Downloaded 12/07/12 to 131.180.58.35. Redistribution subject to SEG license or copyright; see Terms of Use at http://library.seg.org/

Imaging geophysicists often have to be content with tomographic velocity models obtained using fixed anisotropy parameters. Interpretation geophysicists often have to accept image volumes without a good measure of uncertainty. To those who have qualms about hand-specifying anisotropy parameters, and to those who question hand-ascribing uncertainties to Earth models, I suggest the current May-June issue of GEOPHYSICS. It contains an exciting special section on Borehole Geophysics. I applaud the great efforts of the editors, reviewers, and authors who have contributed to the section. We need such contributions to anchor our wealth of full-azimuth surface data by sound statistical analysis of well data and improved understanding of rock physics. The following are two brief samples of the May-June issue. I invite you to browse through the entire issue for the latest developments in exploration geophysics.

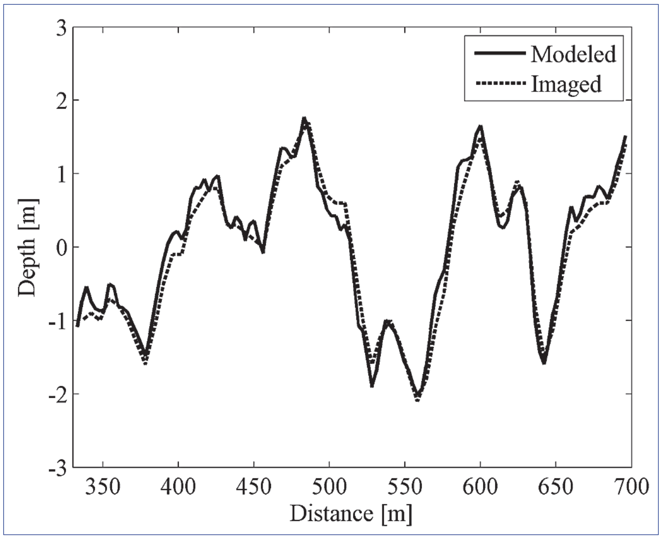

Figure 1. *(Figure 4 of Orji et al.): Modeled and imaged Pieson-Moskowitz time-varying sea surface profiles at one time instant.*

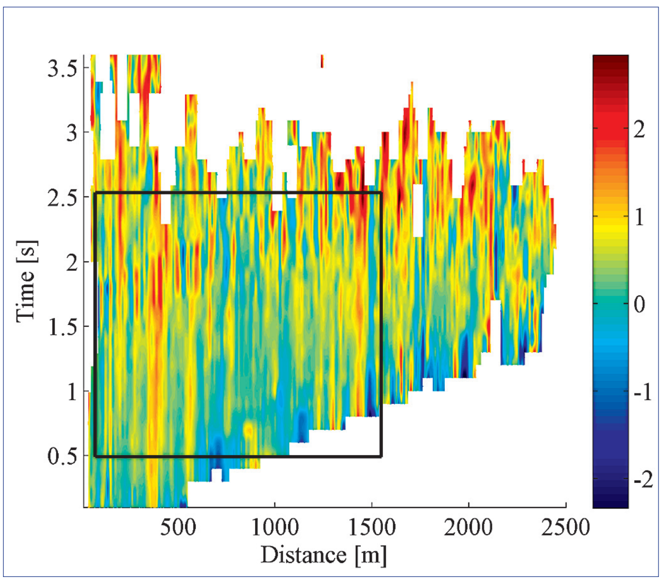

Figure 2. *(Figure 10b of Orji et al.): Plot of a time-varying sea surface profile obtained by linear interpolation of the images for different times.*

Effects of time-varying sea surface in marine seismic data by Okwudili Orji, Walter Soellner, and Leiv-J Gelius. The authors demonstrate the feasibility of imaging time-varying wavy sea surface topography. They propose doing this using dual-sensor streamer data. Literally they turn the traditional subsurface imaging problem upside down because the sea surface to be imaged is above the receivers. The recorded data are separated into upgoing and downgoing components under the usual assumption that up- and downgoing wavefields are related to each other given the sea surface. The complication is that the sea surface is time-varying and is actually not given. The authors use progressively more complex synthetic cases to validate their approach: from frozen rough sea, to time-varying sea, to moving receivers, to varying receiver depths, and finally to varying wind speed. Figure 1 shows a profile of the true and imaged time-varying sea surface at one instant of time. The authors also apply their approach to North Sea dual-sensor streamer data. Figure 2 shows the imaged time variations of a sea surface profile for the data acquired under marginal weather conditions.

