CURRICULUM VITA

MRINAL K. SEN

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EDUCATION:

1987	Ph.D. Geology and Geophysics, University of Hawaii at Manoa
1979	M.Sc. Applied Geophysics, Indian School of Mines (now IIT), Dhanbad, India
1977	B.Sc. Applied Geophysics, Indian School of Mines (now IIT), Dhanbad, India

PROFESSIONAL EXPERIENCE:

08/18-	***Interim Director***, University of Texas Institute for Geophysics
09/07-	***John A. and Katherine G. Jackson Chair*** in Applied Seismology
08/04-	**Professor of Geophysics**, Dept. of Geological Sciences and Institute for Geophysics, The University of Texas at Austin
09/17-	**Associate Director**, University of Texas Institute for Geophysics.
09/16-	**Head, Energy Research division**, Institute for Geophysics, The University of Texas at Austin
01/12-01/14	**Director**, National Geophysical Research Institute, Hyderabad, India (on leave from University of Texas at Austin, USA)
09/07-08/12	**Member**, Graduate Studies Committee, *Computational and Applied mathematics*, UT Austin.
9/07-12/11	**Chairman,** Geophysics Education and Research Group, Jackson School of Geosciences
09/06-08/07	Weeks Endowed Fellow, Dept. of Geological Sciences, The University of Texas at Austin
09/03–08/06	Jackson Endowed Fellow, Institute for Geophysics, The University of Texas at Austin
09/98–08/04	Senior Research Scientist, Institute for Geophysics, The University of Texas at Austin
01/02–08/03	Fellow of Edwin Allday Centennial Chair in Subsurface Geology, Department of Geological Sciences, The University of Texas at Austin
09/92–08/98	Research Scientist, Institute for Geophysics, The University of Texas at Austin
09/89–08/92	Research Associate, Institute for Geophysics, The University of Texas at Austin
09/87–09/89	Project Seismologist, Woodward-Clyde Consultants, Pasadena, California
09/82–05/87	Graduate Research Assistant, University of Hawaii
07/81–08/82	Geophysicist, OMNI Tape Company, Houston, Texas
09/79–06/81	Geophysicist, INDICOS Computer Services, Bombay, India

VISITING POSITIONS:

02/14-	Adjunct Professor, Academy of Council and Scientific Research, CSIR-National Geophysical Research Institute, Hyderabad, India.

11/01–12/01	Visiting Professor, Section Applied Geophysics, Delft University of Technology, Netherlands.
07/98–08/98	Consultant, Upstream Strategic Research Group, MOBIL Oil Company, Dallas, Texas
06/98–07/98	Consultant, Rock Physics/Seismic Attributes Group, AMOCO Research Center, Tulsa, Oklahoma
08/93	Visiting Scientist, NRL-SSC, Bay St. Louis, Missouri
06/87–08/87	Research Seismologist, Hawaii Institute of Geophysics
02/85–06/85	Geophysical Intern, SOHIO Petroleum Company, Dallas, Texas

TEACHING EXPERIENCE:

Seismic Imaging (GEO384W)
Inverse Theory (GEO384M)
Advanced Theoretical Seismology/SEISMOLOGY III (GEO 391/GEO390D)
Solid Earth Geophysics (GEO354/GEO384D)
Quantitative Seismic Interpretation (GEO 365D)
Seismic Imaging in exploration and global scale
Linear systems and inverse methods
Seminar courses on seismic migration and inversion
Asymptotic methods in seismic wave propagation
Mathematical Methods in Geophysics

INDUSTRY SHORT COURSES:

"Global optimization methods in geophysical inversion," SBGF 2001, ONGC, Delft, Germany.

"Seismic modeling, migration, and inversion" (one-week short course taught at companies) (ONGC 2003, 2004, 2005; Oil India 2007)

"Seismic modeling and inversion: the state of the art"–SBGF 2005 (Sep. 10), SPG 2006 (Jan. 8)

"Seismic inversion: theory and practice"

"Pre-stack time and depth migration" (one-week short course taught at ONGC, Jan. 2006; Dec 2008)

"Pre- and Post-stack Inversion" (one-week short course taught at ONGC, Dec. 2006; Jan 2008; Dec 2008)

"AVO and Seismic Attributes" (one-week short course taught at ONGC, Dec. 2006; Dec 2007; Dec 2008)

"Elastic wave theory," (two-day short course taught at Conoco-Phillips. Houston, Oct. 2007).

"Innovative techniques for reservoir characterization using seismic data "(one week short course taught at ONGC India Jan 2008)

"Seismic Inversion" – one week short course taught at China University of Petroleum (Sept 2009) and Chinese National Oil Corporation (CNPC).

"Application, Analysis and Interpretation of Converted Waves", JOGMEC, Chiba, Japan (Nov 2009); ONGC (Dec 2010)

"Reservoir Model Building: from seismic to Simulation", SPG conference Hyderabad, India (Dec 2009)

"Advanced Methods for seismic imaging, AVO and inversion", ONGC (Dec 2010)

"Sub-basalt Imaging", ONGC (Dec 2010)

"Seismic inversion" – 2 day short course at BGP, CNPC, Beijing, China (March 2011)

"Seismic inversion for reservoir characterization" – 3 day short course taught at Kuala Lampur, Malayasia organized by MICE Global, Nov 19-21, 2013.

"Seismic inversion for reservoir characterization" – 5 day short course taught at Kuala Lampur, Malayasia organized by MICE Global, Aug 18-22, 2014.

"Sub-basalt Imaging" – 1 day short course, SPG Kochin, November 2013.

"Seismic inversion and Rock Physics (Sen and Spikes)" – 5 day short course taught to EDGER sponsors January 2015.

"Inverse Theory" – 5 day short course taught at the Technical University of Satander, Bucaramanga, Colombia, April 2015.

"Seismic migration and inversion" – 5 day short course at the China University Petroleum, June 2015, 2016, 2017.

"Geostatistical Seismic inversion" – 1 day short course at BGP, China, June 2015.

"Full waveform inversion" – 1 day short course PetroChina, Beijing, China, June 2016, May 2017.

"Global Optimization and Uncertainty Quantification" – 4 day short course, University of Naples Federico II, Naples, Italy, June 2017. "Full Waveform Inversion" – 1 day short course SEG (SEG San Antonio, Sept 2011; Geo 2012 Baharain, March 2012)

"Sub-basalt Imaging" – 1 day short course, SPG Kolkata, February 2012.

"Full waveform inversion" – 2 day short course at Petroleum Institute, Abu Dhabi, Oct 23-24, 2013.

"Full waveform inversion" – 2 day short course at Kuwait Oil Company, Kuwait, June 26-27, 2013.

2-day short course SEG annual conference Houston Texas, September 19-20, 2013.

2-day short course SEG annual conference New Orleans, October 17-18, 2015.

2-day short course SEG annual conference Dallas, October 17-18, 2016.

2-day short course SEG annual conference Houston, September 23-24, 2017.

"Seismic Inversion" – 2 day short course at the Vietnam Petroleum Institute, Hanoi, Vietnam, Dec 26-17, 2017.

RESEARCH INTERESTS:

- Theoretical and Computational Seismology: Wave propagation, Anisotropy, Synthetic seismograms.
- Exploration Geophysics: Seismic Processing, AVO, Imaging, GPR, Post and Pre-stack inversion, Reservoir characterization.
- Inverse Theory and Optimization.
- Computational Methods: Supercomputing and parallel computation applications in Geophysics, uncertainty in climate models.

SERVICE:

Member, Editorial Advisory Board (Geophysics), Cambridge University Press, 2018-

Member, SEG book review committee, 2016-

Chairman, opponent committee of PhD Candidate Tuhin Bhakta, NTNU, Trondheim, Norway, May 2015.

Member, National Science and Engineering Research Council (NSERC) Canada , collaborative research grant site review committee, March 2014.

Member, Research Committee, Society of Exploration Geophysicists.

Associate Editor, *Geophysics, Seismic Migration section*, June 06-present.

Associate Editor, *Geophysics, Seismic Modeling and Wave Propagation section*, June 06-present.

Associate Editor, *Journal of Seismic Exploration*, 2005-present.

Member, Editorial Board, International Journal of Geophysics, 2008-2011.

Member, Editorial Board, Geohorizons, 2011-present

Associate Editor, *Computational Seismology and Geodynamics*, American Geophysical Union, 1997-2008.

Guest Editor, *Geohorizons Decmeber 2009*, publication of the Society of petroleum geophysicists, India

Member, Technical Program Committee (key contact - seismic inversion), Society of Exploration Geophysicists' annual meeting, San Antonio, Texas, 2011.

Member, 2011 NSF Graduate Research Fellowship Program (GRFP), Terrestrial Geosciences Panel.

Co-chair, Technical Program Committee, SEG representative, Society of Petroleum Geophysicists' annual meeting, Hyderabad, India, 2010.

Member, Technical Program Committee (key contact - seismic inversion), Society of Exploration Geophysicists' annual meeting, Houston, Texas, 2009.

Co-convenor, Workshop on 'Seismic Interferometry', SEG annual meeting, Houston, Texas, Oct. 09.

Co-convenor, Workshop on 'Bayesian method for geological model building', EAGE meeting, Amsterdam, The Netherlands, July 09.

Co-chair, Technical Program Committee, SEG representative, Society of Petroleum Geophysicists' annual meeting, Hyderabad, India, 2008.

Member, Technical Program Committee (key contact - seismic inversion), Society of Exploration Geophysicists' annual meeting, San Antonio, Texas, 2007.

Co-chair, Technical Program Committee, SEG representative, Society of Petroleum Geophysicists' annual meeting, Kolkata India, 2006.

Co-chair, Technical Program Committee, SEG representative, Society of Petroleum Geophysicists' annual meeting, Hyderabad, India, 2004.

Member, Technical Program Committee, Society of Exploration Geophysicists' annual meeting, San Antonio, Texas, 2001.

Invited Participant, National Research Council (NRC) planning workshop on 'How uncertainty is related to ocean science models?' Sept. 99, Washington D.C.

Member, **External Review Board** of the Marine Geosciences Division Basic and Applied Research programs, Office of Naval Research, 1999.

Invited Participant (Unclassified), DARPA Geophysics seminar *on Detection of Underground Facilities*, Mar. 99.

Invited panel member, DOE workshop on *Global inversion of Geophysical Data*, San Jose, California, Feb. 99.

Invited Participant, two-week workshop on *Inverse Problems* at the Institute of Mathematics and Its applications at the University of Minnesota (03/06/95–03/17/95).

Member, European Academy of Sciences

Member, American Geophysical Union (AGU)

Member, European Association of Geoscientists and Engineers (EAGE)

Member, Society of Exploration Geophysicists (SEG)

Member, Society of Industrial and Applied Mathematics (SIAM)

Member, *International Committee*, Society of Exploration Geophysicists (past)

Member, *Computer Application Committee*, Society of Exploration Geophysicists (past).

Committees:

Chair, Eleanor Picard Staff Excellence Committee, UTIG, 2017

Member, Annual Performance Evaluation Committee, UTIG, 2017

Member, Post-tenure review committee, UT-DGS, 2017

Chair, Post-tenure review committee, UT-DGS, 2016

Chair, Exploration Geophysics search committee, 2014

Member, strategic planning committee, UTIG, 2015-16

Member, Shell Chair search committee, 2014-17.

Member, Appointments committee [tenure and promotion committee], Jackson School of Geosciences, 2009-2012.

Chairman, Geophysics Curricular Group**,** Dept. of Geological Sciences (until 2009)

Chairman, Internal JSG Hires**, UTIG** (until 2009)

Member, GBDS director search committee**, UTIG** [2010]

Member, Exploration Geophysics Search Committee, Dept. of Geological Sciences [2006]

Member, Endowed chair nomination committee, Dept. of Geological Sciences [2011]

Member, KAUST (King Abdullah University of Science and Technology) computational geosciences faculty search committee, Institute of computational and engineering sciences, UT Austin.[2007-2009]

Member, KAUST (King Abdullah University of Science and Technology) computational geosciences director search committee, Institute of computational and engineering sciences, UT Austin. .[2007-2009]

Member, JSG Energy initiative search committee

Member, UTIG Fellowship committee

Member, Graduate admissions and support committee (UTIG representative)

Member, Graduate studies committee (GSC), Department of Geological Sciences

Member, Graduate studies committee (GSC), Computational and Applied Math Program, UT Austin

Member, Graduate studies sub-committee (GSSC), three-year term, Computational and Applied Math Program, UT Austin, **Area C: Mathematical modeling of a natural, engineered, or other system.**

Chairman, Graduate curriculum committee**,** Dept. of Geological Sciences [2008-2009]

Member, Steering Committee, Jackson School of Geosciences 2003–2005

Chairman, UTIG Computer committee 2000–2005

Co-chairman, UTIG Seminar committee 2003–2005

AWARDS AND HONORS:

Virgil Kauffman Gold medal of the Society of Exploration Geophysicists (SEG) for make significant advances in the sciences of Exploration Geophysics in the past 5 years, 2018.

Distinguished Researcher Award, University of Texas Institute for Geophysics, 2016.

UTIG director's circle of excellence recognition, 2016.

Distinguished Graduate Alumnus Award, Department of Geology and Geophysics, University of Hawaii at Manoa, 2016.

Distinguished Educator Award, Jackson School of Geosciences, University of Texas at Austin, 2015.

UTIG director's circle of excellence recognition, 2015.

Honorary membership of the Society of Exploration Geophysicists (SEG) for extraordinary contributions as a geophysicist, educator and author, 2015.

UTIG director's circle of excellence recognition, 2014.

Distinguished Alumnus award, Indian School of Mines, 2014.

Recipient of Dr. Hari Narayan award of the Geological society of India, 2013.

Fellow, Geological society of India, 2013.

Recipient of decennial gold medal of the Indian Geophysical Union (IGU), 2012.

Fellow, A. P. Akademi of sciences, 2012.

Recipient of SPG, India honorary membership, 2012.

UTIG director's circle of excellence recognition, 05/2010

Recipient of John A. and Katherine G. Jackson Chair in Applied Seismology, 09/2007-

Joseph C. Walter Jr. Award for Research Excellence, University of Texas at Austin, 2007

Recipient of Weeks Endowed Fellowship, Dept of Geological Sciences at the Jackson School of Geosciences, UT Austin.

Recipient of Jackson Endowed Senior Fellowship at the Jackson School of Geosciences, UT Austin.

"Free gas and gas hydrate saturation estimation from multi-component seismic data offshore Oregon," Paper by Kumar, Sen, and Bangs awarded an outstanding student paper award at the AGU fall meeting 2004 in San Francisco, California.

"Joint stochastic inversion of pre-stack seismic data and well logs for high-resolution reservoir delineation and improved production forecast." Paper by Varela, Torres-Verdin, and Sen

presented at SEG 2003 in Dallas was selected as best paper presented by a student at SEG2003. Recognition was presented during SEG2004 in Denver, Colorado.

"Multilayer AVO inversion using genetic algorithms." Paper by Sen and Stoffa presented at the SEG/EAEG Summer Research Workshop '92, selected the best paper on AVO inversion.

Recipient of SEG Scholarships, 1984-85, 1985-86, 1986-87.

Recipient of ISM silver medal for ranking first in first class in B.Sc. and M.Sc. at Indian School of Mines.

Recipient of J. Watumul Foundation Award for the most outstanding student in Geology and Geophysics at the University of Hawaii, 1986.

Recipient of National Merit Scholarship, Gov't. of India at the undergraduate level.

PH.D. ADVISOR:

L. N. Frazer, University of Hawaii

PATENT

Sen, M. K., P. L. Stoffa, and F. Liu, 2003, *Angle dependent surface multiple attenuation for two-component marine bottom sensor data*, United States Patent number 6,654,693 granted on 11/25/03.

PUBLICATIONS

Books:

Sen, M. K., and P. L. Stoffa, 1995, *Global Optimization Methods in Geophysical Inversion*, Elsevier Science Publications, Netherlands.

Sen, M. **K**., 2006, Seismic Inversion, *Society of Petroleum Engineers*, USA.

(this book was nominated for Hamilton author award at the University of Texas at Austin).

Sen, M. K., and P. L. Stoffa, 2013, Global Optimization Methods in Geophysical Inversion, Second Edition, *Cambridge University Press*.

Book Chapters:

Sen, **M. K**. and S. Mallick. 2018, Application of Genetic algorithms in Geophysics, in *Application of soft computing and intelligent methods in Geophysics*, Heijan, A., P. Styles, Springer Publications.

