

# **IMPACTS OF ACQUISITION FOOTPRINT ON SEISMIC ATTRIBUTE ANALYSIS**

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## **ABSTRACT**

Seismic data quality is impacted not only by fold, but also by the distribution of sourcereceiver offsets and azimuths that make up this fold. The impact of the seismic acquisition program on processing and on the quality of the final image is commonly called acquisition footprint. The seismic acquisition program impacts the quality of the subsurface image in several ways, the most fundamental of which is subsurface illumination. A more subtle impact of the seismic acquisition program, and the object of this work, is the variation of amplitude and signal-to-noise ratio as a function of illumination angle and backscattered coherent noise.

The acquisition footprint signature of land acquisition programs and of obstacles that modify these programs is well known, through not necessarily well treated at this time. The impact of more recent advances in seismic acquisition, including using an increasing number of marine towed streamers, vertical cables, and ocean bottom cables

are less well known. The impact of acquisition footprint on seismic attribute analysis has been barely addressed.

To understand the impact of marine survey design on acquisition footprint analysis, I acquired 3-D multi-streamer marine data over a physical model containing complex channel structures sandwiched between simple homogenous and isotropic elastic layers. In this work, I addressed the impact of acquisition footprint on seismic attributes and illumination by employing conventional processing methods and a suite of different migration algorithms.