

Sigsbee model

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ABSTRACT

The Subsalt Multiples Attenuation and Reduction Technology Joint Venture (SMAART JV) publicly released several data sets between September 2001 and November 2002. These synthetic data model the geologic setting found on the Sigsbee escarpment in the deep water Gulf of Mexico. Additional information may be found at <http://www.delphi.tudelft.nl/SMAART/>. The data sets remain the property of SMAART and are used under the agreement found at the SMAART site listed above.

MODEL

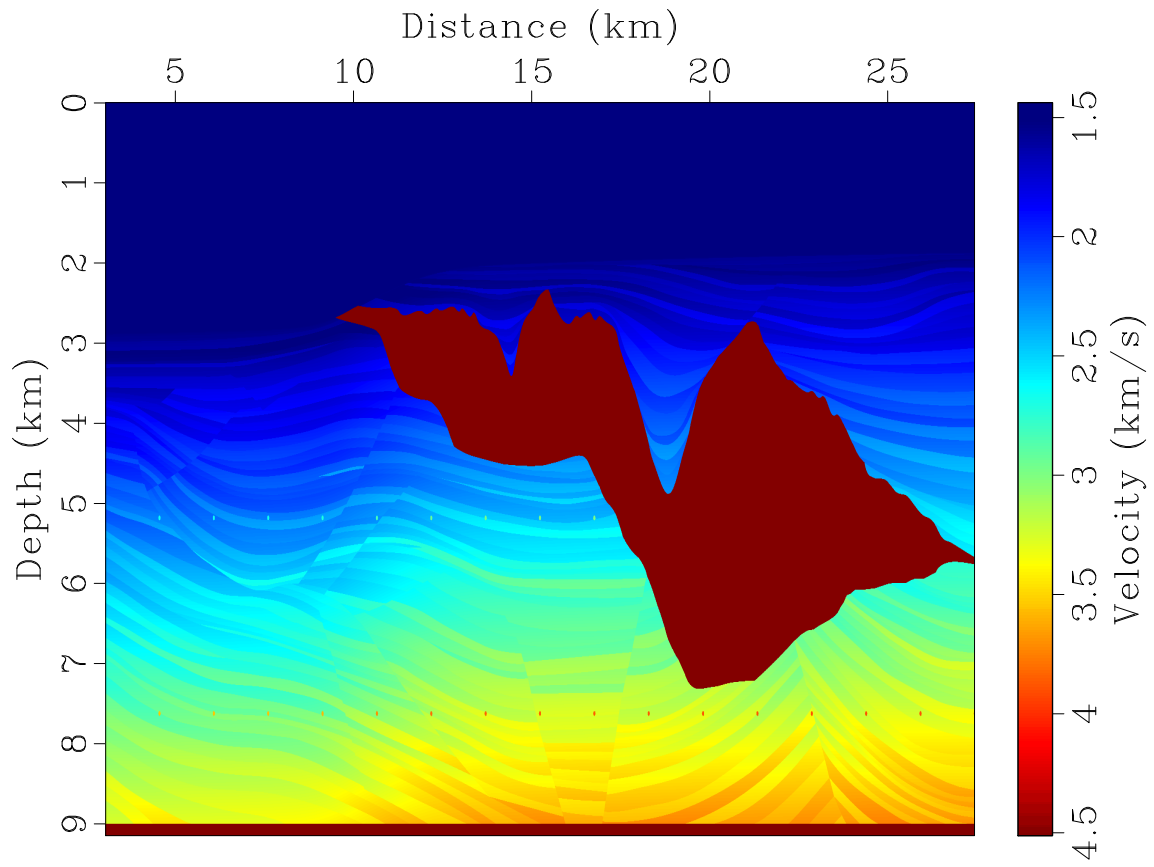


Figure 1: "Stratigraphic" velocity model.

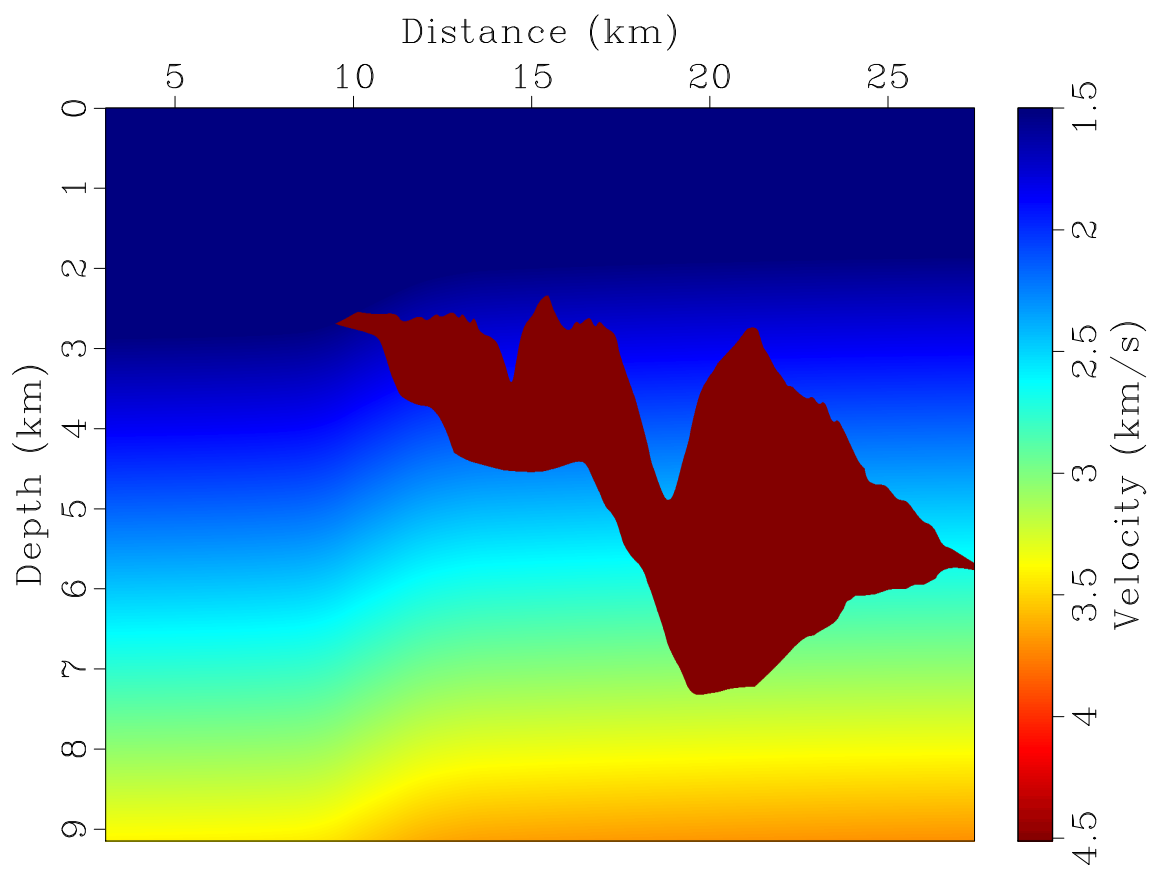


Figure 2: “Migration” velocity model.

