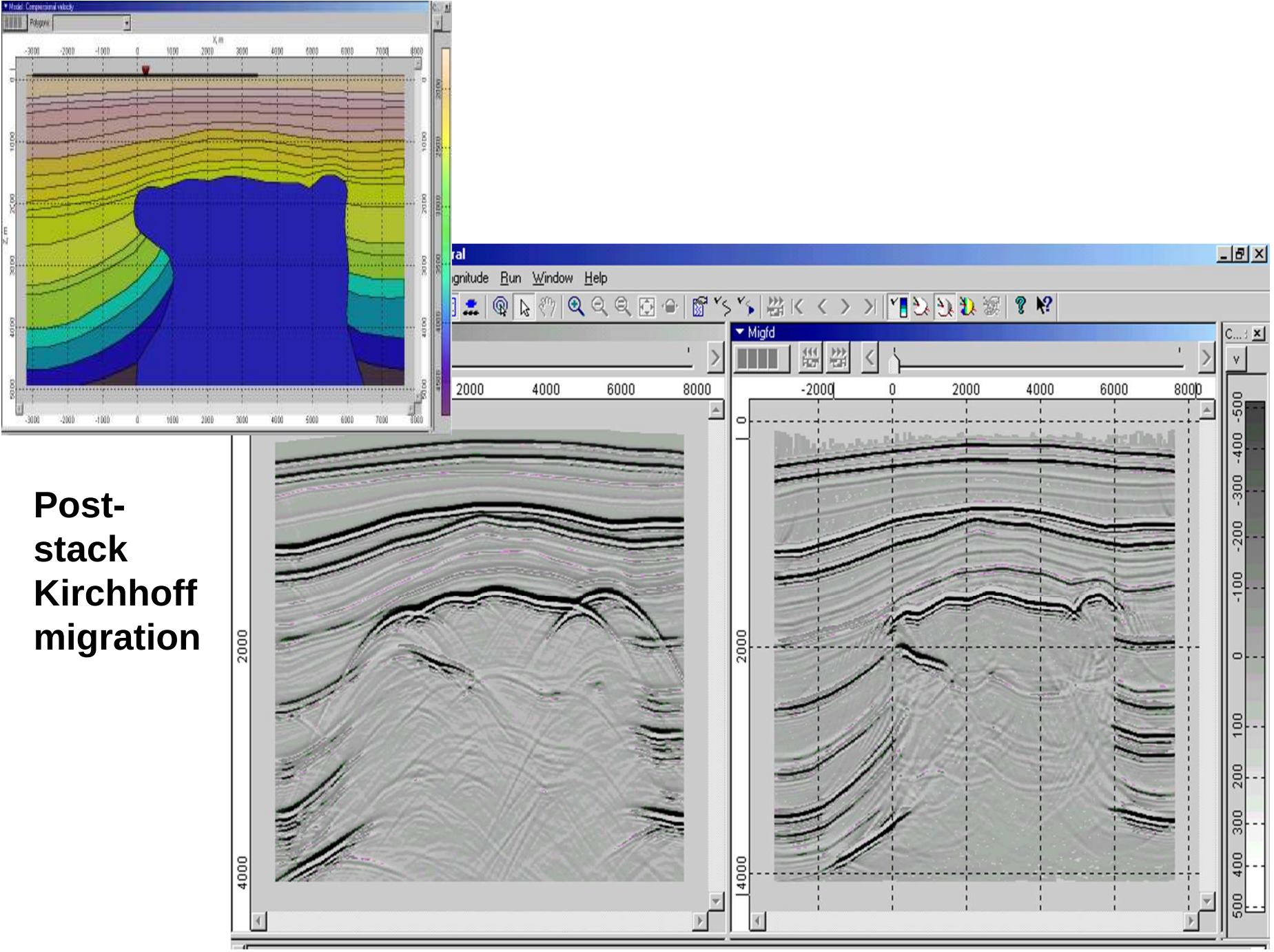
Visualization and post-processing procedures

1. *Basic: clipping, equalizing, smoothing etc.*
2. *Zero balancing*
3. *Linear gain*
4. *Normalization*
5. *Automatic gain control*
6. *Add “white noise”*
7. *Random shift*
8. *Smoothing*
9. *Time shift*