Quantitative log interpretation and uncertainty propagation of petrophysical properties and facies classification from rock physics modeling and formation evaluation analysis by Dario Grana, Marco Pirrone, and Tapan Mukerji. The authors use two real data examples to illustrate their use of Monte Carlo simulation (MCS) for propagating uncertainties from well data to those in facies classifications that can be linked to seismic attributes. They partition their workflow into three steps with MCS applied at each step. The first step is to perform quantitative log interpretation (QLI) that uses well-log-derived data such as neutron porosity, gamma ray, and density to obtain petrophysical parameters. Figure 3 shows the

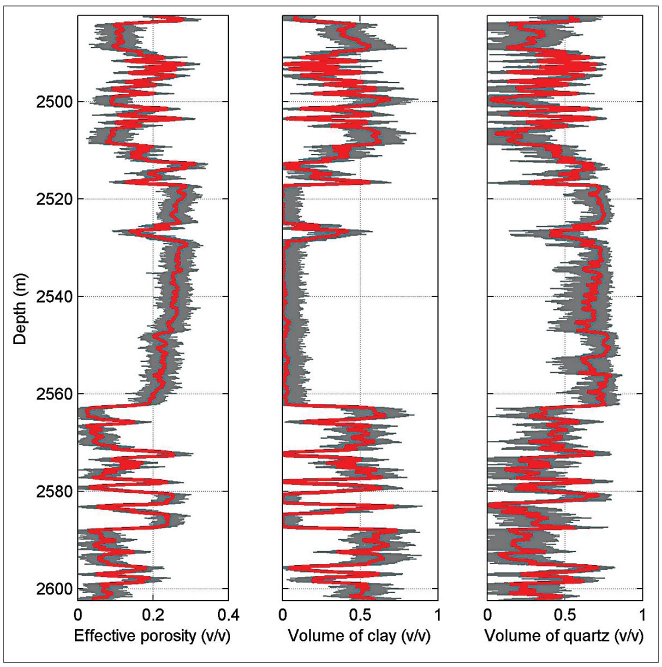

Figure 3. *(Figure 9 of Grana et al.): A set of 100 realizations of the three petrophysical parameters (gray curves). The point-wise medians (P50) are plotted in red.*

Downloaded 12/07/12 to 131.180.58.35. Redistribution subject to SEG license or copyright; see Terms of Use at http://library.seg.org/

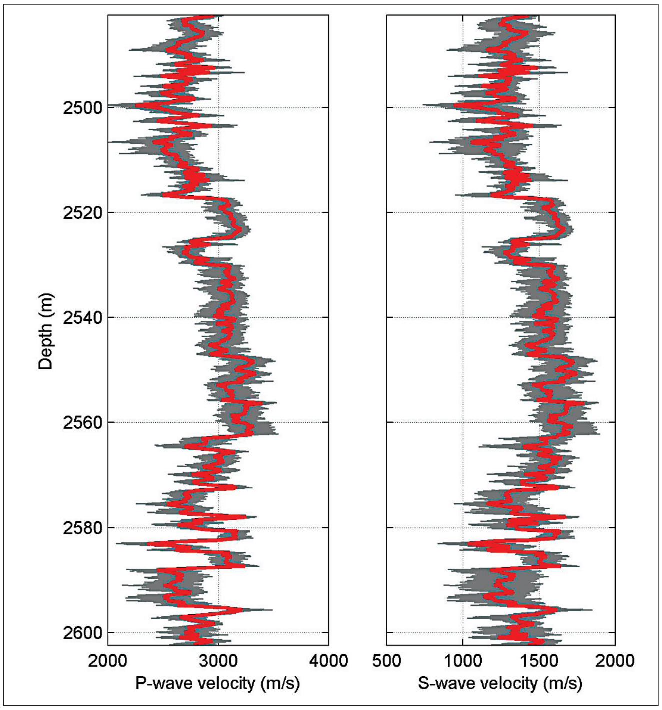

Figure 4. *(Figure 10 of Grana et al.): A set of 100 realizations of two elastic parameters (gray curves). The point-wise medians (P50) are plotted in red.*

