Mrinal K Sen

List of Publications by Year
in descending order

174 papers	5,512 citations	117625 34 h-index	102487 66 g-index
177 all docs	177 docs citations	177 times ranked	2482 citing authors

#	Article	IF	Citations
1	Nonlinear one‐dimensional seismic waveform inversion using simulated annealing. Geophysics, 1991, 56, 1624-1638.	2.6	436
2	Nonlinear multiparameter optimization using genetic algorithms: Inversion of plane‐wave seismograms. Geophysics, 1991, 56, 1794-1810.	2.6	347
3	Bayesian inference, Gibbs' sampler and uncertainty estimation in geophysical inversion1. Geophysical Prospecting, 1996, 44, 313-350.	1.9	273
4	A new time–space domain high-order finite-difference method for the acoustic wave equation. Journal of Computational Physics, 2009, 228, 8779-8806.	3.8	187
5	Grid dispersion and stability criteria of some common finite-element methods for acoustic and elastic wave equations. Geophysics, 2007, 72, T81-T95.	2.6	165
6	Prestack and poststack inversion using a physics-guided convolutional neural network. Interpretation, 2019, 7, SE161-SE174.	1.1	160
7	The interior penalty discontinuous Galerkin method for elastic wave propagation: grid dispersion. Geophysical Journal International, 2008, 175, 83-93.	2.4	144
8	A prestack basis pursuit seismic inversion. Geophysics, 2013, 78, R1-R11.	2.6	130
9	Born integral, stationary phase and linearized reflection coefficients in weak anisotropic media. Geophysical Journal International, 2004, 158, 225-238.	2.4	125
10	A hybrid scheme for absorbing edge reflections in numerical modeling of wave propagation. Geophysics, 2010, 75, A1-A6.	2.6	125
11	An implicit staggered-grid finite-difference method for seismic modelling. Geophysical Journal International, 2009, 179, 459-474.	2.4	124
12	Artificial neural networks for parameter estimation in geophysics. Geophysical Prospecting, 2000, 48, 21-47.	1.9	116
13	A new time‐space domain high‐order finite‐difference method for acoustic wave equation. , 2009, , .		105
14	Computation of differential seismograms and iteration adaptive regularization in prestack waveform inversion. Geophysics, 2003, 68, 2026-2039.	2.6	103
15	Stability of the high-order finite elements for acoustic or elastic wave propagation with high-order time stepping. Geophysical Journal International, 2010, 181, 577-590.	2.4	97
16	Transdimensional seismic inversion using the reversible jump Hamiltonian Monte Carlo algorithm. Geophysics, 2017, 82, R119-R134.	2.6	86
17	Estimating a starting model for full-waveform inversion using a global optimization method. Geophysics, 2016, 81, R211-R223.	2.6	84
18	Nonlinear inversion of resistivity sounding data. Geophysics, 1993, 58, 496-507.	2.6	83

