Least Squares Migration 1-Day Short Course

Instructor: Jerry Schuster

Book: Seismic Inversion, 2017, Schuster, SEG Press

Objective: Learn about the benefits and problems associated with least squares migration (LSM) for reconstructing earth's reflectivity distribution from seismic data. Topics include acoustic LSM, migration deconvolution, elastic LSM, multiples LSM, viscoacoustic LSM and AVO LSM. Several case histories are presented, and both the challenges and future directions of LSM are discussed.

Labs: Participants with laptops and MATLAB can apply LSM and migration deconvolution to simple synthetic data.

Target Audience: Earth scientists who have a casual familiarity with calculus, migration theory and its practice. Research specialists will also benefit because the new technology of AVO LSM will be presented, a means by which elastic LSM can be approximately performed by solving the AVO acoustic wave equation. Lectures will be at a high level where intuition is favored and complicated formulas are often (not always) avoided.

Teaching Schedule: Early morning lectures present the LSM and migration deconvolution (MD) methods and some case histories. Simple MATLAB exercises are used to develop an understanding of the benefits and limitations of LSM and MD. The afternoon classes will present the more advanced topics such as viscoacoustic, elastic and AVO LSM. The challenges and future directions of LSM are discussed.