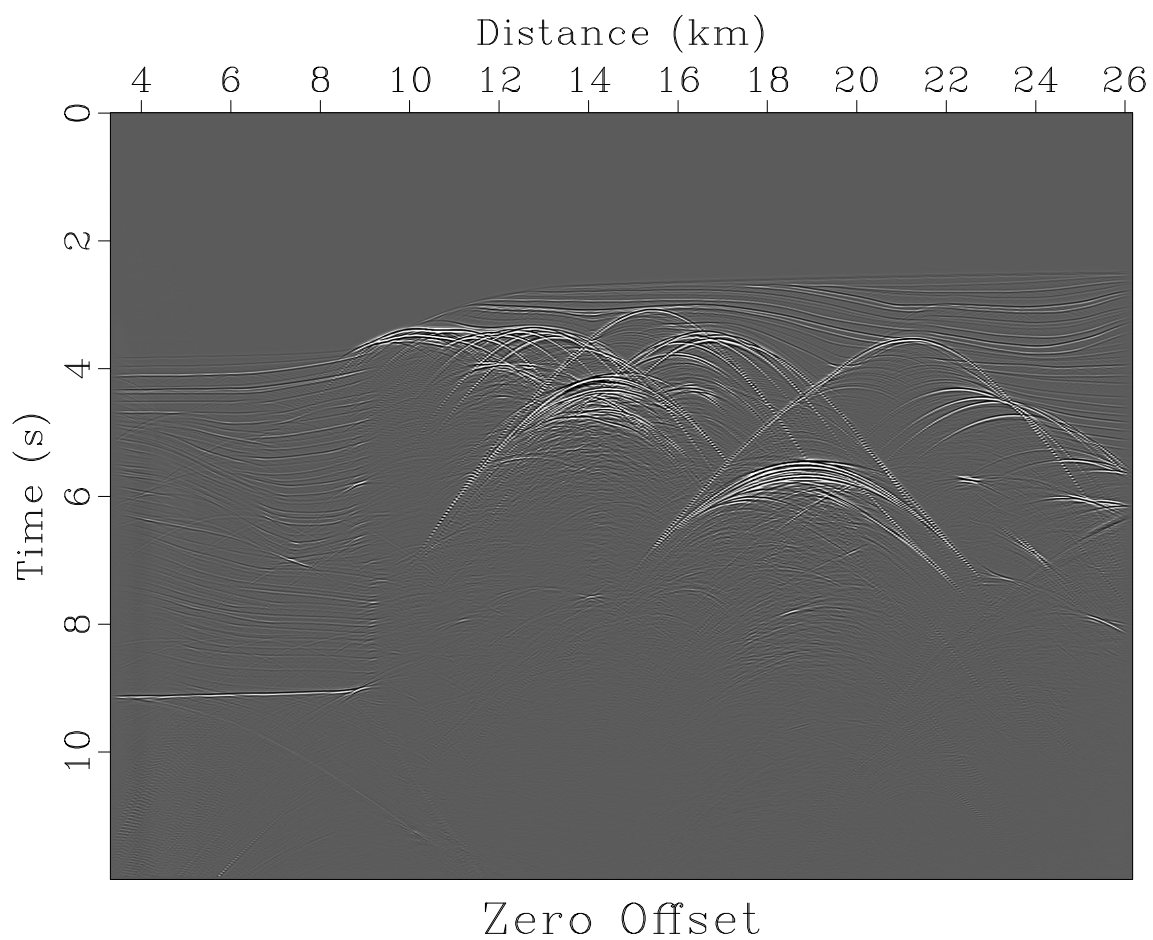


Figure 3: Zero-offset data from finite-difference modeling.

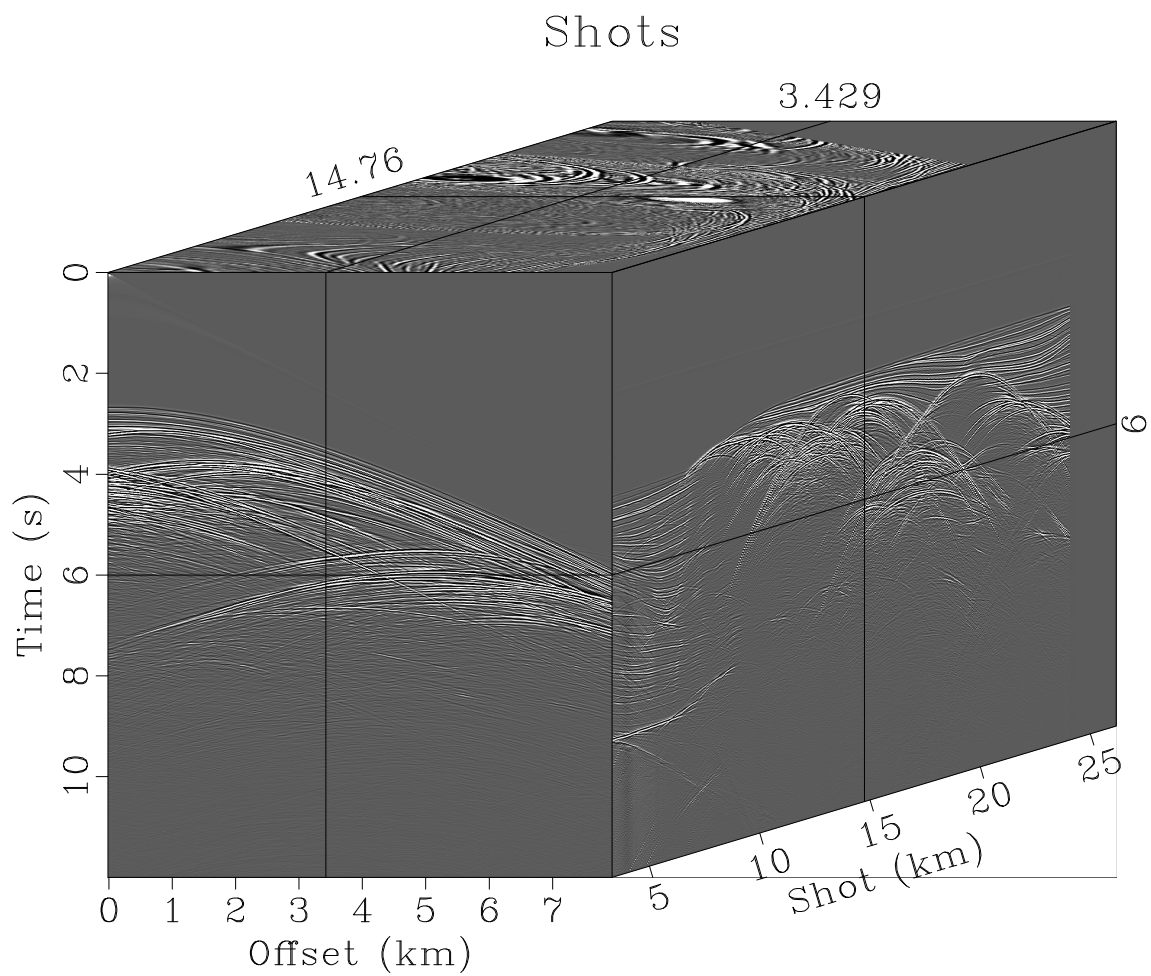


Figure 4: Shot gathers from finite-difference modeling.

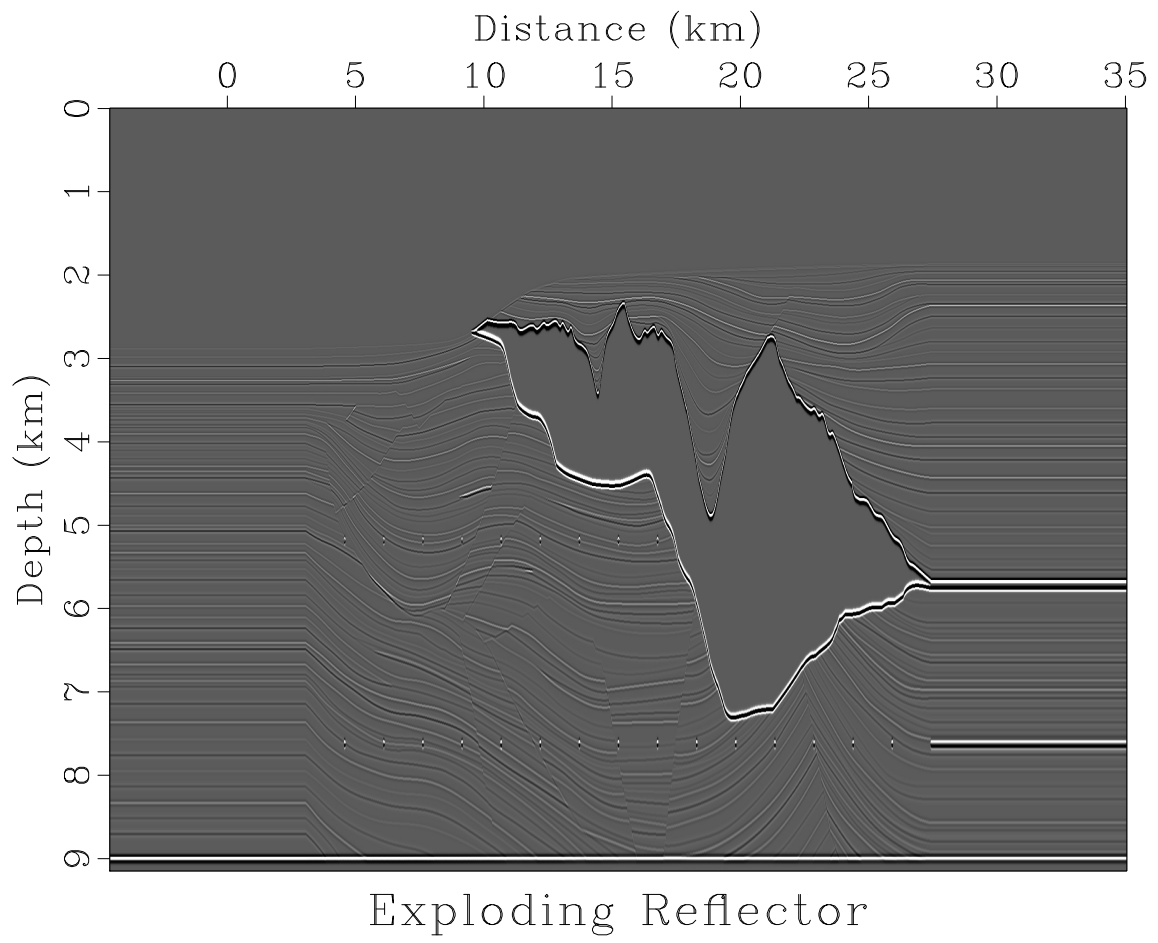


Figure 5: Exploding reflector.