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19	Least-squares reverse time migration in elastic media. Geophysical Journal International, 2017, 208, 1103-1125.	2.4	83
20	Finite-difference modeling with adaptive variable-length spatial operators. Geophysics, 2011, 76, T79-T89.	2.6	79
21	Automatic NMO correction and velocity estimation by a feedforward neural network. Geophysics, 1998, 63, 1696-1707.	2.6	77
22	Time–space domain dispersion-relation-based finite-difference method with arbitrary even-order accuracy for the 2D acoustic wave equation. Journal of Computational Physics, 2013, 232, 327-345.	3.8	74
23	Application of Very Fast Simulated Annealing to the Determination of the Crustal Structure Beneath Tibet. Geophysical Journal International, 1996, 125, 355-370.	2.4	71
24	Finite-difference modelling of S-wave splitting in anisotropic media. Geophysical Prospecting, 2008, 56, 293-312.	1.9	70
25	Hybrid optimization methods for geophysical inversion. Geophysics, 1997, 62, 1196-1207.	2.6	69
26	Vertical fracture detection by exploiting the polarization properties of ground-penetrating radar signals. Geophysics, 2004, 69, 803-810.	2.6	68
27	Effective finite-difference modelling methods with 2-D acoustic wave equation using a combination of cross and rhombus stencils. Geophysical Journal International, 2016, 206, 1933-1958.	2.4	54
28	Elastic wave propagation in fractured media using the discontinuous Galerkin method. Geophysics, 2016, 81, T163-T174.	2.6	52
29	Plane-wave depth migration. Geophysics, 2006, 71, S261-S272.	2.6	50
30	Optimal parameter and uncertainty estimation of a land surface model: A case study using data from Cabauw, Netherlands. Journal of Geophysical Research, 2003, 108, .	3.3	49
31	A comparison of finite-difference and spectral-element methods for elastic wave propagation in media with a fluid-solid interface. Geophysical Journal International, 2015, 200, 278-298.	2.4	48
32	Full waveform inversion of reflection seismic data for ocean temperature profiles. Geophysical Research Letters, 2008, 35, .	4.0	46
33	Joint inversion of first arrival seismic travel-time and gravity data. Journal of Geophysics and Engineering, 2005, 2, 277-289.	1.4	44
34	Impacts of data length on optimal parameter and uncertainty estimation of a land surface model. Journal of Geophysical Research, 2004, 109, .	3.3	39
35	Acoustic VTI modeling with a time-space domain dispersion-relation-based finite-difference scheme. Geophysics, 2010, 75, A11-A17.	2.6	39
36	Prestack migration velocity estimation using nonlinear methods. Geophysics, 1996, 61, 138-150.	2.6	35

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37	Hopfield neural networks, and mean field annealing for seismic deconvolution and multiple attenuation. Geophysics, 1997, 62, 992-1002.	2.6	35
38	2D Full-Waveform Inversion and Uncertainty Estimation using the Reversible Jump Hamiltonian Monte Carlo. , 2017, , .		35
39	Non-linear inversion of resistivity profiling data for some regular geometrical bodies1. Geophysical Prospecting, 1995, 43, 979-1003.	1.9	33
40	Autonomic oil reservoir optimization on the Grid. Concurrency Computation Practice and Experience, 2005, 17, 1-26.	2.2	32
41	Deep crustal seismic reflection images from the Dharwar craton, Southern India—evidence for the Neoarchean subduction. Geophysical Journal International, 2018, 212, 777-794.	2.4	32
42	Predicting subsurface CO2 movement: From laboratory to field scale. Geophysics, 2012, 77, M27-M37.	2.6	30
43	A hybrid absorbing boundary condition for elastic staggered-grid modelling. Geophysical Prospecting, 2012, 60, 1114-1132.	1.9	29
44	Time-space-domain mesh-free finite difference based on least squares for 2D acoustic-wave modeling. Geophysics, 2017, 82, T143-T157.	2.6	29
45	Prestack plane-wave Kirchhoff migration in laterally varying media. Geophysics, 1996, 61, 1068-1079.	2.6	28
46	Use of VFSA for resolution, sensitivity and uncertainty analysis in 1D DC resistivity and IP inversion. Geophysical Prospecting, 2003, 51, 393-408.	1.9	26
47	Enforcing smoothness and assessing uncertainty in non-linear one-dimensional prestack seismic inversion. Geophysical Prospecting, 2006, 54, 239-259.	1.9	24
48	3D acoustic wave modelling with time-space domain dispersion-relation-based finite-difference schemes and hybrid absorbing boundary conditions. Exploration Geophysics, 2011, 42, 176-189.	1.1	24
49	Choice of regularization weight in basis pursuit reflectivity inversion. Journal of Geophysics and Engineering, 2015, 12, 70-79.	1.4	24
50	Double-plane-wave reverse time migration in the frequency domain. Geophysics, 2016, 81, S367-S382.	2.6	24
51	Deep learning for velocity model building with common-image gather volumes. Geophysical Journal International, 2021, 228, 1054-1070.	2.4	24
52	Background velocity estimation using non-linear optimization for reflection tomography and migration misfit. Geophysical Prospecting, 1998, 46, 51-78.	1.9	23
53	Minibatch least-squares reverse time migration in a deep-learning framework. Geophysics, 2021, 86, S125-S142.	2.6	23
54	Time-lapse seismic data registration and inversion for CO2 sequestration study at Cranfield. Geophysics, 2013, 78, B329-B338.	2.6	22