Sen, M. K., and L. N. Frazer, 2014, Multi-fold phase space path integral synthetic seismograms, Society of Exploration Geophysicists (SEG) reprint volume on *Seismic Diffraction: Modeling, Observation, and Imaging*, edited by Michael Pelissier, Tijmen Jan Moser, Kamill Klem-Musatov, and Henning Hoeber.

Liu, Y., and **M. K. Sen,** 2012, A hybrid scheme for absorbing edge reflections in numerical modeling of wave propagation, *Numerical modeling of seismic wave propagation: gridded two-way wave-equation methods,* 80, Society of Exploration Geophysicists, Tulsa, USA.

Pecher, I. A., B. Milkereit. A. Sakai, M. K. Sen, N. L. Bangs, and J. Huang, 2012, Vertical seismic profiles through gas-hydrate bearing sediments, chapter 8, in Geophysical

Characgterization of gas hydrates, ed. M. Riedel, E. WIlloughbuy, and S. Chopra, 121-142.

DeBasabe, J. and **M. K. Sen,** 2012, Stability of the high order finite element methods for acoustic and elastic wave propagation with high-order time-stepping, *Numerical modeling of seismic wave propagation: gridded two-way wave-equation methods*, 65, Society of Exploration Geophysicists, Tulsa, USA.

DeBasabe, J. and **M. K. Sen,** 2012, Grid dispersion and stability criteria of some common finite element methods for acoustic and elastic wave propagation, *Numerical modeling of seismic wave propagation: gridded two-way wave-equation methods*, 52, Society of Exploration Geophysicists, Tulsa, USA.

Liu, Y., and **M. K. Sen,** 2012, An implicit staggered grid finite-difference method, *Numerical modeling of seismic wave propagation: gridded two-way wave-equation methods*, 39, Society of Exploration Geophysicists, Tulsa, USA.

Sen, M. K., 2011, Seismic, Reflectivity Method, invited contribution, *Encyclopedia of Solid Earth Geophysics*, vol II, 1269-1279, Springer, The Netherlands.

Sen, M. K., and P. L. Stoffa, 2011, Inverse Theory: global optimization, invited contribution, *Encyclopedia of Solid Earth Geophysics*, vol I, 625-632. Springer, The Netherlands.

Stoffa, P. L., **M. K. Sen**, R. Seif, and R. Pestana, 2009, Parallel and adaptive pre-stack plane wave migration in *Advanced Computational Infrastructures for Parallel and Distributed Adaptive Applications*, John Wiley and Sons, ed. M. Parashar, 45-63.

Jackson, C., **M. K. Sen,** P. L. Stoffa, and G. Huerta, 2009, Importance sampling for climate model uncertainty estimation: Parallel and adaptive strategies, *Advanced Computational Infrastructures for Parallel and Distributed Adaptive Applications*, John Wiley and Sons, ed. M. Parashar , 65-78.

Filina, I., D. Blankenship, L. Roy, **M. K. Sen**, T. Richter and J. Holt, 2006, Inversion of airborne gravity data acquired over subglacial lakes in East Antarctica, *"Antarctica -Contributions to Global Earth Sciences"*, edited by Dieter Fütterer, Springer Publishing House Springer Berlin Heidelberg, 129-133.

Liu, F., **M. K. Sen**, and P. L. Stoffa, 2005, Dip selective 2-D multiple attenuation operators in plane wave domain, to be published in a special volume on multiple attenuation, SEG publications.

Sena, A. R., P. L. Stoffa, and **M. K. Sen,** 2004**,** Migration of ground penetrating radar data in heterogeneous and dispersive media, in Oluic, M., ed., *New strategies for remote sensing*, 711-719.

Sen, M.K., P.L. Stoffa, R. Seifoullaev, and J. T. Fokkema, 2003, Airborne GPR for the detection of underground facilities, *Subsurface Sensing Technologies and Applications*, 4(1), 41-60.

Sen, M. K., 2001, Prestack inversion of plane wave seismograms: Isotropy to transverse Isotropy, special volume, *Recent advances in Exploration Geophysics, RECODER, The Canadian Society of Exploration Geophysicists*, 85-96.

Xia, G., **M. K. Sen**, and P. L. Stoffa, 1997, AVO analysis of Mobil offshore data by linearized inversion in the τ-p domain, *AVO inversion of Mobil data*, Society for Exploration Geophysicists Press, Chapter 9, p. 167-185.

Book Reviews:

Sen, M. K., and J. Vamaraju, 2018, Review of the book *Numerical Simulation in Applied Geophysics* by Juan Santos , The Leading Edge, In press.

Sen, M. K., 2018, Review of the book *Waves and Rays in Seismology* by M. Slawanski, The Leading EDGE, 37(3), 233.

Sen, M. K., 2000, Review of the book *Seismic Inversion and Deconvolution: Dual Sensor Technology* by E. A. Robinson, *EOS*, 81 (32), 368.

Sen, M. K., and P. L. Stoffa, 1996, Review of the book *Wavelets in Geophysics* by Foufoula-Georgiou and Kumar, *Mathematics and Computation*, 65 (213), 449.

Review Article:

Sen, M. K., 2004, Hyderabad : Leveraging Technologies, *The Leading Edge*, 23 (3), 261-268.

Journal Publications:

2018

1. Zhao, Z*., **M. K. Sen**, and P. L. Stoffa, 2018, Reciprocity and double plane wave migration, Geophysics, In Press.
2. Zhao, Z*., and **M. K. Sen**, 2018, Fast image domain target oriented least squares reverse time migration, Geophysics, In Press.
3. Vamaraju, J.*, **M. K. Sen**, J. DeBasabe, and M. F. Wheeler, 2018, Enriched Galerkin finite element approximation for elastic wave propagation in fractured media, Journal of Computational Physics, 372, 726-747.
4. Mishra, P. K.*, S. K. Nath, **M. K. Sen**, and G. E. Fasshauer, 2018. Hybrid Gaussian-cubic radial basis functions for scattered data interpolation, Computational Geosciences, https://doi.org/10.1007/s10596-018-9747-3.
5. Mandal, B., V. Vijaya Rao, **M. K. Sen**, P. Karuppannan, and D. Sarkar, 2018, 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, 37.
6. Chouhan, M. S*., M. Fedi, and **M. K. Sen**, 2018, Gravity inversion by the MHODE method for investigating salt domes and complex sources, Geophysical Prospecting, doi: 10.1111/1365-2478.12603.
7. Zhang, P*., **M. K. Sen**, M. M. Sharma, J. Gableman, and D. Dlowka, 2018. Mapping proppant distribution in hydraulic fractures in cased boreholes using low frequency downhole electrical measurements, SPE Hydraulic Fracturing Technology.
8. Barone, A.*, and **M. K. Sen**, 2017, A New Fourier AVAz Fracture Characterization Method: Case study in the Haynesville Shale, Geophysics, 83(1),WA101-WA120. *(listed in Geophysics Bright Spots*)

9. Liu, H.*, **M. K. Sen**, K. Spikes, 2017, 3D simulation of seismic wave propagation in fractured media using an integral method accommodating irregular geometries, Geophysics, 83(1),WA121-WA136.

2017

10. Mandal, B., V Vijaya Rao, Dipankar Sarkar, YJ BhaskarRao, S Raju, P Karuppannan, **M. K Sen**, 2017, Deep crustal seismic reflection images from the Dharwar craton, Southern India-Evidence for the Neoarchean subduction, Geophysical Journal International, 212 (2), 777-794.

11. Luo, Chunmei, **M. K. Sen,** S. Wang, and S. Yuan, 2017, An AVAF inversion method to detect hydrocarbon", Journal of Geophysics and Engineering, 14(5), 1167-1176.

12. Ren, Z.*, Y. Liu, and **M. K. Sen**, 2017, Modeling of the Acoustic Wave Equation by Staggered-Grid Finite-Difference Schemes with High-Order Temporal and Spatial Accuracy, Bulletin of the Seismological Society of America, 107(5), 2160-2182.

13. Zhao, Z.*, **M. K. Sen**, and P. L. Stoffa, 2017, Reciprocity and double plane wave migration, Geophysics, Geophysics, 82(6), 1-56.

14. Rekappali, R*., R. K. Tiwari, **M. K. Sen**, and N. Vedanti, 2017, 3D seismic data de-noising and reconstruction using Multichannel Time Slice Singular Spectrum Analysis, Journal of Applied Geophysics, 140, 145-153.

15. Mishra, P. K*., S. K. Nath, G. Kosec, and **M. K. Sen**, 2017, An improved radial basis pseudo-spectral method with hybrid Guassian-cubic kernels, Engineering Analysis and Boundary Elements, 80, 162-171.

16. Li, B*., Y. Liu, **M. K. Sen**, and Z. Ren, 2017, Time-space domain mesh-free finite difference method based on least squares for 2D acoustic wave equation, Geophysics, 82(4).

17. **Sen, M. K**., and R. Biswas*, 2017, Trans-dimensional seismic inversion using the Hamiltonian Monte Carlo approach, Geophysics, 82(3), R119-R134.

18. Zhao, Z.*, **M. K. Sen**, and P. L. Stoffa, 2017, Double plane wave reverse time migration, Geophysical Prospecting, doi: 10.1111/1365-2478.12507.

19. Ren, Z*., Y. Liu, and **M. K. Sen**, 2017, Least squares reverse time migration in elastic media, Geophysical Journal International, 208(2), 1103-1125.

2016

20. Xue, Y*., and **M. K. Sen**, 2016, Stochastic seismic inversion using greedy annealed importance sampling, Journal of Geophysics and Engineering, 13, 796-804.

21. Kumar, P., G. Sen, P. Mandal, and **M. K. Sen**, 2016, Shallow lithosphere-asthenosphere boundary beneath Cambay rift zone of India, Journal of Geological Society of India, 88(4), 401-406.

22. Bei, P.*, **M. K. Sen**, and G. Hanming, 2016, 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, 13, 690-703.

23. Wang, E.*, Y. Liu, and **M. K. Sen**, 2016, High order finite difference modeling with 2D acoustic wave equation using a combination of cross and rhombus stencils, Geophysical Journal International, 206,1933-1958.

24. Zhao, Z.*, **M. K. Sen**, and P. L. Stoffa, 2016, Double plane wave reverse time migration in frequency domain, Geophysics, 81(5), S367-S382.

25. DeBasabe, J. D., **M. K. Sen**, and M. F. Wheeler, 2016, Modeling of seismic wave propagation in fractured media by the discontinuous Galerkin finite element method, Geophysics, 81(4), T163-T174.

26. Datta, D.*, and **M. K. Sen**, 2016, Estimating a starting model in full waveform inversion using a global optimization method, Geophysics, 81(4), R211-R223.

27. Chatterjee, R., D. K. Singha*, M. Ojha, **M. K. Sen**, and K. Sain, 2016, Porosity estimation from pre-stack seismic data in gas-hydrate bearing sediments from KG basin, Journal of Natural Gas Science and Engineering, 33, 562-572.

28. Ojha, M., **M. K. Sen**, and K. Sain, 2016, Use of split-spread configuration of marine seismic data in full waveform inversion: Krishna-Godavari basin, India, Journal of seismic exploration, 25, 359-373.

29. Kumar, D., S. Mondal* M. J. Nandan, P. Harini, BMVS Sekhar, and **M. K. Sen**, 2016, Two-dimensional electrical resistivity tomography (ERT) and time-domain-induced polarization (TDIP) study in hard rock for groundwater investigation: a case study at Choutuppal Telangana, India, Arabian Journal of Geosciences, 9(5), 1-15.

30. Ma, J., Chen, X., **M. K. Sen**, and Y. Xue, 2016, Free surface multiple attenuation of blended data, Geophysics, 81(3), V227-V233.

2015

31. Agarwal, M.*, J. Pulliam, **M. K. Sen**, H. Garrola, 2015, Lithospheric structure of Texas Gulf of Mexico passive margin from surface wave dispersion and migrated Ps receiver function, Geochemistry, Geophysics, Geosystems, 16(7), 2221-2239.

32. Patro, P. K., K. Aziz, Veeraswamy, S. Sarma, and **M. K. Sen**, 2015, Sub-basalt seismic imaging – the efficacy of magentotelluric method, Applied Geophysics, 121, 106-115.

33. Vedanti, N, **M. K. Sen**, R. P. Srivastava, 2015, Integrated reservoir characterization for understanding in-situ combustion process in Balol oil field, India, Interpretation, 3(2), T69-T80.

34. Agarwal, M.*, J. Pulliam, **M. K. Sen**, U. Dutta, M. Pesyanos, and R. Mellors, 2015, Crustal and upper mantle structure in the Middle East: Assessing constraints provided by jointly modeling Ps and Sp receiver functions and Rayleigh wave group velocity dispersion curves, Geophysical Journal International, 201(2), 783-810.

35. DeBasabe, J. D., and **M. K. Sen**, 2015, A comparison of finite difference and spectral element methods for elastic wave propagation in media with a solid-fluid interface, Geophysical Journal International, 200(1), 278-298.

36. **Sen, M. K.,** and R. Biswas*, 2015, Choice of regularization weight in basis pursuit deconvolution, Journal of Geophysics and Engineering, 12, 70-79.

37. Ghosh, R., **M. K. Sen**, and N. Vedanti, 2015, Quantitative interpretation of a growing CO2 plume in Sleipner, north sea from time-lapse seismic data using rock physics modeling, Journal of Greenhouse Gas Control, 32,147-158.

38. Vijayarao, D., N. Damodara*, K. Sain, and **M. K. Sen**, 2015, Upper crust of the archean Dharwar craton in southern India as revealed by refraction tomography and its implications, Geophysical Journal International, 200(1), 652-663.

2014

39. Perumal, S. K., J. Kopisetti, K. Nagula, R. Menon, ….. **M. K. Sen**, 2014, Impact fragmentation of Lonar Crater, India: Implications for impact cratering processes in Basalt, Journal of Geophysical Research: Planets, 111(9), 2029-2059.

40. **Sen, M. K**., R. Biswas*, P. Mandal, and P. Kumar, 2014, Basis pursuit receiver function, Bulletin of the seismological society of America, doi 10.1785/0120140004.

41. Saraswat, P.*, V. Raj, **M. K. Sen**, and A. Naryanan, 2014, Multiattribute Seismic Analysis With Fractal Dimension and 2D and 3D Continuous Wavelet Transform,, paper no. SPE-164417-MS, http://dx.doi.org/10.2118/164417-PA.

42. Singha, D. K.*, R. Chatterjee, **M. K. Sen** and K. Sain, 2014, Pore-pressure prediction in gas-hydrate bearing sediments of Krishna-Godavari basin, India, Marine Geology, 357, 1-11.

43. Murthy, A. S. N., D. Sarkar, **M. K. Sen**, V. Sridher, and A. Prasad, 2014, Mapping the sub-trappean Mesozoic sediments in the western part of Deccan volcanic province of India, Journal of Asian earth sciences, 93, 15-24.

44. Dixit, M. K., S. Kumar, R. Catchings, K. Suman, D. Sarkar, and **M. K. Sen**, 2014, Seismicity, faulting and structure of the Koyna-Warna Seismic regions, Journal of Geophysical Research: Solid Earth, 119(8), 6372-6398, DOI: 10.1002/2014JB010950.

45. Behera, L., and **M. K. Sen**, 2014, Tomographic imaging of sub-basalt sediments and shallow basement for hydrocarbon potential in Deccan volcanic province of India, Geophysical Journal International, 199 (1), 296-314

46. Kumar, P., **M. K. Sen**, and C. Halder*, 2014, Estimation of shear velocity contrast from transmitted PS amplitude variation with ray-parameter, Geophysical Journal International, 198 (3), 1431-1437.

47. Kumar, P., K. Talukdar* and **M.K. Sen**, 2014, Lithospheric Structure below Transantarctic Mountain using Receiver Function Analysis of TAMSEIS Data, JOURNAL GEOLOGICAL SOCIETY OF INDIA, 83(5), 483-492.

48. Sain, K, M. Rai* and **M. K. Sen**, 2014, A review on shale gas prospect in Indian sedimentary basins, J. Ind. Geophys. Union, 18(2), 183-194.

