Modeling for the cross-sections with Lateral Velocity Heterogeneities

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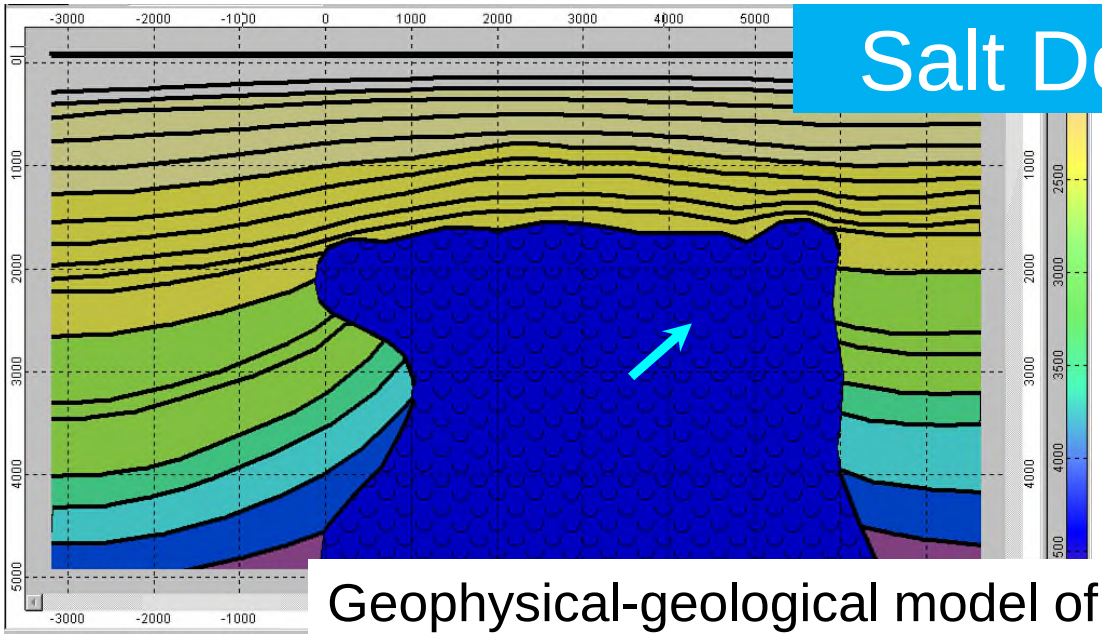
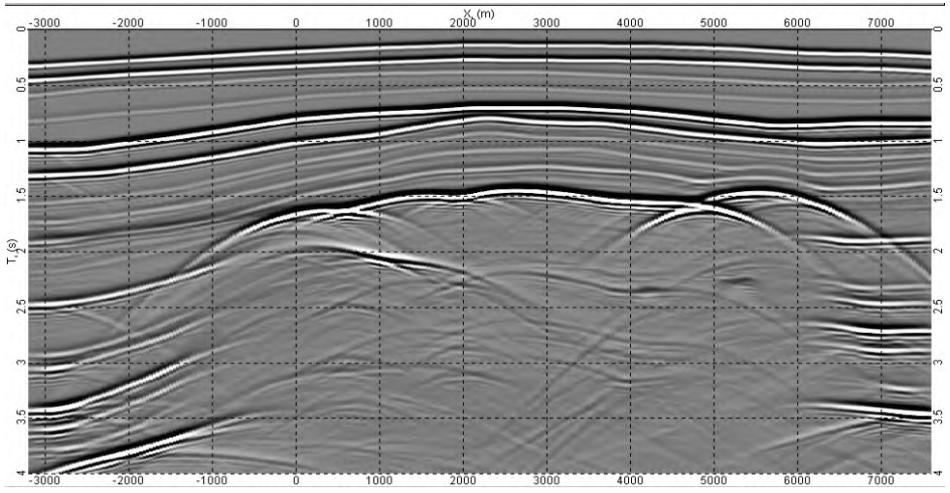
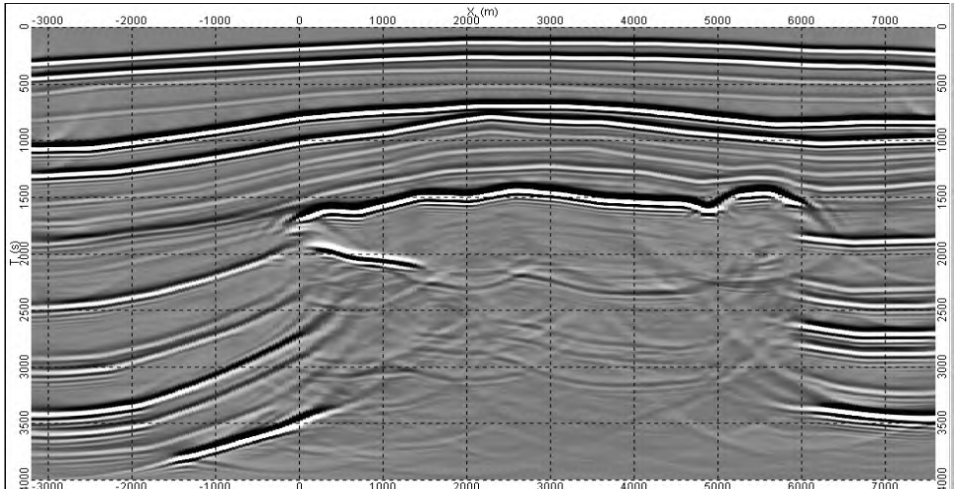
Salt Dome –example 1-



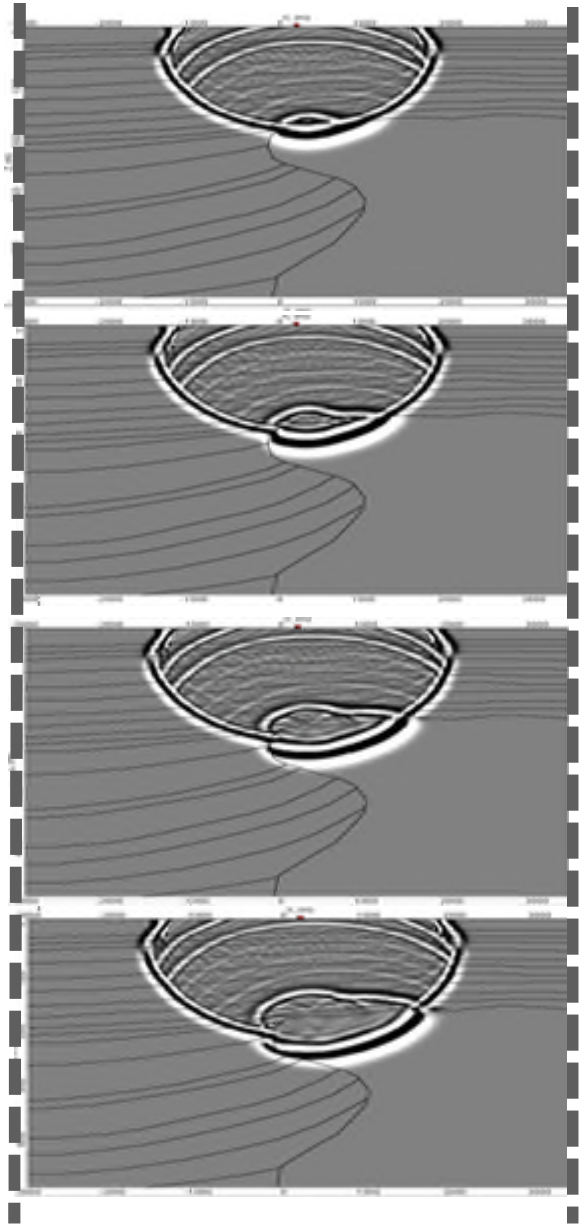
Geophysical-geological model of the salt-dome created with Tesseral package

