Practical Examples of the Implementation of Surface Related Multiple Elimination for Land Data

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ABSTRACT

We present examples implementing land surface related multiple elimination (LSRME) on real land data from The Sultanate of Oman. Examples from both structured and flat areas show the robustness of LSRME.

Traditionally, multiples in land data were handled by dip filtering, moveout discrimination and/or model-driven methods. These methods have produced excellent results, imaging once hidden structures; however, they all have limitations. Dip filtering requires dip discrimination, and Radon-based methods are limited by moveout discrimination. If the difference between primary and multiple is too small, Radon methods are unlikely to be able to separate the two. Model-driven methods can be complex, requiring a priori information including horizons, knowledge of multiple generators and accurate velocity models.

Surface related multiple elimination (SRME) is a well-established approach for marine processing, but is relatively new to land processing. We propose LSRME as a data-driven method, requiring no velocity model as a priori information. Special attention is required to pre-condition the data and optimize the adaptive subtraction; the straightforward work flow produces excellent results and is robust, working in many diverse situations.