49. Zhang, R, X. Song, S. Fomel, **M. K. Sen**, S. Srinivasan, 2014, Time-lapse pre-stack seismic data registration and inversion for CO2 sequestration study at Cranfield, Geophysical Prospecting, doi: 10.1111/1365-2478.12114

50. Zhang, R., **M. K. Sen** and S. Srinivasan, 2014, Time-lapse pre-stack seismic inversion with thin bed resolution for monitoring CO_2 sequestration from Cranfield, Mississippi, International Journal of Greenhouse Gas Control, 20, 223-229.

51. Mandal, B.*, **M. K. Sen**, and V. VijayaRao, 2014, Deep seismic image enhancement by the common reflection stack (CRS) method: Delhi-Aravalli fold belt, Geophysical Journal International, doi: 10.1093/gji/ggt402, 196(2),902-917.

2013

52. Tao, Y.*, and **M. K. Sen**, 2013, Frequency domain full waveform inversion using scattering integral approach and its sensitivity analysis, *Journal of Geophysics and Engineering*, 10(6),065008.

53. Prasad, A. S. S. R. S, K. Sain, and **M. K. Sen**, 2014, Imaging sub-basalt mesozoics along Jakhau-Mandvi and Mandvi-Mundra profiles in Kutch sedimentary basin from seismic and gravity modeling, Geohorizons, *51-56*.

54. Prasanna Lakshmi, K. J., P. Senthil Kumar, K. Vijaya Kumar, A. Ravinder. T. Seshunarayana, and **M. K. Sen**, 2013, Petrophysical stratigraphy of the Deccan basalts across the western ghats escarpment around Mahabaleswar and Koyna regions, Journal of Asian Earth Sciences, September.

55. Satyavani, N., **M. K. Sen**, M. Ojha, and K. Sain, 2013, Azimuthal anisotropy in OBS observations in Mahanadi offshore, India, Interpretation, 1(2), T187-T198.

56. Kumar, P., M. Ravi Kumar, G. SriJayanthi, K. Arora, D. SriNagesh, R. K. Chadha, and **M. K. Sen**, 2013, Seismological evidence of flexure in the Indian continental tectonic plate, *Journal of Geophysical Research*, VOL. 118, 1–13, doi:10.1002/jgrb.50366.

57. Zhang, R., S. Song, S. Fomel, **M. K. Sen** and S. Srinivasan, 2013, Time-lapse seismic data registration and inversion for CO2 sequestration study at Cranfield, Geophysics, 78(6), B329-B338.

58. Mandal, B.*, **M. K. Sen**, and V. VijayaRao, 2013, New seismic images of the central Indian suture zone and their tectonic interpretation, Tectonics, 32, doi:10.1002/tect.20055.

59. Tao, Y.*, and **M. K. Sen**, 2013, Seismic interferometry in plane wave domain, *Geophysics*, 78(4), Q35-Q44.

60. Zhang, R.*, **M. K. Sen**, and S. Srinivasan, 2013, Multi-trace basis pursuit inversion with spatial regularization, *Journal of Geophysics and Engineering*, 10, doi:10.1088/1742-2132/10/3/035012.

61. Tao, Y.*, and **M. K. Sen**, R. Zhang, and K. Spikes, 2013, A robust stochastic inversion workflow for time-lapse data: hybrid starting model and double difference inversion, *Journal of Geophysics and Engineering*, 10, doi:10.1088/1742-2132/10/3/035011.

62. Tao, Y.*, and **M. K. Sen**, 2013, Subtracting non-Gaussian noise in reverse time migration, *Geophysical Prospecting*, doi: 10.1111/1365-2478.12016.

63. Yang, L., and **M. K. Sen**, 2013, Time-space domain dispersion-relation-based finite-difference method with arbitrary even-order accuracy for the 2D acoustic wave equation, Journal of Computational Physics, 232(1), 327-345. http://dx.doi.org/j.jcp.2012.08.025.

64. Zhang, R., **M. K. Sen**, and S. Srinivasan, 2013, Pre-stack basis pursuit inversion, Geophysics, VOL. 78, NO. 1 (JANUARY-FEBRUARY 2013); P. R1–R11. [**One of the 20 research articles with the most full-text downloads in January – rank 1]**

65. Tao, Y.*, and **M. K. Sen**, 2013, Frequency domain full waveform inversion with plane wave data, *Geophysics*, VOL. 78, NO. 1 (JANUARY-FEBRUARY 2013); P. R13–R23.

2012

66. Zhang, R., **M. K. Sen**, S. Phan*, and S. Srinivasan, 2012, Stochastic and deterministic seismic inversion for thin bed resolution, *Journal of Geophysics and Engineering*, 9611-618.

67. AlMuhaidib, Abdulaziz*, **M. K. Sen**, and M. Nafi Toksoz, 2012, Integration of geology, rock physics, logs and pre-stack seismic for reservoir porosity estimation, AAPG Bulletin, 96, 1235-1251.

68. Saraswat, P.*, and **M. K. Sen**, 2012, Artifical neural systems based self organizing maps for seismic facies analysis, *Geophysics*, 77(4), O45-O53.

69. Saraswat, P.*, and **M. K. Sen**, 2012, Prestack inversion of angle gathers using a hybrid evolutionary algorithm, *Journal of seismic exploration*, 21, 177-200.

70. Ghosh, R., and **M. K. Sen,** 2012, Predicting subsurface CO_2 movement: from laboratory to field scale, Geophysics, 77(3), M27-M37.

71. Liu, T.*, **M. K. Sen**, T. Hu, and J. D. DeBasabe, 2012, Dispersion analysis of the spectral element method using a triangular mesh, Wave Motion, 49, 4, 474-483.

72. Liu, Yang and **M. K. Sen,** 2012, A hybrid absorbing boundary condition for elastic staggered grid modeling, *Geophysical Prospecting*, DOI: 10.1111/j.1365-2478.2011.01051.x.

73. Tao, L.*, T. Hu, **M. K. Se**n, J. Yang, R. Wang, J. Wei, 2012. A hybrid scheme for seismic modeling based on Galerkin method, Geophysical Journal International, doi: 10.1111/j.1365-246X.2011.05094.x

2011

74. Liu, Yang and **M. K. Sen,** 2011, 3D acoustic wave equation modeling with time-space domain dispersion-relation based staggered-grid finite-difference schemes and hybrid absorbing boundary conditions, *Exploration Geophysics, 42, 176–189.*

75. Tao, Y.*, and **M. K. Sen**, 2011, Seismic inversion for splay fault interpretation in Nankai Trough, Japan, Journal of Geophysics and Engineering, 9,1-11.

76. Liu, Yang and **M. K. Sen,** 2011, Finite-difference modeling with adaptive variable length spatial operators, *Geophysics,*76(4), T79-T89. [**One of the 20 research articles with the most full-text downloads in September 2011 – rank 19**]

77. Sil, S.*, **M. K. Sen**, and B. Gurevich, 2011, Sensitivity analysis of fluid substitution in a porous and fractured medium, Geophysics, 76(3), WA157-166.

78. Liu, Yang and **M. K. Sen,** 2011, Scalar wave equation modeling with time-space domain dispersion-relation based staggered-grid finite-difference schemes, *Bulletin of the Seismological society of America,* 101(1), 141-159.

2010

79. Smith, D.*, **M. K. Sen**, and R. Ferguson, 2010, Data regularization and datuming by conjugate gradients, Journal of Seismic Exploration, 19 (4), 321-347.

80. Porsani, M., P. L. Stoffa, **M. K. Sen**, and Roustam Seif, 2010, Partitioned least squares operator for large scale geophysical inversion, Geophysics, 75(6), R21-R28.

81. Liu, Yang and **M. K. Sen,** 2010, Acoustic VTI modeling with a time-space domain dispersion-relation-based finite-difference-based scheme, *Geophysics*, 75(3), A11-A17. [**One of the 20 research articles with the most full-text downloads in May 2010 – rank 16]**

    [**One of the 20 research articles with the most full-text downloads in June 2010 – rank 6]**

    [**One of the 20 research articles with the most full-text downloads in June 2010 – rank 16]**

82. Srivastava, R. P., and **M. K. Sen**, 2010, Stochastic pre-stack seismic inversion using fractal based priors, *Geophysics*, 75(3), pp. R47-R59. [**One of the 20 research articles with the most full-text downloads in May – rank 3]** [**One of the 20 research articles with the most full-text downloads in June – rank 3]** [**One of the 20 research articles with the most full-text downloads in July – rank 10]**

83. Sil, S.*, R. P. Srivastava, and **M. K. Sen**, 2010, Observation of anisotropy in the multi-component node data from Atlantis field, Gulf of Mexico, *Geophysical Prospecting*, doi: 10.1111/j.1365-2478.2010.00871.x.

84. Liu, Yang and **M. K. Sen,** 2010, **A hybrid scheme for absorbing edge reflections in numerical modeling of wave propagation,** *Geophysics*, 75(2), P A1-A6.

    [**One of the 20 research articles with the most full-text downloads in March 2010 – rank 3]**

    [**One of the 20 research articles with the most full-text downloads in April 2010 – rank 1]**

    [**One of the 20 research articles with the most full-text downloads in May 2010 – rank 5]**

85. DeBasabe, J.* and **M. K. Sen**, 2010, Stability of the high-order finite element methods for acoustic or elastic wave propagation with high-order time stepping, *Geophysical Journal International*, 181, 577-590.

86. Bansal, R.*, and **M. K. Sen**, 2010, Ray-Born inversion for anisotropy parameters, *Geophysical Journal International*, doi: 10.1111/j.1365-246X.2009.04484.x.

2009

87. Liu, Yang and **M. K. Sen,** 2009, A new time-space domain finite-difference method for acoustic wave propagation, *Journal of Computational Physics*, 228, 8779-8806.**[**One of the most

downloaded papers from Oct to Dec 2009 [**rank 7**, **ScienceDirect TOP25 Hottest Articles of JCP**]

88. Liu, Yang and **M. K. Sen,** 2009, Advanced finite-difference methods for seismic modeling , *Geohorizons, December,* 5-16.

89. Srinivasan, S and **M. K. Sen,** 2009, Stochastic modeling of facies distribution in a carbonate reservoir in the Gulf of Mexico, *Geohorizons, December, 54-67.*

90. Srivastava, R. P., and **M. K. Sen**, 2009, Stochastic post-stack seismic inversion using fractal based priors, *Journal of Geophysics and Engineering*, 6, 412-425.

91. Liu, Yang and **M. K. Sen,** 2009, An implicit staggered-grid finite-difference method for seismic modeling, *Geophysical Journal International*, doi: 10.1111/j.1365-246X.2009.04305.x.

92. Sil, S.*, and **M. K. Sen**, 2009, Seismic critical angle anisotropy analysis in tau-p domain, *Geophysics*, 74(4), A53-A57. **[One of the 20 research articles with the most full-text downloads during the month of July 2009]**

93. Vedanti, N., and **M. K. Sen**, 2009, Seismic inversion tracks in-situ combustion: a case study from Balol field, India, *Geophysics*, 74(4), B103-B112. **[One of the 20 research articles with the most full-text downloads during the month of July 2009 and August 2009]**

94. Liu, Yang and **M. K. Sen,** 2009 A practical implicit finite difference method: example from seismic modeling, J*ournal of Geophysics and Engineering*, 6, 231-249.

95. Ma, J.*, **M. K. Sen**, and X. Chen, 2009, Multiple attenuation using inverse data processing in the coupled plane wave domain, *Geophysics*, 74(4), V75-V81.

96. Jin, L., **M. K. Sen**, and P. L. Stoffa, 2009, Fusion based classification method and its application, *Journal of Seismic Exploration*, 18(2), 103-117.

97. DeBabsabe, J.*, and **M. K. Sen**, 2009, New developments in finite element methods of seismic wave propagation simulation, invited paper, special section on seismic modeling, *The Leading Edge*, invited paper, special section on seismic modeling, 28(5), 562-567. **[One of the 10 research articles with the most full-text downloads during the month of May 2009]**

98. **Sen, M. K**. and A. Pal, 2009, A reflectivity method for laterally varying media: homogeneous layers with curved interfaces, *Geophysical Journal International*, 178(2), 792-812.

99. Liu, Yang and **M. K. Sen,** 2009, Numerical modeling of wave equation by truncated high-order finite difference method, *Earthquake Science*, 22, 205-213.

100. Ma, J.*, **M. K. Sen**, and X. Chen, 2009, Multiple attenuation using inverse data processing in the plane wave domain, *Chinese J. of Geophysics* (in Chinese with English abstract), 52(3), 808-816.

101. Hong, T.*, and **M. K. Sen**, 2009, A new MCMC algorithm for seismic waveform inversion and corresponding uncertainty analysis, *Geophysical Journal International*, doi: 10.1111/j.1365 246X.2008.04052.x.

102. Jin, L., P. L. Stoffa , **M. K. Sen**, and R. Seif, 2009, Pilot point parameterization in stochastic inversion for reservoir properties using time-lapse seismic and production data, *Journal of Seismic Exploration*, 18, 1-20.

103. Dutta, U., **M. K. Sen**, N. N. Biswas, and Y. Zang, 2009, Investigation of shallow sedimentary structure of the anchorage basin, Alaska, using simulated annealing inversion of site response data, *Bulletin of the Seismological Society of America,* 99(1), 326-339.

104. Sil, S.*, and **M. K. Sen**, 2009, Azimuthal tau-p analysis in a weak orthorhombic medium, *Journal of Seismic Exploration*, 18, 81-91.

105. DeBabsabe, J.* and **M. K. Sen**, 2009, Comments on a paper "Dispersion analysis of spectral element method for elastic wave propagation," G. Seriani and S. P. Oliveira, *Wave Motion*, 46, 92-93.

2008

106. Jackson, C. S., **M. K. Sen**, G. Huerta, Y. Deng, and K. P. Bowman, 2008, Error reduction and convergence in climate prediction, *Journal of Climate*, Vol. 21, No. 24, 6698–6709.

107. Villargan, A., G. Huerta, C. Jackson, and **M. K. Sen**, 2008, Parameter uncertainty estimation in climate models, *Bayesian Analysis*, **3(4)**, 823-850.

108. Gangopadhyay, A., and **M. K. Sen**, 2008, Seismicity in the northern Gulf of Mexico: A possible mechanism, *Geophysical Journal International*, doi: 10.1111/j.1365-246X.2008.03952.x.

109. Jin, L., P. L. Stoffa, and **M. K. Sen,** 2008, Stochastic inversion for reservoir properties using parallel learning based VFSA and pilot point parameterization, SPE-118818-PP.

110. Filina , Irina Y.*, Donald D. Blankenship, Malte Thoma. Valery V. Lukin, Valery N. Masolov, **M. K. Sen,** 2008, New 3D bathymetry and sediment distribution in Lake Vostok: implications for pre-glacial origin and numerical modeling of internal processes within the lake, *Earth and Planetary Sciences Letters*, doi:10.1016/j.epsl.2008.09.012 .

111. Sil, S.*, and **M. K. Sen**, 2008, Azimuthal tau-p analysis in anisotropic media, *Geophysical Journal International*, doi: 10.1111/j.1365-246X.2008.0382.x.

112. **M. K. Sen** and N. Vedanti**,** 2008, Seismic Inversion tracks in-situ combustion: 4D seismic at the Balol field, India, paper no. SPE-116600-PP, Society of Petroleum Engineers, 8 pages.

113. DeBabsabe, J.*, **M. K. Sen** and M. F. Wheeler, 2008, The Interior Penalty Discontinuous Galerkin Method for Elastic Wave Propagation: Grid Dispersion, Fast Track Paper, *Geophysical Journal International*, 175, 83-93.

114. Jin, L., **M. K. Sen**, P. L. Stoffa, and R. Seif, 2008, Time lapse seismic attributes analysis for water-flooded reservoirs, Journal of Geophysics and Engineering, 5, 210-220.

115. Bansal, R.*, and **M. K. Sen**, 2008, Finite difference modeling in anisotropic media: a shear wave splitting study, *Geophysical Prospecting*, 56, 293-312.

116. van der Neut, J.*, **M. K. Sen**, and K. Wapenaar, 2008, Seismic reflection coefficients of faults at low frequencies: a model study, *Geophysical Prospecting*, 56, 287-292.

117. Sena, A.*, **M. K. Sen** , and P. L. Stoffa, 2008, Modeling of ground penetrating radar data in stratified media using the reflectivity technique, *Journal of Geophysics and Engineering*, 5, 129-146.

118. Wood, W. T., W. Steven Holbrook, **M. K. Sen**, and P. L. Stoffa, 2008, Full waveform inversion of reflection seismic data for ocean temperature profiles, *Geophysical Research Letters*, 35,L040608, doi:10.1029/2007GL032359.