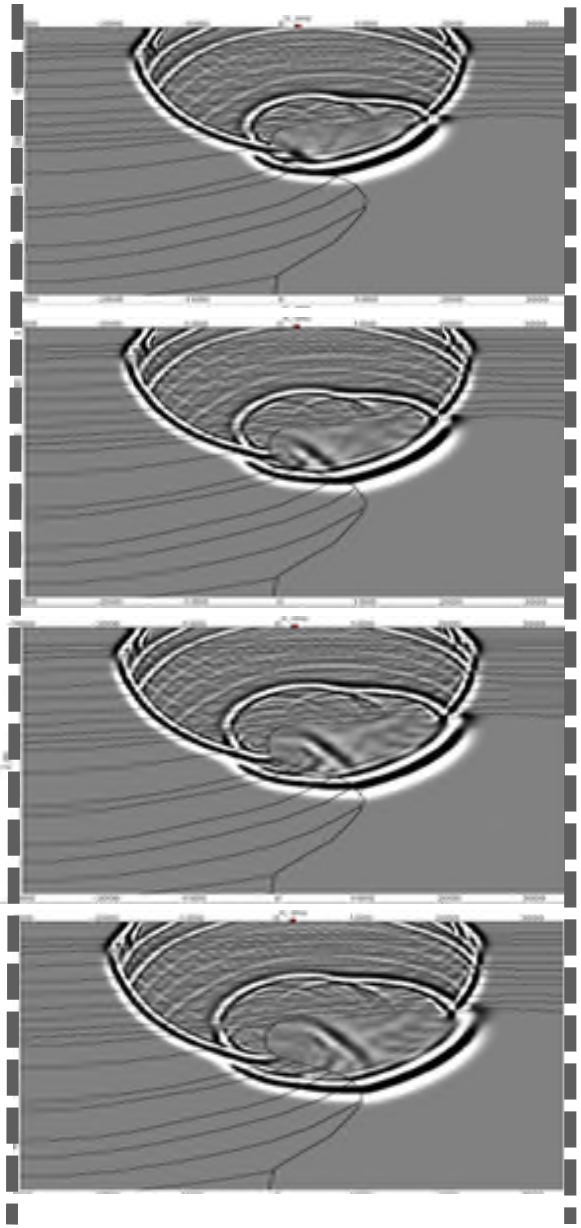


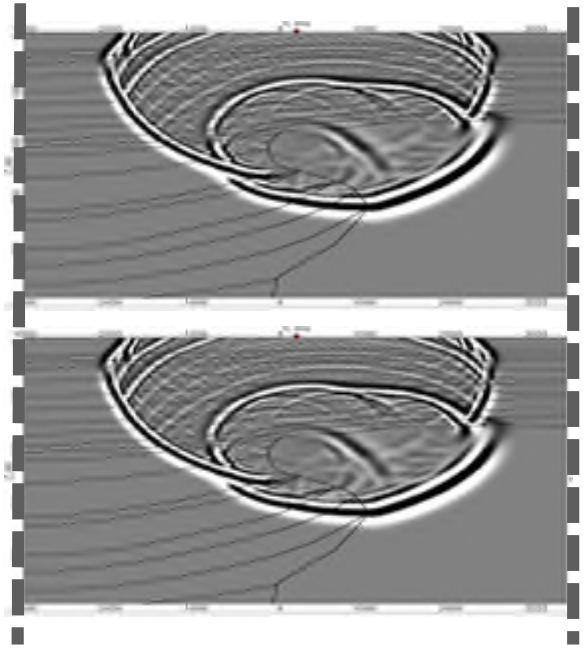
Synthetic time cross-section generated by Tesseral



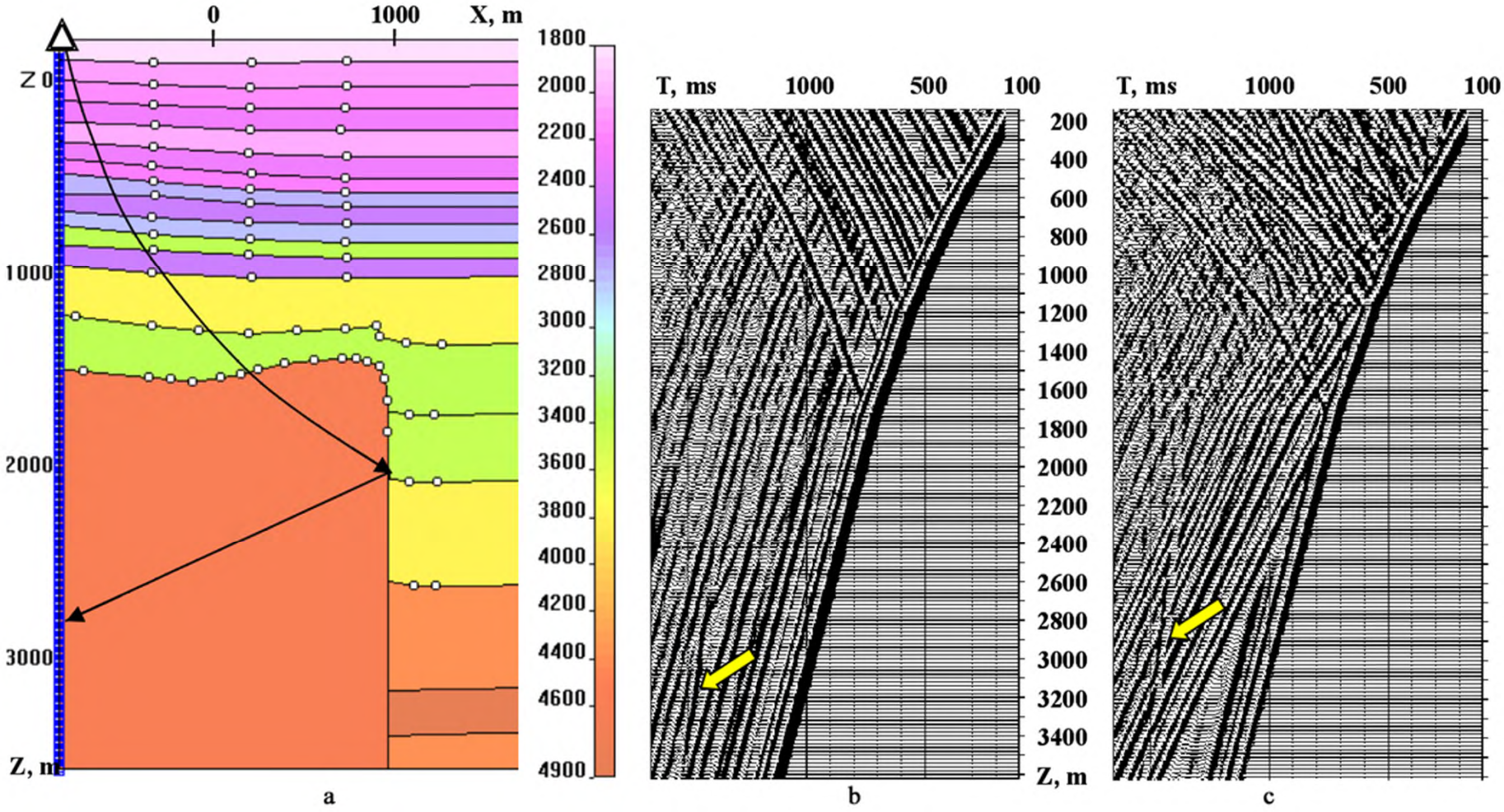
Seismic image, after post-stack migration processing of the synthetic time cross-section





