Regional Prospectivity Assessment and Field Reconnaissance Studies
Seismic Data Processing and Inversion
Seismic Interpretation and Prospect Definition
Openhole Log Evaluation and Quantitative Petrophysical Analysis
Stratigraphy and Reservoir Sedimentology
Static Reservoir Modelling and Reserves Calculation
Geothermal Exploration

Amsterdam
Petroleum
Geoscience

Seismic data processing and inversion

Amsterdam Petroleum Geoscience (AmsterdamPG) has an experienced team of geophysicists, geologists and IT engineers performing seismic data processing, seismic inversion and seismic interpretation in a professional environment. With versatile, well-established software packages (GlobeClaritas™, Seismic Unix™, IHS Kingdom™, Petrel™, JewelSuite™, HR Strata™) and powerful workstations our team handles pre-stack and post-stack seismic data from land, marine, 2D and 3D surveys. AmsterdamPG performs the complete processing workflow from loading raw field data to visualising the end-product, including the following steps:

- Data loading and QC
- Elevation, refraction and residual static corrections
- Single channel processing (bandpass, gain, muting)
- Deconvolution
- Pre-stack multichannel filtering (FK, Tau-P, FX)
- Noise and multiple suppression
- Velocity analysis
- CMP sorting and stacking
- Post-stack signal enhancement (single/multichannel)
- Post-stack and pre-stack time/depth migration
- Time-to-depth conversion and 2D/3D visualisation

One of the specialties of AmsterdamPG is reprocessing vintage seismic data from surveys in the 60's throughout the 90's. Particularly unmigrated data with high noise levels can experience considerable enhancement by reprocessing, as illustrated in Figure 1.

Seismic imaging is done in a fully integrated flow involving semi-automated velocity model building, parallel computed 3D pre-stack migration and seismic inversion. With GlobeClaritas™, HR Strata™ and IHS Kingdom™ software, the highest standards of imaging are guaranteed. Figures 2 and 3 demonstrate pre-stack depth migration capabilities.