119. Kumar, C.*, **M. K. Sen**, and R. J. Ferguson, 2008, Depth migration anisotropy analysis in the time domain, *Geophysical Prospecting*, 56, 87-94.

2007

120. De Basabe, J. D*, and **M. K. Sen**, 2007, Grid Dispersion and stability criteria of some common finite-element methods for acoustic and elastic wave equations, *Geophysics*, 72(6), T81-T95.

121. **Sen, M. K**., F. D. Lane, and D. J. Foster, 2007, Anomalous reflection amplitudes from fractured reservoirs: failure of AVOA?, *The Leading Edge*, Special Section: Fractures, 26 (9), 1148-1153.

122. Gangopadhyay, A., J. Pulliam, and **M. K. Sen**, 2007, Seismic waveform inversion for crust and upper mantle structure beneath Africa, Geophysical J. International, 170, 1210-1226.

123. Kumar, D.*, **M. K. Sen**, and N. L. Bangs, 2007, Free gas and gas hydrate saturation from multi-component reflection seismic data from Hydrate ridge, *Journal of Geophysical Research*, v. 112, B12306, doi:10.1029/2007JB004993

124. Shaw, R. K., A. Chatterjee*, and **M. K. Sen**, 2007, Use of AVOA analysis to estimate dip of obliquely dipping fractures in hydrocarbon reservoirs, *Journal of Seismic Exploration*, 15(4), 355-366.

2006

125. Klie, H., W. Bangerth, X. Gai, M.F. Wheeler, P.L. Stoffa, **M. K. Sen**, M. Parashar, U. Catalyurek, J. Saltz, T. Kurc, 2006, Models, methods and middleware for grid-enabled multiphysics oil reservoir management, *Engineering with Computers*, Springer Verlag, 22, 349-370.

126. Zhang, X., B. Rutt, U. Catalyurek, T. Kurc, P. L. Stoffa, **M. K. Sen**, and J. Saltz, 2006, Supporting scalable and distributed data subsetting and aggregation in large-scale seismic data analysis, *International Journal of High Performance Computing Applications*, Vol. 20, No. 3, 423-438 (2006),DOI: 10.1177/1094342006067471.

127. Stoffa, P. L., **M. K. Sen**, R. Seifoullaev, R. Pestana, and J. Fokemma, 2006, Plane-wave Depth migration, *Geophysics*, 71(6), S261-S272.

128. Kumar, C.*, **M. K. Sen**, and R. J. Ferguson, 2006, Travel time sensitivity analysis for parameter estimation in TI media, *Journal of Seismic Exploration*, 15(2), 119-132.

129. Sena, A.*, P. L. Stoffa, and **M. K. Sen**, 2006, Split step Fourier migration of GPR data in lossy media, Geophysics, 71(4), K77–K91.

130. Bangerth, W., H. Klie, M. F. Wheeler, P. L. Stoffa, and **M. K. Sen**, 2006, Optimization algorithms for the reservoir oil well placement problem, *Computational Geosciences*, 10(3), 303-319.

131. Bansal, R.*, and **M. K. Sen**, 2006, Two-point ray tracing in anisotropic media, *Journal of Seismic Exploration*, 15(1), 25-44.

132. Shaw, R. K., and **M. K. Sen**, 2006, Use of AVOA data to estimate fluid in a vertically fractured reservoir, *Geophysics*, 71(3), C15-C24.

133. Kumar, D.*, **M. K. Sen**, and N. L. Bangs, 2006, Seismic characteristics of gas hydrates at the Hydrate ridge, *Geophysics: the Leading Edge of Exploration*, Special Issue on Gas Hydrates, 25(5), 610-614.

134. Kumar, D.*, **M. K. Sen**, N. L. Bangs, C. Wang, and I. Pecher, 2006, Seismic Anisotropy at the Hydrate Ridge, *Geophysical Research Letters*, 33, L01306, doi:10.1029/2005GL023945.

135. Varela, O. J.*, C. Torres-Verdin, and **M. K. Sen**, 2006, Enforcing smoothness and assessing uncertainty in non-linear pre-stack seismic waveform inversion, *Geophysical Prospecting*, 54, 239-259.

136. Varela, O. J.*, C. Torres-Verdin, **M. K. Sen**, and I. G. Roy, 2006, Using time-lapse 3D seismic data to detect variations in pore-pressure and fluid saturation due to oil displacement by water: A numerical study based on one-dimensional pre-stack inversion, *Journal of Geophysics and Engineering*, 3, 176-193.

2005

137. Roy, L., **M. K. Sen**, P. L. Stoffa, K. McIntosh, and Y. Nakamura, 2005, Joint inversion of first arrival travel time and gravity data, *Journal of Geophysics and Engineering*, 2, 277-289.

138. Mukherjee, A.*, **M. K. Sen**, and P. L. Stoffa, 2005, Travel time computation and pre-stack time migration in transversely isotropic media, *Journal of Seismic Exploration*, 13(3), 201-226.

139. Kurc, T., U. Catalyurech, Zhang, X., J. Saltz, M. Peszynska, M. Wheeler, A. Sussman, **M. K. Sen**, R. Seifoullaev, P. L. Stoffa, C. Torres-Verdin, 2005, A simulation and data analysis system for large scale, data driven, oil reservoir simulation studies, *Concurrency and Computation: Practice and Experience*, invited paper, 17, 1441-1467.

140. Roy, I. G., **M. K. Sen**, and C. Torres-Verdin, 2005, Full waveform inversion using a distributed system of computers, *Concurrency and Computation: Practice and Experience*, invited paper, 17, 1365-1385.

141. Roy, L., **M. K. Sen**, D. Blankenship, P. L. Stoffa, and T. Richter, 2005, Inversion and uncertainty estimation of gravity data using simulated annealing: An application over Lake Vostok, East Antarctica, *Geophysics*, 70(1), J1-J12.

142. Matossian, V. , V. Bhat, M. Parashar, M. Peszynska, **M. K. Sen**, P. L. Stoffa, and M. F. Wheeler, 2005, Autonomic Oil reservoir optimization on grid, *Concurrency and Computation: Practice and Experience*, invited paper, 17, 1-26.

143. Xia, Y., Z. Yang, P. L. Stoffa, and **M. K. Sen**, 2005, Using different hydrological variables to assess the impact of atmospheric forcing errors on optimization and uncertainty analysis of the CHASM surface model at a cold catchment, *Journal of Geophysical Research*, 110, 1-15.

144. Xia, Y., Z. Yang, P. L. Stoffa, and **M. K. Sen**, 2005, Optimal parameter and uncertainty estimation of a land surface model: sensitivity to parameter ranges and model complexities, *Advances in atmospheric sciences*, 22(1), 142-157.

2004

145. Roy, I,G, **M. K. Sen**, C. Torres-Verdin and O. J. Varela, 2004, Pre-stack inversion of a Gulf of Thailand OBC dataset, *Geophysics*, 69(6), 1470-1477.

146. Xia, Y., **M. K. Sen**, C. Jackson, and P. L. Stoffa. 2004, Multi-dataset study of optimal parameter and uncertainty estimation of a land surface model with Bayesian stochastic inversion and multicriteria method, *Journal of Applied Meteorology*, 43(10), 1477-1497.

147. Ferguson, R., and **M. K. Sen**, 2004, Estimating the elastic parameters of anisotropic media using a joint inversion of P-wave and S-wave travel time errors, *Geophysical Prospecting*, 52, 547-557.

148. Shaw, R. K., and **M. K. Sen**, 2004, Born Integral, stationary phase, and linearized reflection coefficients in anisotropic media, *Geophysical Journal International*, 158, 225-238.

149. Jackson, C., **M. K. Sen**, and P. L. Stoffa. 2004, An efficient stochastic Bayesian approach to optimal parameter and uncertainty estimation within climate system models, *Journal of Climate*, Vol. 17, No. 14, 2828-2841.

150. Xia,Y. P.L. Stoffa, C. Jackson, and **M. K.Sen**, 2004, Effect of forcing data errors on calibration and uncertainty estimates of the CHASM model: a multi-dataset study, *World Scientific Series on Meteorology of East Asia*, Vol.3, 340-355, World Scientific Publishing Co. Pte Ltd., Singapore, 2004

151. Xia,Y Z-Liang Yang, P. L. Stoffa, and **M. K. Sen**, 2004, Impact of data lengths on optimal parameter and uncertainty estimation of a land surface model, *Journal of Geophysical Research-Atmospheres*, 109, D07101.

152. Tsoflias, G.*, J. P. Van Gestel*, P. L. Stoffa, and **M. K. Sen**, 2004, Vertical fracture detection by exploiting the polarization properties of ground penetrating radar data, *Geophysics*, 69 (3), 803-810.

153. Kumar, D.*, **M. K. Sen**, and R. Fergusson, 2004, Travel time and computation and pre-stack depth migration in tilted TI media, *Geophysics*, 69(11), 37-44.

2003

154. Jackson, C., Y. Xia, **M. K. Sen**, and P. L. Stoffa.2003, Optimal parameter estimation and uncertainty analysis of a land surface model" A case study using data from Cabauw, Netherlands, *Journal of Geophysical Research-Atmospheres*, 108, D18.

155. Ahmed, I.*, P. L. Stoffa, and **M. K. Sen**, 2003, Residual migration velocity analysis in offset-depth domain, J Seismic Exploration, *Journal of Seismic Exploration*, 12:237-257.

156. **Sen. M. K**., and I. G. Roy, 2003, Computation of differntial seismograms and iteration adaptive regularization in pre-stack seismic waveform inversion, *Geophysics*, 68 (6), 2026-2039. **[One of the 10 research articles with the most full-text downloads during the month of May 2009]**

157. Bhattacharya, B. B., Shalivahan, **M. K. Sen**, 2003, Use of VFSA for resolution and uncertainty analyis in 1D DC resistivity and IP inversion, *Geophysical Prospecting*, 51, 393-408.

158. **Sen. M. K**., and A. Mukherjee*, 2003, τ-p analysis in transversely isotropic media, *Geophysical Journal International*, 154, 647-658.

159. Pecher, I. A., W. S. Holbrook, **M. K. Sen**, D. Lizarralde, W. T. Wood, D. R. Hutchinson, W. P. Dillon, H. Hoskins, and R. A. Stephen, 2003, Seismic anisotropy in gas-hydrate and gas-bearing sediments on the Blake Ridge–results from a walkaway vertical seismic profile, *Geophysical Research Letters*, 30 (14), 1733-1736.

2002

160. Jiao, J., P. L. Stoffa, **M. K. Sen**, and R. Seifoullaev, 2002, Residual migration velocity analysis in the plane-wave domain and its application, *Geophysics*, 67(4), 1258-1269.

2001

161. Pulliam, J., **M. K. Sen**, C. Frohlich, and S. Grand, 2001, Determination of crustal structure by inversion of shear-coupled PL waves using global optimization, DTRA meeting in Jackson Hole.

2000

162. Porsani, M. J., P. L. Stoffa, **M. K. Sen**, and R. K. Chunduru, 2000, Fitness functions, genetic algorithms and hybrid optimization in seismic waveform inversion, *Journal of Seismic Exploration*, 9(2), 143-164.

163. McIntosh, K. D., and **M. K. Sen**, 2000, Geophysical Evidence for dewatering and deformation process in the ODP Leg 170 area offshore Costa Rica, *Earth and Planetary Science Letters*, 178, 125-138.

164. Liu, F.*, **M. K. Sen**, and P. L. Stoffa, 2000, Dip selective 2-D multiple attenuation operators in plane wave domain, *Geophysics*, 65(11), 264-274.

165. Xia, G.*, **M. K. Sen**, and P. L. Stoffa, 2000, Mapping of elastic properties of gas hydrates in the Carolina Trough by waveform inversion, *Geophysics*, 65(3), 735-744.

166. Calderón-Macías, C.*, **M. K. Sen**, and P. L. Stoffa, 2000, Neural Networks for Parameter Estimation in Geophysics, *Geophysical Prospecting*, 48, 21-47.

1999

167. Pestana, J., P. L. Stoffa, and **M. K. Sen**, 1999, Free surface multiple attenuation in the plane wave domain by match filtering, *Journal of Seismic Exploration*, 8, 167-179.

168. **Sen, M. K**., F. Liu*, P. L. Stoffa, and J. T. Fokkema, 1998, A unified treatment of free surface multiple elimination algorithms, *Journal of Seismic Exploration*, 7, 129-143.

169. Sen, V.*, **M. K. Sen** and P. L. Stoffa, 1999, PVM based 3-D Kirchhoff migration using dynamically computed traveltimes: An application in seismic data processing, *Parallel Computing*, 25, 231-248.

1998

170. **Sen, M. K**., P. L. Stoffa, and G. Xia, 1998, AVO and Seismic Waveform Inversion in the Plane Wave Domain: Application o Gas Hydrate Data, GEOHORIZONS, Special Bulletin of the Society of Petroleum Geophysicists, 4-12.

171. Pulliam, J. and **M. K. Sen**, 1998, Anisotropy in the core-mantle transition zone may indicate chemical heterogeneity, *Geophysical Journal International*, 135, 113-128.

172. Xia, G.*, **M. K. Sen**, and P. L. Stoffa, 1998, 1D elastic waveform inversion: A divide and conquer approach, *Geophysics*, 63(5), 1670-1684.

173. Calderón-Macías, C.*, **M. K. Sen**, and P. L. Stoffa, 1998, Automatic NMO correction and velocity estimation by a feedforward neural network, *Geophysics*, 63(5), 1696-1707.

174. Varela, C., P. L. Stoffa, and **M. K. Sen**, 1998, Background velocity estimation using nonlinear optimization for reflection tomography and migration misfit, Geophysical Prospecting, 46(1), 51-78.

1997

175. Chunduru, R.K.*, **M. K. Sen**, and P.L. Stoffa, 1997, Hybrid optimization methods for geophysical inversion, *Geophysics*, 62(4), 1196-1207.

176. Calderón-Macías, C.*, **M. K. Sen**, and P. L. Stoffa, 1997, Hopfield Neural Network and Mean Field Annealing in seismic deconvolution and multiple elimination, *Geophysics*, 62(3), 992-1002.

177. Matzel, E.*, **M. K. Sen**, and S. P. Grand, 1996, Evidence for anisotropy in the deep mantle beneath Alaska, Geophysical Research Letters, 23(18), 2417-2420.

1996

178. Zhao, L. S., **M. K. Sen**, P. L. Stoffa, and C. Frohlich, 1996, Application of very fast simulated annealing to the determination of the crustal structure beneath Tibet, *Geophysical Journal International*, 125, 355-370.

179. Akbar, F. E.*, **M. K. Sen**, and P. L. Stoffa, 1996, Prestack plane-wave Kirchhoff migration in laterally varying media, *Geophysics*, 61(4), 1068-1079.

180. **Sen, M. K.,** and P. L. Stoffa, 1996, Bayesian inference, Gibbs' sampler and uncertainty estimation in geophysical inversion, Geophysical Prospecting, 44, 313-350.

181. Jervis, M.*, **M. K. Sen**, and P. L. Stoffa, 1996, Prestack velocity estimation by nonlinear optimization, *Geophysics*, 61, 138-150.

182. Chunduru, R. K.*, **M. K. Sen**, and P. L. Stoffa, 1996, 2-D resistivity inversion by spline parameterization and simulated annealing, *Geophysics*, 61(1), 151-161.

1995

183. Chunduru, R. K.*, **M. K. Sen**, P. L. Stoffa, and R. Nagendra, 1995, Non-linear inversion of resistivity profiling data for some geometrical bodies, Geophysical Prospecting, 43, 979-1003.

184. **Sen, M. K**., 1995, Shallow crustal structure and modeling of some aftershocks of the Loma Prieta earthquake, USGS Open File Report.

185. Wood, W. T., and **M. K. Sen**, 1995, Non-linear inversion of seismic data by successive approximations of model parameter probability distribution functions, in Full Field Inversion Methods in Ocean and Seismo-Acoustics (eds.) O. Diachok, A. Caiti, P. Gersoft and H. Schmidt, 147-152.

186. Lindwall, D. A., **M. K. Sen**, and J. F. Gettrust, 1995, Detection of high shear wave velocities in marine sediment by inversion with simulated annealing, in Full Field Inversion Methods in Ocean and Seismo-Acoustics (eds.) O. Diachok, A. Caiti, P. Gersoft and H. Schmidt, 383-388.