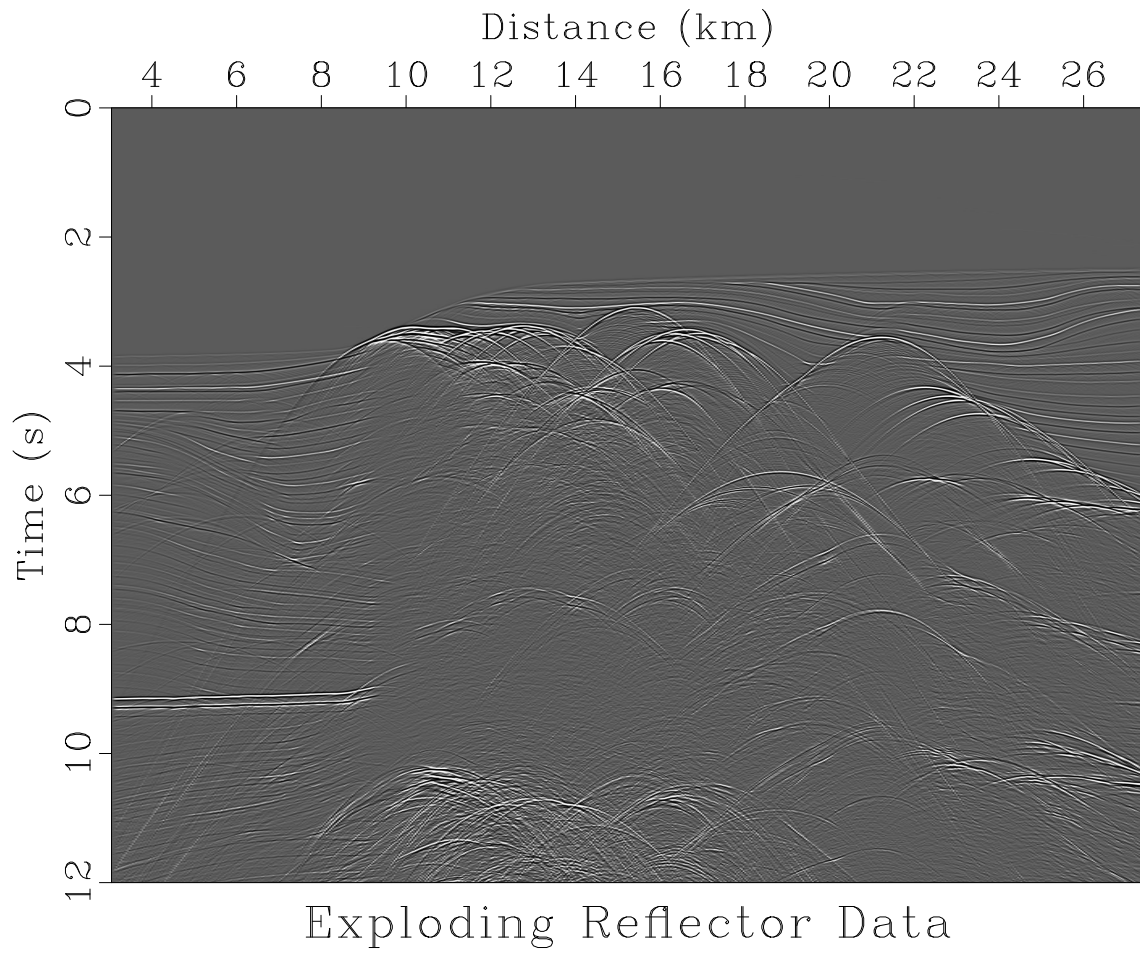


Figure 6: High-resolution zero-offset data modeled from exploding-reflector modeling.

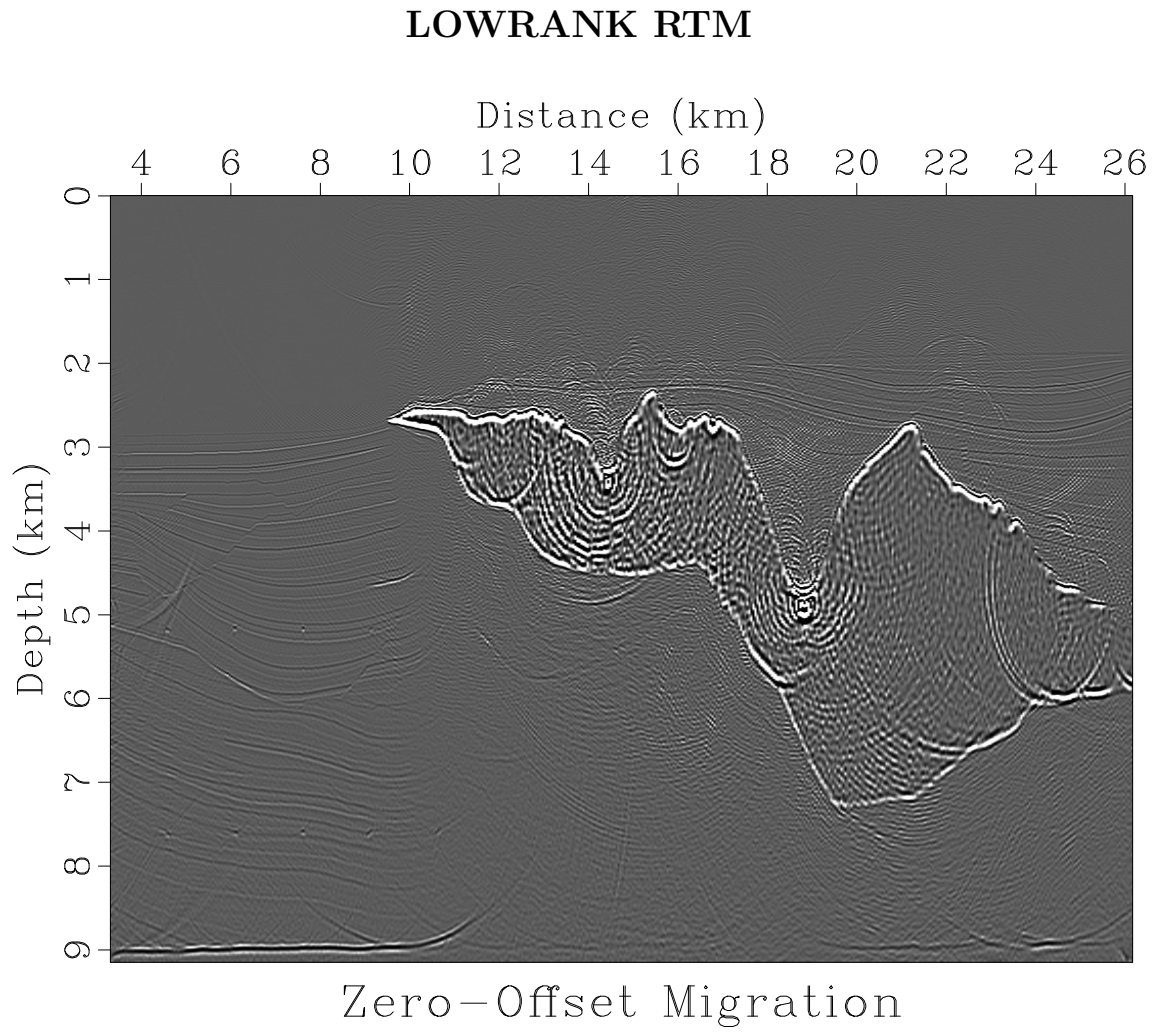


Figure 7: Zero-offset RTM image by the lowrank method.