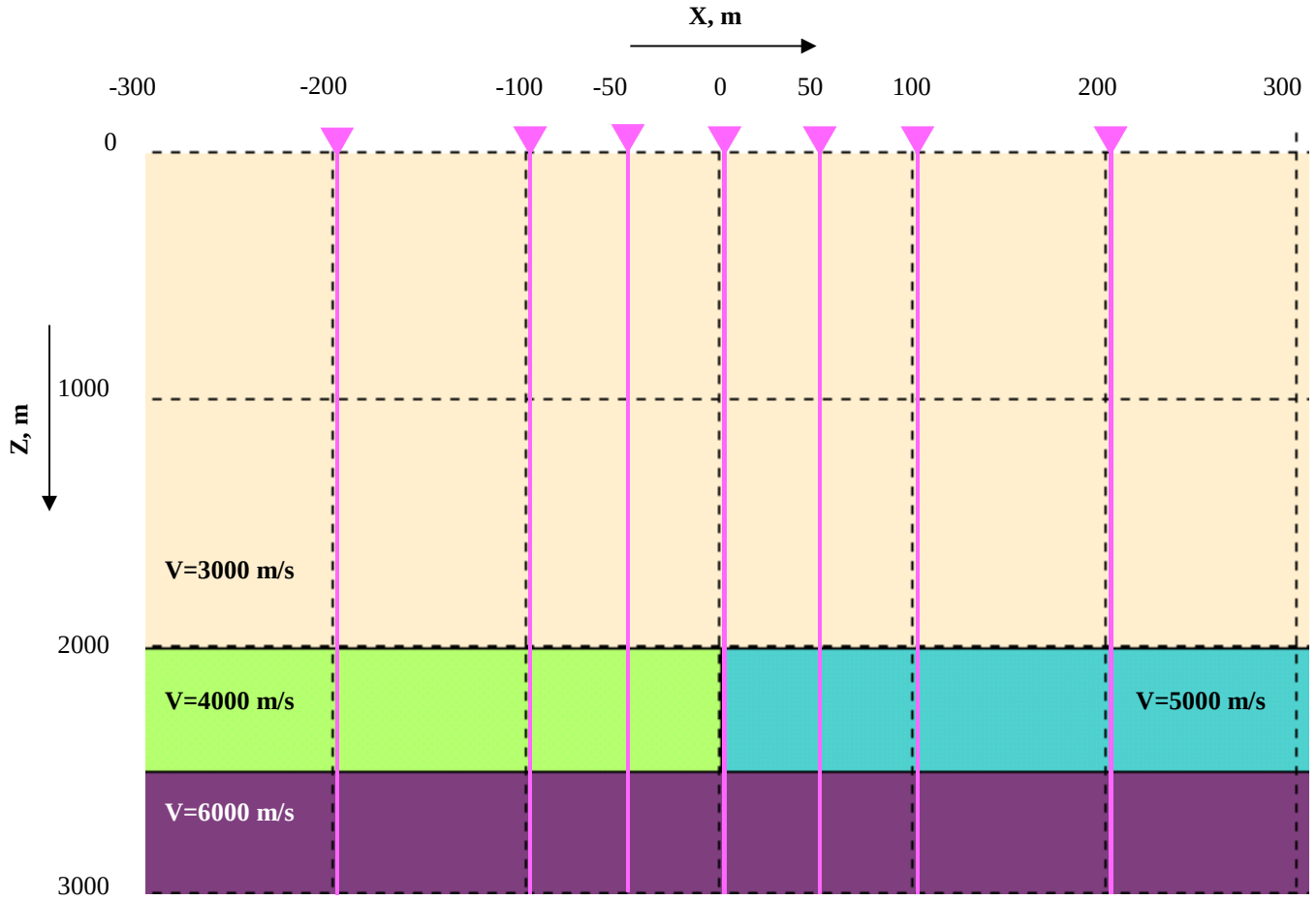


Sequence of snapshots of the wave field propagation through the cornice of the saltdome (the arrow indicates the reflection from the salt cornice)