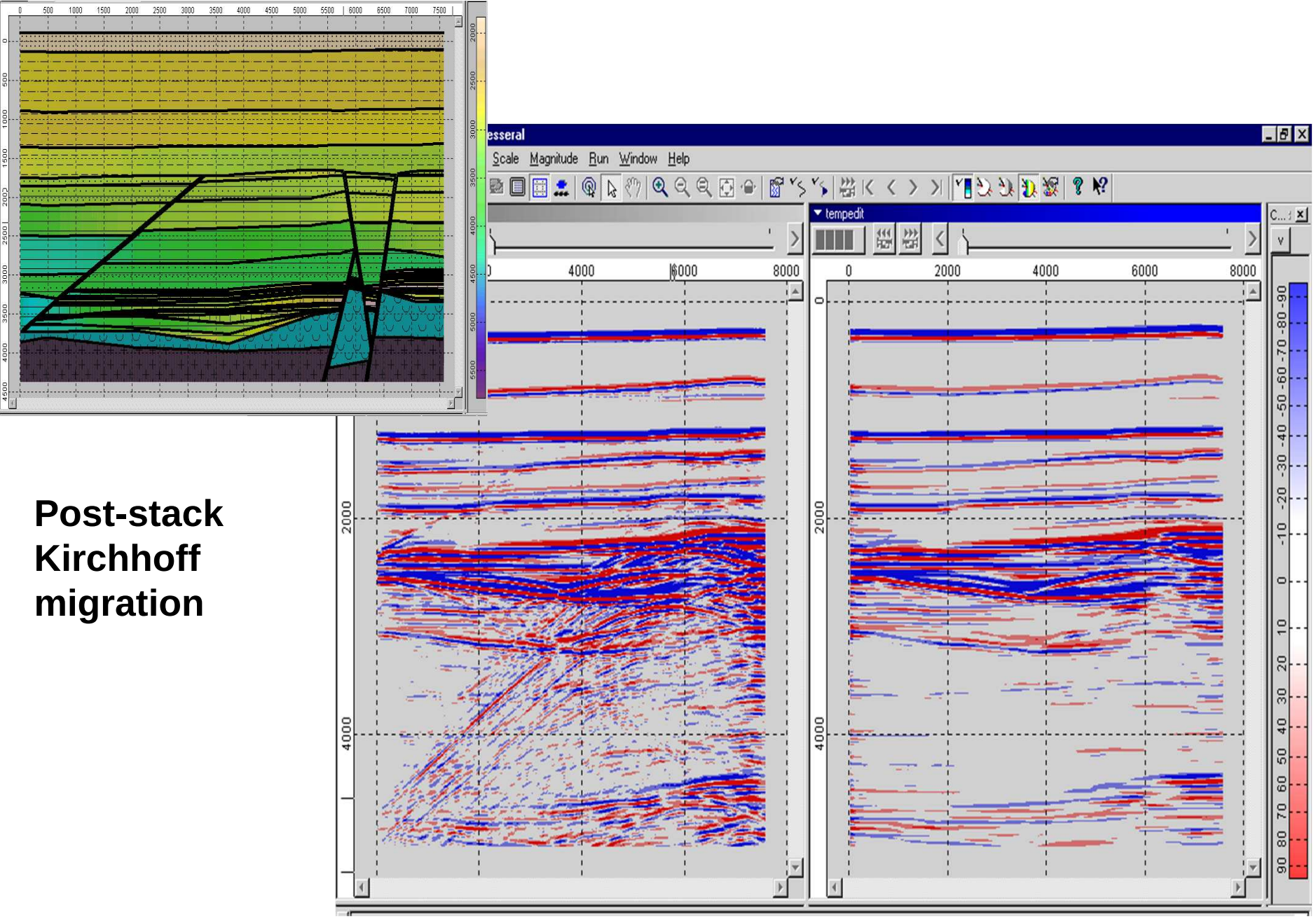


Time Scale Seismic imaging

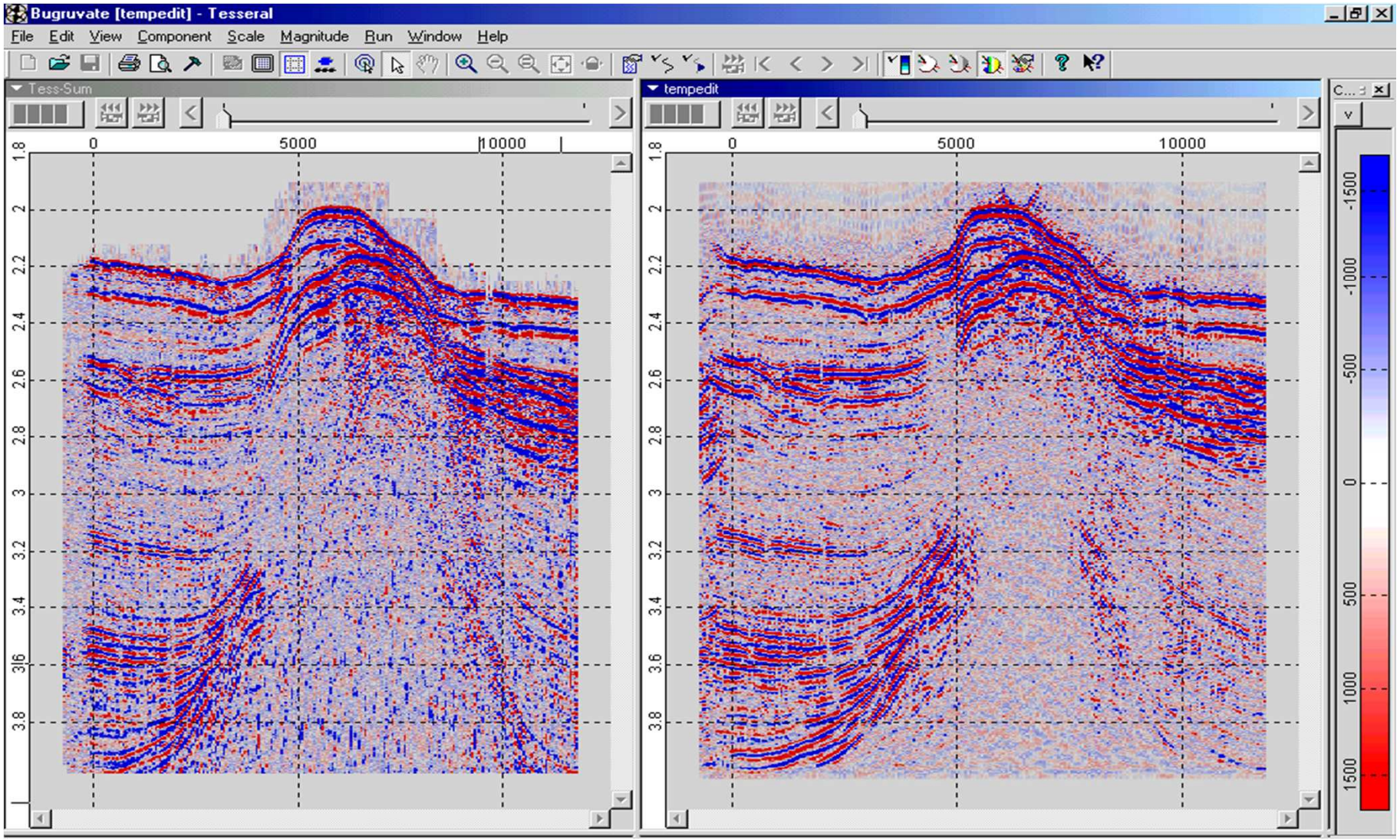




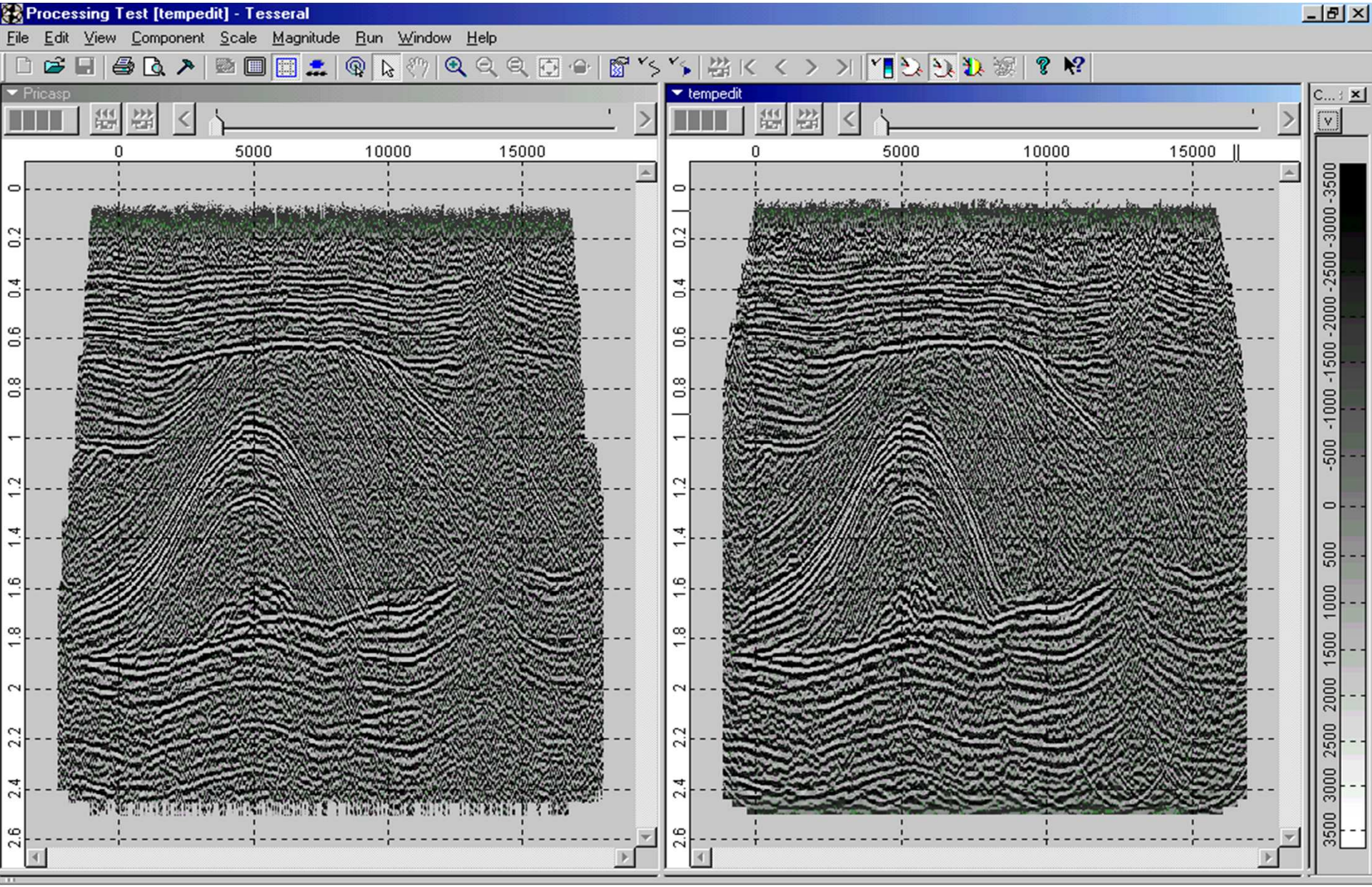
Post-stack Kirchhoff migration



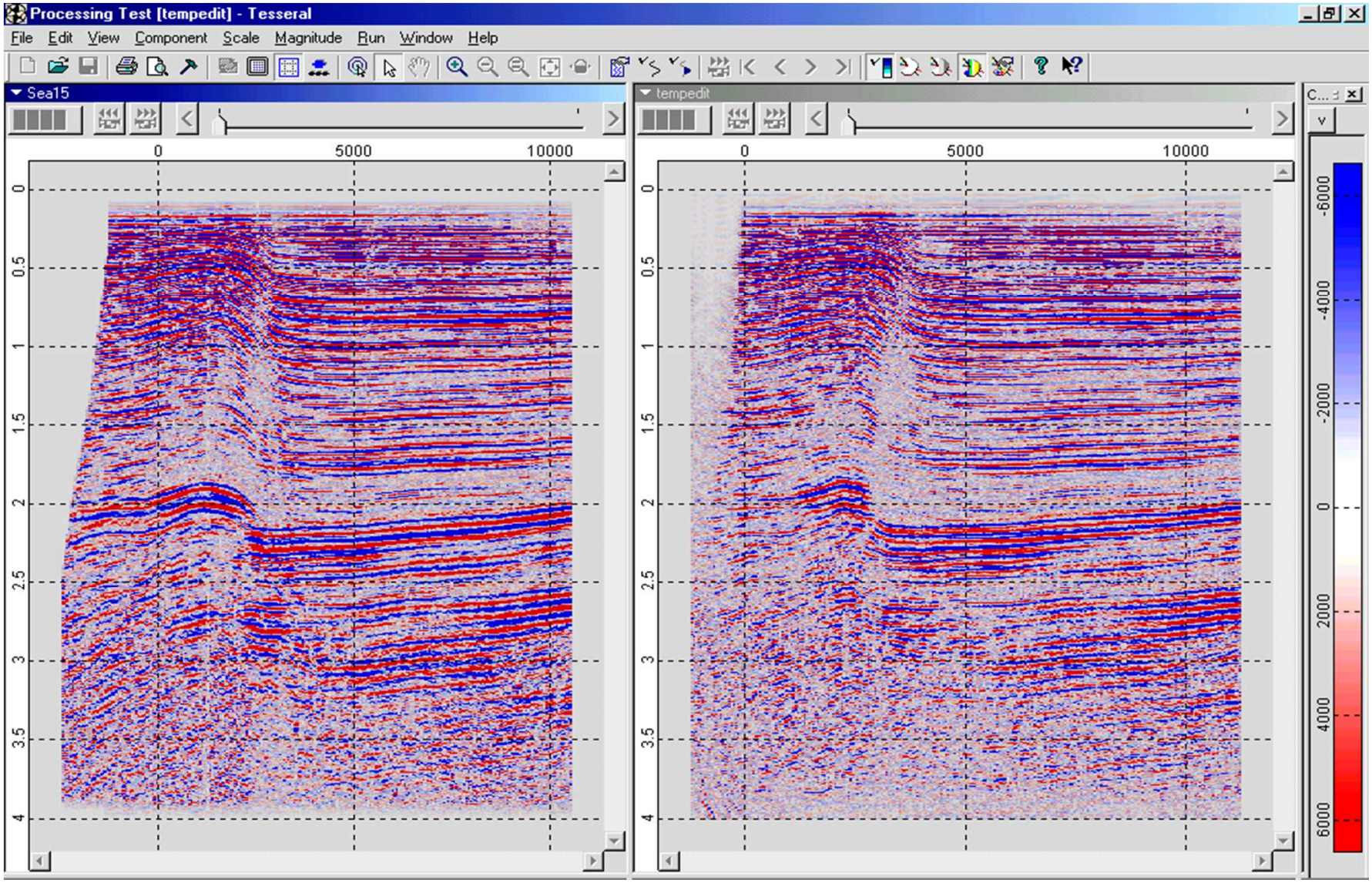
Post-stack Kirchhoff migration



Tesseral 2-D package allows seismic data processing obtained in other processing systems.
Post-stack migration in FK-domain (Atlantic ocean)