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55	Least-squares path-summation diffraction imaging using sparsity constraints. Geophysics, 2019, 84, S187-S200.	2.6	21
56	An improved hybrid absorbing boundary condition for wave equation modeling. Journal of Geophysics and Engineering, 2018, 15, 2602-2613.	1.4	20
57	A new Fourier azimuthal amplitude variation fracture characterization method: Case study in the Haynesville Shale. Geophysics, 2018, 83, WA101-WA120.	2.6	19
58	A gradient-based Markov chain Monte Carlo method for full-waveform inversion and uncertainty analysis. Geophysics, 2021, 86, R15-R30.	2.6	19
59	Split-step Fourier migration of GPR data in lossy media. Geophysics, 2006, 71, K77-K91.	2.6	18
60	Numerical modeling of wave equation by a truncated high-order finite-difference method. Earthquake Science, 2009, 22, 205-213.	0.9	18
61	Dip selective 2-D multiple attenuation in the plane€wave domain. Geophysics, 2000, 65, 264-274.	2.6	17
62	Crustal and uppermost mantle structure in the Middle East: assessing constraints provided by jointly modelling Ps and Sp receiver functions and Rayleigh wave group velocity dispersion curves. Geophysical Journal International, 2015, 201, 783-810.	2.4	17
63	2€D migration velocity estimation using a genetic algorithm. Geophysical Research Letters, 1993, 20, 1495-1498.	4.0	16
64	Gravity inversion by the Multi€HOmogeneity Depth Estimation method for investigating salt domes and complex sources. Geophysical Prospecting, 2018, 66, 175-191.	1.9	15
65	A simulation and data analysis system for large-scale, data-driven oil reservoir simulation studies. Concurrency Computation Practice and Experience, 2005, 17, 1441-1467.	2.2	14
66	Shallow lithosphere-asthenosphere boundary beneath Cambay Rift Zone of India: Inferred presence of carbonated partial melt. Journal of the Geological Society of India, 2016, 88, 401-406.	1.1	14
67	Unsupervised physics-based neural networks for seismic migration. Interpretation, 2019, 7, SE189-SE200.	1.1	14
68	Pre-stack inversion using a physics-guided convolutional neural network. , 2019, , .		14
69	Physics-guided deep autoencoder to overcome the need for a starting model in full-waveform inversion. The Leading Edge, 2022, 41, 375-381.	0.7	14
70	Common Reflection Surface Stack Imaging of the Proterozoic Chambal Valley Vindhyan Basin and Its Boundary Fault in the Northwest India: Constraints on Crustal Evolution and Basin Formation. Tectonics, 2018, 37, 1393-1410.	2.8	13
71	Frequency-dependent AVO analysis using the scattering response of a layered reservoir. Geophysics, 2020, 85, N1-N16.	2.6	13
72	Full-waveform inversion of salt models using shape optimization and simulated annealing. Geophysics, 2019, 84, R793-R804.	2.6	12