187. **Sen, M. K**., A. Dattagupta, P. L. Stoffa, L. Lake, and G. Pope, 1995, Stochastic reservoir modeling by simulated annealing and genetic algorithms, SPE Formation Evaluation, March, 49-55.

1993

188. Jervis, M.*, P. L. Stoffa, and **M. K. Sen**, 1993, 2-D migration velocity estimation using a genetic algorithm, Geophysical Research Letters, 20(14), 1495-1498.

189. **Sen, M. K**., B. B. Bhattacharya, and P. L. Stoffa, 1993, Nonlinear inversion of resistivity sounding data, *Geophysics*, 58, 496-507.

1992

190. Stoffa, P. L. and **M. K. Sen**, 1992, Seismic Waveform Inversion Using Global Optimization, *Journal of Seismic Exploration*, 1(1), 9-27.

191. **Sen, M. K**. and P. L. Stoffa, 1992, Rapid sampling of model space using genetic algorithms: Examples from seismic waveform inversion, *Geophysical Journal International*, 108(1), 281-292.

192. **Sen, M. K**., and P. L. Stoffa, 1992, Genetic inversion of AVO, *Geophysics, The Leading Edge of Exploration*, 11(1), 27-29.

1991

193. Stoffa, P. L. and **M. K. Sen**, 1991, Nonlinear multiparameter optimization using genetic algorithms: Inversion of plane wave seismograms, *Geophysics*, 56(11), 1794-1810.

194. **Sen, M. K**., and P. L. Stoffa, 1991, Non-linear one-dimensional seismic waveform inversion using simulated annealing, *Geophysics*, 56(10), 1624-1638.

195. **Sen, M. K.,** and L. N. Frazer, 1991, Multifold phase space path integral synthetic seismograms, Geophys. J. Int., 104, 479-487.

196. Somerville P. G., J. P. Mclaren, **M. K. Sen**, and D. V. Helmberger, 1991, Tthe influence of site conditions on the spatial incoherence of ground motions, Structural Safety,10 (1-3): 1-13.

197. Somerville, P. G., **M. K. Sen**, and B. P. Cohee, 1991, Simulation of strong ground motions recorded during the 1985 Michoacan, Mexico and Valpariso, Chile earthquakes, Bull. Seism. Soc. Am., 81(1), 1-28.

198. **Sen, M. K**., 1991, Modeling of wave propagation in northern Los Angeles Basin, Bull. Seism. Soc. Am., 81(3), 751-768.

1990

199. **Sen, M. K.,** 1990, Deep structural complexity and site response in Los Angeles Basin, Proceed. 4th U.S. Natl. Conf. Earthq. Eng., May 20-24, Palm Springs, CA, II, 545-554.

200. Tajima, F., and **M. K. Sen**, 1990, Implications from the aftershocks of the Loma Prieta earthquake, Geophysical Research Letters, 17(9), 1421-1424.

1989-1981

201. Somerville, P. G., B. P. Cohee, and **M. K. Sen**, 1989, Estimates of strong ground motions in the Seattle-Portland region from hypothesized magnitude 8 Cascadia subduction earthquakes, Proceedings of Conference XLVIII: 3rd annual workshop on earthquake hazards in the Puget Sound, Portland area, Portland, Oregon, Mar. 28-30, 50-61.

202. **Sen, M. K**., L. N. Frazer, N. R. Chapman, and S. Mallick, 1988, Analysis of multipath sound propagation in the ocean, J. Acoust. Soc. Am., 83(2), 588-597.

203. **Sen, M. K**., and L. N. Frazer, 1987, Reflection seismograms using multifold path integrals, Part II, Computations, Geophysical J. Royal Astr. Soc., 88, 647-671.

204. Frazer, L. N., and **M. K. Sen**, 1985, Kirchhoff-Helmholtz reflection seismograms in a laterally variable multi-layered elastic medium, Part I, Theory, Geophysical J. Royal Astr. Soc., 80, 121-147.

205. **Sen, M. K**., and L. N. Frazer, 1985, Kirchhoff-Helmholtz reflection seismograms in a laterally variable multi-layered elastic medium, Part II, Computation, Geophysical J. Royal Astr. Soc., 82, 415-437.

206. Bhattacharya, B. B., and **M. K. Sen**, 1981, Depth of investigation of co-linear electrode arrays over homogeneous, anisotropic half space in direct current methods, *Geophysics*, 46(5), 767-778.

Expanded Abstracts:

2017

Alulaiw, B., and M. K. Sen, 2017, Estimation of pore porosity and fracture parameters from 3D seismic data by Born inversion. SEG Technical Program Expanded Abstracts 2017: 3277–3281, doi.org/10.1190/segam2017-17734621.1.

Barone, A., and M. K. Sen, 2017, An improved classification method that combines feature selection with nonlinear Bayesian classification and regression: A case study on pore-fluid prediction. SEG Technical Program Expanded Abstracts 2017, 3062-3066., doi.org/10.1190/segam2017-17790222.1.

Barone, A., and M. K. Sen, 2017, 2017, A novel method for developing hybrid Born-Rytov AVO approximations. SEG Technical Program Expanded Abstracts 2017, 493-497, doi.org/10.1190/segam2017-17795218.1.

Biswas, R., and M. K. Sen, 2017, 2D Full-Waveform Inversion and Uncertainty Estimation using the Reversible Jump Hamiltonian Monte Carlo. SEG Technical Program Expanded Abstracts, 1280–1285, doi.org/10.1190/segam2017-17680416.1.

Chauhan, M. S., M. Fedi, and M. K. Sen, 2017, Ambiguity for inversion of scaling function: A comparison with gravity inversion. SEG Technical Program Expanded Abstracts 2017, 1729-1733, doi.org/10.1190/segam2017-17788175.1.

Datta, D. Jaysaval, P., M. K. Sen, and A. Arnulf, 2017, Fast Full Waveform Inversion using a Schur-complement based frequency-domain finite- difference modeling. SEG Technical Program Expanded Abstracts 2017, 1643-1647, doi.org/10.1190/segam2017-17678493.1.

Datta, D., M. K. Sen, Scott Morton, and Faqi Liu, 2017, Global 3D acoustic Full Waveform Inversion using sparse model parameterization. SEG Technical Program Expanded Abstracts 2017, 1599-1603, doi.org/10.1190/segam2017-17677853.1.

Jaysaval, P. M. K., Sen, A. Arnulf, and B. Denel, 2017, Fast 2.5D controlled-source electromagnetic inversion using a Schur complement based frequency-domain finite-difference modeling. SEG Technical Program Expanded Abstracts 2017, 1121-1125, doi.org/10.1190/segam2017-17468148.1.

Kumar, D., Z. Zhao, D. Foster, and M. K. Sen, 2017, Frequency-dependent AVO analysis based on scattering series. SEG Technical Program Expanded Abstracts 2017, 534-538, doi.org/10.1190/segam2017-17677300.1.

Liu, H., M. K. Sen, and K. T. Spikes, 2017, Azimuthal seismic scattering analysis of fractures: SEG Technical Program Expanded Abstracts, 3249–3254, doi: 10.1190/segam2017-17789554.1.

Mishra, P,, S. Nath, G. Fasshauer, and M. K. Sen, 2017, Frequency-domain meshless solver for acoustic wave equation using a stable radial basis-finite difference (RBF-FD) algorithm with hybrid kernels. SEG Technical Program Expanded Abstracts 2017, 4022-4027, doi.org/10.1190/segam2017-17494511.1.

Vamaraju, J., M. K. Sen, M. F. Wheeler, and J.De Basabe, 2017, A hybrid-Galerkin finite-element method for seismic wave propagation in fractured media. SEG Technical Program Expanded Abstracts 2017, 4074-4079, doi.org/10.1190/segam2017-17683820.1.

Vamaraju, J., M. K. Sen, J. De Basabe, and M. Wheeler, 2017, A comparison of continuous, discontinuous, and enriched Galerkin finite-element methods for elastic wave-propagation simulation. SEG Technical Program Expanded Abstracts 2017, 4063-4067, doi.org/10.1190/segam2017-17658225.1.

Zhao, Z., and M. K. Sen, 2017, Fast double plane wave full-waveform inversion using the scattering-integral method in frequency domain. SEG Technical Program Expanded Abstracts 2017, 1324-1329, doi.org/10.1190/segam2017-17790005.1.

Liu, H., **M. K. Sen**, and K. Spikes, 2017, Effect of incident angle on wave scattering in fractured media: a numerical investigation, EAGE Expanded abstracts.

Chauhan, M. S., M. Fedi, and **M. K. Sen**, 2017, Gravity inversion by the MHODE method: application to a salt dome case, EAGE Expanded abstracts.

Alulaiw, B., and **M. K.** Datta, D. Jaysaval, P., M. K. Sen, and A. Arnulf, 2017, Fast Full Waveform Inversion using a Schur-complement based frequency-domain finite- difference modeling. SEG Technical Program Expanded Abstracts 2017, 1643-1647, doi.org/10.1190/segam2017-17678493.1.

Datta, D., M. K. Sen, Scott Morton, and Faqi Liu, 2017, Global 3D acoustic Full Waveform Inversion using sparse model parameterization. SEG Technical Program Expanded Abstracts 2017, 1599-1603, doi.org/10.1190/segam2017-17677853.1.

Barone A., and **M. K. Sen**, 2017, An Improved Classification Method that Combines Feature Selection with Nonlinear Bayesian Classification and Regression: A Case Study on Pore Fluid Prediction, SEG Expanded abstracts.

Barone A., and **M. K. Sen**, 2017, A Novel Method for Developing Hybrid Born-Rytov AVO Approximations, SEG Expanded abstracts.

Biswas, R., and **M. K. Sen**, 2017, 2D Full Waveform Inversion and Uncertainty Estimation using the Reversible Jump Hamiltonian monte Carlo , SEG Expanded abstracts.

Datta, D., **M. K. Sen**, F. Liu, and S. Morton, 2017, Global 3D acoustic FWI using sparse model parameterization, SEG Expanded abstracts.

Datta, D., P. Jayasaval, **M. K. Sen**, and A. Arnulf, 2017, Fast Full Waveform Inversion using a Schur complement based frequency-domain finite-difference modeling, SEG Expanded abstracts.

Kumar, D., Z. Zhao, D. J. Foster, and **M. K. Sen**, 2017, Frequency dependent AVO analysis based on scattering series, SEG Expanded abstracts.

Liu, H., **M. K. Sen**, and K. T. Spikes, 2017, Azimuthal seismic scattering analysis of fractures, SEG Expanded abstracts.

Chauhan, M. S. , M. Fedi, and **M. K. Sen**, 2017, Ambiguity for inversion of scaling function: a comparison with gravity inversion, SEG Expanded abstracts.

Mishra, P. K., S. K. Nath, G. Fasshauer, and **M. K. Sen**, 2017, Frequency-domain meshless solver for acoustic wave equation using a stable radial basis-finite difference (RBF-FD) algorithm with hybrid kernels, SEG Expanded abstracts.

Jayasaval, P., **M. K. Sen**, and A. Arnulf, 2017, Fast 2.5D controlled-source electromagnetic inversion using a Schur complement based frequency-domain finite-difference modeling, SEG Expanded abstracts.

Jayasaval, P., D. Datta, **M. K. Sen**, and A. Arnulf, 2017, A Schur complement based fast 2D finite-difference modeling of acoustic wavefield in the frequency domain , SEG Expanded abstracts.

Vamaraju, J., **M. K. Sen**, J. DeBasabe and M. F. Wheeler, 2017, A comparison of continuous, discontinuous and enriched Galerkin finite element methods for elastic wave propagation simulation, SEG Expanded abstracts.

Vamaraju, J., **M. K. Sen**, J. DeBasabe and M. F. Wheeler, 2017, A hybrid Galerkin finite element method for seismic wave propagation in fractured media

Zhao, Z. and **M. K. Sen**, 2017, Fast Double Plane Wave FWI using the Scattering Integral Method in Frequency Domain

2016

Biswas, S., and **M. K. Sen**, 2016, From acoustic FWI to elastic pre-stack waveform inversion, SEG expanded abstracts, 1216-1220.

Datta, D., **M. K. Sen**, F. Liu, and S. Morton, 2016, Salt model building by shape based parameterization and global FWI, SEG expanded abstracts, 1069-1073.

Liu, H., **M. K. Sen**, and K. Spikes, 2016, Numerical modeling of seismic wave propagation through fractures with non-uniform height and density in 3D, SEG expanded abstracts, 3876-3880.

Rekapalli, R., R. Tiwari, and **M. K. Sen**, 2016, Fault identification by diffraction separation from seismic reflection seismic data by using time slice SSA based algorithm, SEG expanded abstracts, 3920-3924.

Ren., Q., **M. K. Sen**, M. Nagirahi, S. Srinivasan, and K. Spikes, 2016, Geostatistics guided seismic inversion of 3D seismic data in VTI media, EAGE Expanded abstracts.

Zhao, Z., and **M. K. Sen**, 2016, Double plane wave least squares migration using an approximate Hessian, EAGE Expanded abstracts.

2015

DeBasabe, J., and **M. K. Sen**, M. Wheeler, 2015, Simulation of fracture interface waves using the discontinuous Galerkin method , SEG Expanded abstracts.

Zhao, Z., **M. K. Sen** , and P. L. Stoffa, 2015, Double plane wave least squares reverse time migration, SEG Expanded abstracts.

D. Datta, **M. K. Sen**, M. Ojha, and K. Sain, 2015, Effect of density on acoustic full waveform inversion over hydrate bearing zone offshore India, SEG Expanded abstracts.

B. Aluliaw, and M. K. Sen, 2015, AVA using spherical wave reflection coefficient: application to Cana field, SEG Expanded abstracts.

Zhao, Z., **M. K. Sen** , and P. L. Stoffa, 2015, Using reciprocity for double plane wave dataset and imaging, SEG Expanded abstracts.

Zhao, Z., **M. K. Sen** , and P. L. Stoffa, 2015, Plane wave reverse time migration in VTI media using Green's functions, SEG Expanded abstracts.

Rajesh, R., R. K. Tiwari, **M. K. Sen** , and N. Vedanti, 2015, De-noising of 3D seismic data using multi-channel singular spectrum based time slice and horizon processing , SEG Expanded abstracts.

Aluliaw, B., and **M. K. Sen**, 2015, Pre-stack seismic inversion by quantum annealing: application to Cana field, SEG Expanded abstracts.

Barone, A., and **M. K. Sen**, 2015, Comparison of HTI and orthorhombic methods for characterizing fracrture density and fracture azimuth from 3D seismic data, SEG Expanded abstracts.

Barone, A., and **M. K. Sen**, 2015, Estimation of fluid factor and fracture weakness from 3D seismic data in HTI media: A case study from Hayensville shale, SEG Expanded abstracts.

Biswas, R., and **M. K. Sen**, 2015, Pre-stack trans-dimensional inversion, SEG Expanded abstracts.

M. K. Sen, P. L. Stoffa, and R. Seif, 2015, Accurate 3D seismic wavefield simuation in anisotropic media: A massively parallel approach, EAGE Expanded abstracts.

2014

DeBasabe, J., and **M. K. Sen**, 2014, A comparison of monolithic methods for elastic wave propagation in media with a fluid-solid interface, SEG Expanded abstracts.

Ghosh, R., **M. K. Sen**, and N. Vedanti, 2014, Rock physics modeling of CO2 movement in Sleipner field north sea, SEG Expanded abstracts.

Biswas, R., and **M. K. Sen**, 2014, Regularization weight estimation in basis pursuit inversion using a Bayesian framework, SEG Expanded abstracts.

Zhao, Z., P. L. Stoffa, and **M. K. Sen**, 2014, Double plane wave reverse time migration in time domain, SEG Expanded abstracts.

Zhao, Z., **M. K. Sen** , and P. L. Stoffa, 2014, Double plane wave reverse time migration in frequency domain, SEG Expanded abstracts.

2013

M., Alhussain, and **M. K. Sen**, 2013, Quantitative estimation of fracture parameters after removing anisotropic overburden effects, SEG Expanded abstracts.

L.Behera and **M. K. Sen**, 2013, Tomographic imaging of sub-basalt Mesozoic sediments for hydrocarbon potential in Deccan volcanic province, India, SEG Expanded abstracts.

