

# Understanding Channel-Overbank Deposits and Seismic Stratigraphic Features Using Newly Developed Volumetric Attributes

Nabanita Gupta, Supratik Sarkar, and Kurt J. Marfurt  
*University of Oklahoma, Norman, OK*

Volumetric seismic attributes have long been used to illuminate geomorphologic features. However, detailed stratigraphic interpretation still demands careful investigation of seismic data. Edge detection attributes like coherence and Sobel filter often delineate channel edges while curvature attributes help to image the channel thalweg and differential compaction. Unfortunately, neither of those attributes help us to expand well-established seismic stratigraphy workflows that involve mapping onlap, offlap, parallelism, and erosion unconformities. Recently-developed “reflector convergence” attributes do just this. Combined with coherence and curvature these volumetric measures facilitate and quantify detailed modeling of the channel fill and levee-overbank deposits as well as interrelation of stratal geometries in both fluvial and deep-water environments. This attribute improves understanding of the reservoir pattern delineation and potential reservoir connectivity in similar depositional setting. We illustrate the value of this new workflow through application of vector reflector convergence in the Red Fork Formation and show how it improves our understanding about the stratigraphic patterns mentioned above in different stages of channel and canyon fills and their interrelations within regional stratigraphic framework.