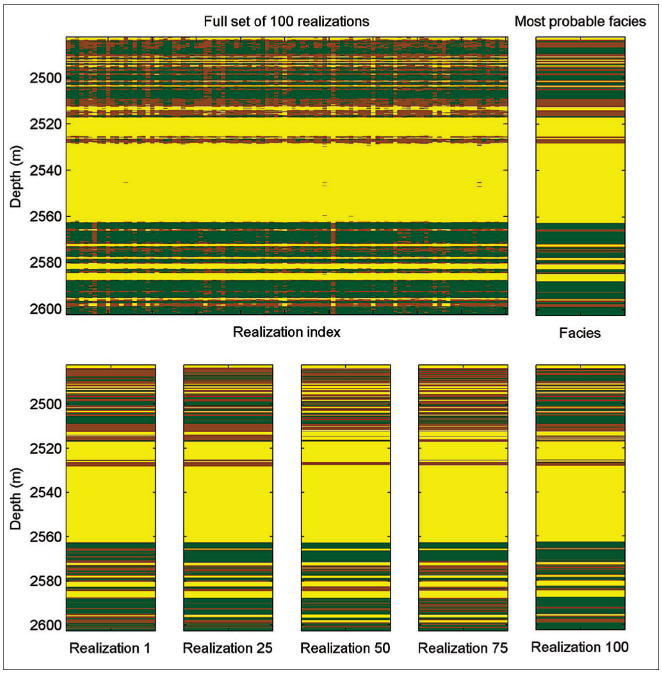

Figure 5. *(Figure 12 of Grana et al.): A set of 100 realizations of facies (top left), the most likely facies (top right), and five selected realizations (bottom) with green for low-concentration turbidite facies, brown for mid-concentration turbidite facies, and yellow for high-concentration turbidite facies.*

results of QLI plus MCS for the effective porosity, volumes of clay and quartz, and their uncertainties as indicated by a set of realizations. The second step is to use the petrophysical parameters in rock physics model (RPM) computations of the elastic parameters. Figure 4 shows the results of RPM computations plus MCS for the P-wave velocity V_P, S-wave velocity V_S, density ρ, and their uncertainties. The last step is to perform log-facies classification (LFC) using the derived elastic model. Figure 5 shows the results of LFC plus MCS for the facies classification.

The following is a list of papers recommended by the Associated Editors (AE) for the May-June issue of Geophysics Bright Spots:

1) *Estimation of horizontal stress magnitudes and stress coefficients of velocities using borehole sonic data* by Ting Lei, Bikash Sinha, and Michael Sanders. AE remark: Novel and clever use of borehole measurements to get the stresses in a nondestructive manner.
2) *Rock quality assessment using the effect of mud-filtrate invasion on conflicting borehole resistivity measurement*s by Jesus Salazar and A. Jeff Martin. AE Carlos Torres-Verdin
3) *Deblending by direct inversion* by Kees Wapenaar, Joost van der Neut, and Jan Thorbecke. AE James Rickett's remark: The paper shows that the inherent spatial band-limited nature of seismic data can help with separation of simultaneously recorded data. In some situations this may be enough to separate shots without the need for additional sparsity or coherence arguments.
4) *Is the fast Hankel transform faster than quadrature?* by Kerry Key. AE Joe Dellinger
5) *Effects of time-varying sea surface in marine seismic data* by Okwudili Orji, Walter Soellner, and Leiv-J Gelius
6) *Quantitative log interpretation and uncertainty propagation of petrophysical properties and facies classification from rock physics modeling and formation evaluation* by Dario Grana, Marco Pirrone, and Tapan Mukerji. AE Michael Oristaglio. TLE