

WS01

## Migration Velocity Analysis with a second-order Gauss-Newton scheme: a 2D real data example

R. Soubaras CGG

B. Gratacos CGG

### Summary

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We present the application of a Migration Velocity Analysis with a second-order Gauss-Newton update scheme (Soubaras and Gratacos (2017)) on a real 2D dataset. This second order scheme includes a deconvolution of the gradient by the Hessian, which removes the “gradient artefacts” on the velocity gradient and produces an extended reflectivity which is a least-squares migration rather than a migration. Starting with a crude initial velocity model (linear gradient from the water bottom) and leaving the velocity unconstrained, we obtained a detailed velocity model which is consistent with the geology, as well as flattened gathers.

## Abstract

We present the application of a Migration Velocity Analysis with a second-order GaussNewton update scheme (Soubaras and Gratacos (2017)) on a real 2D dataset. This second order scheme includes a deconvolution of the gradient by the Hessian, which removes the “gradient artefacts” on the velocity gradient and produces an extended reflectivity which is a least-squares migration rather than a migration. Starting with a crude initial velocity model (linear gradient from the water bottom) and leaving the velocity unconstrained, we obtained a detailed velocity model which is consistent with the geology, as well as flattened gathers.

## References

Soubaras, R. and Gratacos, B. (2017). Migration Velocity Analysis: mitigating the gradients artefacts by Gauss-Newton update. 79th EAGE Conference & Exhibition, Extended Abstracts, WS09-D01.