N. Satyavani, **M. K. Sen**, M. Ojha, and K. Sain, 2013, Azimuthal anisotropy in OBS data from Mahanadi basin, India, SEG Expanded abstracts.

J. Xue, **M. K. Sen**, and R. Tatham, 2013, Characterization of a saturated, fractured, porous rock and estimation of its fluid factor, SEG Expanded abstracts.

R. Zhang, X. Song, S. Fomel, S. Srinivasan, and , **M. K. Sen**, 2013, Time lapse registration and inversion for CO2 sequestration in Cranfield Misssissippi, SEG Expanded abstracts.

Xue, Y., L. Jin, and **M. K. Sen**, 2013, Application of principal component analysis to simultaneous seismic inversion, EAGE meeting.

2012

Alhussain, M., and **M. K. Sen**, 2012, Removing anisotropic overburden effect for reliable reservoir fracture characterization, SEG Technical Program Expanded Abstracts 2012: 1-5.

Tao, Y., and **M. K. Sen**, 2012, Comparison of different scaling methods for receiver wavefield for reverse time migration, SEG expanded abstracts.

Zhang, R., **M. K. Sen**, and S. Srinivasan, 2012, Pre-stack basis pursuit inversion, SEG expanded abstracts.

R. Ghosh, Zhang, R., **M. K. Sen**, and S. Srinivasan, 2012, Monitoring CO2 movement by interpreting time-lapse seismic data using a rock physics model from Tuscaloosa, Mississippi, SEG expanded abstracts.

L. Tao, J. DeBasabe, L.Lin, T. Hu, **M. K. Sen**, and X. Wei, 2012, Grid Dispersion and stability criteria for spectral element methods with triangular meshes, SEG expanded abstracts.

Zhang, R., M. K. Sen, and S. Srinivasan, 2012, Basis pursuit inversion of pre-stack seismic data, EAGE conference, Copenhagen, Denmark.

T. Liu, J. D. DeBasabe, and M. K. Sen, 2012, Grid dispersion analysis of triangular grid spectral elements, Copenhagen, Denmark.

2011

Ghosh, R., and M. K. Sen, 2011, A frequency-dependent fractured poro-elastic effective medium modeling, First international workshop in Rock Physics, Denver, Colorado, USA.

Alhussain, M., Spikes, K., and **M. K. Sen**, 2011, Sensitivity study of fracture parameters in a carbonate oil reservoir, September, SEG San Antonio, USA.

DeBasabe, J., **M. K. Sen**, and M. F. Wheeler, 2011, Seismic wave propagation in fractured media: a discontinuous Galerkin approach, September, SEG San Antonio, USA.

Deng, Z., **M. K. Sen,** U. Wang, X. Bai, and Y. Xue, 2011, Pre-stack PP and PS joint inversion in the same PP time scale, September, SEG San Antonio, USA.

Joy, C, T. Vanorio, and **M. K. Sen,** 2011, A rock physics experiment to differentiate pressure effects and chemical effects on the elastic properties of lower Tuscaloosa sandstone in Cranfield, Mississippi, September, SEG San Antonio, USA.

Phan, S., and **M. K. Sen,** 2011, Reservoir evaluation for CO2 sequestration at Dickman Field, Kansas, SEG annual meeting, September, SEG San Antonio, USA.

Saraswat, P., and **M. K. Sen,** 2011, Artificial immune based self organizing maps for seismic facies analysis, SEG annual meeting, September, SEG San Antonio, USA.

Xue. Y., **M. K. Sen,** and D. Zhiwen, 2011, A mew stochastic inference method for inversion of pre-stack data , September, SEG San Antonio, USA.

Liu, Y., and **M. K. Sen,** 2011, Finite difference modeling with variable length spatial operators and time steps, SEG annual meeting, September, SEG San Antonio, USA.

Liu, Y., and **M. K. Sen,** 2011, Finite difference modeling with variable length spatial operators and time steps, SEG annual meeting, September, SEG San Antonio, USA.

Tao, Y., K. Spikes, and **M. K. Sen,** 2011, Stochastic seismic inversion using both low and high frequency fractal priors , September, SEG San Antonio, USA.

Zhang, R., **M. K. Sen,** and S. Srinivasan, 2011, CO2 pre-injected reservoir characterization in Cranfield using basis pursuit inversion, September, SEG San Antonio, USA.

Sen, M. K., 2011, Some practical aspects of full waveform modeling, invited paper, SEG summer research workshop, Quebec city, Canada.

Y. Xue and **M. K. Sen**, 2011, A new MCMC method for pre-stack seismic inversion, Quebec city, Canada.

S. Phan and **M. K. Sen**, 2011, Stochastic inversion for pre-injection reservoir characterization at Dickman field, Quebec city, Canada.

Liu, Y., and **M. K. Sen,** 2011, Time-space domain finite-difference method with arbitrary even-order accuracy for the 2D acoustic wave equation, June, EAGE Vienna.

2010

Deng, Z., U. Wang, **M. K. Sen,** Y. He, K. Li, and X. Bai, 2010, A practical approach to mode-converted shear wave velocity analysis from 3C data, SEG annual meeting, October, Denver, USA.

Ye, F., R. H. Tatham, and **M. K. Sen,** , 2010, Anticipated Seismic Responses of the Bakken Formation, East Williston Basin, North Dakota, SEG annual meeting, October, Denver, USA.

Ma, J., **M. K. Sen,** and X. Chen, 2010, OBC Multiple Attenuation Technique Using SRME Theory, North Dakota, SEG annual meeting, October, Denver, USA.

Saraswat, P., and **M. K. Sen,** 2010, Simultaneous stochastic inversion of prestack seismic data using Hybrid Evolutionary Algorithm, SEG annual meeting, October, Denver, USA.

Sil, S., **M. K. Sen,** and B. Gurevich, 2010, On fluid substitution in porous and aligned fractured medium, SEG annual meeting, October, Denver, USA.

Liu, Y., and **M. K. Sen,** 2010, A hybrid absorbing boundary condition for elastic wave modeling with staggered-grid finite difference, SEG annual meeting, October, Denver, USA.

Liu, Y., and **M. K. Sen,** 2010, Finite-difference modeling with adaptive variable length spatial operators, SEG annual meeting, October, Denver, USA.

Tao, Y., **M. K. Sen,** N. Bangs, and T. Hess, 2010, Seismic Inversion for splay fault interpretation in the Nankai Trough accretionary wedge, Japan, SEG annual meeting, October, Denver, USA.

Phan, S., and **M. K. Sen,** 2010, Porosity estimation from seismic data at Dickman Field, Kansas for carbon sequestration, SEG annual meeting, October, Denver, USA.

Srinivasan., and **M. K. Sen,** 2010, Mapping of diagenesis in a carbonate reservoir in the Gulf of Mexico by a stochastic data integration technique, SEG annual meeting, October, Denver, USA.

Sen, M. K., 2010, Inverse problem of reflection seismic data, IEEE conference on Geosciences and remote sensing (IGARSS 2010), Honolulu, HI, July 2010.

Sil, S, **M. K. Sen** and T. M. Smith, 2010, Fluid substitution in an orthorhombic medium, International workshop on seismic anisotropy, Perth, Australia.

Sen, M. K., P. S. Routh, and R. P. Srivastava, 2010, Use of priors and hyper-priors in stochastic inversion for reservoir parameters, SPG bi-annual meeting, Hyderabad, India.

Srinivasan, S., and M. K. Sen, 2010, Modeling diagenetic pathways constrained to seismic impedance data in a carbonate reservoir, SPG bi-annual meeting, Hyderabad, India.

Liu, Y., and M. K. Sen, 2010, 3D acoustic wave modeling with a time-space domain dispersion-relation based finite-difference Scheme, SPG bi-annual meeting, Hyderabad, India.

Saraswat, P**.,** Srivastava , R. P. and **M. K. Sen,** 2010, Particle Swarm and Differential Evolution: Optimization for stochastic inversion of post-stack seismic data, SPG bi-annual meeting, Hyderabad, India.

2009

Sen, M K., 2009, Use of marine multi-component seismic data in the estimation of elastic properties of shallow sediments, Invited paper to be presented at the workshop on 'multi-component seismic data' at the SEG annual meeting, Houston, TX..

DeBasabe, J., and **M. K. Sen,** 2009, Continuous and discontinuous finite element methods for elastic wave propagation, SEG annual meeting, Houston, TX.

Miah, K. H, and **M. K. Sen,** 2009, Grid dispersion minimization in Green's tensor used in Scattering Integral inversion method, SEG annual meeting, Houston, TX.

Ma, J, **M. K. Sen,** and X. Chen, 2009, Free surface multiple attenuation using inverse data processing in the coupled plane-wave domain: field data example, SEG annual meeting, Houston, TX.

Sil, S., R. P. Srivastava, and **M. K. Sen,** 2009, Observation of azimuthal anisotropy on multi-component Atlantis node seismic data, SEG annual meeting, Houston, TX.

Srivastava , R. P. and **M. K. Sen,** 2009, Stochastic pre-stack seismic inversion using fractal prior, SEG annual meeting, Houston, TX.

Liu, Y. and **M. K. Sen,** 2009, Acoustic VTI modeling by a new time-space domain high-order finite difference method, SEG annual meeting, Houston, TX.

Sena, A, **M. K. Sen,** P. L. Stoffa, R. Seif and L. Jin, 2009, Joint inversion of time-lapse seismic and production data using VFSA with Local Thermal Regulation and pilot point parameterizatios, SEG annual meeting, Houston, TX.

Sena, A, P. L. Stoffa, **M. K. Sen,** and R. Seif, 2009, Assessing the value of time-lapse seismic data in joint inversion for reservoir parameter estimation in an oil reservoir subjected to water flooding recovery: a synthetic example, SEG annual meeting, Houston, TX.

A. Ciucivara, and, **M. K. Sen,** 2009, A reflectivity method for laterally varying media, SEG annual meeting, Houston, TX.

Rajput,S., **M. K. Sen,** and S. Chopra, 2009, Seismic indicators of gas hydrates and free gas, SEG annual meeting, Houston, TX.

Smith, D. R., **M.K. Sen** and R.J. Ferguson, 2009, Optimized Regularization and Redatuming by Conjugate Gradients, EAGE meeting, Amsterdam, The Netherlands.

Yang Liu and **M. K. Sen,** 2009, 2D acoustic wave equation modeling with a new high-accuracy time-space domain finite-difference stencil, EAGE meeting, Amsterdam, The Netherlands.

Yang Liu and **M. K. Sen**, 2009, A new time-space domain high-order finite-difference method for acoustic wave equation, SEG Beijing meeting, Beijing, China.

2008

M. K. Sen and S. Srinivasan 2008, Reservoir modeling accounting for scale and precision of seismic data: application to a carbonate reservoir, *Invited paper:* Workshop on data integration, SEG Annual meeting, Las Vegas, NV.

DeBasabe, J., **M. K. Sen**, and M. F. Wheeler, 2008, Grid dispersion of discontinuous Galerkin method for elastic wave propagation, SEG Annual meeting, Las Vegas, NV.

Hong, T., and **M. K. Sen**, 2008, Joint Bayesian Inversion for Reservoir Characterization and Uncertainty Quantification, SEG Annual meeting, Las Vegas, NV.

J. Ma, **M. K. Sen**, and X. Chen, 2008, Multiple Attenuation Using Inverse data processing in the plane-wave domain, SEG Annual meeting, Las Vegas, NV.

L. Jin, **M. K. Sen**, and P. L. Stoffa, 2008, One-dimensional full waveform inversion using ensemble Kalman filter, SEG Annual meeting, Las Vegas, NV.

P. Routh, **M. K. Sen**, D. Whitmore and P. Anno, 2008, Inversion Using Bayesian Hyper-Prior Formulation for Sharp Boundaries, SEG Annual meeting, Las Vegas, NV.

S. Sil, S. Sriivasan, **M. K. Sen**, Jaime J. Ríos López and Madain Moreno Vidal , 2008, Markov Bayes Simulation for structural uncertainty estimation, SEG Annual meeting, Las Vegas, NV.

M. K. Sen and N. Vedanti**,** 2008, Seismic Inversion tracks in-situ combustion: 4D seismic at the Balol field, India, paper no. SPE-116600-PP, Society of Petroleum Engineers' annual technical convention, Denver, Colorado.

M. K. Sen, 2008, Seismic Modeling and Amplitude versus Azimuth in fractured media, paper No, 449, Proceedings of the conference of the Society of Petroleum Geophysicists (SPG), Hyderabad, India, 6 pages.

S. Sil, S. Srinivasan, and **M. K. Sen,** 2008, Markov Bayes simulation for structural uncertainty estimation, paper No, 200, Proceedings of the conference of the Society of Petroleum Geophysicists (SPG), Hyderabad, India, six pages.

N. Vedanti and **M. K. Sen,.** 2008, Seismic Inversion tracks in-situ combustion: time lapse seismic at the Balol oil field, paper No, 201, Proceedings of the conference of the Society of Petroleum Geophysicists (SPG), Hyderabad, India, five pages.

J. van der Neut, **M. K. Sen,** and K. Wapenaar 2008, Low frequency seismic reflection coefficients at non-welded interfaces, paper No, 28, Proceedings of the conference of the Society of Petroleum Geophysicists (SPG), Hyderabad, India, five pages.

2007

M. K. Sen, 2007, Stiffness, compliance and tensor to matrix mapping in seismic modeling of fractured reservoirs: A tutorial, Proceedings of the national seminar on modern trends in geophysical sciences and techniques, Indian School of Mines, Dhanbad, 107-111.

S. Sil and **M. K. Sen,** 2007, A new NMO equation for HTI medium, Proceedings of the national seminar on modern trends in geophysical sciences and techniques, Indian School of Mines, Dhanbad, 24-28.

A. Gangopadhyay, J. Pulliam and **M. K. Sen,** 2007, A Modeling of S, Sp, SsPmP and shear-coupled PL waveformsfor the crust and upper mantle velocity structure, Proceedings of the national seminar on modern trends in geophysical sciences and techniques, Indian School of Mines, Dhanbad, 60-65.

U. Dutta, **M. K. Sen,** N. Biswas and Z. Yang**,** 2007, Waveform inversion of local earthquake data from Delaney Park Downhole Seismic Array, Anchorage, Alaska, Proceedings of the national seminar on modern trends in geophysical sciences and techniques, Indian School of Mines, Dhanbad, 71-75.

M. K. Sen, and A. Pal, 2007, Seismogram Synthesis in Laterally Varying Media in the Coupled Slowness domain, SEG Annual meeting, San Antonio.

van der Neut, J, R. K. Shaw, and **M. K. Sen**, 2007, Estimation of the fluid indicator from AVO gradient variations with azimuth at arbitrary fracture sets s, SEG Annual meeting, San Antonio.

Sil, S., and **M. K. Sen** 2007, Azimuthal tau-p analysis in HTI media, SEG Annual meeting, San Antonio.

Young, R., and **M. K. Sen** 2007, A comparison of porosity estimates obtained using post, partial, and prestack seismic inversion methods: Marco Polo Field, Gulf of Mexico, SEG Annual meeting, San Antonio.

Routh, P., L. Qiu, **M. K. Sen**, and P. Anno, 2007, Inversion for non-smooth models with physical bounds, SEG Annual meeting, San Antonio.

Jin, L., **M. K. Sen**, and P. L. Stoffa, 2007, Fusion based classification method and its application, SEG Annual meeting, San Antonio.

Jin, L., **M. K. Sen**, P. L. Stoffa, and R. Seif, 2007, Optimal Model Parameterization in Stochastic inversion for reservoir properties using time-lapse seismic and production data, SEG Annual meeting, San Antonio.

Jin, L., **M. K. Sen**, T. Hong, and P. L. Stoffa, 2007, Joint estimation of porosity and saturation by combining a rock physics model and constrained pre-stack seismic waveform inversion, SEG Annual meeting, San Antonio.

DeBasabe, J., and **M. K. Sen**, 2007, Grid dispersion and stability criteria of some common finite difference and finite element method for acoustic and elastic wave propagation, SEG Annual meeting, San Antonio.

Hong, T., and **M. K. Sen**, 2007, A new MCMC method for parameter estimation and uncertainty analysis, SEG Annual meeting, San Antonio.

Hong, T., **M. K. Sen**, P. L. Stoffa, H. Klie, S. G. Thomas, A. Rodriguez, and M. F. Wheeler, 2007, Integrated Time-lapse Seismic Inversion for Reservoir Petrophysics and Fluid Flow Imaging, Expanded abstract, SEG Annual meeting, San Antonio.

