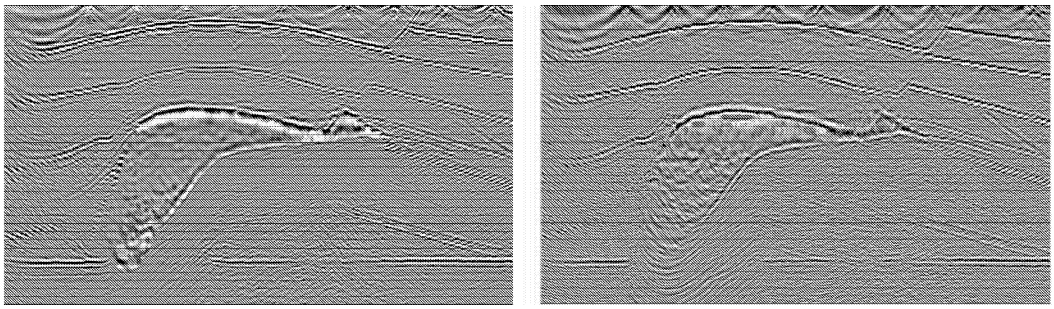

Fig. 6: Inline 242 of the SEG-EAGE model: migrated images from the optimized finite difference algorithm (left) and a single-arrival Kirchhoff migration algorithm (right).

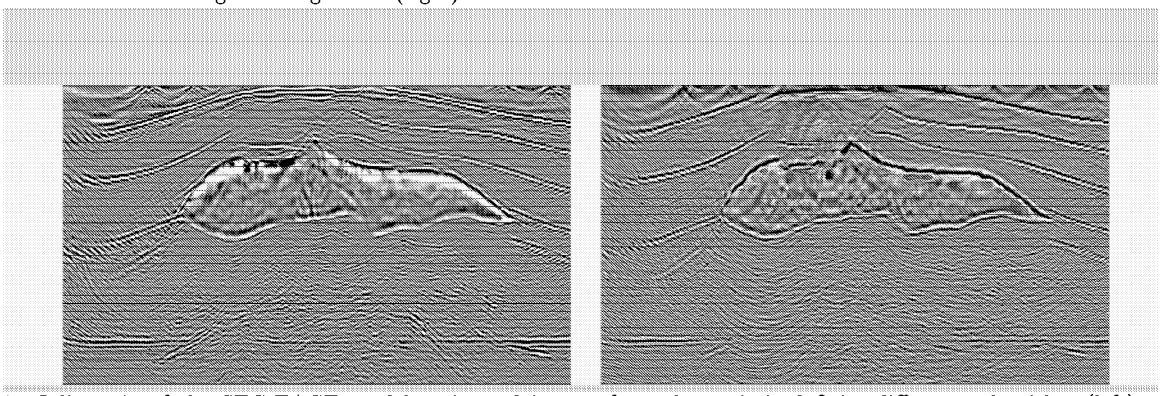

Fig. 7: Inline 342 of the SEG-EAGE model: migrated images from the optimized finite difference algorithm (left) and a single-arrival Kirchhoff migration algorithm (right).

relatively noisy results since it contains only 45 shots. The hybrid finite-difference (Sun et al., 2001) migrated results at inlines 242 and 342, compared with results from the "maximum energy" Kirchhoff migration, are shown in Figures 6 and 7. The finite-difference migrated images show much better imaged salt bottoms. The subsalt flat event images are also significantly improved. Moreover, the finite-difference images do not show the typical "ghost smiles" routinely observed in Kirchhoff-migrated images.

Conclusions

Migrations beased on one-way wavefield extrapolation offer the potential of greater structural imaging quality than single-arrival Kirchhoff migration, but the standard formulation of such migrations, e.g. finite-difference migration, produce incorrect migrated amplitudes. By comparing these amplitudes with those produced by true-amplitude Kirchhoff migration, we have, in effect, calibrated these migration methods, correcting their amplitude and phase behavior.

References

Bleistein, N., Cohen, J. K., and Stockwell, J. W., 2001, Mathematics of multidimensional seismic inversion: Springer.

Claerbout, J., 1985, Imaging the earth's interior: Blackwell Scientific Publications, Inc.

Sun, J., Notfors, C., Gray, S., and Zhang, Y., 2001, 3-D pre-stack common shot depth migration: a structure adaptive implementation: submitted to SEG 2001.

Wapenaar, K., 1998, Reciprocity properties of one-way propagators: Geophysics, **63**, no. 4, 1795–1798.

Zhang, Y., Gray, S., and Young, J., 2000, Exact and approximate weights for Kirchhoff migration: 70th Ann. Mtg., Soc. Expl. Geophys., Expanded Abstracts, **II**, 1036–1039.

Zhang, Y., Gray, S., and Young, J., 2001, True-amplitude common-offset, common-azimuth $v(z)$ migration: submitted to Journal of Seismic Exploration.

Zhang, G. Q., 1993, System of coupled equations for upgoing and down-going waves: Acta Math. Appl. Sinica, **16**, no. 2, 251–263.