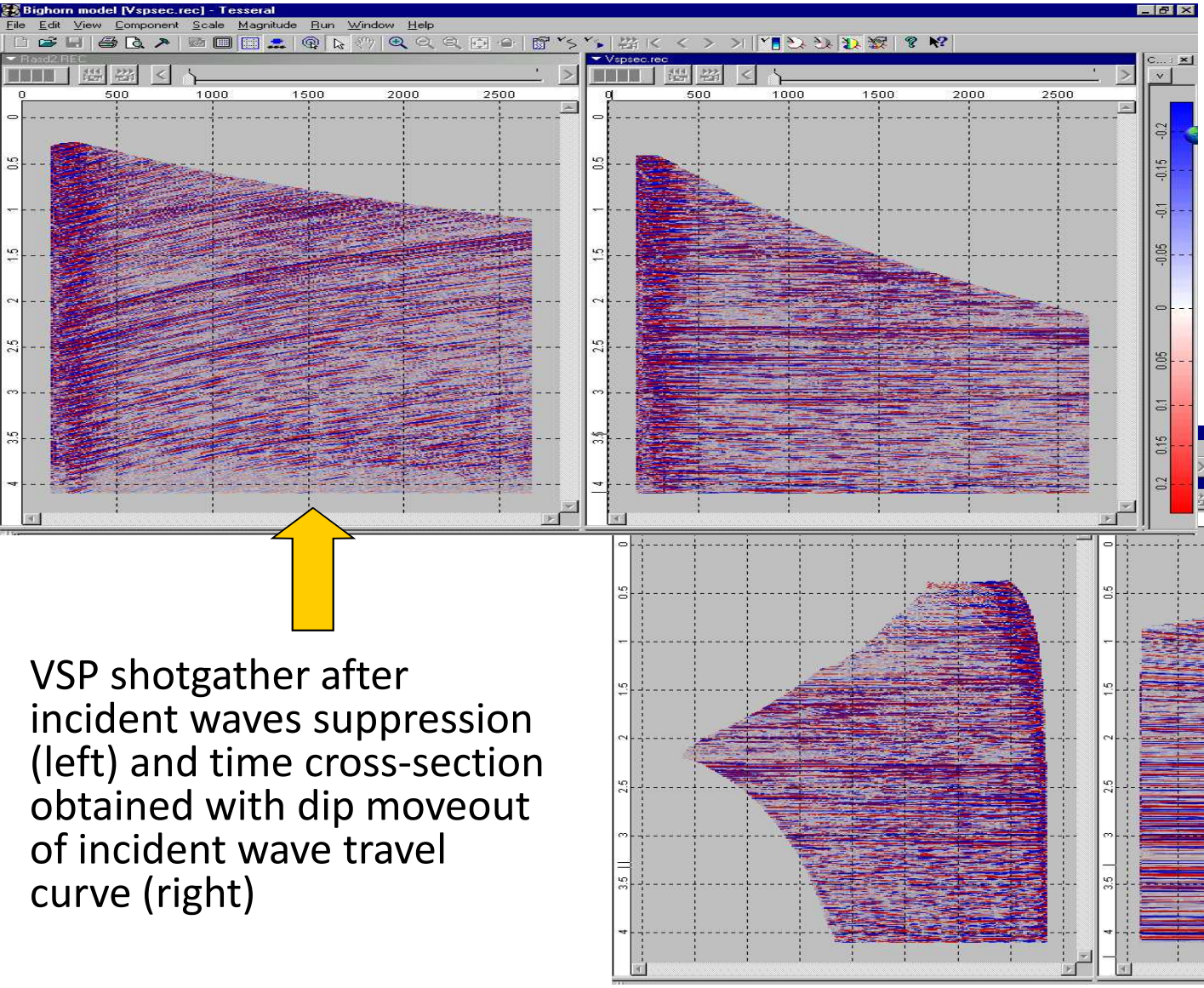


Kirchhoff post-stack migration (Pre-Caspian Basin)



Post-stack migration in FK-domain (Black sea)

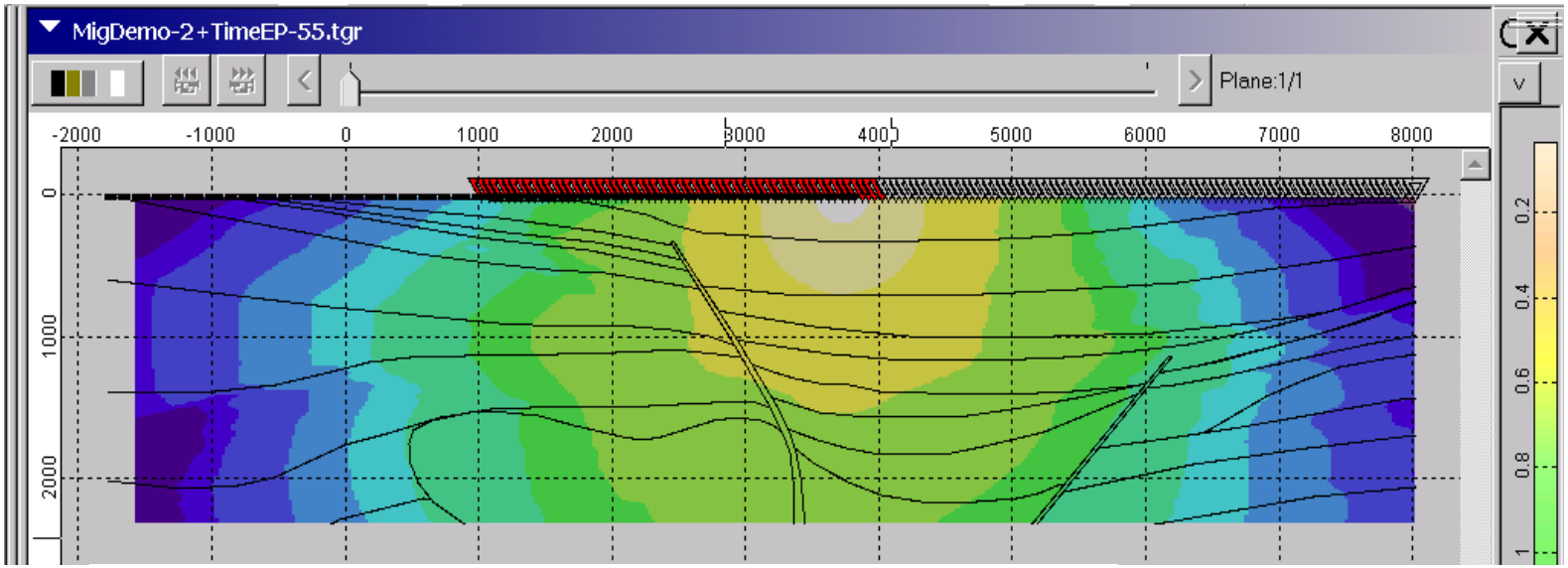
Some examples of VSP data processing (see corresponding presentation)



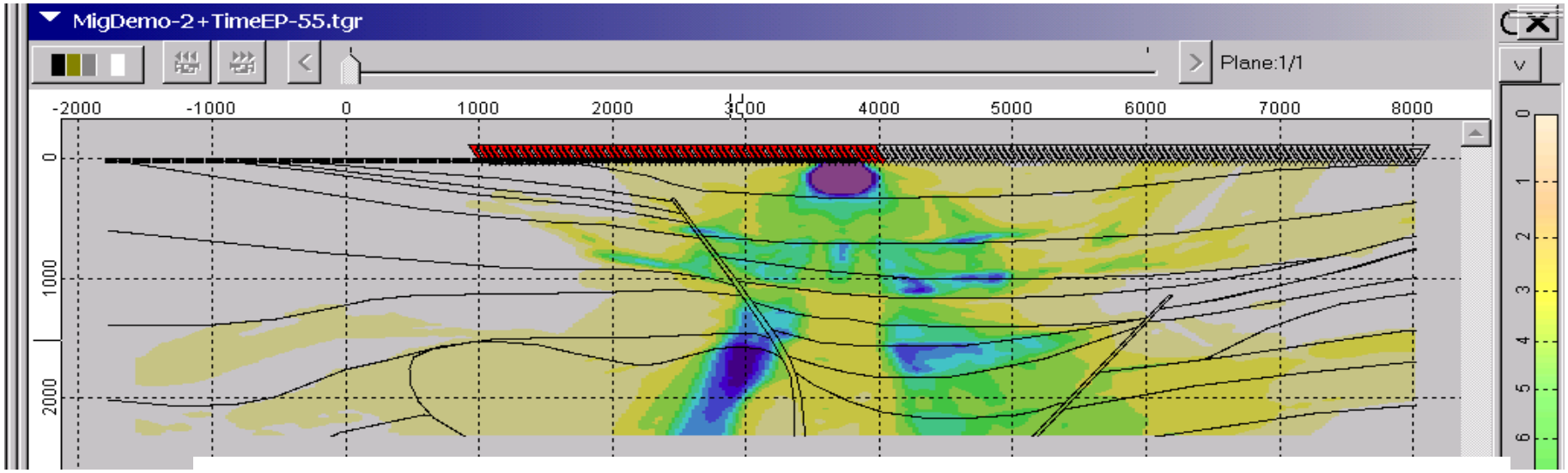
Time cross-section (VSP - CDP transformation, left), and migrated cross-section (right)

VSP shotgather after incident waves suppression (left) and time cross-section obtained with dip moveout of incident wave travel curve (right)

