Geophysical Research Abstracts, Vol. 8, 09849, 2006
SRef-ID: 1607-7962/gra/EGU06-A-09849

Collaborative Validation of Seismic Models

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SAIC, Univ. of Colorado, Harvard Univ., Multimax, and Univ. Calif. San Diego collaborated to produce travel-time calibrations for seismic stations in Asia, Middle East, Africa, and Europe. 3D Earth models were developed for production of regional P, Pn and teleseismic P travel-time corrections. In order to test and validate these models, an unprecedented collection of "ground-truth" (GT) events was assembled and vetted. New methods for collection, quality control, and grading these events were developed as well as new metrics for evaluating location improvement. This GT database was critical in demonstrating significant improvements in location are achieved with 3D models. We will report on lessons learned and a new method, reciprocal cluster analysis (RCA), that fuses local and distant seismic arrivals to achieve high confidence GT5 events in regions previously lacking this valuable commodity.