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73	A gradient based MCMC method for FWI and uncertainty analysis. , 2019, , .		12
74	Hopfield networks for high-resolution prestack seismic inversion. , 2018, , .		12
75	Using different hydrological variables to assess the impacts of atmospheric forcing errors on optimization and uncertainty analysis of the CHASM surface model at a cold catchment. Journal of Geophysical Research, 2005, 110, .	3.3	11
76	A hybrid scheme for seismic modelling based on Galerkin method. Geophysical Journal International, 2011, 186, 1165-1178.	2.4	11
77	Fast image-domain target-oriented least-squares reverse time migration. Geophysics, 2018, 83, A81-A86.	2.6	11
78	Frequency-dependent AVO analysis: A potential seismic attribute for thin-bed identification. Geophysics, 2021, 86, N1-N17.	2.6	11
79	Multidataset Study of Optimal Parameter and Uncertainty Estimation of a Land Surface Model with Bayesian Stochastic Inversion and Multicriteria Method. Journal of Applied Meteorology and Climatology, 2004, 43, 1477-1497.	1.7	10
80	A possible mechanism for the spatial distribution of seismicity in northern Gulf of Mexico. Geophysical Journal International, 2008, 175, 1141-1153.	2.4	10
81	Ray-Born inversion for fracture parameters. Geophysical Journal International, 2010, 180, 1274-1288.	2.4	10
82	Observation of shear–wave splitting in the multicomponent node data from Atlantis field, Gulf of Mexico. Geophysical Prospecting, 2010, 58, 953-964.	1.9	10
83	Lithospheric structure of the Texas–Gulf of Mexico passive margin from surface wave dispersion and migrated Ps receiver functions. Geochemistry, Geophysics, Geosystems, 2015, 16, 2221-2239.	2.5	10
84	Double plane–wave reverse–time migration. Geophysical Prospecting, 2017, 65, 1541-1558.	1.9	10
85	Frequency–domain double–plane–wave least–squares reverse time migration. Geophysical Prospecting, 2019, 67, 2061-2084.	1.9	10
86	A hybrid Galerkin finite element method for seismic wave propagation in fractured media. Geophysical Journal International, 2020, 221, 857-878.	2.4	10
87	Density inversion from seismic using a trans-dimensional approach: A field dataset example. , 2019, , .		10
88	Numerical and Field Investigations of GPR: Toward an Airborne GPR. Subsurface Sensing Technologies and Applications, 2003, 4, 41-60.	0.9	9
89	Time–lapse pre–stack seismic data registration and inversion for CO_2 sequestration study at Cranfield. Geophysical Prospecting, 2014, 62, 1028-1039.	1.9	9
90	3D simulation of seismic-wave propagation in fractured media using an integral method accommodating irregular geometries. Geophysics, 2018, 83, WA121-WA136.	2.6	9

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91	Prestack inversion of a Gulf of Thailand (OBC) data set. Geophysics, 2004, 69, 1470-1477.	2.6	8
92	Seismic reflection coefficients of faults at low frequencies: a model study. Geophysical Prospecting, 2008, 56, 287-292.	1.9	8
93	Shallow splay fault properties of the Nankai Trough accretionary wedge inferred from seismic inversion. Journal of Geophysics and Engineering, 2012, 9, 1-11.	1.4	8
94	Double Plane Wave Least Squares Reverse Time Migration. , 2015, , .		8
95	A Boltzmann machine for high-resolution prestack seismic inversion. Interpretation, 2019, 7, SE215-SE224.	1.1	8
96	Multifrequency beam-based migration in inhomogeneous media using windowed Fourier transform frames. Geophysical Journal International, 2020, 223, 1086-1099.	2.4	8
97	Simultaneous stochastic inversion of prestack seismic data using hybrid evolutionary algorithm. , 2010, , .		7
98	Reciprocity and double plane-wave migration. Geophysics, 2017, 82, S453-S466.	2.6	7
99	Full waveform seismic inversion using a distributed system of computers. Concurrency Computation Practice and Experience, 2005, 17, 1365-1385.	2.2	6
100	Seismic critical-angle anisotropy analysis in the τ-p domain. Geophysics, 2009, 74, A53-A57.	2.6	6
101	Prestack PP & PS wave joint stochastic inversion in the same PP time scale. , 2011, , .		6
102	Frequency-dependent AVO analysis based on scattering series. , 2017, , .		6
103	A hybrid optimization method for full-waveform inversion. , 2021, , .		6
104	A practical approach to mode€converted shear wave velocity analysis from 3C data. , 2010, , .		5
105	Pre-stack Trans-dimensional Seismic Inversion. , 2015, , .		5
106	Joint inversion of PP and PS AVAZ data to estimate the fluid indicator in HTI medium: a case study in Western Sichuan Basin, China. Journal of Geophysics and Engineering, 2016, 13, 690-703.	1.4	5
107	Free-surface multiple attenuation for blended data. Geophysics, 2016, 81, V227-V233.	2.6	5
108	Genetic Algorithm with Applications in Geophysics. Springer Geophysics, 2018, , 487-533.	0.9	5