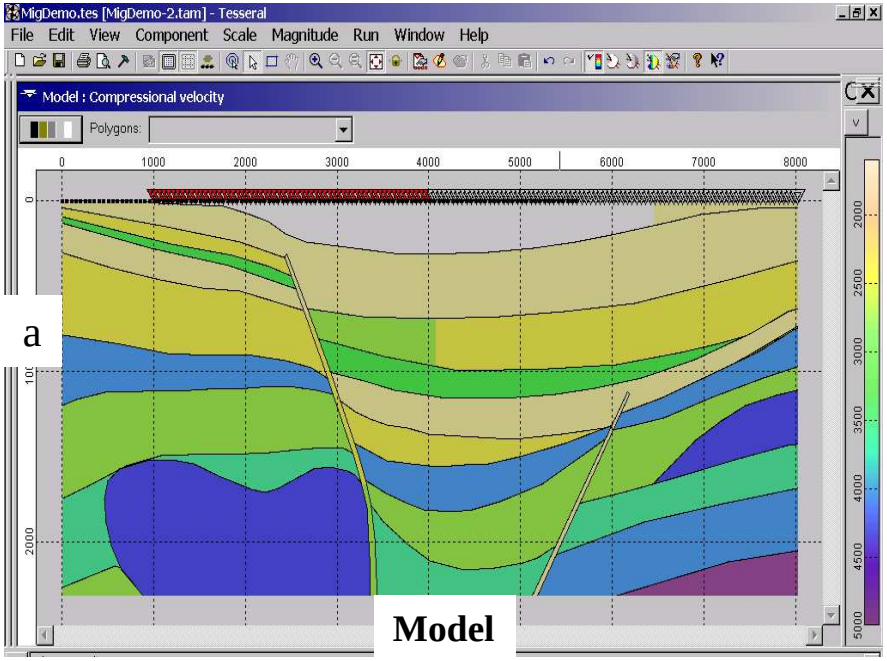
Depth Scale Seismic Imaging



Time field (XZ) of first arrivals of direct wave

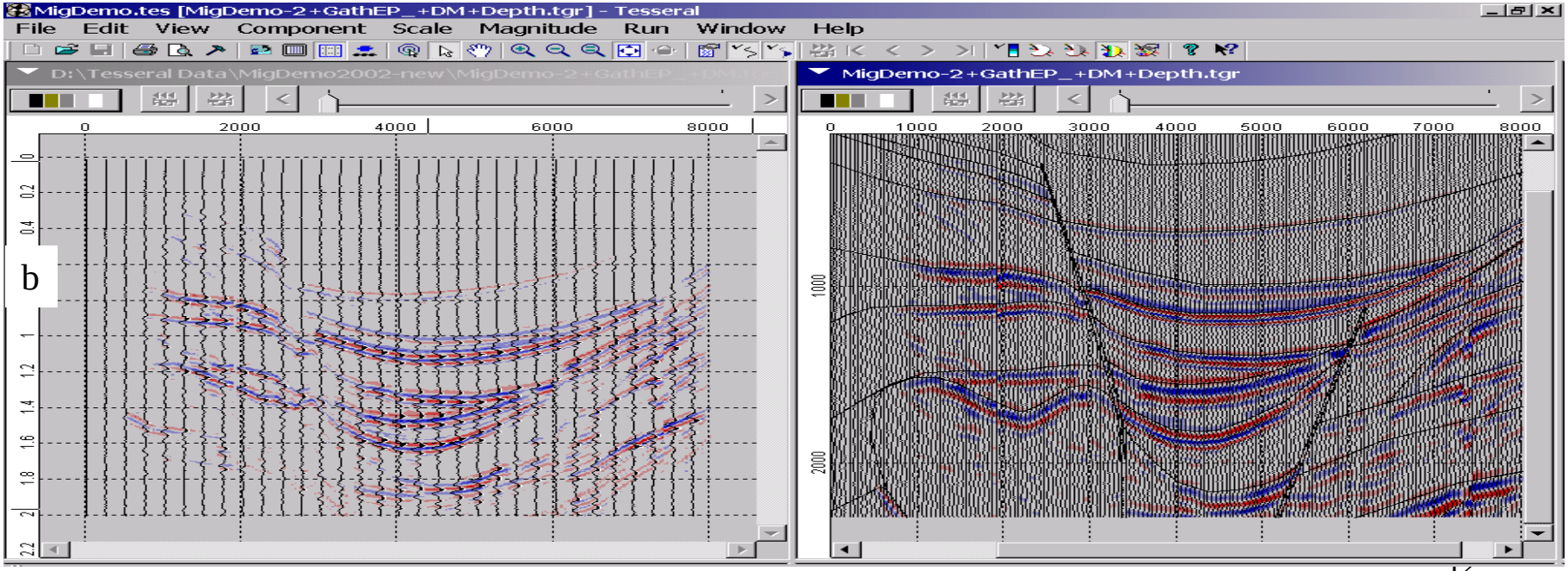


Scalar function of intensity of direct wave. Energy highlights are showing the focusing zones.

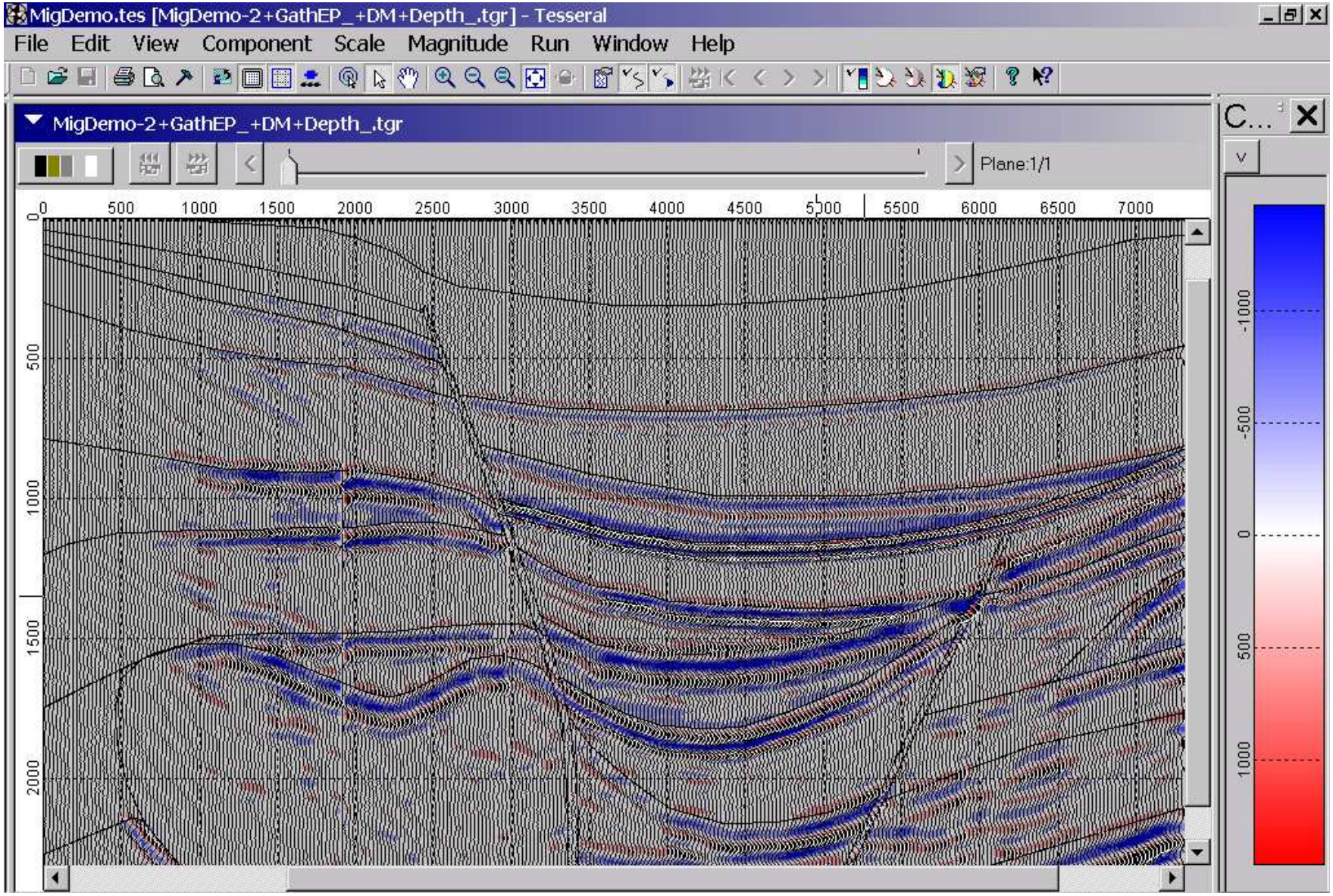


Depth migration in the Tesseral 2-D package uses "TIME" functionality allowing to calculate times of arrival of first down going wave and corresponding Green function scalar. This is used in Kirchhoff-migration, a step that immediately follows the synthetic shotgathers computation.

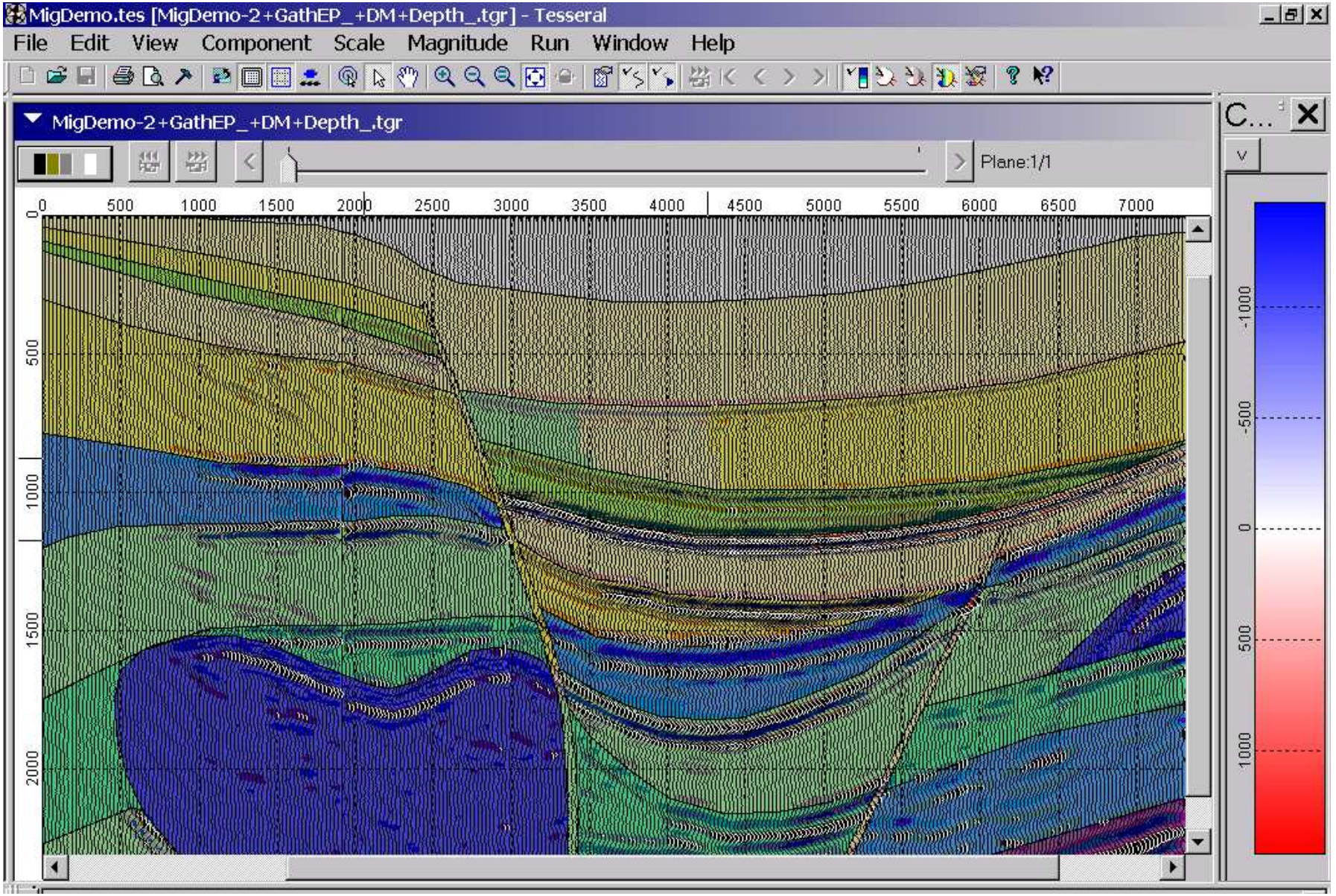
One can correctly perform depth migration in complex structured media with an implied anisotropy. The computations of the wavefield travel times based on the Eikonal wave equation allow for a quicker migrated section. There is vast a vast possibility in determining velocity models and a friendly data interface contributes to the ease of migrating modeled shotgather data and.



