### Contents

 Büllion of the  
Seismological Society of America  
Volume 100 • Number 3 • June 2010

**Articles**

- Large Earthquake Triggering, Clustering, and the Synchronization of Faults  
  *Christopher H. Scholz*  
  Pages 901

- Trade-Offs among Dynamic Parameters Inferred from Results of Dynamic Source Inversion  
  *Hiroyuki Goto and Sumio Sawada*  
  Pages 910

- How to Promote Earthquake Ruptures: Different Nucleation Strategies in a Dynamic Model with Slip-Weakening Friction  
  *Andrea Bizzarri*  
  Pages 923

- Variability of Kinematic Source Parameters and Its Implication on the Choice of the Design Scenario  
  *Giovanna Cultrera, Antonella Cirella, Elena Spagnuolo, André Herrero, Elisa Tinti, and Francesca Pacor*  
  Pages 941

- Site- and Motion-Dependent Parametric Uncertainty of Site-Response Analyses in Earthquake Simulations  
  *W. Li and D. Assimaki*  
  Pages 954

- Effects of Kinematic Constraints on Teleseismic Finite-Source Rupture Inversions: Great Peruvian Earthquakes of 23 June 2001 and 15 August 2007  
  *Thorne Lay, Charles J. Ammon, Alexander R. Hutko, and Hiroo Kanamori*  
  Pages 969

- Tsunami Simulations of the 1867 Virgin Island Earthquake: Constraints on Epicenter Location and Fault Parameters  
  *Roy Barkan and Uri ten Brink*  
  Pages 995

- On the Geologic Structure at the Epicenter of the 1886 Charleston, South Carolina, Earthquake  
  *Martin C. Chapman and Jacob N. Beale*  
  Pages 1010

- Seismotectonics and Fault Structure of the California Central Coast  
  *Jeanne L. Hardebeck*  
  Pages 1031

- Single- and Multigrain Luminescence Dating of Sediments Related to the Greenville Fault, Eastern San Francisco Bay Area, California  
  *Glenn W. Berger, Thomas L. Sawyer, and Jeffery R. Unruh*  
  Pages 1051

- Focal Depth Determination for Moderate and Small Earthquakes by Modeling Regional Depth Phases $sP_g$, $sP_mP$, and $sP_n$  
  *Shutian Ma*  
  Pages 1073

- Rupture Directivity Characteristics of the 2003 Big Bear Sequence  
  *Ying Tan and Don Helmberger*  
  Pages 1089
Rupture Directivity of Moderate Earthquakes in Northern California
   Linda C. Seekins and John Boatwright 1107

The 20 January 2007 Odaesan, Korea, Earthquake Sequence: Reactivation of a Buried Strike-Slip Fault?
   Won-Young Kim, Hoseon Choi, and Myunghyun Noh 1120

On the Increase of Background Seismicity Rate during the 1997–1998 Umbria-Marche, Central Italy, Sequence: Apparent Variation or Fluid-Driven Triggering?
   Anna Maria Lombardi, Massimo Cocco, and Warner Marzocchi 1138

The Long-Lasting Aftershock Series of the 3 May 1887 $M_w$ 7.5 Sonora Earthquake in the Mexican Basin and Range Province
   Raúl R. Castro, Peter M. Shearer, Luciana Asitz, Max Suter, Cesar Jacques-Ayala, and Frank Vernon 1153

Frequency-Magnitude Characteristics Down to Magnitude $-4.4$ for Induced Seismicity Recorded at Mponeng Gold Mine, South Africa
   G. Kwiatek, K. Plenkers, M. Nakatani, Y. Yabe, G. Dresen, and JAGUARS-Group 1165

Temporal and Spatial Variations of Local Magnitudes in Alaska and Aleutians and Comparison with Body-Wave and Moment Magnitudes
   Natalia A. Ruppert and Roger A. Hansen 1174

