Wave-Equation Demigration and Wave-Equation Depth Migration

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Wave-equation demigration transforms pre-stack time migration (PSTM) gathers into common-depth point (CDP) pre-processed gathers. Demigration is the kinematic equivalent of inverse PSTM, or PSTM, modeling. The demigrated gathers can be used as input for depth migration. The demigration workflow can be used when the original input CDPs are not available or when there are time constraints and re-processing the data from tapes will take more time than demigrating the PSMT gathers. We show results on demigrating 3-D land data and compare the input to the demigrated and then PSTM migrated data. We also use the demigrated gathers as input to wave-equation depth migration and compare the results with the PSTM stack. The wave-equation, depth-migrated results are cleaner and easier to interpret, and they remove from the structure the effect of lateral velocity variation.