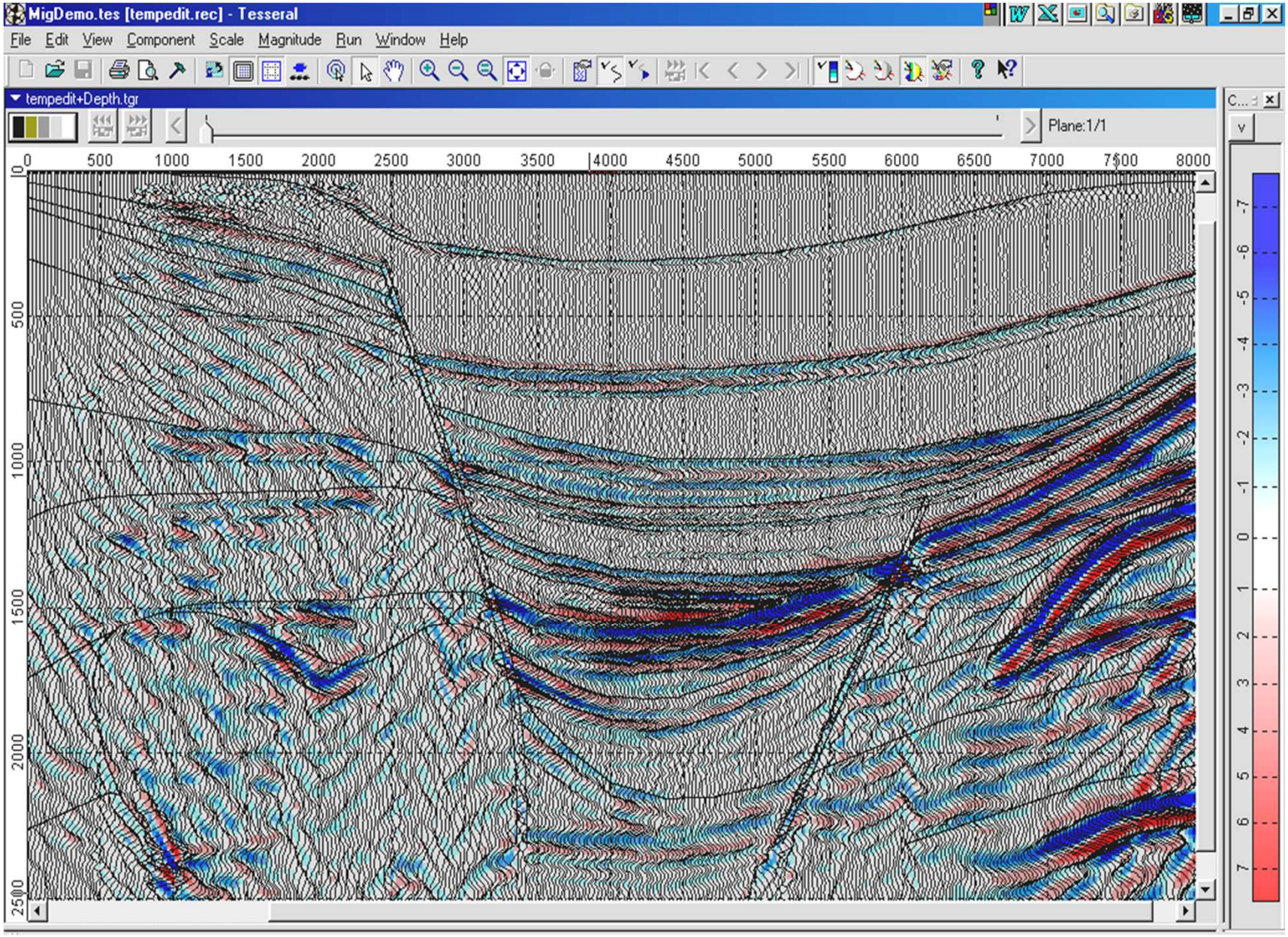
Result of depth migration: a – time scale, b – depth scale (model as a a contouring pad)



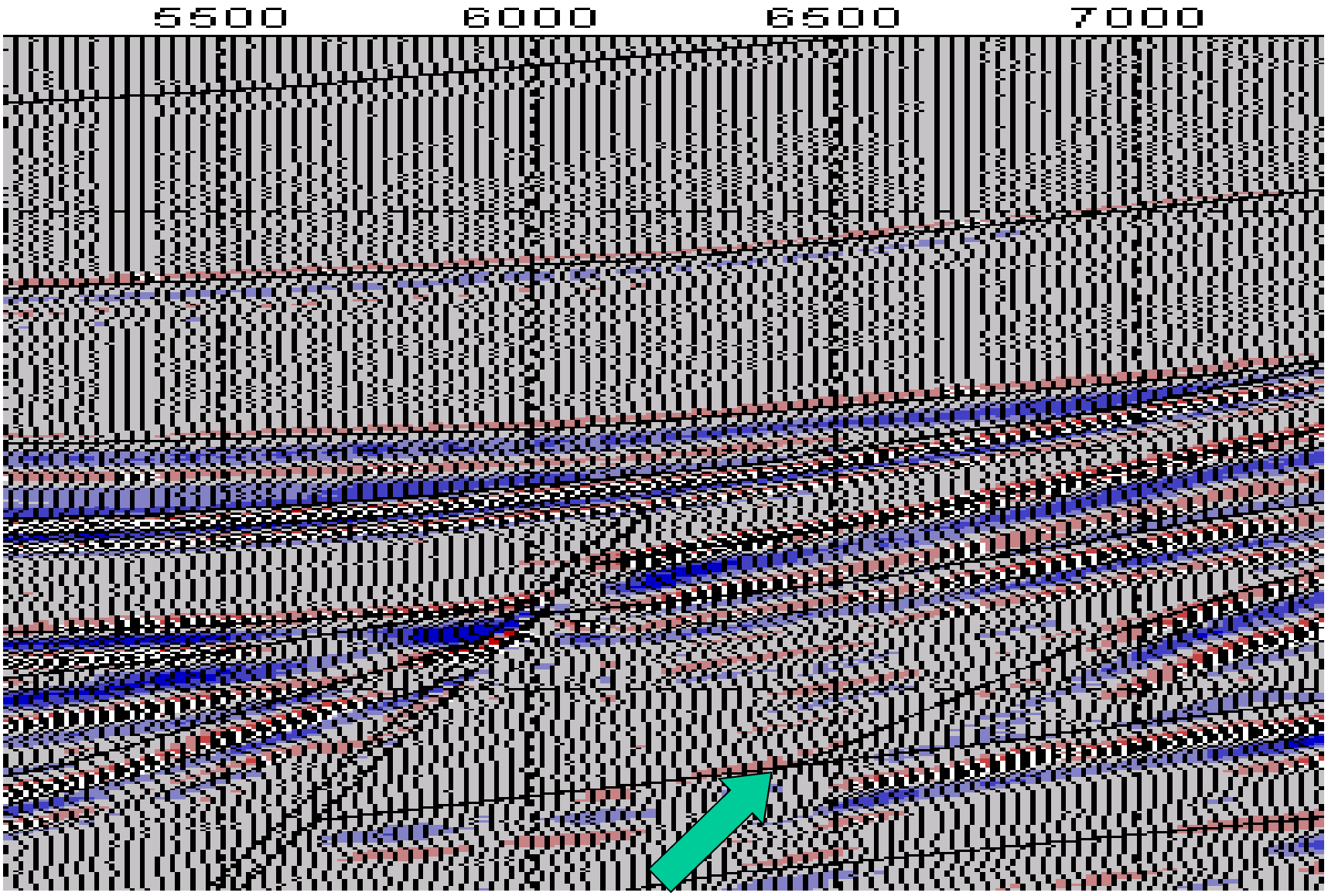
Result of depth migration. Depth scale, as background is used the model contour.



Result of depth migration. Depth scale, as a pad is used the color velocity model.