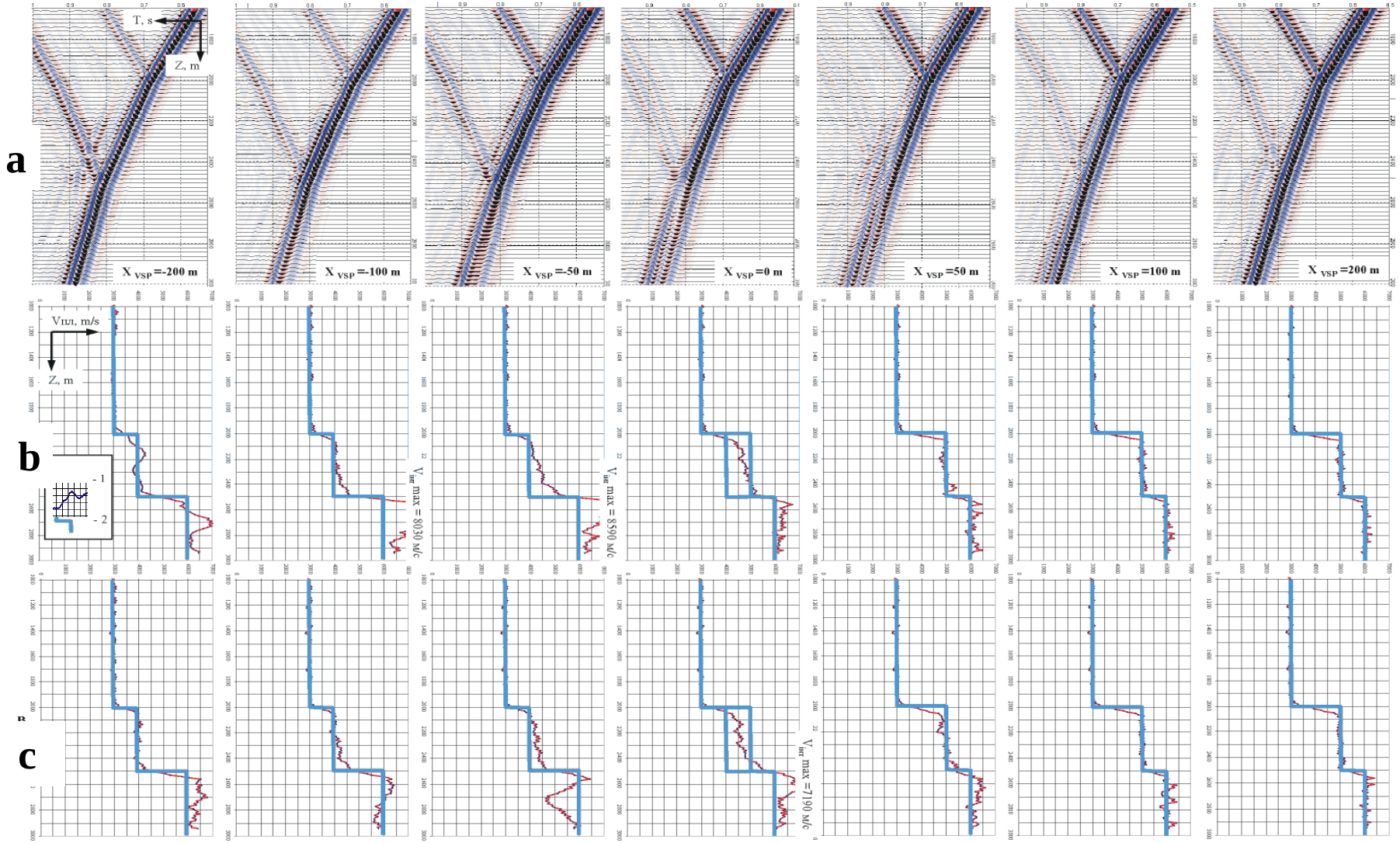


Modeling of reflections from the salt dome wall for VSP observations:
a – source model; b and c – VSP shotgathers for X- and Z-components correspondingly. With arrow is shown reflection from the salt dome wall.