Chaoshun, H., **M. K. Sen**, P. L. Stoffa, and K. McIntosh, 2007, Plane wave pre-stack Gaussian beam depth migration, Expanded abstract, SEG Annual meeting, San Antonio.

Bansal, R., and **M. K. Sen**, 2007, Finite difference modeling in anisotropic media: a S-wave splitting study in fractured reservoirs, Expanded abstract, SEG Annual meeting, San Antonio.

Bansal, R., and **M. K. Sen**, 2007, Estimation of fracture parameters in laterally varying anisotropic media using Born integrals, SEG Annual meeting, San Antonio.

Van der Neut, J., **M. K. Sen**, and C. P. A. Wapenaar, 2007, Seismic reflection at a fault: a model study, EAGE meeting, London.

Van der Neut, J., **M. K. Sen,** and C. P. A. Wapenaar, 2007, Monitoring effective stress changes in the fault zones from time-lapse seismic reflection data: a model study, London.

Hong, T., and **M. K. Sen**, 2006, Real-coding and multi-scale genetic algorithm for pre-stack seismic waveform inversion, SEG annual meeting, New Orleans.

2006

Van der Noot, J., **M. K. Sen**, and C. P. Wapenaar, 2006, Prediction of effective stress from seismic reflection coefficients at non-welded interfaces between fractured media, expanded abstract: Jakarta 2006 Convention, SEG.

Kumar, C., **M. K. Sen**, and R. J. Ferguson, 2006, Travel time sensitivity analysis for parameter estimation in TI media, EAGE conference, Vienna, Austria.

M. K. Sen, and P. L. Stoffa, 2006, True Amplitude Migration-Inversion in Phase Space, SPG meeting, Kolkata, India.

Roy, A., and **M. K. Sen**, 2006, Modeling of Deep Structures of Andaman Subduction Zone from Satellite Gravity Data, SPG meeting, Kolkata, India.

Shaw, R. K., and **M. K. Sen**, and A. Chatterjee, 2006, Estimation of dip of oblique fractures using AVOA analysis, SPG meeting, Kolkata, India.

2005

Kumar, D., **M K. Sen** and N. L. Bangs, 2005, Seismic characteristics of gas hydrate system at the Hydrate Ridge, offshore Oregon, SBGF annual meeting, Salvador, Bahia, Brazil.

Stoffa, P. L., **M. K. Sen**, R. Seifoullaev, R. Pestana, and J. Fokemma, 2005, Double Plane Wave Kirchhoff Depth Migration, SBGF annual meeting, Salvador, Bahia, Brazil.

Shaw, R. K., and **M. K. Sen**, 2005, Sensitivity of linearized reflection coefficients to fluid saturation and fracture roughness, SEG annual meeting, Houston, Texas.

Bansal, R., and M. K. Sen, 2005, 3-D two point ray tracing in general anisotropic media, SEG annual meeting, Houston, Texas.

Kumar, C., **M K. Sen** and R. J. Ferguson, 2005, Reflection Travel Time Sensitivity Analysis for VTI media, SEG annual meeting, Houston, Texas.

Kumar, D., **M K. Sen** and N. L. Bangs, 2005, Estimation of gas hydrate saturation from multi-component seismic data, SEG annual meeting, Houston, Texas.

Stoffa, P. L., **M. K. Sen**, R. Seifoullaev, H. Klie, X. Gai, W. Bangerth, J. Rungamornrat and M. F. Wheeler, 2005, An analysis of flow-simulation scales and seismic response, SEG annual meeting, Houston, Texas.

X. Gai, J. Rungamornrat, H. Klie, W. Bangerth, M. F. Wheeler, P. L. Stoffa, **M. K. Sen**, R. Seifoullaev, 2005, Fully integrated reservoir flow, geomechanics, and seismic modeling: A tool for better reservoir characterization and geomechanical prediction from 4D seismic, SEG annual meeting, Houston, Texas

Mallick, S., D. Gillespie, and **M. K. Sen**, 2005, Azimuthal reflectivity and quantitative evaluation of anisotropy parameters from seismic data: a feasibility study, SEG annual meeting, Houston, Texas.

Kumar, D., **M. K. Sen**, and N. L. Bangs, 2005, Seismic characterization of gas hydrate system at the Hydrate Ridge, offshore Oregon, SBGF meeting, Salvador, Bahia, Sep. 10-12, 2005.

P. L. Stoffa, **M. K. Sen**, R. Seifoullaev, R. Pestana, and J. Fokkemma, 2005, Pre-stack depth migration in double plan-wavedomain, SBGF meeting, Salvador, Bahia, Sep. 10-12, 2005.

R. Seifoullaev, P. L. Stoffa, and **M. K. Sen, 2005**, Use of reciprocity in pre-stack depth migration, SBGF meeting, Salvador, Bahia, Sep. 10-12, 2005.

2004

Ferguson, R., and **M. K. Sen**, 2004, Joint inversion of P- and SV-wave traveltime error to estimate anisotropy: A CFP approach, SEG annual meeting, Denver, Colorado.

Kumar, D., **M. K. Sen**, and N. Bangs 2004, P-wave seismic anisotropy on Hydrate Ridge, SEG annual meeting, Denver, Colorado.

Sena, A.*, **Sen, M.K**., and Stoffa, P.L., 2004, Modeling of ground-penetrating radar data in stratified media, SEG annual meeting, Denver, Colorado.

2003

Filina, I., D. Blankenship, L. Roy, **M. K. Sen**., T. Richter, and J. Holt, 2003, Acquisition and analysis of airborne gravity data over subglacial lakes in East Antarctica, to be published in the 9th ISAES proceeding volume

Roy, L., **M. K. Sen**, Donald D. Blankenship, Paul L. Stoffa, and Thomas Richter, 2003, Gravity inversion and Uncertainty analysis Using Simulated Annealing: An Application over Lake Vostok, East Antarctica, SBGF 2003 meeting Rio, Brazil.

Sen, M. K, C. Wang, and N. L. Bangs, 2003, Analysis of OBS and MCS data offshore Oregon: Estimation of elastic properties of gas hydrates, SBGF 2003 meeting Rio, Brazil.

Ferguson, R. J., S. B. Fomel, and **M. K. Sen,** 2003, Series expansion of wave propagation in heterogeneous media using least squares, SBGF 2003 meeting Rio, Brazil.

Kumar, D., **M. K. Sen**, and R. Ferguson, 2003, Travel time computation and pre-stack depth migration in tilted transversely isotropic media, SEG 2003 annual meeting, Dallas, USA.

Sena, A., P. L. Stoffa, and **M. K. Sen**, 2003, Split-step Fourier migration of GPR data, SEG 2003 annual meeting, Dallas, USA.

Varela, O. J., C. Torres-verdin, and **M. K. Sen**, 2003, Joint inversion of pre-stack seismic data and well-logs for high-resolution reservoir delineation and improved production forecast , SEG 2003 annual meeting, Dallas, USA.

R. L. Nowack., **M. K. Sen**,and P. L. Stoffa, 2003, Gaussian Beam Migration for Sparse Common-Shot and Common-Receiver Data, SEG 2003 annual meeting, Dallas, USA.

I. Ahmed, P. L. Stoffa., **M. K. Sen**,and K. McIntosh, 2003, Residual migration velocity analysis in offset-time domain via the ray parameter-depth domain SEG 2003 annual meeting, Dallas, USA.

Varela, O. J., C. Torres-Verdin, and **M. K. Sen**, 2003, Enforcing smoothness and assessing uncertainty in one-dimensional pre-stack waveform inversion, EAGE 2003 annual meeting, Stavanger, Norway.

Fergusson, R. S. Fome, and **M. K. Sen**, 2003, Wave propagation in heterogeneous media by a least-squares one-way operator, EAGE 2003 annual meeting, Stavanger, Norway.

2002

Roy, I. G., **Sen, M. K**., Torres-Verdin, C, and Varela, O. J., 2002, Pre-stack inversion of a Gulf of Thailand OBC dataset, SEG 2002 annual meting, Salt Lake City, USA.

Sen, M. K., and I. G. Roy, 2002, Two problems in pre-stack inversion: optimal regularization and computation of differential seismograms, SEG 2002 annual meeting, Salt Lake City, USA.

Torres-Verdin, C., Z. Wu, O. Varela, **M. K. Sen**, and I. G. Roy, Joint inversion of pres-stack seismic and fluid flow data, SEG 2002 annual meeting, Salt Lake City, USA.

Ferguson, R., and **M. K. Sen**, 2002, Parameter estimation in transversely isotropic media, SEG 2002 annual meeting, Salt Lake City, USA.

Wang, C., **M. K. Sen**, and K. McIntosh, 2002, Velocity estimation from post-stack seismic data and density log, SEG 2002 annual meeting, Salt Lake City, USA.

Varela, O. J., Torres-Verdin, C., **Sen, M. K**. and Roy, I. G**.**, 2002, Assesing dynamic reservoir behavior with pres-stack 3D seismic data: a sensitivity study based on inversion, 64th EAGE conference and exhibition at Florence May 26-30.

M. K. Sen, and I. G. Roy, 2002, Fast pre-stack inversion of field seismic data, SPG conference in Mumbai, India.

2001

A. Mukherjee, and **M. K. Sen**, 2001, Seismic processing in anisotropic media, SPG conference in Mumbai, India.

M. K. Sen, 2001, Prestack inversion: Current status and future directions., Brazilian Society of Exploration Geophysicists meeting, Salvador, Bahia.

Roy, I. G**.,** and **M. K. Sen**, 2001, Prestack inversion with adaptive regularization, Brazilian Society of Exploration Geophysicists meeting, Salvador, Bahia.

M. K. Sen, C. Wang., and N. Bangs, 2001, Converted waves from the hydrated sediments: constraints on the shear structure of the shallow sediments in the Oregon continental margin, Brazilian Society of Exploration Geophysicists meeting, Salvador, Bahia.

A. Mukherjee**, M. K. Sen**, and P. L. Stoffa, 2001, Travel time computation and pre-stack time migration in transversely isotropic media, presented at the *72nd Annual International Society of Exploration Geophysicists Meeting and Exposition*, San Antonio, Texas.

Aziz, A., P. L. Stoffa, and **M. K. Sen**, 2001, 3D multiple prediction and attenuation using a very fast simulated annealing, presented at *the 72nd Annual International Society of Exploration Geophysicists Meeting and Exposition*, San Anotonio, Texas.

2000

M. K. Sen, and A. Mukherjee, 2000, Reflection moveout analysis and waveform inversion in transversely isotropic media, presented at *the 71st Annual International Society of Exploration Geophysicists Meeting and Exposition*Calgary, Cananda.

J. Jiao**,** P. L. Stoffa**, M. K. Sen**, and R. Safiuleav, 2000, Residual migration velocity analysis, presented at the *70th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Houston, Texas.

J. vanGestel**,** P. L. Stoffa**,** and **M. K. Sen**, 2000, Migration of GPR data, presented at the *70th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Houston, Texas.

1999

Liu, F., **M. K. Sen**, and P. L. Stoffa, 1999, Multiple attenuation of multi-component ocean bottom seismometer data, presented at the *69th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Houston, Texas.

Tsoflias, G., J. P. Van Gestel, P. L. Stoffa, and **M. K. Sen**, 1999, Vertical fracture detection by exploiting the polarization properties of ground penetrating radar data, presented at the *69th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Houston, Texas.

1998

Liu, F., **M. K. Sen**, and P. L. Stoffa, 1998, 2D multiple attenuation operators in tau-p domain, *Proceedings of the 68th Annual International Society of Exploration Geophysicists Meeting and Exposition*, New Orleans, LA, II, 1256-1259.

Xia, G., **M. K. Sen**, and P. L. Stoffa, 1998, Mapping of elastic properties of gas hydrates in he Carolina Trough by waveform inversion, *Proceedings of the 68th Annual International Society of Exploration Geophysicists Meeting and Exposition*, New Orleans, LA, II, 1146-1149.

Akbar, F. E., P. L. Stoffa, and **M. K. Sen**, 1998, Three-dimensional plane-wave Kirchhoff depth migration, *Proceedings of the 68th Annual International Society of Exploration Geophysicists Meeting and Exposition*, New Orleans, LA, II, 1708-1711.

Akbar, F. E., C. Calderon-Macias, V. Sen, **M. K. Sen**, and P. L. Stoffa, 1998, A comparative study of first arrival time computation for 3D inhomogeneous isotropic velocity models, *Proceedings of the 68th Annual International Society of Exploration Geophysicists Meeting and Exposition*, New Orleans, LA, II, 1728-31.

1997

Sen, M. K. and G. Xia, 1997, Parameter estimation in anisotropic media, *Proceedings of the 67th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Dallas, Texas, II, 1559-1562.

Stoffa, P. L., **M. K. Sen**, and G. Xia, 1997, Simulated annealing: A tool for estimating the macro-model for prestack migration velocity analysis and AVO, *5th International Congress of the Brazilian Geophysical Society*, Sao Paulo, Brazil.

Wood, W. T., J. F. Gettrust, **M. K. Sen**, and J. G. Kosalas, 1997, Bottom/sub-bottom surveying using a new, parametric, side-scan sonar, *NATO SACLANT Conference on High Frequency Accoustics in Shallow Water*, Lerici, Italy.

Pulliam, J. and **M. K. Sen**, 1997, Seismic anisotropy in the core-mantle transition zone: Implications for chemical heterogeneity and dynamics, *Proceedings of the 29th General Assembly of the International Association of Seismology and Physics of the Earth's Interior*, Thessaloniki, Greece.

1996

Chunduru, R., **M. K. Sen**, and P. L. Stoffa, 1996, Development of efficient hybrid optimization for geophysical inversion, *Proceedings of the 66th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Denver, CO, II, 1130-1133.

Akbar, F. E., P. L. Stoffa, **M. K. Sen**, and C. L. Varela, 1996, Automated background velocity estimation in the plane wave domain using VFSA, *Proceedings of the 66th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Denver, CO, I, 731-734.

Calderón-Macías, C., **M. K. Sen**, and P. L. Stoffa, 1996, A neural network optimization approach for automatic NMO correction and velocity estimation, *Proceedings of the 66th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Denver, CO, II, 1979-1982.

Xia, G., **M. K. Sen**, and P. L. Stoffa, 1996, Two-step velocity estimation and AVO inversion in the tau-p domain, *Proceedings of the 66th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Denver, CO, II, 1727-1730.

Sen, M. K., P. L. Stoffa, J. T. Fokkema, and C. Calderón-Macías, 1996, On two approaches to wave equation based multiple attenuation, *EAGE 58th Conference and Technical Exhibition*, Amsterdam, Netherlands, I, B002.

Tanis, M. C., P. L. Stoffa, **M. K. Sen**, and J. T. Fokkema, 1996, Prestack split-step Fourier depth migration, *EAGE 58th Conference and Technical Exhibition*, Amsterdam, Netherlands, I, X048.

Varela, C. L., P. L. Stoffa, and **M. K. Sen**, 1996, Automatic background velocity estimation in 2D media, *EAGE 58th Conference and Technical Exhibition*, Amsterdam, Netherlands, I, X009.

Akbar, F. E., P. L. Stoffa, **M. K. Sen**, and C. L. Varela, 1996, Automatic background velocity estimation of 2D media in the τ-p domain, *EAGE 58th Conference and Technical Exhibition*, Amsterdam, Netherlands.

1994-1982

Akbar, F. E., **M. K. Sen**, and P. L. Stoffa, 1994, Prestack plane wave Kirchhoff depth migration using a cluster of workstations, *Proceedings of the Society of Exploration Geophysicists 64th Annual International Meeting and Exposition*, Los Angeles, CA, 225-228.

Chunduru, R. K., **M. K. Sen**, and P. L. Stoffa, 1994, Resistivity inversion for 2-D geologic structures using very fast simulated annealing, *Proceedings of the Society of Exploration Geophysicists 64th Annual International Meeting and Exposition*, Los Angeles, CA, 640-643.

Sen, V., **M. K. Sen**, P. L. Stoffa, and M. Jervis, 1994, Generation of 3-D velocity models, seismic modeling and migration: an application of the Kirchhoff-Helmholtz approach to ocean bottom seismometer data, *Proceedings of the Society of Exploration Geophysicists 64th Annual International Meeting and Exposition*, Los Angeles, CA, 699-702.