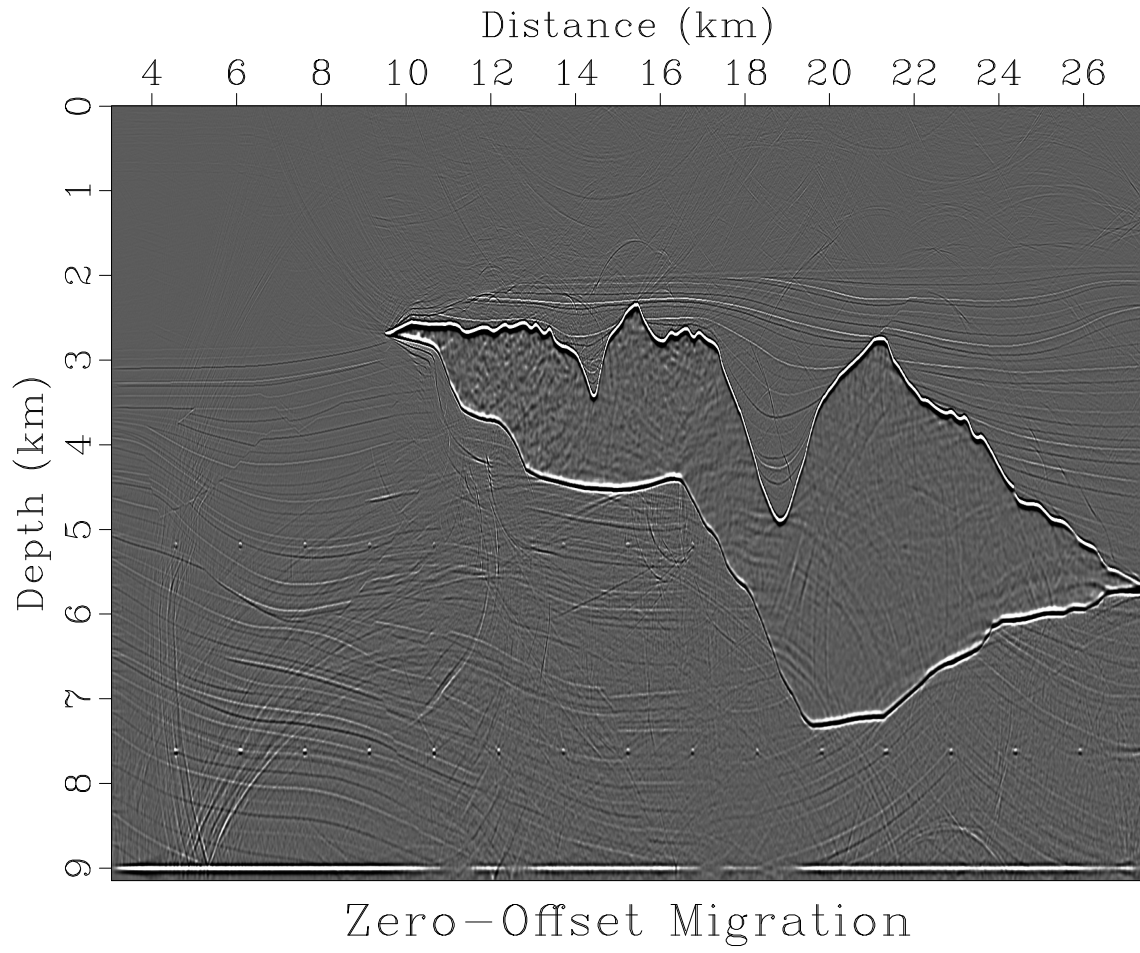


Figure 8: Zero-offset RTM image by the lowrank method using high-resolution data.

FFD RTM

Source Wavelet

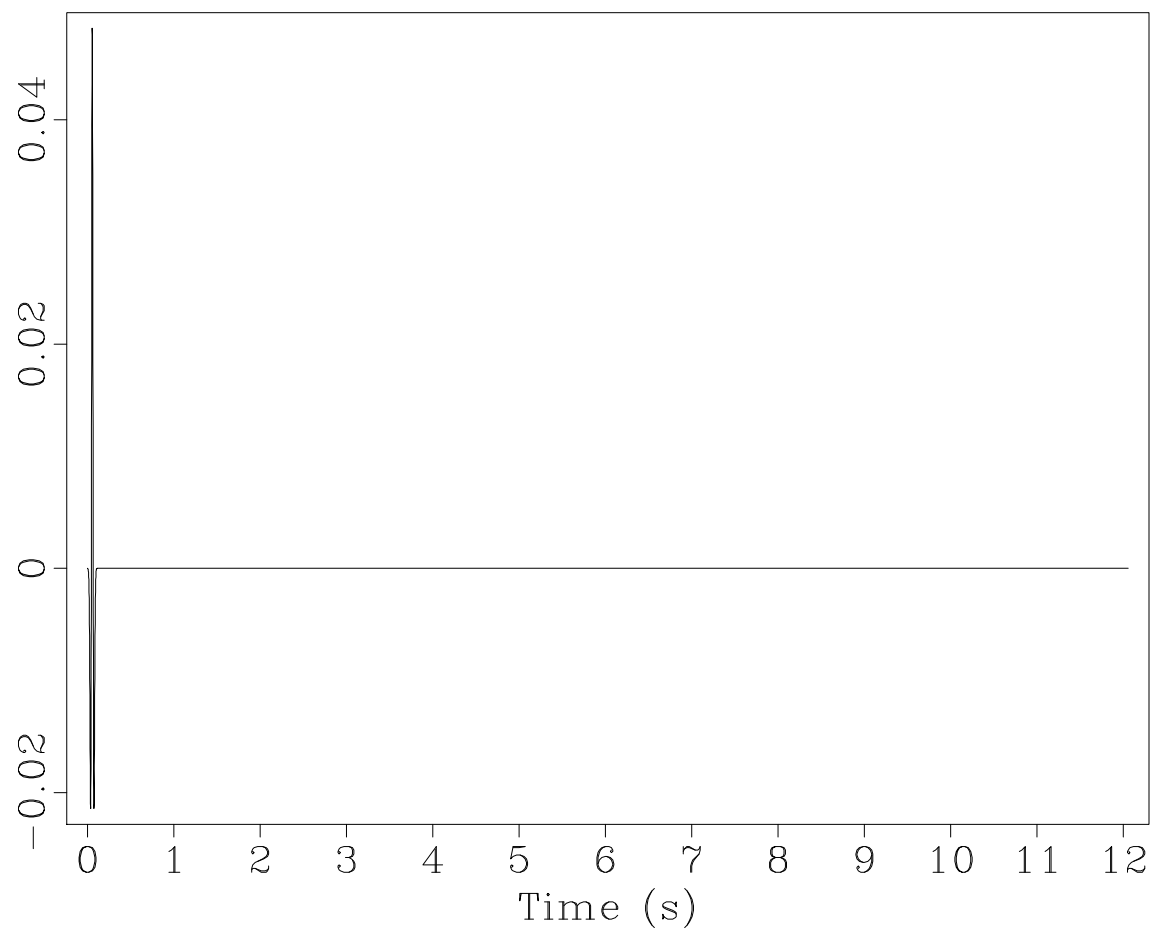
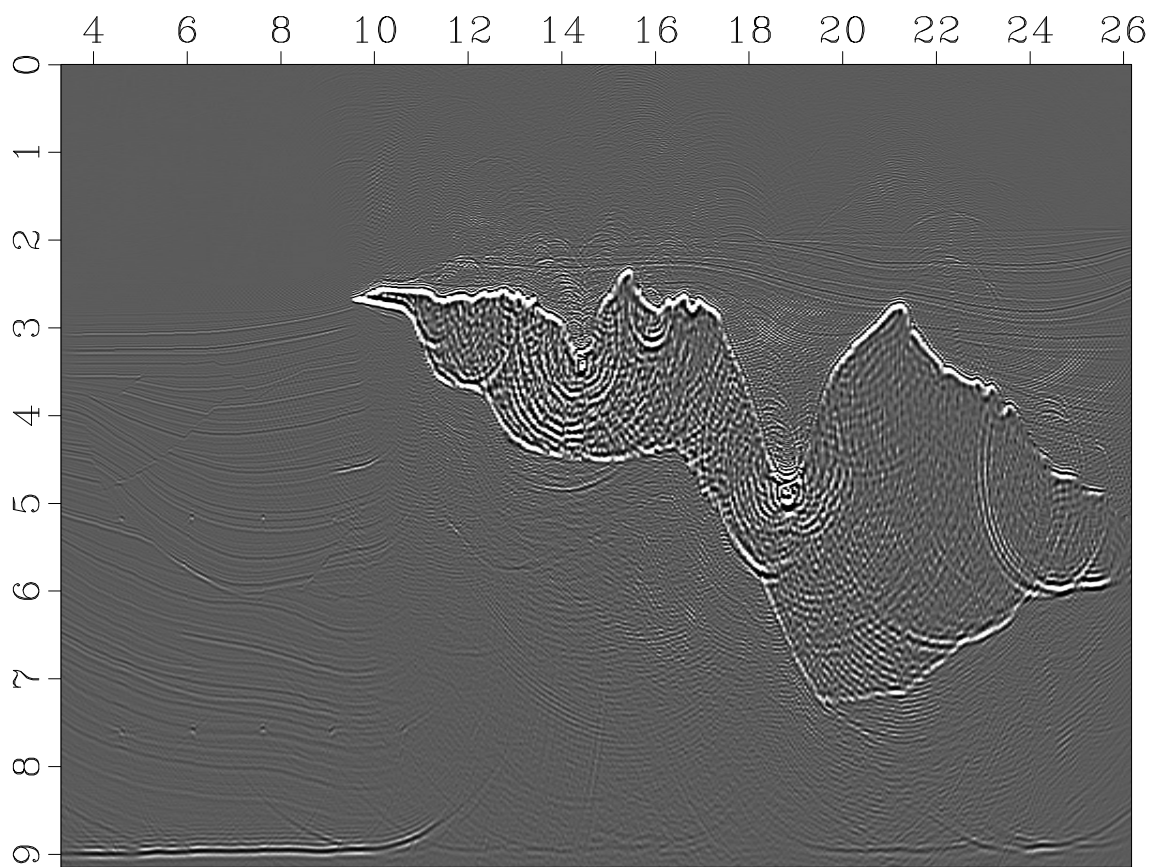


Figure 9: Source wavelet for FFD RTM



Zero-Offset Migration

Figure 10: Zero-offset RTM image by Fourier finite-differences.

