COMMON-REFLECTION-POINT STACKING: A MODEL DRIVEN APPROACH TO DMO (1-39)

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Dip Moveout or DMO is known to be a valuable tool in today's processing schemes. In general, DMO is an extension to the conventional processing of NMO correction, CMP stacking and post-stack migration. Processing with DMO approximates the result of migration before stack. DMO is generally based on the assumption that the formation velocity is constant, although approximate generalizations of DMO in the presence of depth-variable velocities have been investigated as well. All these efforts put into the development of the DMO algorithm are based on the concept of 'time-domain technology'. We could, however, start with the concept of 'depth technology' (compare e.g. time migration versus depth migration). In this paper a depth oriented approach to DMO - which we call 'common-reflection-point stacking' - is presented. In this approach, the DMO operator design is based on a macro-model of the subsurface, in which ray tracing is performed. To obtain an exact DMO operator for inhomogeneous media, an offset ray tracing for all offsets should be done. We will show that the multi-offset ray tracing can be approximated by efficient zero-offset ray tracing, in combination with a simple expression. A global description of the method is presented. Some examples of the 'generalized DMO operators' are also shown. Finally examples will be shown of the performance of the CRP stacking algorithm on synthetic data derived from inhomogeneous macro-models.

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50th annual EAEG meeting, The Hague