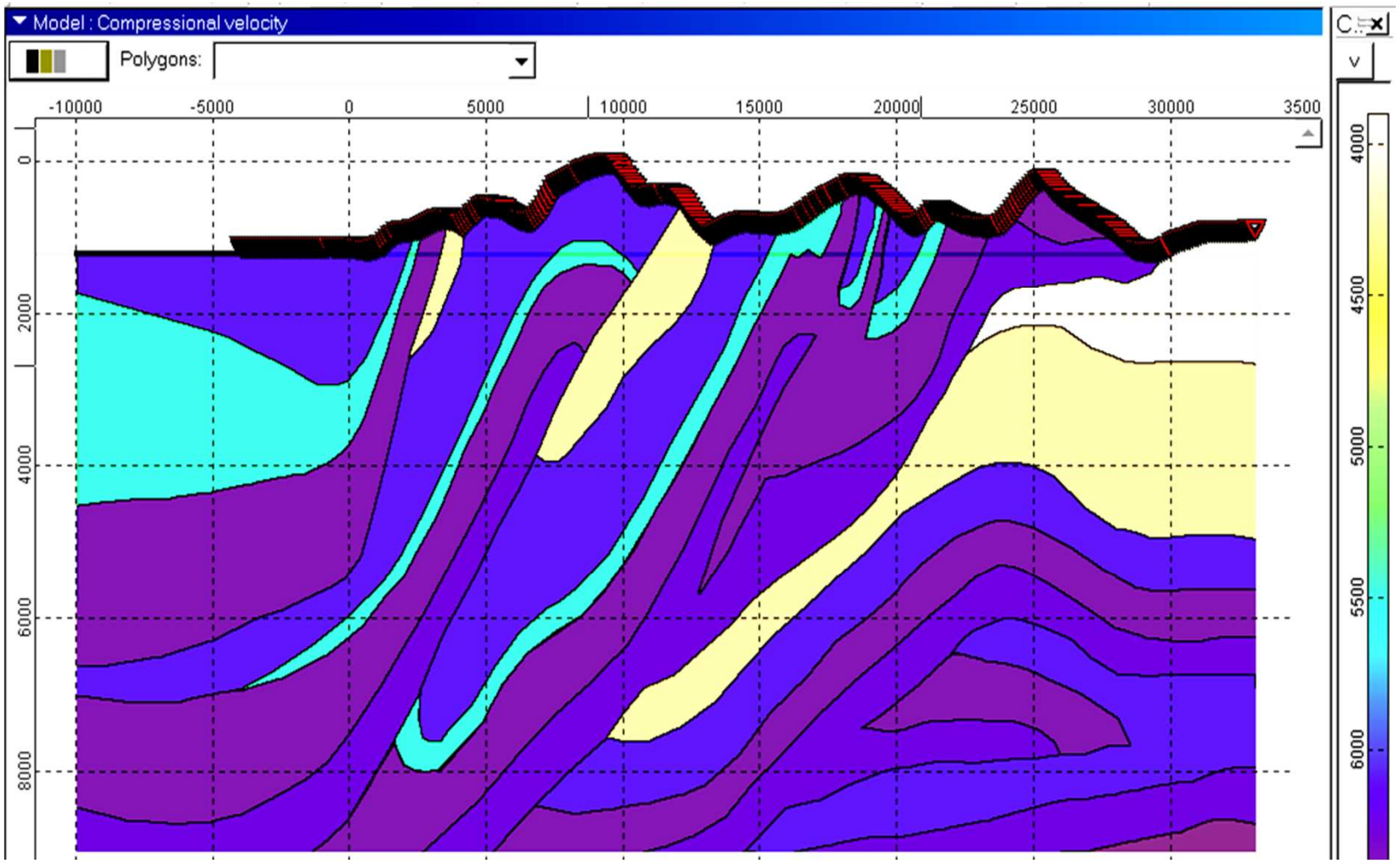


Result of depth migration. Depth scale, as a background is used the model contour.

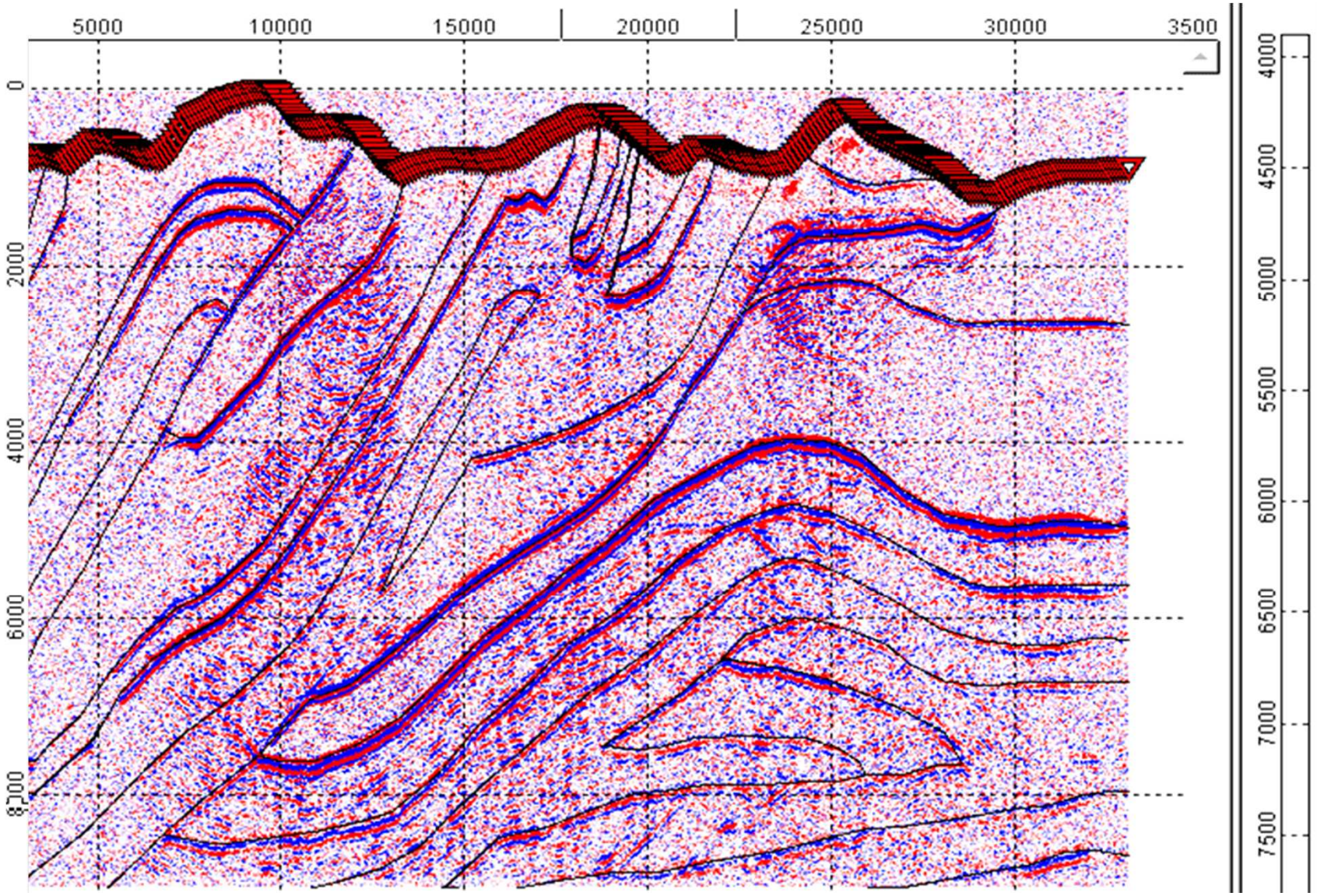


Result of depth migration. Depth scale. Effect of phase change at a pinchout of the high velocity laye

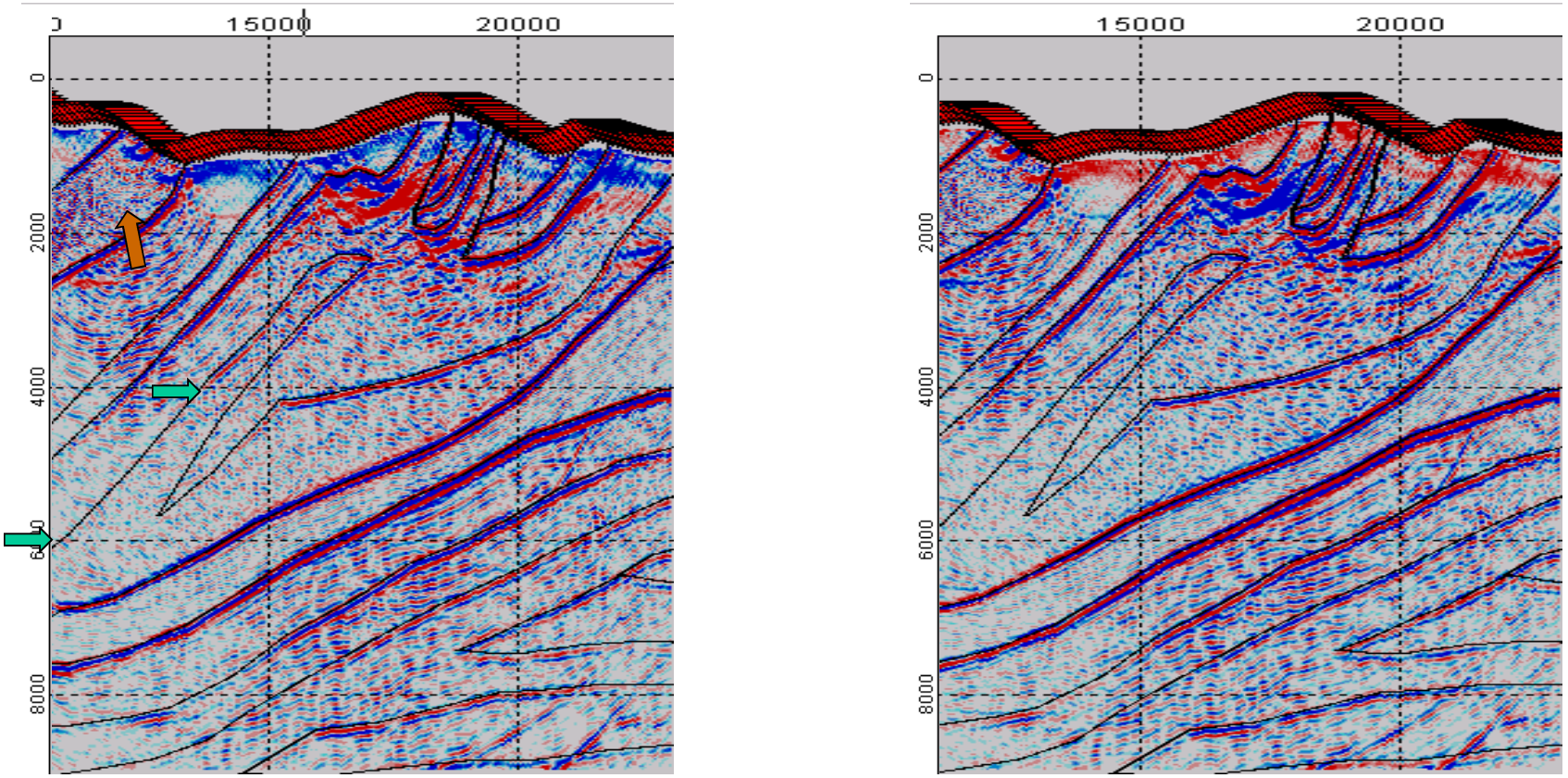
Wave field modeling and migration in conditions of complex structures and uneven relief of surface observations