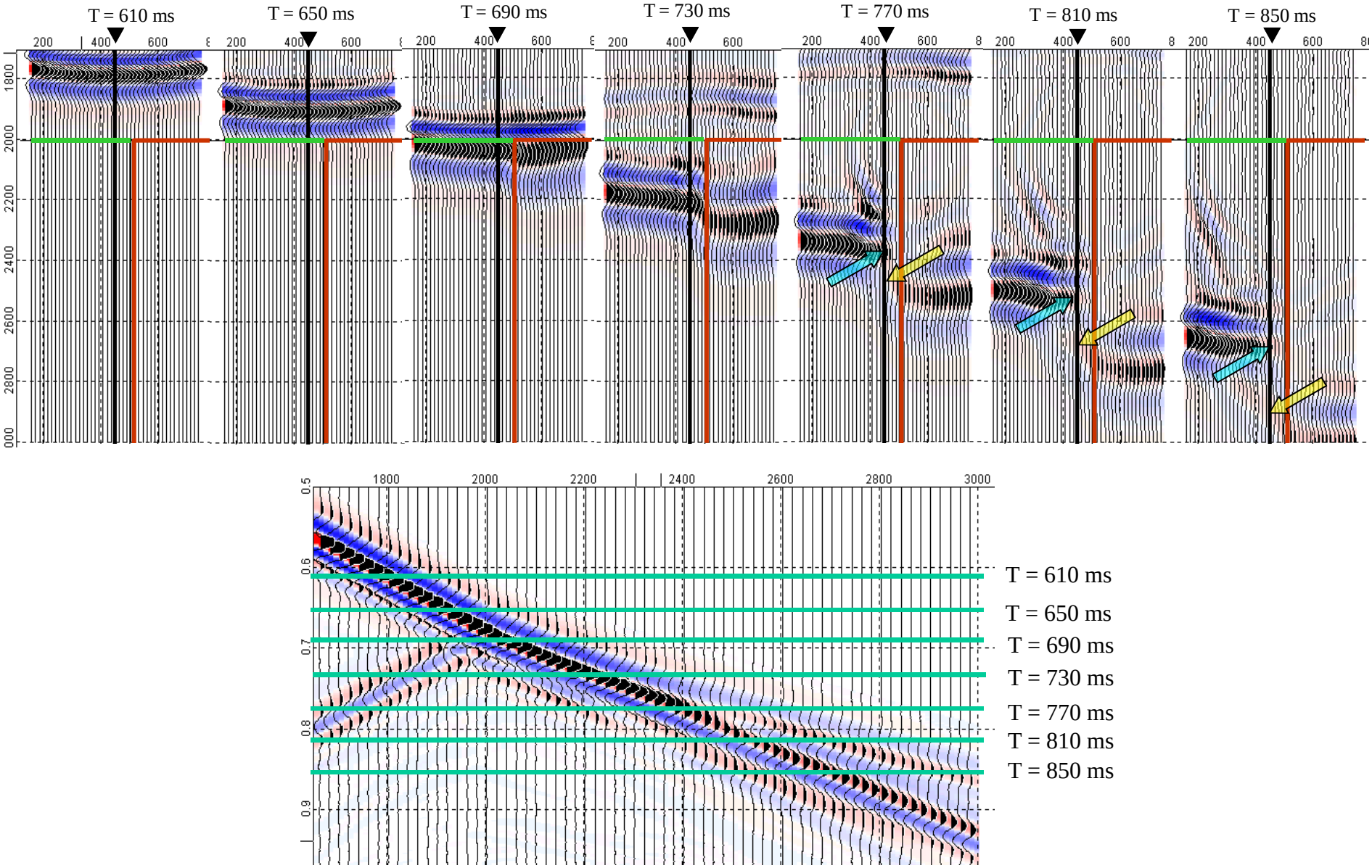
Vertical Contact –example 2-



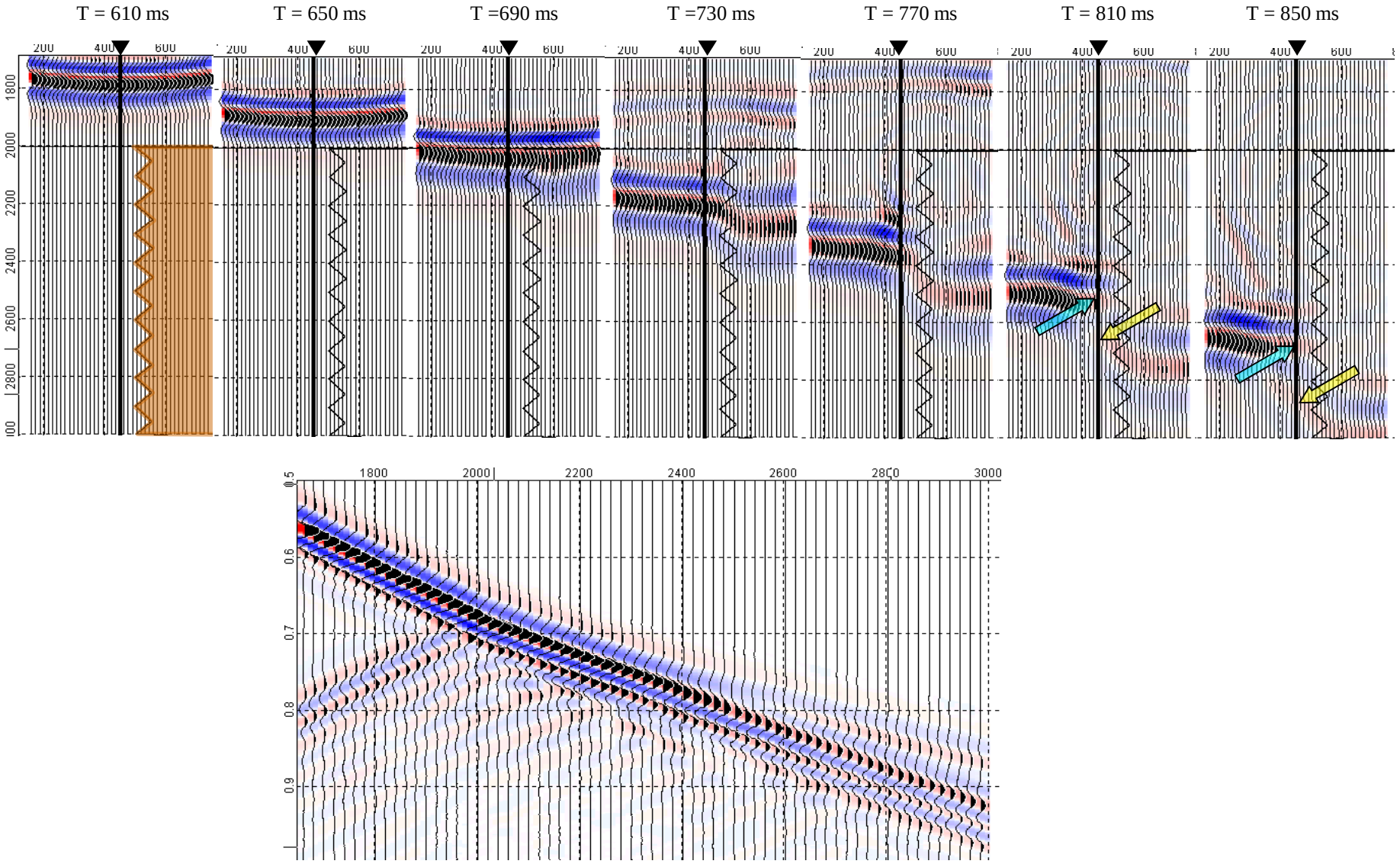
Model “Vertical Contact”, representing lateral velocity heterogeneities. Vertical lines show locations of the modeled VSP wells.



"Vertical Contact" modeling results: a – synthetic VSP shotgathers; b – interval velocities determined by first arrivals of direct wave, c – interval velocities determined by second additional phase of direct wave.
Legend: 1 – graphic of determined interval velocities; 2 – graphic of *a priory* (model) interval velocities

