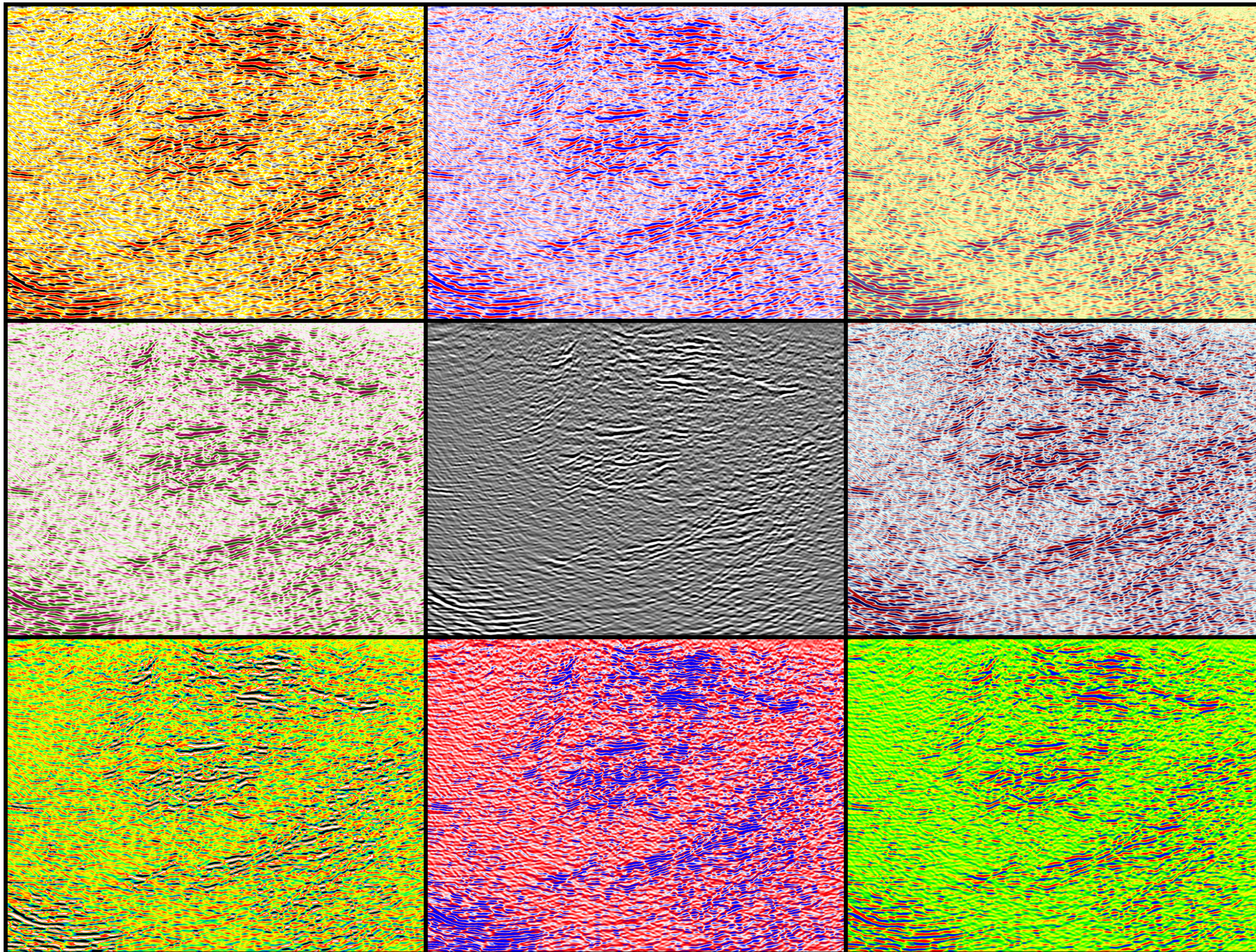


Shades of Seismic

Dr Andrew Squelch
Department of Exploration Geophysics
Western Australian School of Mines
Curtin University



The individual images were generated and saved as single screenshots within Paradigm's Gocad software using a selection of the inbuilt colour maps. The seismic data was provided by BHP Billiton and was processed by Curtin Exploration Geophysics. The individual screenshot images were assembled into the final image using Python and the Python Imaging Library (PIL).

Processed seismic reflection survey data consists of columns of values representing the amplitude of the seismic pulses reflected back from interfaces between different materials lying beneath the Earth's surface. These pulses usually have positive and negative lobes (wiggles) and consequently the amplitudes range as positive and negative values either side of zero. This data is displayed as colour-shaded 2D sections or 3D volumes with the vertical axis representing depth into the ground from the top down. To aid with their interpretation, and depending on personal preference and the interpretation goals, these datasets are displayed using particular colour combinations. Colour maps are designed and selected with the objective of highlighting the locations of strong reflections and/or the locations of breaks in otherwise continuous reflections. Typically, to help the human brain perform its pattern-following magic with positive-negative pairs of reflection amplitudes, an appropriate colour-shaded image is produced by displaying strong positive amplitudes with one strong colour and strong negative amplitudes with a different strong colour (e.g. black, blue or red). These colours are then faded or changed to paler ones in the center as the amplitudes weaken towards zero. A greyscale colour map is often the default in seismic visualisation software but it is invariably changed to one of the more 'colourful' maps as the first step after loading the data.