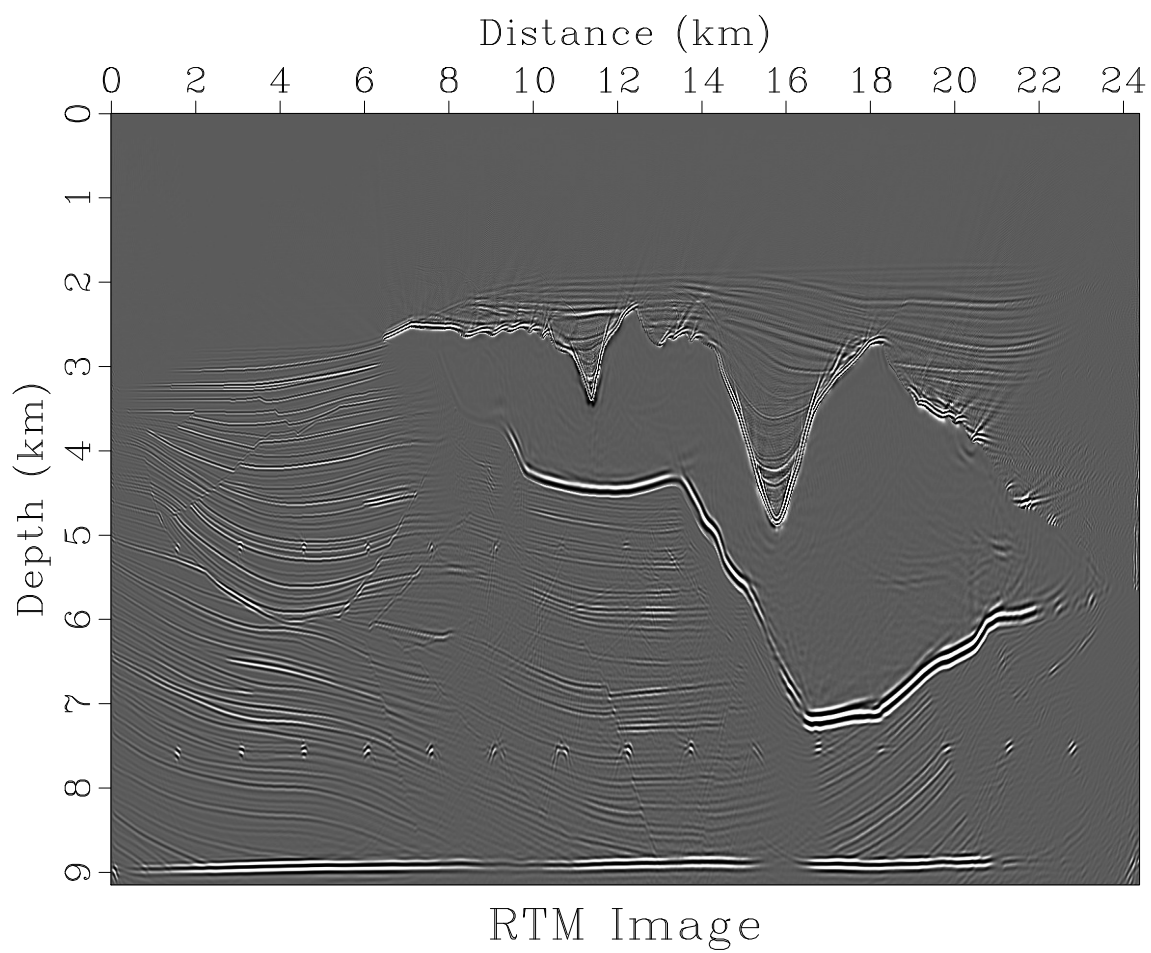


Figure 11: Full-offset RTM image by Fourier finite-differences.

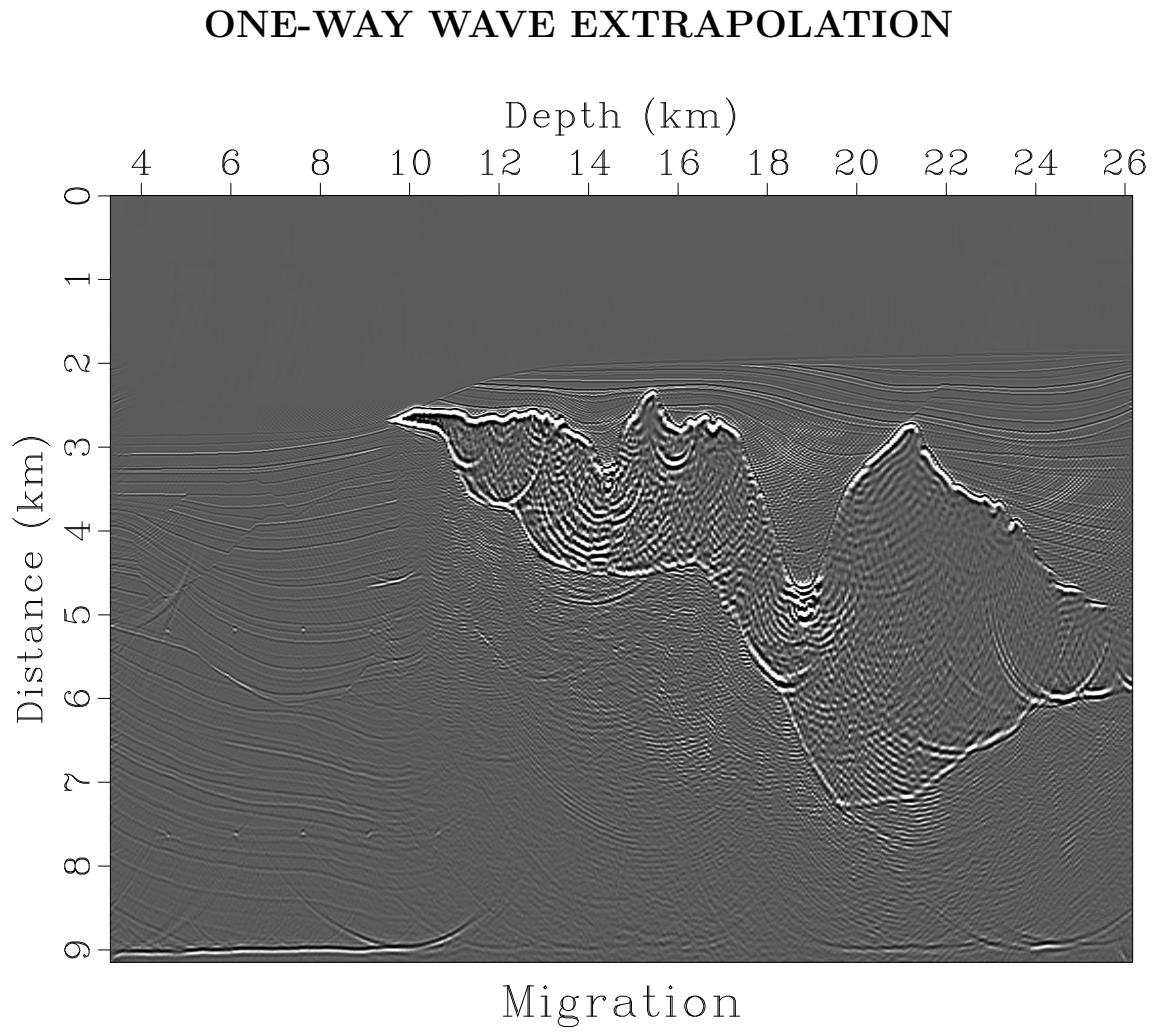
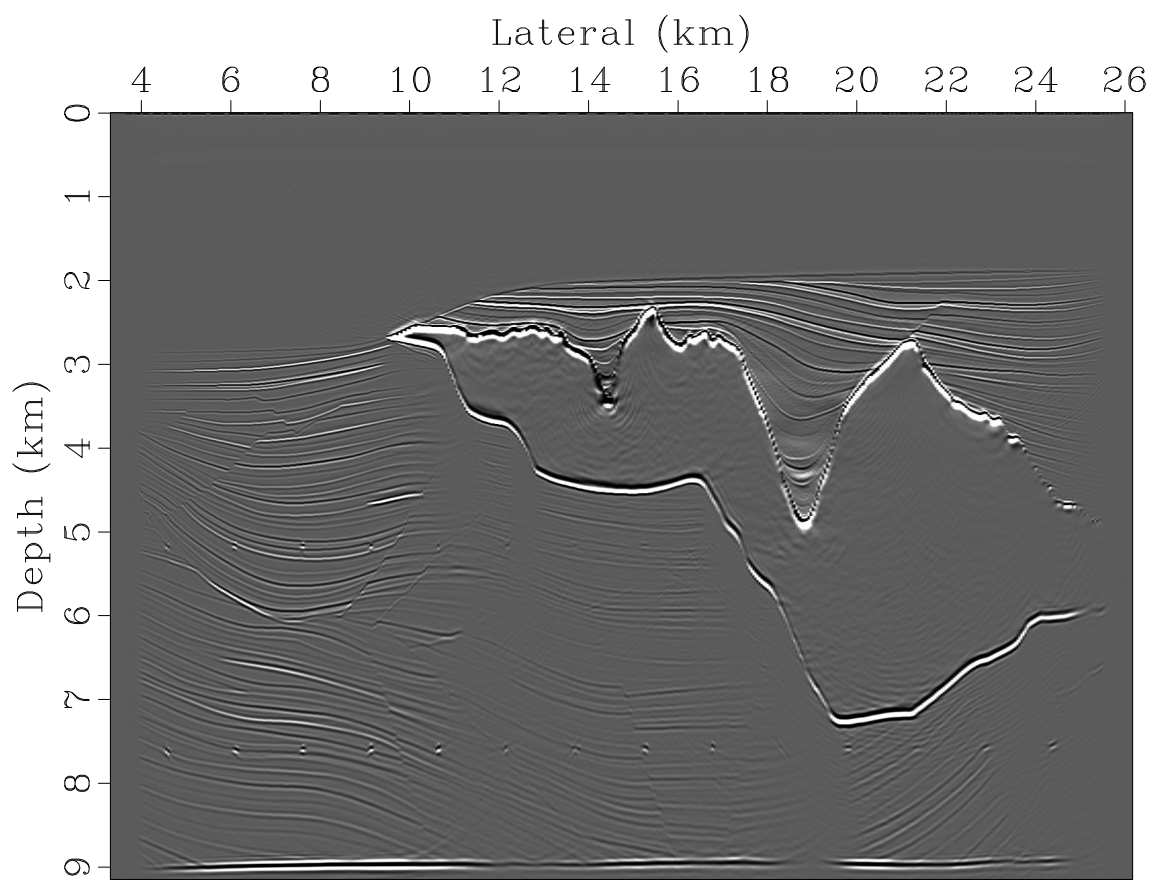