AmsterdamPG provides the whole chain of seismic processing, inversion and interpretation of resulting seismic sections. Exchanging data between the data processing environment and interpretation environment occurs through common data standards (SEGY, HDF5) which gives the necessary flexibility and portability, both for internal usage and for the end-product on demand of the client. The interpretation and inversion of seismic sections/volumes lead to populated 3D depth models for which static hydrocarbon appraisal and volumetrics are done.
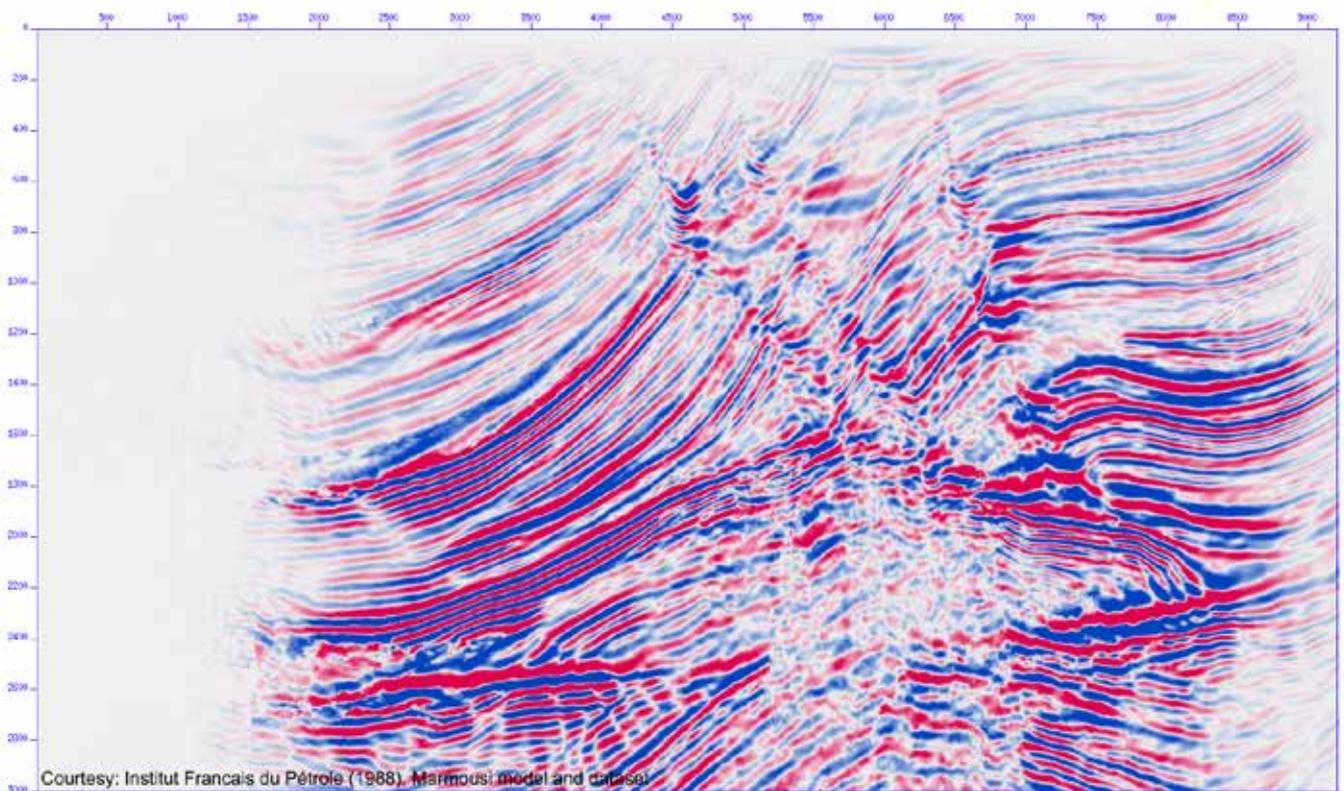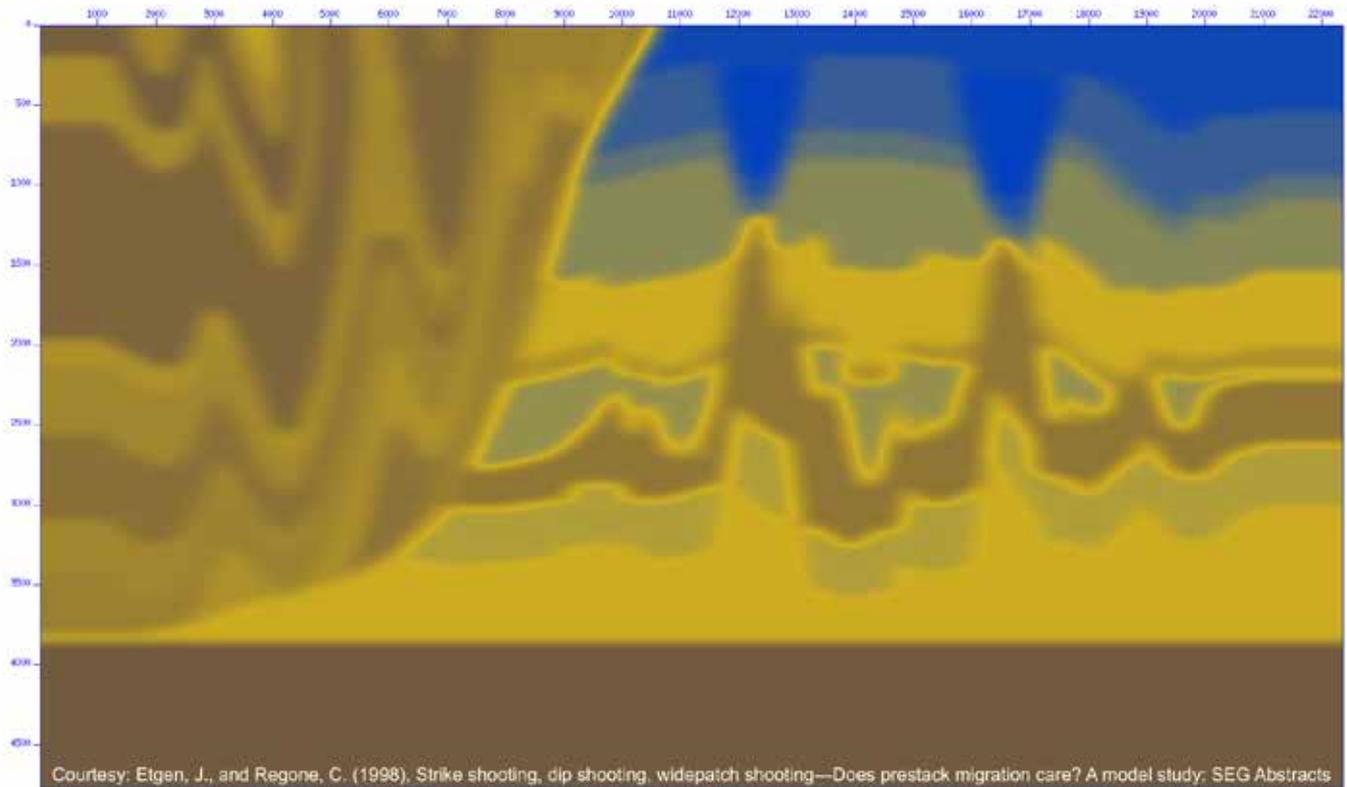
Figure 1: reprocessing