“Big Horn” model (Canadian Rocky Mountains). Rough relief of observation system



Migrated cross-section, obtained from model “Big Horn 1” using VWKM (Vector Wave Kirchhoff Migration, Maximum Energy operator)

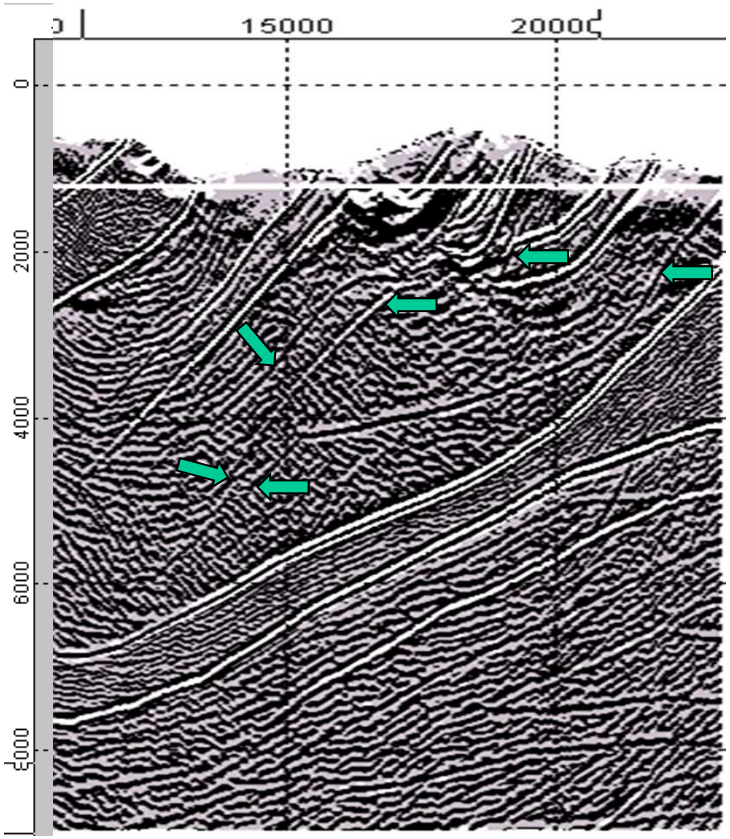


Fragment of migrated cross-section, obtained by “Big Horn 1” model:

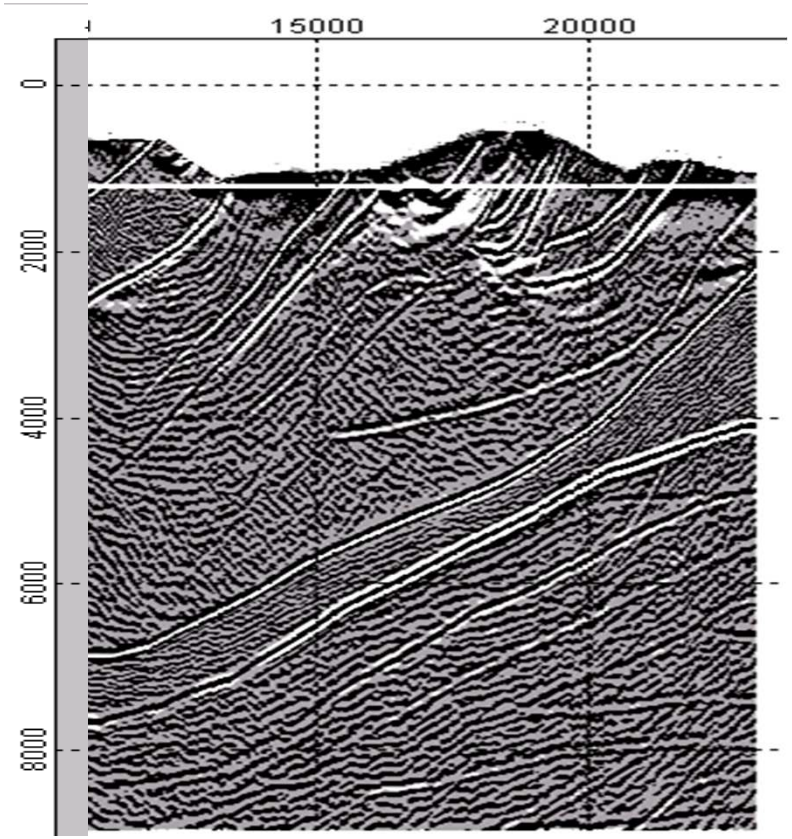
a) direct polarity of seismic signal;