Figure 12: Zero-offset image by one-way wave-equation migration using extended split-step approximation.



PSPI wave equation image

Figure 13: PSPI wave equation image.

MULTI-ARRIVAL KIRCHHOFF MIGRATION

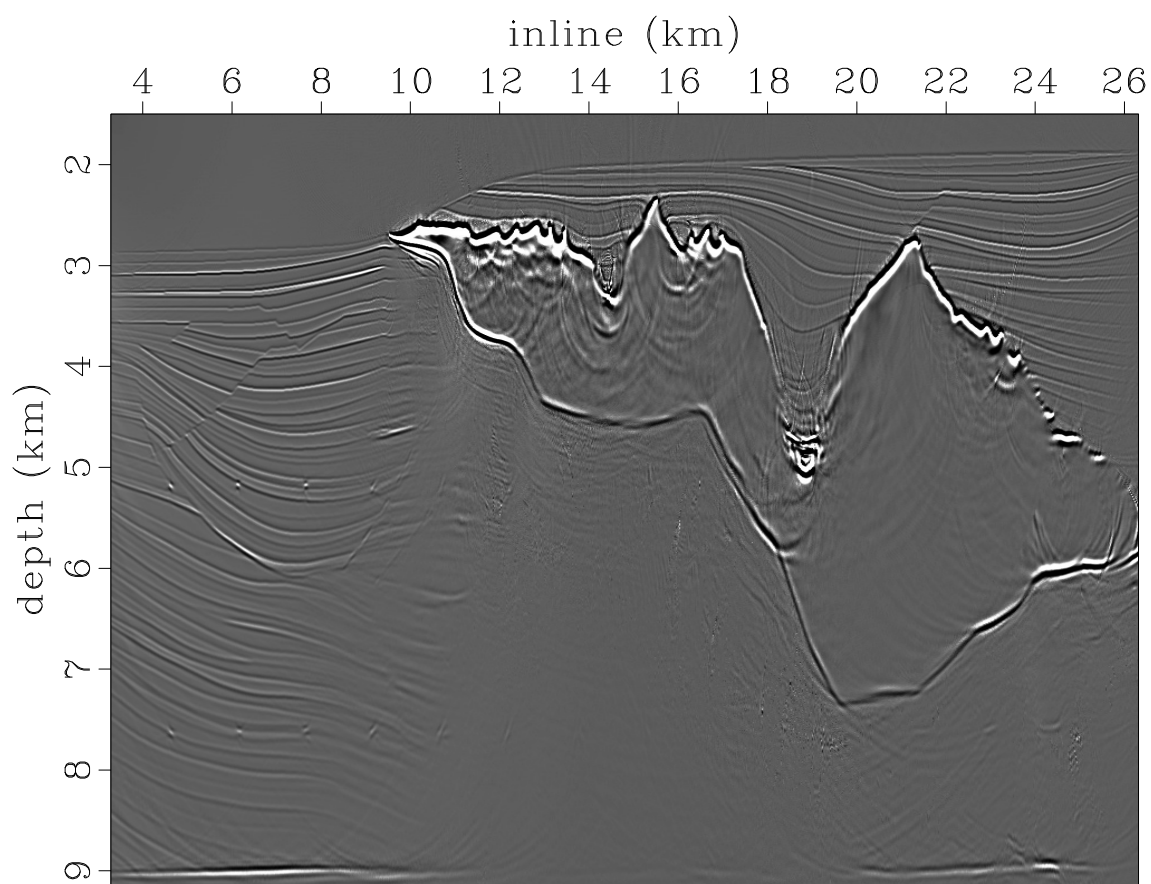


Figure 14: Prestack multi-arrival Kirchhoff migration.

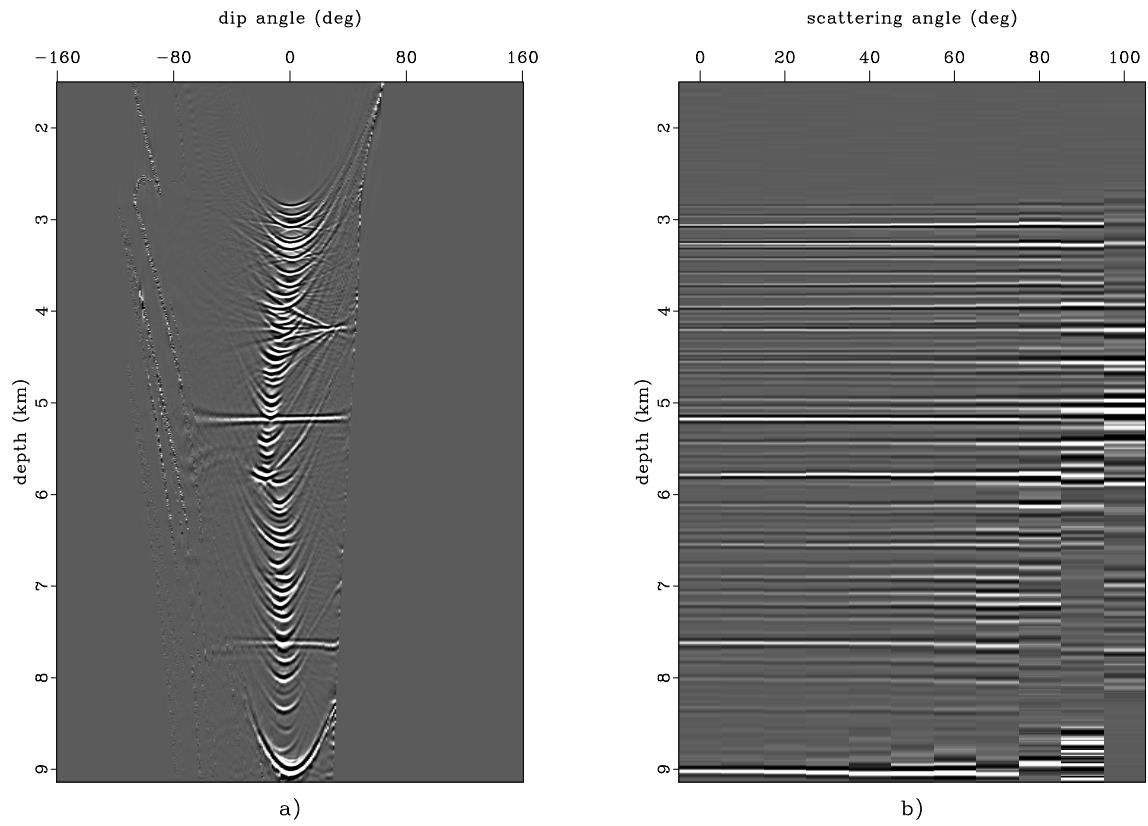


Figure 15: Common-image gather in (a) the dip-angle domain and (b) the scattering-angle domain from position 6.15 km - sedimentary area.