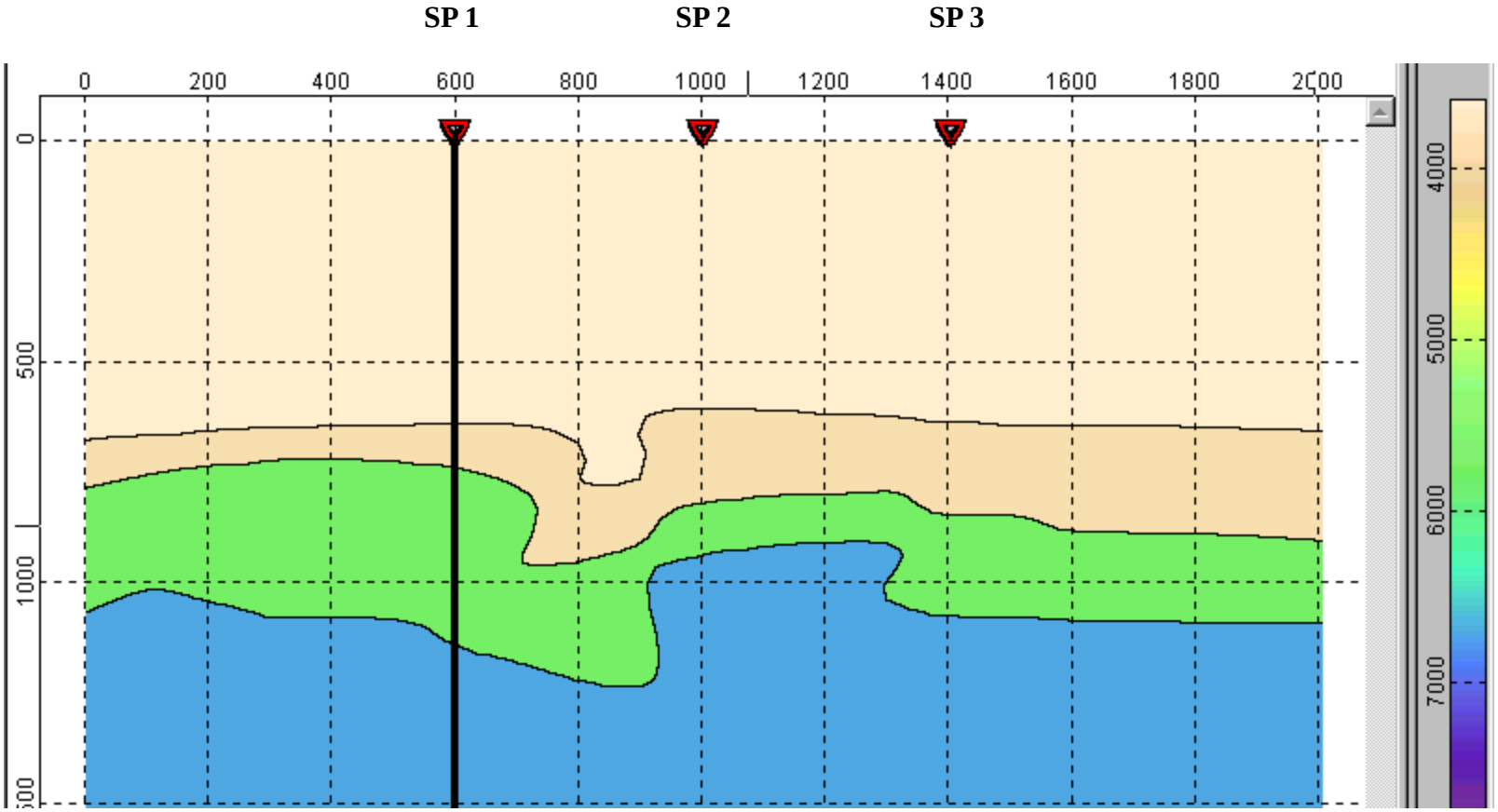


Wave field snapshots (upper) and VSP shotgather (lower), obtained for VSP shotgather modeling in “Vertical Contact” model for case of the well placed in 50m from the *straight* vertical contact in area with lower velocity.

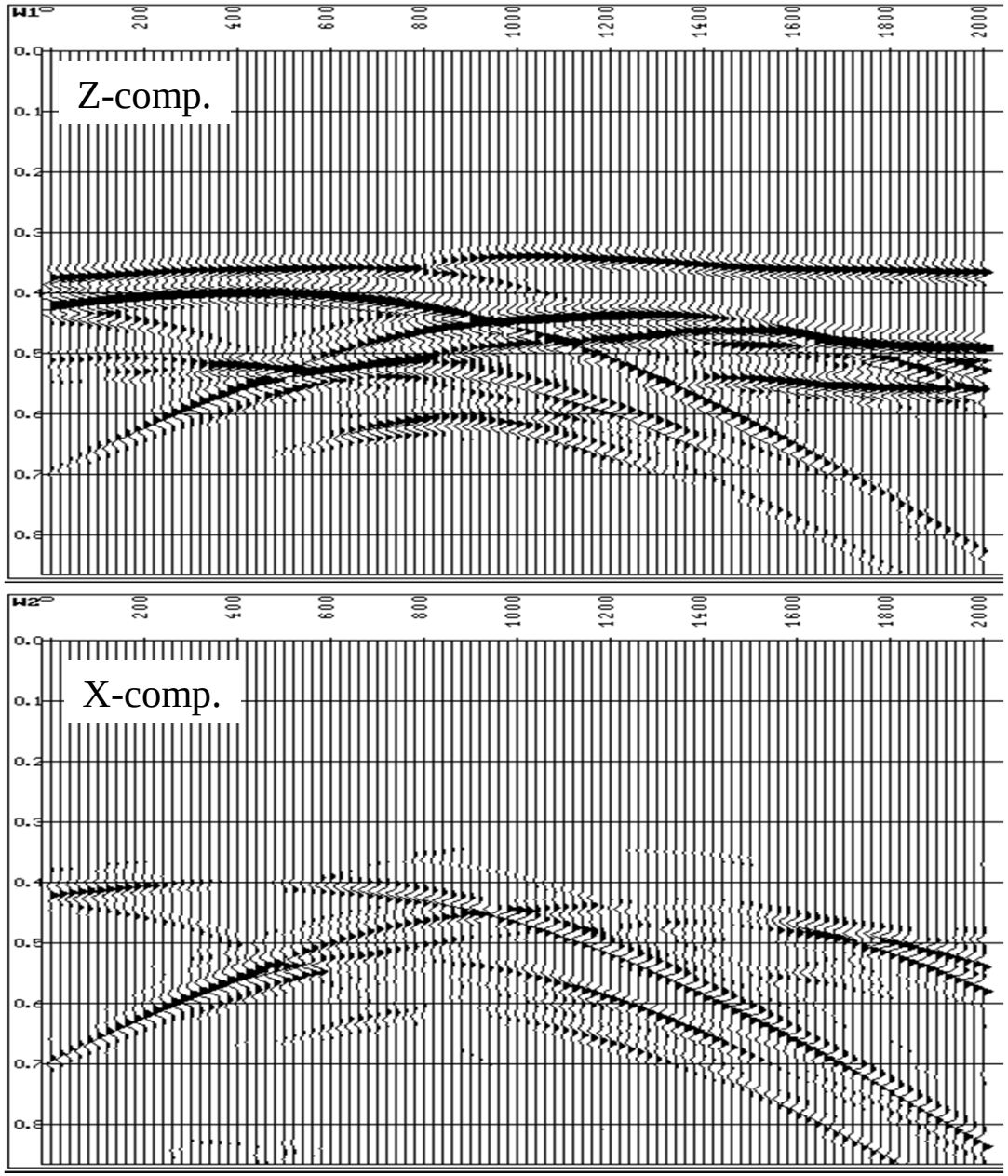


Wave field snapshots (upper) and VSP shotgather (lower), obtained for VSP shotgather modeling in “Vertical Contact” model for case of the well placed in 50m from the *uneven* vertical contact in area with lower velocity.