b) inverse polarity of seismic signal

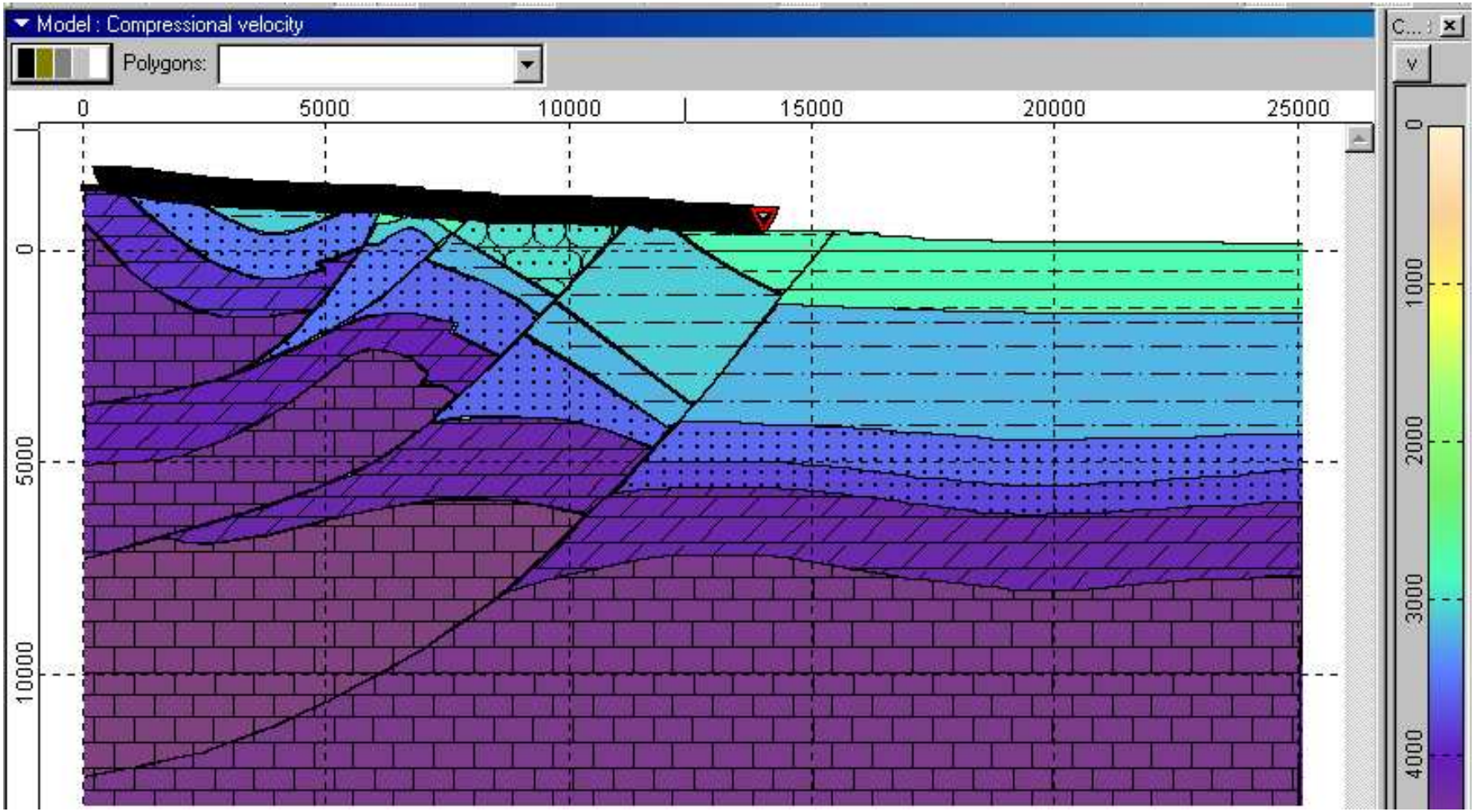
a



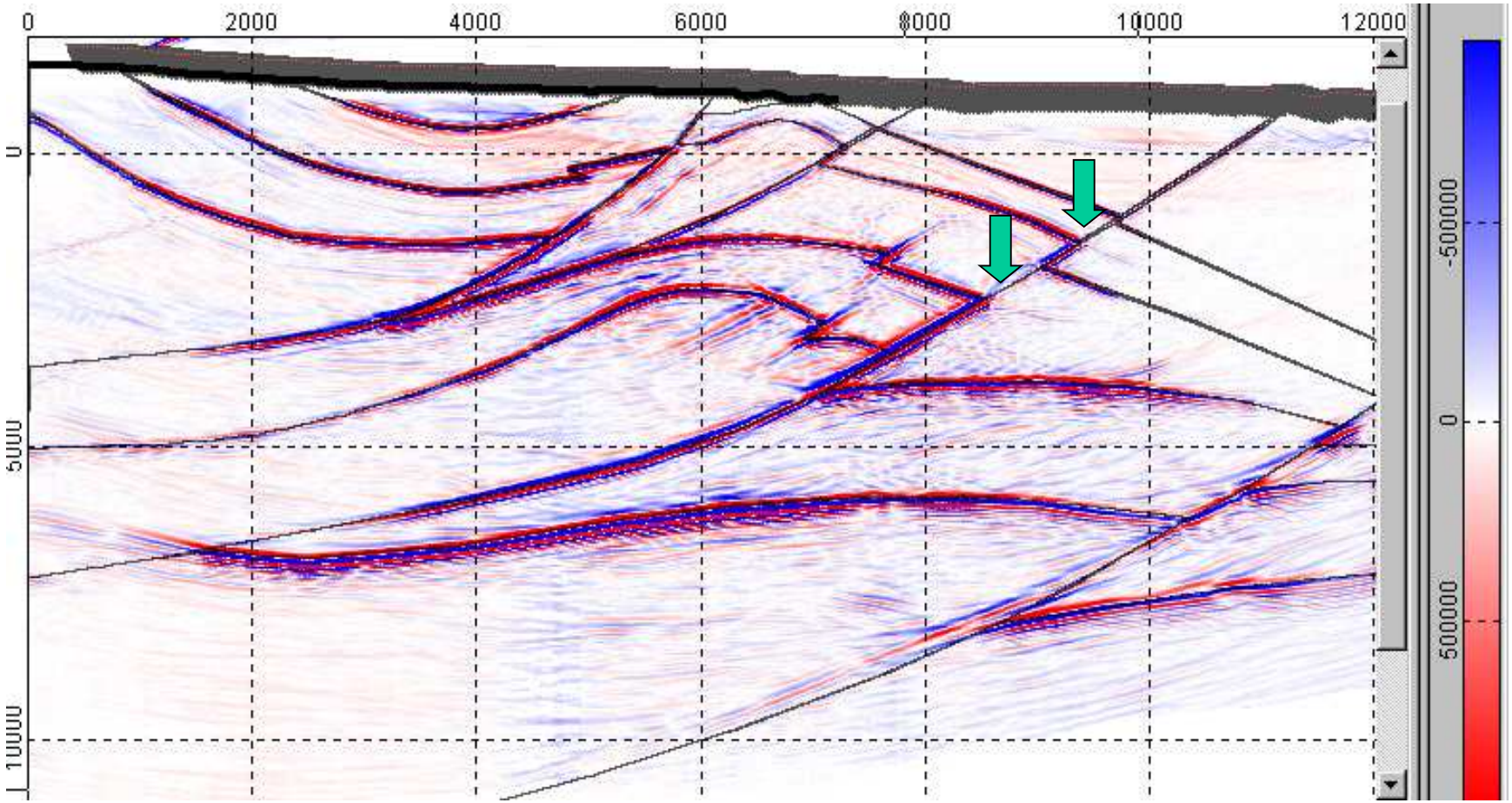
b



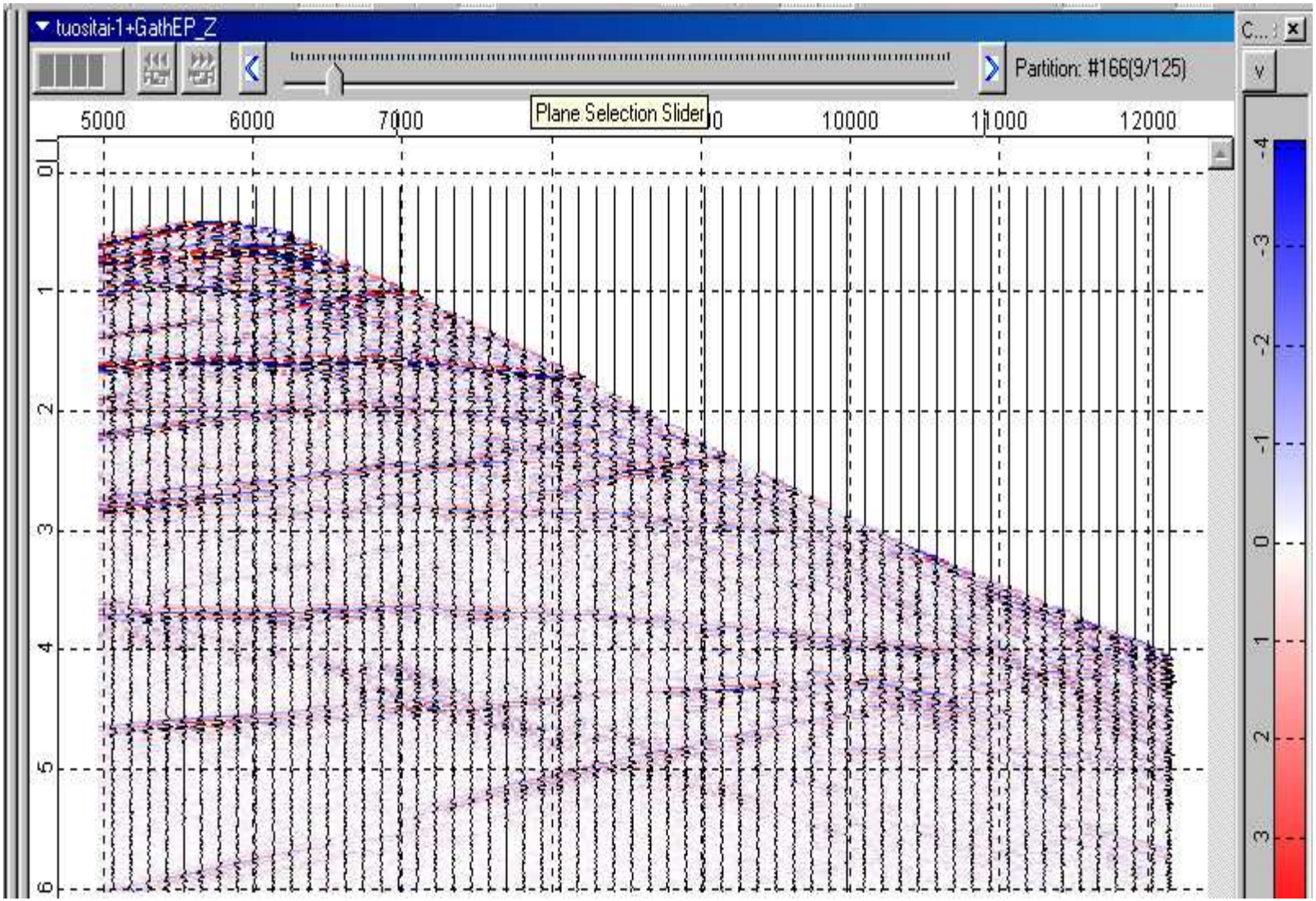
Fragment of migrated cross-section, obtained by “Big Horn 1” model
in gray colors: a) direct polarity of seismic signal;
b) inverse polarity of seismic signal



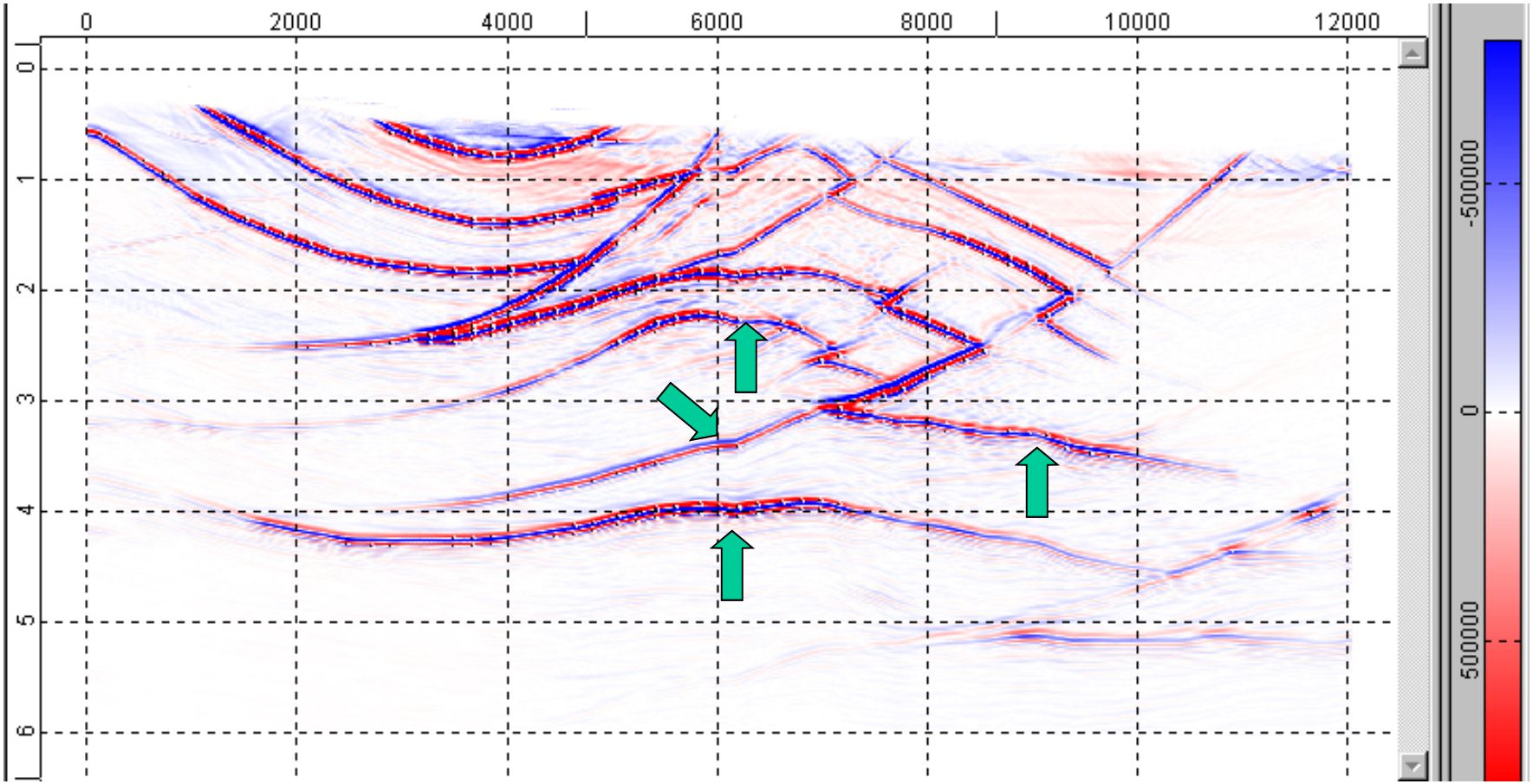
Mountain area model (China)



Migrated cross-section in depth scale, obtained in result of depth migration with VWKM (First arrivals). Model is shown in background. With arrows are shown boundaries intervals, within which there is no velocity contrast. Seismic signal on those intervals is absent.



Example of shotgather after muting



Migrated section in time scale, obtained in result of depth migration with VWKM (First arrivals). With arrows are shown boundaries distortions, obtained after changing velocity by lateral.
Those distortions will be eliminated in depth scale