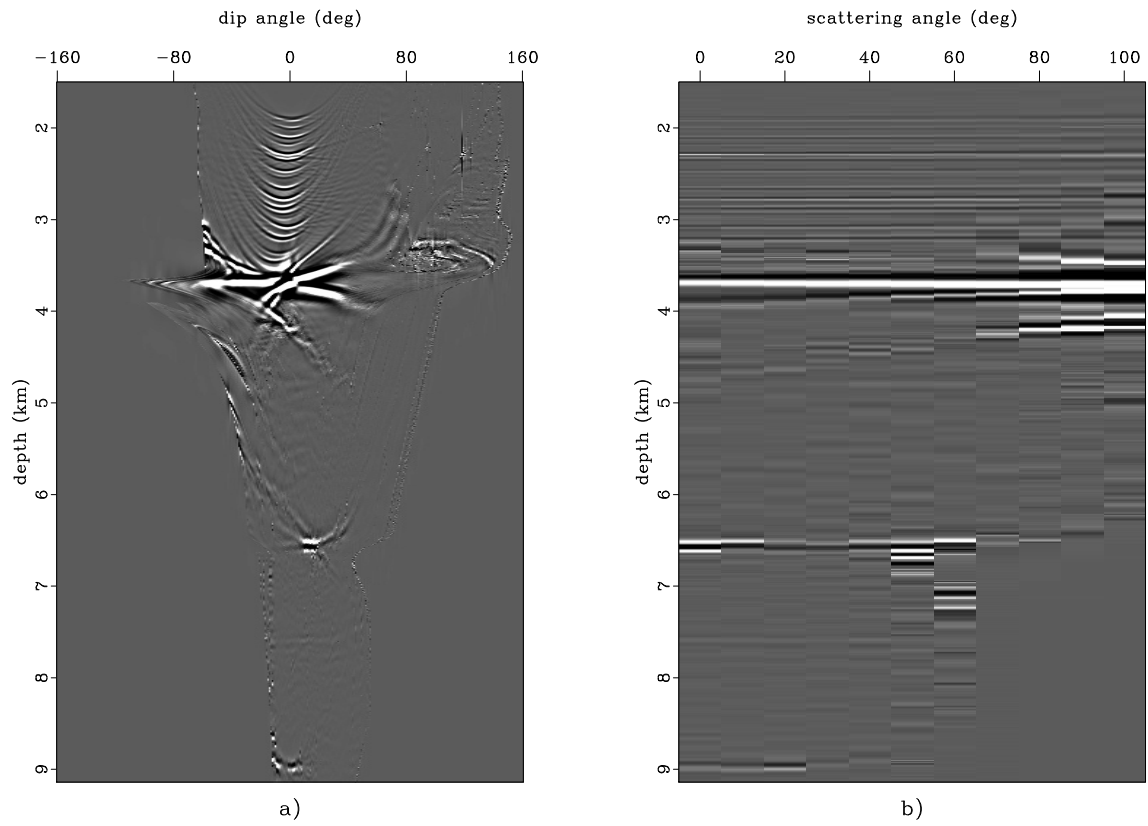


Figure 16: Common-image gather in (a) the dip-angle domain and (b) the scattering-angle domain from position 23 km - salt area.

COMMON REFLECTION ANGLE MIGRATION

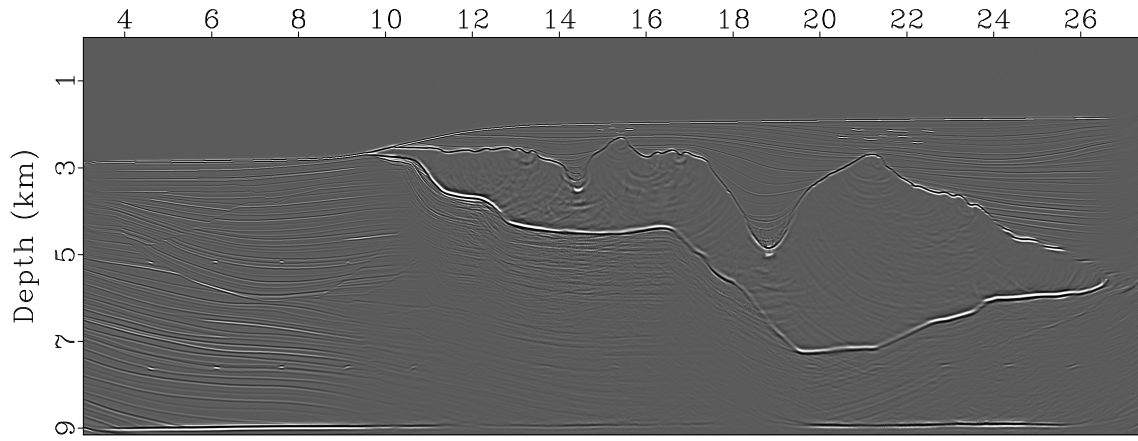


Figure 17: Common reflection angle migration.

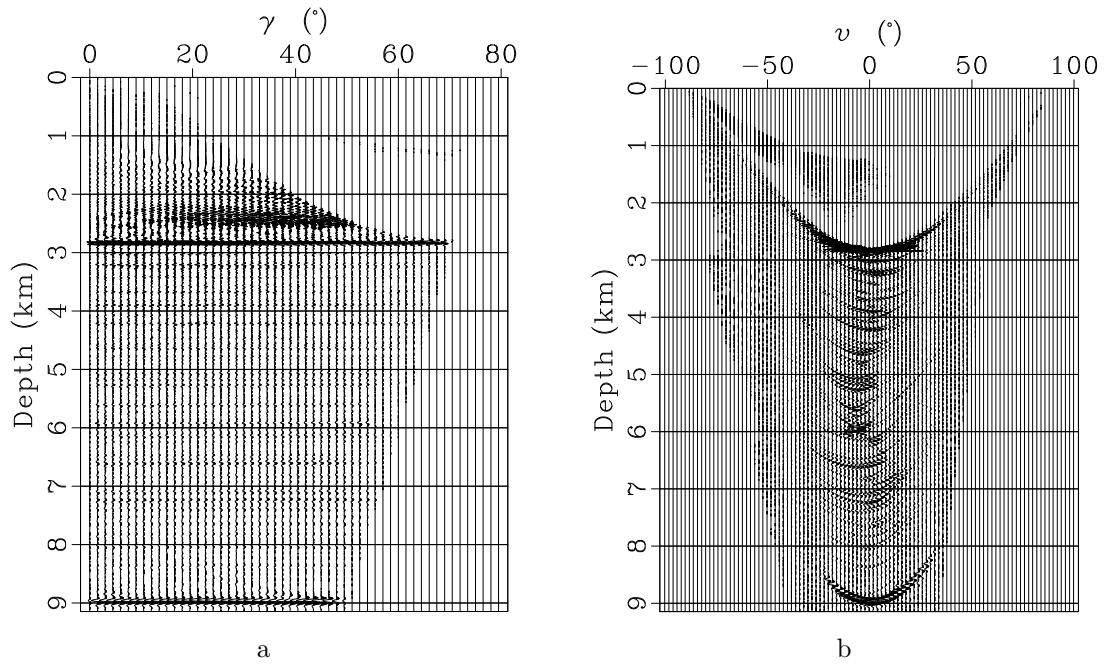


Figure 18: Opening (a) and dip (b) angle gathers at 7 km.