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109	Azimuthal reflectivity and quantitative evaluation of anisotropic parameters from seismic data: a feasibility study. , 2005, , .		5
110	Fast double plane wave full-waveform inversion using the scattering-integral method in frequency domain. , 2017, , .		5
111	Using time-lapse seismic amplitude data to detect variations of pore pressure and fluid saturation due to oil displacement by water: a numerical study based on one-dimensional prestack inversion. Journal of Geophysics and Engineering, 2006, 3, 177-193.	1.4	4
112	Seismic indicators of gas hydrates and associated free gas. , 2009, , .		4
113	Porosity estimation from seismic data at Dickman Field, Kansas for carbon sequestration. , 2010, , .		4
114	Suppressing non‑Gaussian noises with scaled receiver wavefield for reverse‑time migration: comparison of different approaches. Geophysical Prospecting, 2013, 61, 761-770.	1.9	4
115	A new frequency-dependent reflectivity model and estimating seismic AVO attributes. , 2018, , .		4
116	Two-step velocity inversion using trans-dimensional tomography and elastic FWI. , 2020, , .		4
117	Optimal parameter and uncertainty estimation of a land surface model: Sensitivity to parameter ranges and model complexities. Advances in Atmospheric Sciences, 2005, 22, 142-157.	4.3	3
118	Depth migration anisotropy analysis in the time domain. Geophysical Prospecting, 2007, 56, 071106212522001-???.	1.9	3
119	Global 3D acoustic Full Waveform Inversion using sparse model parameterization. , 2017, , .		3
120	Modeling of Low-Frequency Downhole Electrical Measurements for Mapping Proppant Distribution in Hydraulic Fractures in Casedhole Wells. SPE Journal, 2018, 23, 2147-2157.	3.1	3
121	Lithospheric Removal Beneath the Eastern Flank of the Rio Grande Rift From Receiver Function Velocity Analysis. Geochemistry, Geophysics, Geosystems, 2019, 20, 974-991.	2.5	3
122	Assessing model uncertainty for the scaling function inversion of potential fields. Geophysics, 2021, 86, G89-G98.	2.6	3
123	Joint inversion of time‑lapse seismic and production data using VFSA with local thermal regulation and pilot point parameterization. , 2009, , .		3
124	Deep learning with cross-shape deep Boltzmann machine for pre-stack inversion problem. , 2019, , .		3
125	A multi-scale full waveform inversion method - staging wavenumber components and layer-stripping. , 2019, , .		3
126	Comparisons between the hybrid ABC and the PML method for 2D high‑order finite‑difference acoustic modeling. , 2011, , .		2

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127	A new stochastic inference method for inversion of preâ€stack seismic data. , 2011, , .		2
128	Grid dispersion and stability of the spectral element method with triangular elements. , 2012, , .		2
129	Estimation of fracture weaknesses and fluid indictor from 3D seismic data in HTI Media: A case study in the Haynesville Shale. , 2015, , .		2
130	Fast 2D full-waveform modeling and inversion using the Schur complement approach. Geophysics, 2019, 84, R783-R792.	2.6	2
131	Frequency-dependent AVO analysis. The Leading Edge, 2020, 39, 84-91.	0.7	2
132	EFFECT OF FORCING DATA ERRORS ON CALIBRATION AND UNCERTAINTY ESTIMATES OF THE CHASM MODEL: A MULTI-DATASET STUDY. World Scientific Series on Asia-Pacific Weather and Climate, 2004, , 340-355.	0.2	2
133	Estimation of the fluid indicator from azimuthal AVO gradient variations at a fractured reservoir. , 2007, , .		2
134	Planeâ€wave Gaussianâ€beam prestack depth migration. , 2007, , .		2
135	Seismic inversion for splay fault interpretation in the Nankai Trough accretionary wedge, Japan. , 2010, , .		2
136	A fast algorithm for computing the response from multiple fluid-filled fractures. , 2018, , .		2
137	A phase-space beam summation imaging in inhomogeneous medium. , 2019, , .		2
138	Probabilistic joint-inversion of marine CSEM and seismic traveltime data using VFSA and generalized fuzzy clustering. , 2020, , .		2
139	OBC Multiple Attenuation Technique Using SRME Theory. , 2010, , .		2
140	Implication from the aftershocks of the 1989 Loma Prieta Earthquake. Geophysical Research Letters, 1990, 17, 1421-1424.	4.0	1
141	Multiple attenuation using inverse data processing in the planeâ€wave domain. , 2008, , .		1
142	Assessing the value of timeâ€lapse seismic data in joint inversion for reservoir parameter estimation in an oil reservoir subjected to water flooding recovery: A synthetic example. , 2009, , .		1
143	Effective medium modeling of fluidâ€filled fracturedâ€porous medium. , 2011, , .		1
144	Comparison of HTI and Orthorhombic Methods for Determining Fracture Density and Fracture Azimuth from 3D seismic data. , 2015, , .		1

