

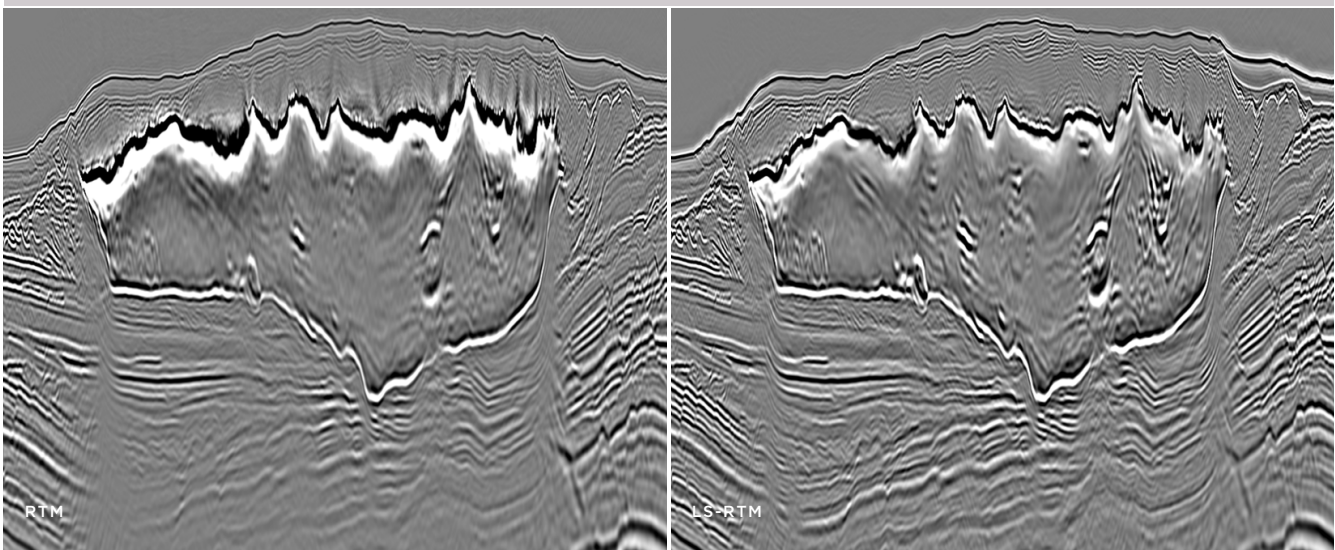


Depth and Least-Squares Imaging

DUG Insight's extensive imaging toolkit can handle any challenge. Our innovative and flexible model-building strategies incorporate a range of technologies including full waveform inversion and high-resolution reflection tomography. We offer conventional and least-squares imaging solutions for both Kirchhoff and reverse time migration (RTM).

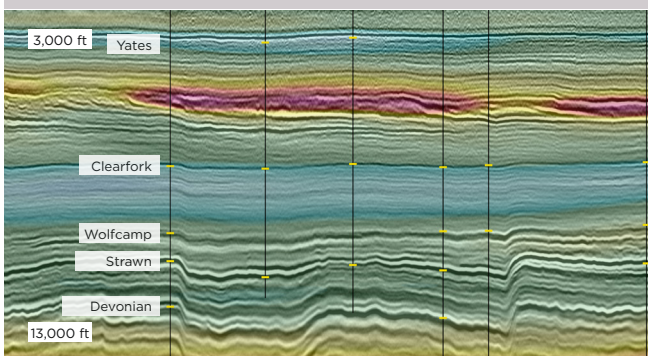
| KIRCHHOFF MIGRATION: | DUG WAVE RTM: | HIGH RESOLUTION TOMOGRAPHY: |
|---|--|---|
| <ul style="list-style-type: none"> > Least-squares imaging > PreSTM - isotropic, VTI and HTI > PreSDM - isotropic, VTI, TTI or tilted orthorhombic > DUG MigQ - to compensate for laterally and vertically varying Q > Diffraction imaging - for imaging of faults and discontinuities | <ul style="list-style-type: none"> > Least-squares imaging - image-domain and data-domain > Anisotropy - isotropic, VTI, TTI or tilted orthorhombic > LS-Q-RTM - to compensate for laterally and vertically varying Q > Vector offset output (VOO) - cartesian and polar | <ul style="list-style-type: none"> > Auto-picking > Refraction and reflection > Multi-azimuth > Structurally conformable updates > Fault constrained > Complete control over which part of the model is updated |

IMAGING UPLIFT WITH LEAST-SQUARES MIGRATION



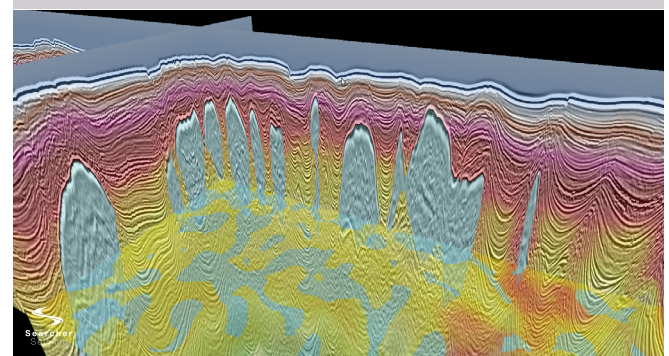
01. Least-squares RTM (right) offers a number of benefits over conventional RTM (left) including improved bandwidth and illumination plus a reduction in migration noise and acquisition footprint. Data courtesy of Shell.

LAND IMAGING - ANISOTROPIC KIRCHHOFF PreSDM



02. Final velocity model and TTI Kirchhoff depth-migrated section from onshore Texas. Note the excellent match to the well markers over a range of depths. Multi-client data presented with permission from Geophysical Pursuit, Inc.

SALT IMAGING WITH DUG RTM



03. Anisotropic (TTI) pre-stack Kirchhoff depth-migrated section from offshore Gabon. The final stack and interval velocity model after five iterations of anisotropic reflection tomography are shown. Data courtesy of Harvest Natural Resources Inc.