

Getting the Most Out of Difficult Data

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ABSTRACT

The last decade has seen a tremendous improvement in signal quality in seismic data. Dense and broadband acquisition, improved processing and imaging have resulted in seismic images that contain unprecedented geological detail. However, in many cases prospecting in new plays relies on re-evaluating legacy data or data acquired in challenging imaging settings, for instance very deep and sub-salt targets. Using computer-assisted seismic interpretation workflows on these data sets requires careful data-conditioning. Also, it has shown to be worthwhile to consider alternative approaches for horizon identification and attribute extraction. In particular, methods that can handle large variations in signal-to-noise ratio, for instance due to processing artifacts, can greatly improve the quality and detail of the interpretation. In the presentation, we will show how careful data conditioning makes it possible to apply state-of-the-art interpretation methods on noisy and low quality data. We will discuss new approaches that aid in the delineation and characterization of deep prospects, but also examples of state-of-the-art pre-stack and time-lapse reservoir characterization will be included.

In the presentation will draw from several case studies. For instance, which we will demonstrate how application of some recently developed noise suppression approaches impact attribute extraction and horizon interpretation for a deep target carbonate platform. Also, the combination of data-condition and a recently developed robust method for 3-D automated structural interpretation will be discussed. The new method extracts a dense set of horizon and relies on a new image processing approach rather than on automated picking or tracking. The approach is not only an alternative for a horizon tracking, but also functions as a platform for attribute extraction and visualization.