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145	Utilizing Reciprocity Principle for Double Plane Wave Dataset and Imaging. , 2015, , .		1
146	Numerical modeling of seismic-wave propagation through fractures with nonuniform height and densityin 3d. , 2016, , .		1
147	A fast image domain least squares migration method with local data target approach. , 2020, , .		1
148	Frequency-dependent AVO attributes for fluid saturation and thin-bed mapping. , 2021, , .		1
149	2.5D controlled-source electromagnetic inversion using very fast simulated annealing algorithm. , 2019, , .		1
150	A Time-Domain Seismic Imaging Method With Sparse Pulsed-Beams Data. IEEE Transactions on Geoscience and Remote Sensing, 2022, 60, 1-11.	6.3	1
151	Seismic Inversion and Deconvolution: Dual-sensor Technology. Eos, 2000, 81, 368.	0.1	0
152	Joint inversion of Pâ€•and SVâ€•wave traveltime error to esimate anisotropy: A CFP approach. , 2004, , .		0
153	Joint Bayesian inversion for reservoir characterization and uncertainty quantification. , 2008, , .		0
154	Freeâ€•surface multiple attenuation using inverse data processing in the coupled planeâ€•wave domain: Field data example. , 2009, , .		0
155	A reflectivity method for laterally varying media. , 2009, , .		0
156	Mapping of diagenesis in a carbonate reservoir in the Gulf of Mexico by a stochastic data integration technique. , 2010, , .		0
157	Reservoir evaluation for carbon sequestration at Dickman Field, Kansas. , 2011, , .		0
158	Joint stochastic inversion of multiâ€•component preâ€•stack seismic data. , 2011, , .		0
159	Inversion of downhole electrical measurements for proppant mapping using very fast simulated annealing. Geophysics, 2020, 85, D13-D22.	2.6	0
160	Inverse Theory, Global Optimization. Encyclopedia of Earth Sciences Series, 2021, , 807-814.	0.1	0
161	Full-waveform inversion using adaptive quasi-Newton optimization. , 2021, , .		0
162	Pulsed-beams migration with windowed Radon transform frames. , 2021, , .		0

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163	Seismic Waveform Inversion: Practical aspects and Application to field seismic data. ASEG Extended Abstracts, 2003, 2003, 1-4.	0.1	0
164	Sensitivity of linearized reflection coefficients to fluid saturation and fracture roughness. , 2005, , .		0
165	3â€Ð Twoâ€point ray tracing in general anisotropic media. , 2005, , .		0
166	Grid dispersion minimization in Green's tensor used in Scattering Integral (SI) inversion method. , 2009, , .		0
167	Multiple attenuation using inverse data processing in the plane wave domain. , 2009, , .		0
168	Monitoring CO_2 movement by interpreting time-lapse seismic data using rock physics modeling in the Tuscaloosa formation, Cranfield, MS Valley. , 2012, , .		0
169	Fast finite-difference simulations of DC borehole measurements using a Schur complement approach. , 2018, , .		0
170	Fast frequency-domain 2D elastic-wave modeling using a Schur complement-based finite-difference method. , 2018, , .		0
171	Pre-stack target-oriented least squares RTM in image domain using conjugate Hopfield networks and the Boltzmann machine. , 2019, , .		0
172	Inverse Theory, Global Optimization. Encyclopedia of Earth Sciences Series, 2020, , 1-9.	0.1	0
173	Meshfree seismic modeling using radial basis finite-difference with adaptive stencil size. , 2020, , .		0
174	Plane Wave Seismic Data: Parallel and Adaptive Strategies for Velocity Analysis and Imaging. , 0, , 45-63.		0