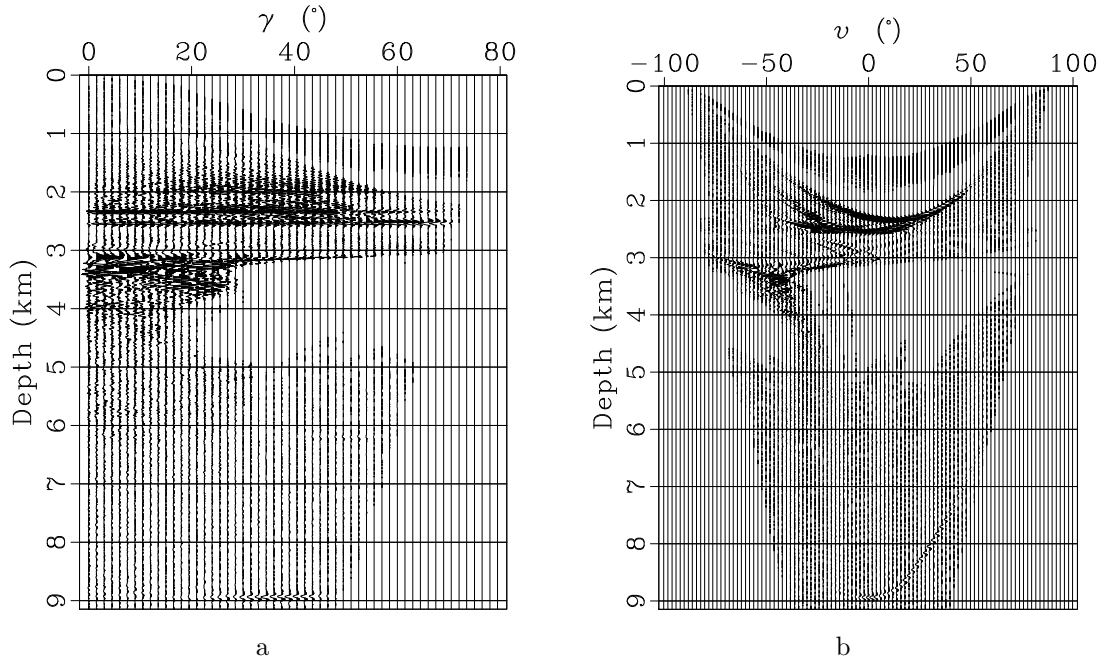


Figure 19: Opening (a) and dip (b) angle gathers at 11 km.

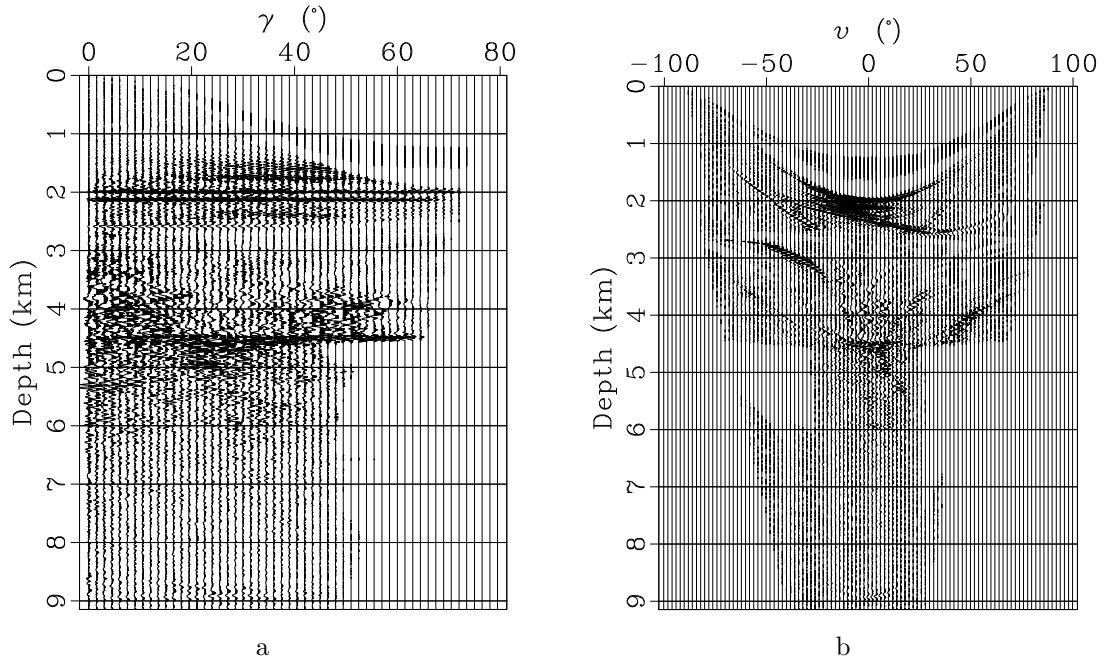


Figure 20: Opening (a) and dip (b) angle gathers at 15 km.

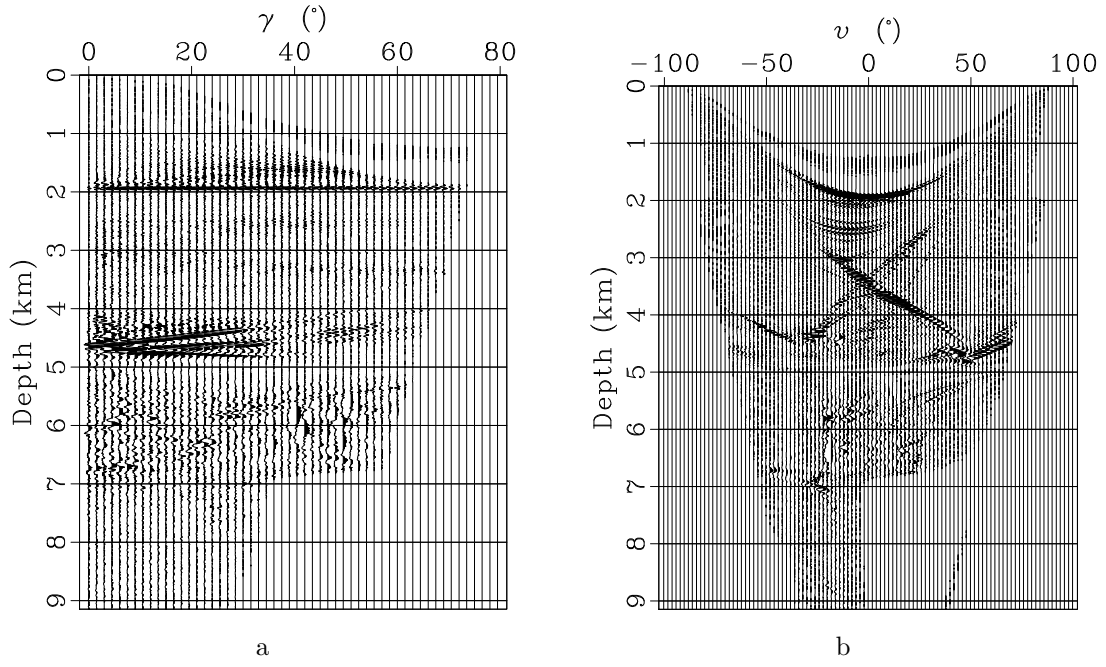


Figure 21: Opening (a) and dip (b) angle gathers at 19 km.

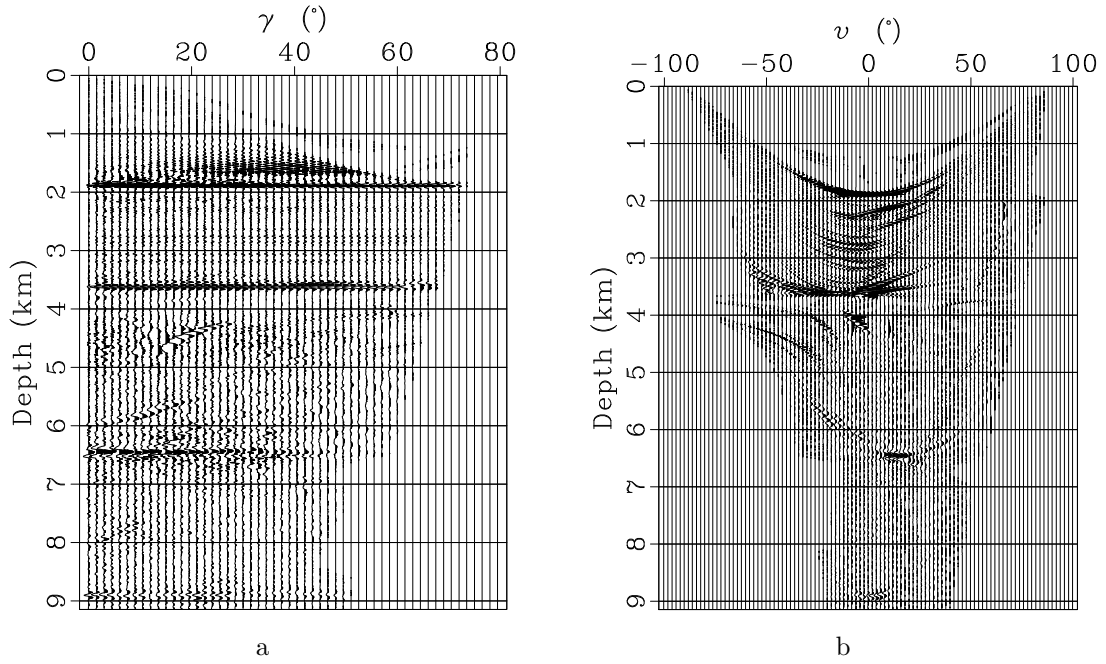


Figure 22: Opening (a) and dip (b) angle gathers at 23 km.