

CGG 3D Surface-Related Multiple Modelling: A Unique Approach

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Abstract

Marine seismic data acquired over seafloors with rough topography are characterized by the presence of complicated multiple energy patterns. Data-driven SRME (Surface Related Multiple Elimination) techniques do not require any *a priori* knowledge of the subsurface (reflectivity, structures and velocities). However, these methods require a shot location at each receiver location, wherein lies the main difficulty for their 3D implementation. Today, solutions involve reconstruction of the missing data or reconstruction of the missing multiple contributions. In the following, a modelbased surface-related multiple modelling (SRMM) technique is presented free from any constraint relating to the shot position and distribution. This technique may require streamer interpolation/extrapolation, but does not require any sail lines reconstructions. An offshore Brazil example demonstrates the efficiency of our 3D SRMM approach to handle complex diffracted multiples due to the 3D structure of the water bottom. 3D surveys acquired in Offshore East Coast Canada from the continental shelf to the sub-basins have and will benefit from the update of our technology in the 3D demultiple domain.