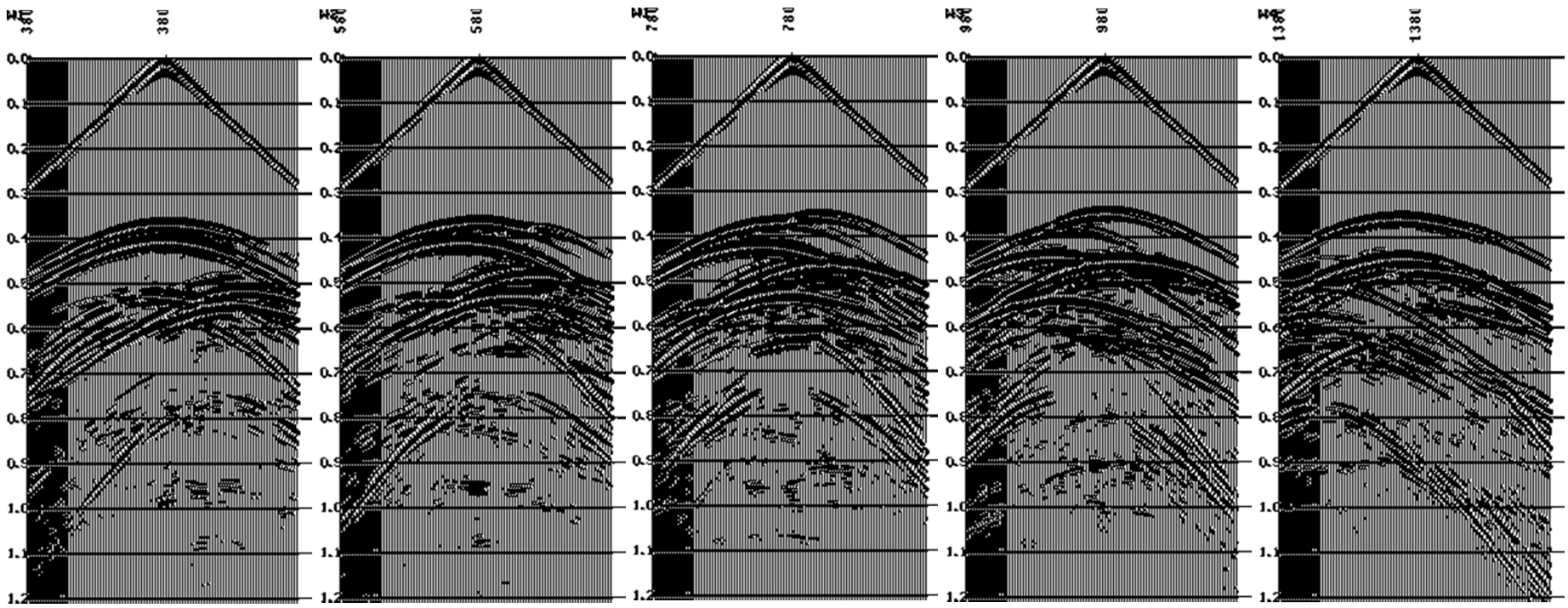
Sharp Flexures –example 3-



“Karsts” source model for VSP survey.

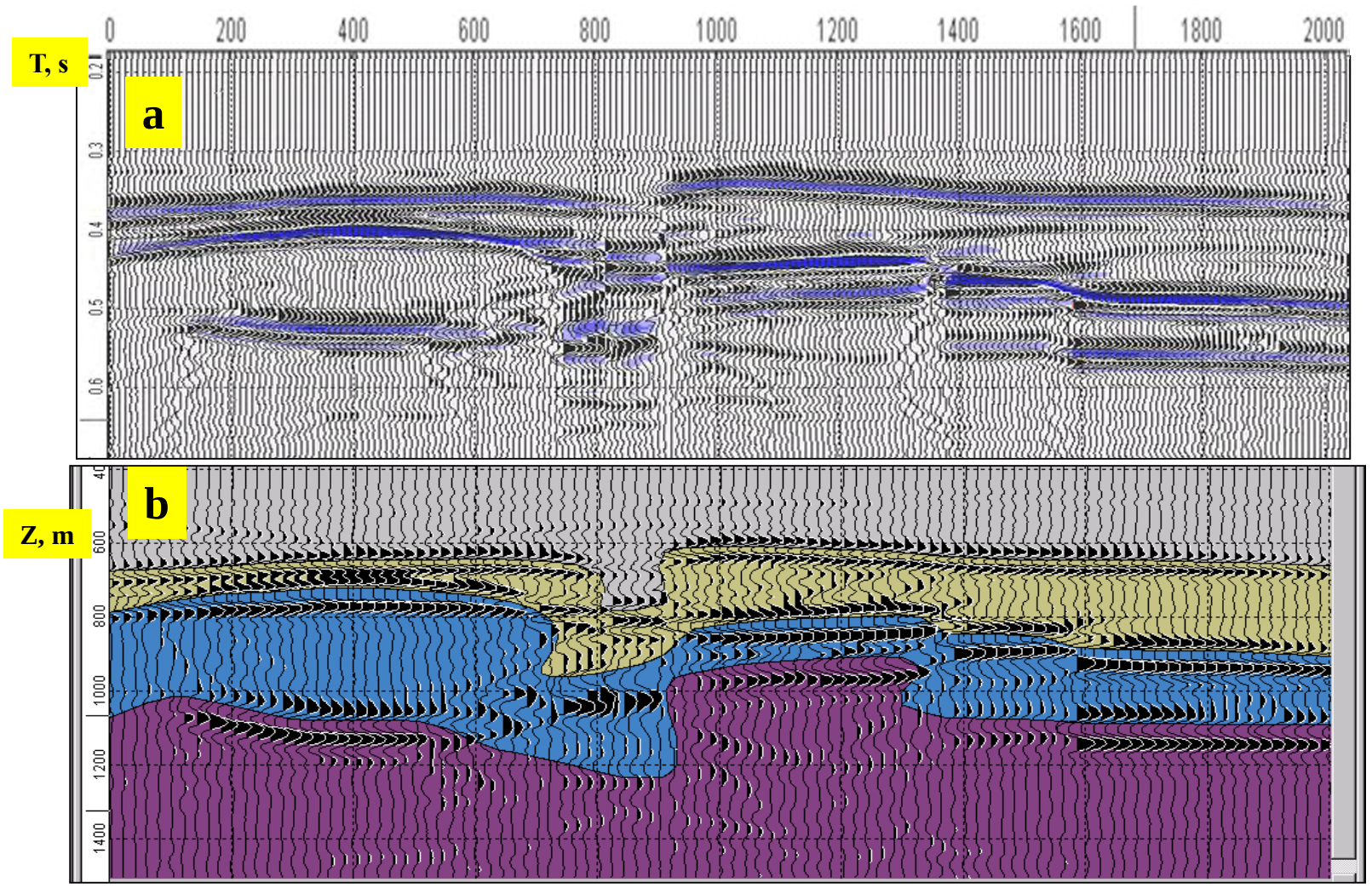


Time cross-section (obtained with the “exploding horizons” source mode), “Karsts” model.