2D Raw migrated stack → 2D Enhanced migrated stack
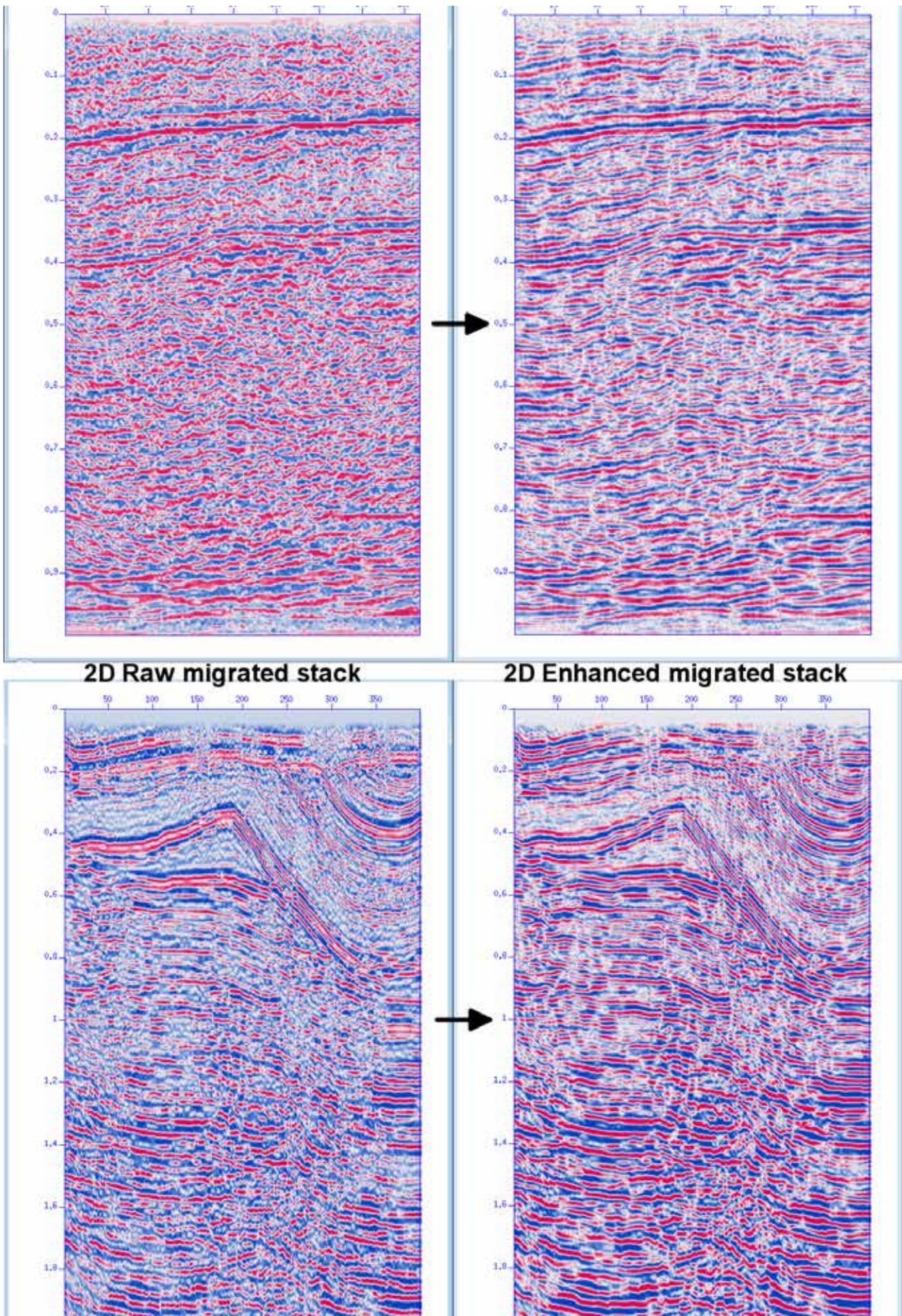
Figure 2:
Prestack depth migration of internationational complex benchmark models.
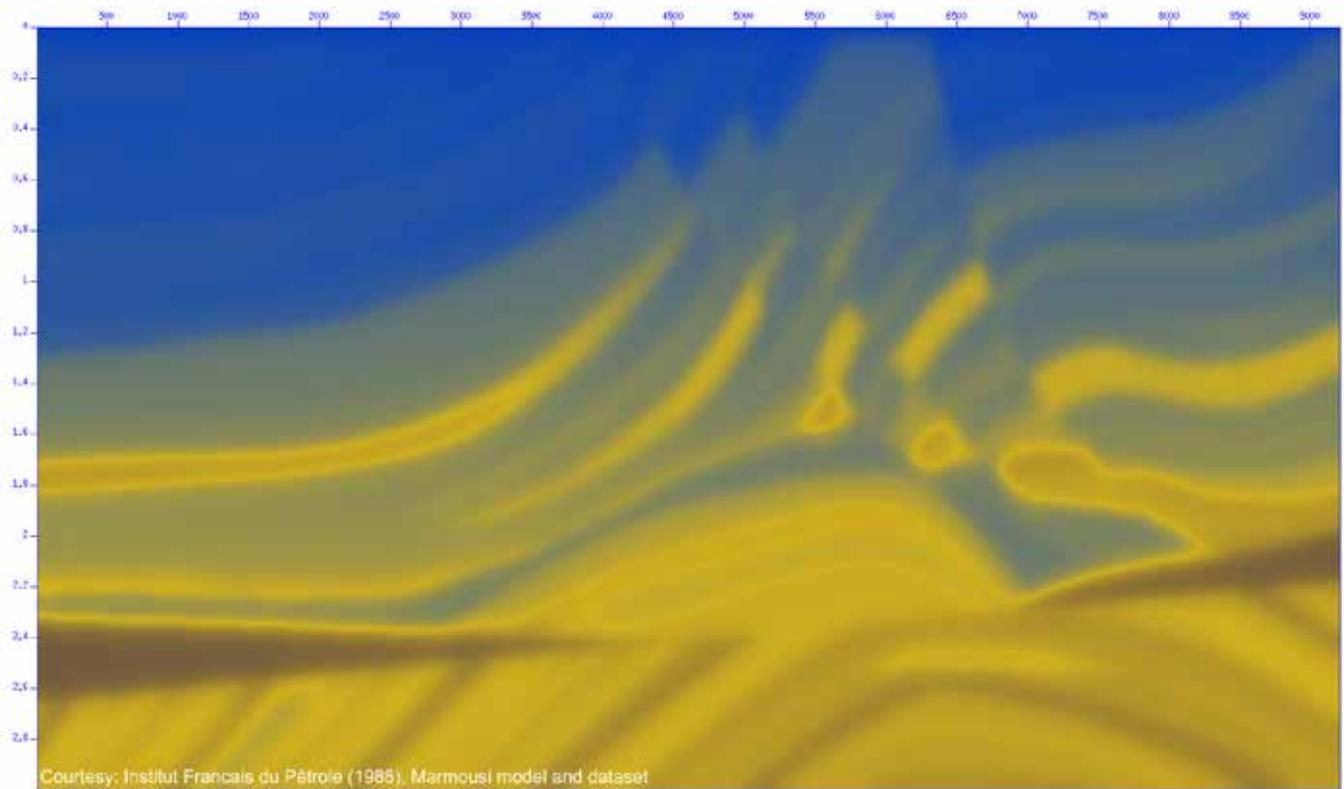
Marmousi model (above) and AmsterdamPG prestack depth migrated image (below)

Figure 3:
Prestack depth migration of internationational complex benchmark models.

Courtesy: Etgen, J., and Regone, C. (1998), Strike shooting, dip shooting, widepatch shooting—Does prestack migration care? A model study: SEG Abstracts

BP Amoco model (above) and AmsterdamPG prestack depth migrated image (below)

Courtesy: Etgen, J., and Regone, C. (1998), Strike shooting, dip shooting, widepatch shooting—Does prestack migration care? A model study: SEG Abstracts