Likelihood-Based Tests for Evaluating Space–Rate–Magnitude Earthquake Forecasts
   J. Douglas Zechar, Matthew C. Gerstenberger, and David A. Rhoades 1184

Generation of Shear Waves from Explosions in Water-Filled Cavities
   G. Eli Baker, Heming Xu, and Jeffry L. Stevens 1196

Seismic Wave Gradiometry Using the Wavelet Transform: Application to the Analysis of Complex Surface Waves Recorded at the Glendora Array, Sullivan, Indiana, USA
   Christian Poppeliers 1211

Influence of the 3D Distribution of $Q$ and Crustal Structure on Ground Motions from the 2003 $M_w$ 7.2 Fiordland, New Zealand, Earthquake
   Donna Eberhart-Phillips, Graeme McVerry, and Martin Reynolds 1225

Effects of 3D Attenuation on Seismic Wave Amplitude and Phase Measurements
   Brian Savage, Dimitri Komatitsch, and Jeroen Tromp 1241

Real-Time Ground-Motion Analysis: Distinguishing $P$ and $S$ Arrivals in a Noisy Environment
   Andreas Rosenberger 1252

On the Stability and Reproducibility of the Horizontal-to-Vertical Spectral Ratios on Ambient Noise: Case Study of Cavola, Northern Italy
   Fabrizio Cara, Giuseppe Di Giulio, Giuliano Milana, Paola Bordoni, John Haines, and Antonio Rovelli 1263

Inversion Analysis of Site Responses in the Kanto Basin Using Data from a Dense Strong Motion Seismograph Array
   Kenichi Tsuda, Kazuki Koketsu, Yoshiaki Hisada, and Takashi Hayakawa 1276

Nonlinear Site Response Effects on the Standard Deviations of Predicted Ground Motions
   Linda Al Atik and Norman Abrahamson 1288

Ground Motions Underground Compared to Those on the Surface: A Case Study from Sudbury, Ontario
   Gail M. Atkinson and Nadia Kraeva 1293
Surface Motion of a Half-Space with Triangular and Semicircular Hills under Incident $SH$ Waves

Gang Liu, Haitao Chen, Diankui Liu, and B. C. Khoo

Probabilistic Seismic Hazard Macrozonation of Tamil Nadu in Southern India

A. Menon, T. Ornthammarath, M. Corigliano, and C. G. Lai

Short Notes

Reverse Propagation of Surface Waves Reflected from Seamounts in the Northwestern Pacific

Kazushige Obara and Minoru Matsumura

Short-Period Rayleigh-Wave Group Velocity Tomography through Ambient Noise Cross-Correlation in Xinjiang, Northwest China

Xiufen Zheng, Wenjie Jiao, Chunhe Zhang, and Liangshu Wang

Temporal Variations in Crustal Scattering Structure near Parkfield, California, Using Receiver Functions

Pascal Audet

Basement Imaging Using $Sp$ Converted Phases from a Dense Strong-Motion Array in Lan-Yang Plain, Taiwan

Chien-Hsin Chang, Ting-Li Lin, Yih-Min Wu, and Wen-Yen Chang

Evidence for Strong Ground Motion by Waves Refracted from the Conrad Discontinuity

Xiaobo He and Tae-Kyung Hong

Seismic Input Motion Determined from a Surface–Downhole Pair of Sensors: A Constrained Deconvolution Approach

D. Bindi, S. Parolai, M. Picozzi, and A. Ansal

A Method for Estimating the Green’s Function of a Near-Surface Layer for $SH$-Waves by Means of a Borehole Receiver Array

Shigeo Kinoshita

Analysis of Coseismic Water-Level Changes in the Wells in the Koyna–Warana Region, Western India

Kalpna Gahalaut, V. K. Gahalaut, and R. K. Chadha

The 20 January 2007 $M_L$ 4.8 Odaesan Earthquake and Its Implications for Regional Tectonics in Korea

Kwang-Hee Kim and Yongcheol Park