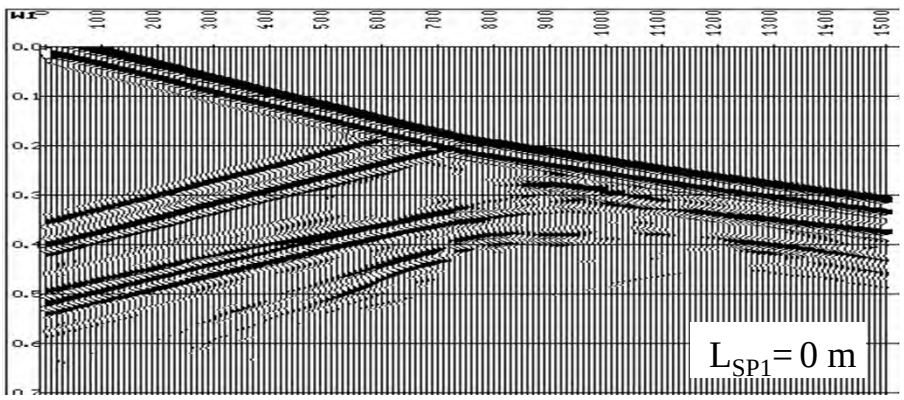


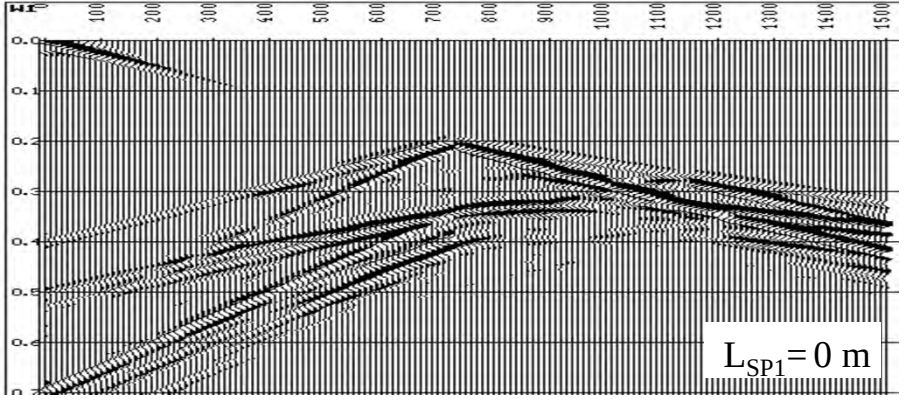
#20	#30	#40	#50	#70
Xsp=380 m	Xsp=580 m	Xsp=780 m	Xsp=980 m	Xsp=1380 m

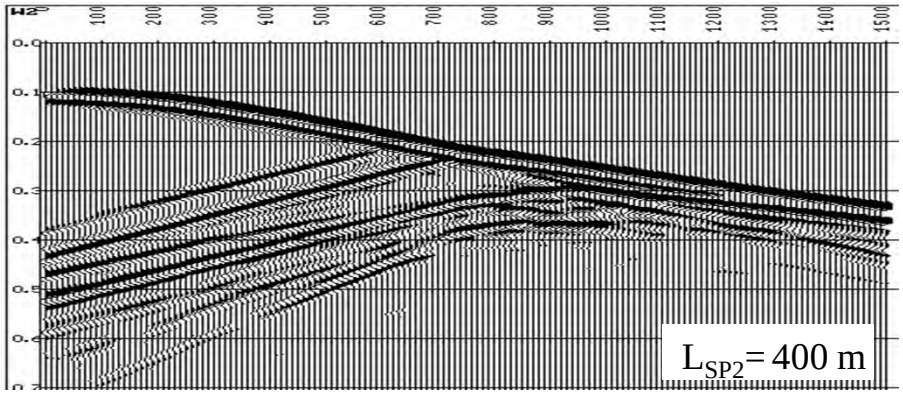
Shotgathers for different shot points
(“Karsts” model)

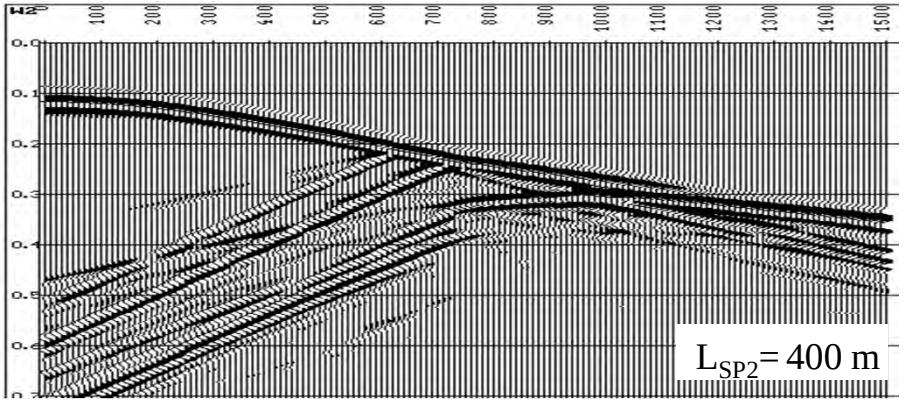


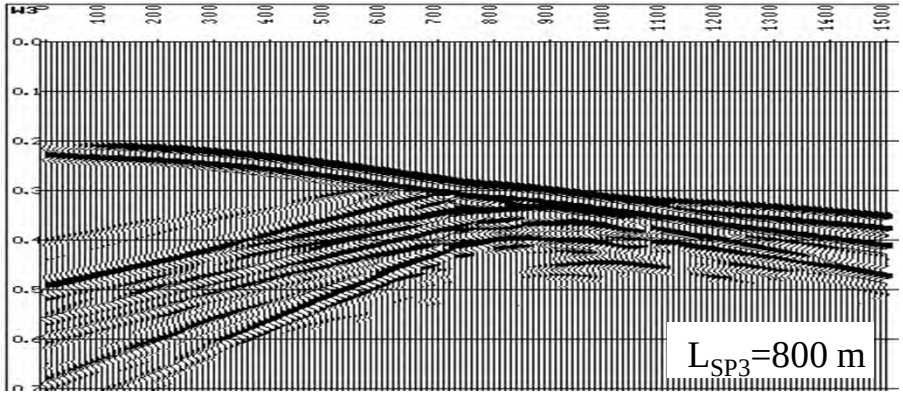
Result of the depth pre-stack migration in the time domain (b) and depth domain (c),in backgrond is seen source “Karsts” model.

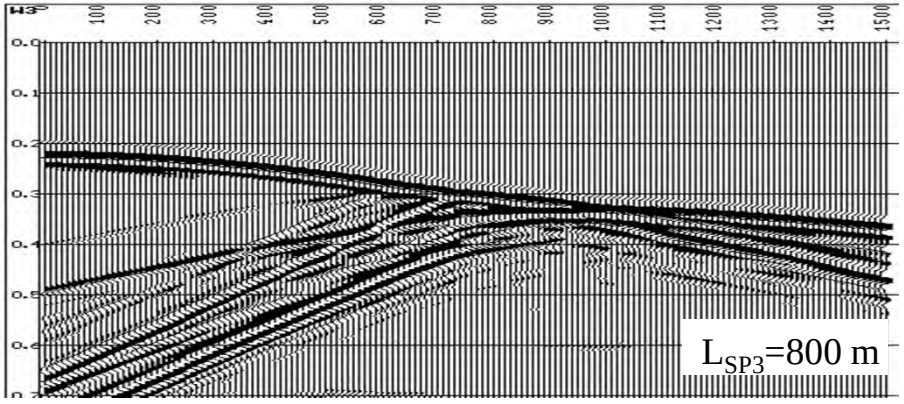












VSP shotgathers, Z-component, “Karsts” model.

VSP shotgathers, X-component

End of Presentation