Varela, C. L., P. L. Stoffa, and **M. K. Sen**, 1994, Migration misfit and reflection tomography: Criteria for pre-stack migration velocity estimation in laterally varying media, *Proceedings of the Society of Exploration Geophysicists 64th Annual International Meeting and Exposition*, Los Angeles, CA, 1347-1350.

Sen, M. K., and P. L. Stoffa, 1994, Bayesian inference, Gibbs sampler and uncertainty estimation in nonlinear geophysical inversion, *EAGE 56th Conference and Technical Exhibition*, Vienna, Austria.

Stoffa, P. L., **M. K. Sen**, C. Varela and R. K. Chunduru, 1994, Geophysical applications of global optimization methods, *EAGE 56th Conference and Technical Exhibition*, Vienna, Austria.

Sen, M. K., P. L. Stoffa, R. K. Chunduru, and M. Jervis, 1993, Geophysical applications of global optimization methods, *3rd International Congress of the Brazilian Geophysical Society*.

Porsani, M. J., P. L. Stoffa, R. K. Chunduru, and **M. K. Sen**, 1993, Evaluation of Measures of Error Using a Genetic Algorithm, *3rd International Congress of the Brazilian Geophysical Society*.

Sen, M. K., A. Duttagupta, P. L. Stoffa, L. Lake, and G. Pope, 1992, Stochastic reservoir modeling by simulated annealing and genetic algorithms: A comparative analysis, *Proceedings of the Society of Petroleum Engineers 67th Annual Technical Conference and Exhibition*, Washington, DC, paper no. SPE 24754, 939-950.

Porsani, M. J., P. L. Stoffa, **M. K. Sen**, R. Chunduru, and W. T. Wood, 1993, A combined genetic and linear inversion algorithm for seismic waveform inversion, *Proceedings of the Society of*

Exploration Geophysicists 63rd Annual International Meeting and Exposition, Washington, DC, 692-695.

Jervis, M., **M. K. Sen**, and P. L. Stoffa, 1993, Optimization methods for 2D pre-stack migration velocity estimation, *Proceedings of the Society of Exploration Geophysicists 63rd Annual International Meeting and Exposition*, Washington, DC, 965-968.

Calderón-Macías, C., and **M. K. Sen**, 1993, Geophysical Interpretation by Artificial Neural Systems: A Feasibility Study, *Proceedings of the Society of Exploration Geophysicists 63rd Annual International Meeting and Exposition*, Washington, DC, 254-257.

Sen, M. K., and P. L. Stoffa, 1992, Multilayer AVO inversion using genetic algorithms, *SEG/EAEG Research Workshop*, Expanded Abstracts, paper 6.8, 581-589.

Bhattacharya, B. B., **M. K. Sen**, and P. L. Stoffa, 1992, Global optimization in the direct interpretation of VES and MTS, submitted to the *International Symposium on Mathematical Modeling and Computer Simulations* held in Bangalore, India

Stoffa, P. L., and **M. K. Sen**, 1991, Seismic waveform inversion using global optimization methods, *2nd International Congress of Brazilian Geophysical Society*, II, 837-841.

Sen, M. K., and P. L. Stoffa, 1991, Simulated annealing, genetic algorithms and seismic waveform inversion, *Proceedings of the 61st Annual International Society of Exploration Geophysicists Meeting and Exposition*, Houston, Texas, II, 945-947.

Sen, M. K., and P. L. Stoffa, 1990, Non-linear seismic waveform inversion in one-dimension using simulated annealing, *Proceedings of the 60th Annual International Society of Exploration Geophysicists Meeting and Exposition*, San Francisco, CA, II, 1119-1122.

Sen, M. K., and L. N. Frazer, 1988, Multifold phase space path integral synthetic seismograms, *Proceedings of the 58th Annual International Society of Exploration Geophysicists Meeting and Exposition*, Anaheim, CA, II, 1050-1052.

ABSTRACTS:

J. DeBasabe and **M. K. Sen**, 2016, Elastic wave propagation in fractured media using the discontinuous Galerkin finite element method, AAPG/SEG international conference, Cancoon, Mexico.

M. K. Sen, and R. Biswas, 2014, Trans-dimensional seismic inversion using the Hamiltonian Monte-Carlo approach, AGU fall annual meeting.

D. Datta, and **M. K. Sen**, 2014, Hybrid optimization methods for full waveform inversion, AGU fall annual meeting.

R. Ghosh, **M. K. Sen**, P. Mandal, J. Pulliam, and M. Agarwal, 2014, Seismic velocity assessment in the Kutch region from multiple waveform functionals , AGU fall annual meeting.

M. Agarwal, J. Pulliam, **M. K. Sen**, and H. Gurrolla, 2014, Crustal and upper mantle structure of Texas-Gulf of Mexico from surface wave dispersion and Ps wave receiver function, AGU fall annual meeting.

M. Ojha, **M. K. Sen**, and K. Sain, 2014, Imaging of gas hydrate bearing sediments by full waveform inversion of multi-channel seismic data from Krishna-Godavari basin , AGU fall annual meeting.

Datta, D., and **M. K. Sen**, 2014, Hybrid optimization methods in full waveform inversion, SEG-AGU workshop on full wavefield inversion, Vancouver, Canada (July 2014).

Agarwal, M., J. Pulliam, and **M. K. Sen**, 2013, Seismic velocity structure of the crust and upper mantle beneath the Texas-Gulf of Mexico margin from joint inversion of Ps and Sp receiver functions and surface wave dispersion, AGU fall meeting, San Francisco, USA.

Schwed, M., J. Pulliam, and M. K. Sen, 2013, Seismic Site Characterization through Joint Modeling of Complementary Data Functionals, with Applications to Santo Domingo, Dominican Republic., AGU fall meeting, San Francisco, USA.

Tao, Y., **M. K. Sen**, R. Zhang, and K. Spikes, 2012, Stochastic time lapse seismic inversion with a hybrid starting model and double difference data, AGU fall meeting, San Francisco, USA.

Zhang, R., X. Song, S. Fomel, **M. K. Sen**, and S. Srinivasan, 2012, Time lapse seismic data registration and inversion for CO2 sequestration at Cranfield, Mississippi, AGU fall meeting, San Francisco, USA.

Zhiwen, D., **M. K. Sen** and Y. Xue, 2011, Joint stochastic inversion of multi-component seismic data, Nonrecurring meetings, Thailand.

Stoffa, P. L., and **M. K. Sen**, 2010, Large scale geophysical inversion using fast annealed importance sampling, AGU fall meeting, San Francisco, USA.

Sen, M. K., U. Dutta, J. Pulliam, R. Ghosh, R. Gok, and M. Pasyanos, 2010, Seismic velocity estimation by joint inversion of P and S receiver functions, waveform fitting and surface wave dispersion, San Francisco, USA.

Stoffa, P. L., and **M. K. Sen**, 2010, Migration velocity analysis in the plane wave domain, AGU meeting in Brazil.

DeBasabe, J., **and M. K. Sen,** 2009, Accuracy and Stability of the Continuous and Discontinuous Finite Element Methods for Elastic Wave Propagation, SIAM annual meeting, Denver, Colorado.

Sen, M. K. and N. Vedanti, 2008, Pre-stack inversion reveals in-situ combustion: Balol field India, Aug. 25-27, Galveston, TX.

Sen, M. K., J. Long, and P. L. Stoffa, 2008, Stochastic inversion of seismic and well production data for reservoir modeling, SPE-SEG joint workshop on 4D seismics, Aug. 25-27, Galveston, TX.

De Basabe, J., and **M. K. Sen**., and M. F. Wheeler, 2008, Grid dispersion analysis of the discontinuous Galerkin method for elastic wave propagation, submitted to a meeting at the IMA, University of Minnessota.

Dutta, U., **M. K. Sen**., N. Biswas, and Z. Yang, 2008, Waveform Modeling of Earthquake Data for Delineating the Sedimentary Structure of the Anchorage Basin, Alaska, *14th International Conference in Earthquake Engineering*, China.

De Basabe, J., and **M. K. Sen**., 2007, Grid dispersion and stability criteria for classical and spectral finite element methods for acoustic and elastic wave modeling, SIAM Geosciences meeting, New Mexico.

Jackson, C., Deng, Y., Huerta, G. and **M. K. Sen**, 2006, Preliminary calculation of an upper bound to climate prediction skill, AGU fall meeting, San Francisco, California.

De Basabe, J., and **M. K. Sen**., 2006, Grid dispersion and stability criteria for some numerical methods of seismic wave propagation, AGU fall meeting, San Francisco, California.

Gangopadhyay,A., J. Pulliam, and **M. K. Sen**., 2006, Velocity Structure of the Crust and Uppermost Mantle Beneath Canada by Inversion of S, SP, SsPmP, and Shear-coupled PL waveforms, AGU Fall meeting, San Franciso.

J. Pulliam, A. Gangopadhyay, and **M. K. Sen**., 2006, A Global Optimization Based Seismic Waveform Inversion for Crust and Upper Mantle Structure Beneath China, AGU Fall meeting, San Francisco, California.

Pulliam, J., A. Gangopadhyay, and **M. K. Sen**., 2006, Seismic Waveform Inversion for Crust and Upper Mantle Structure beneath Africa, New Orleans, AGU spring meeting, Baltimore, Maryland.

Pulliam, J., A. Gangopadhyay, and **M. K. Sen**., 2006, Seismic Waveform Inversion for Crust and Upper Mantle Structure beneath Africa, New Orleans, AGU spring meeting, Baltimore, Maryland.

Dutta, U., **M. K. Sen**., N. Biswas, and Z. Yang, 2006, Waveform inversion of strong motion data from Anchorage, Alaska, SSA annual meeting, Reno, Nevada.

Sen, M. K., 2005, Seismic Inversion for hydrocarbon exploration, crustal structure and whole earth modeling, AGU-SEG joint session spring meeting, New Orleans, USA, Invited.

Kumar, D., **M. K. Sen**, and N. L. Bangs, 2005, Free gas and gas hydrate saturation from multi-component seismic reflection data from Hydrate Ridge, AGU-SEG joint session spring meeting, New Orleans, Louisiana.

Stoffa, P. L., and **M. K. Sen**, 2005, Phase Space Migration–a Fast Migration Algorithm for Densely Sampled Data, AGU-SEG joint session spring meeting, New Orleans, Louisiana.

Jackson, C. S., **Sen, M.K.**, and Stoffa, P.L., 2004, Statistical Inversion for Quantifying Uncertainties in Climate Prediction, AGU fall meeting, San Francisco, California.

Kumar, D., M. K. Sen, and N. Bangs, 2004, Estimation of Gas-hydrate Saturation at the Hydrate Ridge, offshore Oregon, AGU fall meeting, San Francisco, California.

Roy, I. G., and **M. K. Sen**, 2002,Regularization methods in pre-stack waveform inversion, AGU fall meeting, San Francisco, California.

Roy, L., **M. K. Sen**, D. Blankenship, P. L. Stoffa, and T. Richter, 2002, Estimation of Uncertainty in 3D Gravity Inversion Using Simulated Annealing , AGU fall meeting, San Francisco, California.

Ferguson, R. J., S. Fomel, and **M. K. Sen**,: 2002, Wave propagation in heterogeneous media by a least-squares one-way operator, AGU fall meeting, San Francisco, California.

Nowack, R. L., **M. K. Sen**, P. L. Stoffa, and H. Ge, 2002, Gaussian Beam Migration for Sparse Common-Shot and Common-Receiver Data, AGU fall meeting, San Francisco, California.

Jackson, C., **M. K. Sen**, and P. Stoffa. 2002, Optimal parameter and uncertainty estimation within climate and land surface models using Bayesian stochastic inversion. *Mississippi River Climate and Hydrology Conference* May 13-17, 2002, New Orleans, Louisiana. (abstract)

Xia, Y., C. Jackson, **M. K. Sen**, and P. Stoffa. 2002, Optimal parameter estimation and uncertainty analysis of a land surface model using the Cabauw dataset. *Mississippi River Climate and Hydrology Conference* May 13-17, 2002, New Orleans, Louisiana. (abstract)

Jackson, C., **M. K. Sen**, and P. Stoffa. 2002, Optimal parameter and uncertainty estimation within climate and land surface models using Bayesian stochastic inversion. *EOS Trans. AGU*, 83 (19), Spring Meet. Suppl. Abstract B32A-22, 2002.

Xia, Y., C. Jackson, **M. K. Sen**, and P. Stoffa. 2002, Optimal parameter estimation and uncertainty analysis of a land surface model using the Cabauw dataset. *EOS Trans. AGU*, 83 (19), Spring Meet. Suppl. Abstract B32A-08, 2002.

Jackson, C., Q. MU, **M. K. Sen**, and P. Stoffa. 2002, Measures of GCM Performance as Functions of Model Parameters Affecting Clouds and Radiation. *EOS Trans. AGU*, 83 (19), Spring Meet. Suppl. Abstract A51C-03, 2002.

Roy, I. G. and **M. K. Sen**, 2001, Robust waveform inversion by adaptive regularization, AGU Fall Meeting, San Francisco, California.

Pulliam, J. and **M. K. Sen**, 2001, Waveform Modeling of the Crust and Upper Mantle in China using S, Sp, SsPmP and Shear-Coupled PL Waves, AGU Fall Meeting, San Francisco, California.

Bangs, N. L., A. Trehu and **M. K. Sen**, 2001, Mapping the fluid-rich methane systems of Hydrate Ridge with high resolution 3D seismic data, AGU Fall Meeting, San Francisco, California.

Mukherjee, A., and **M. K. Sen**, 2000, Moveout analysis, travel time calculation, and prestack migration in transversely isotropic media, AGU Fall Meeting, San Francisco, California.

Pulliam, J., and **M. K. Sen**, 2000, Determination of crustal structure by waveform modeling of SPL waves, AGU Fall Meeting, San Francisco, California.

McIntosh, K. D., and **M. K. Sen**, 1999, Geophysical Evidence for dewatering and deformation process in the ODP Leg 170 area offshore Costa Rica, AGU Fall Meeting, San Francisco, California.

M. K. Sen, and J. Pulliam, 1999, Constraints on the anisotropic structure of D, AGU Fall Meeting, San Francisco, California.

Sen, M. K., G. Xia, and P. L. Stoffa, 1997, Multi-stage seismic waveform inversion, *EOS Trans. AGU*, 78(46), F467-F468.

Pulliam, R. J. and **M. K. Sen**, 1997, Constraints on the chemical composition and structure of the lowermost mantle from seismic anisotropy, *EOS Trans. AGU*, 78(46), F10.

Sen, M. K., P. L. Stoffa, and C. S. Fulthorpe, 1997, Quantitative marine geophysical research at UTIG, *Southeast Consortium of Ocean Research Workshop*, Stennis Space Center, MS.

Fulthorpe, C. S., P. L. Stoffa, and **M. K. Sen**, 1997, University of Texas Institute for Geophysics: Field studies and geological syntheses, *Southeast Consortium of Ocean Research Workshop*, Stennis Space Center, MS.

Bording, R. P., C. Varela, **M. K. Sen**, and P. L. Stoffa, 1996, Automatic background velocity estimation in Rugose topography and complex geology with visualization, *EOS Trans. AGU*, 77(46), F461.

Lee, D. K., S. P. Grand, **M. K. Sen**, and P. L. Stoffa, 1996, Upper mantle attenuation beneath the East Pacific Rise, *EOS Trans. AGU*, 77(46), F490.

Pulliam, J. and **M. K. Sen**, 1996, Evidence for azimuthal anisotropy of D", *EOS Trans. AGU*, 77(46), F679.

Grand, S.P., E. Matzel, and **M. K. Sen**, 1996, Evidence for slabs lying at the base of the mantle, *EOS Trans. AGU*, 77(46), F708-F709.

Sen, M. K., 1995, Gibbs' sampler and its application to geophysical inversion, Invited lecture at the *SIAM Meeting on Geophysical Inverse Problems*, Yosemite, CA.

Sen, M. K., P. L. Stoffa, C. Varela, M. Jervis, and R. Chunduru, 1995, Optimization methods for automatic velocity estimation, *SIAM meeting on Geophysical Inverse Problems*, Yosemite, CA.

Matzel, E., **M. K. Sen**, and S. P. Grand, 1995, Anisotropy: a possible explanation for the shear wave discontinuity in D", *EOS Trans. AGU*, Nov. 7, F404.

Akbar, F., C. Calderón-Macías, S. Operto, P. L. Stoffa, **M. K. Sen**, K. McIntosh and T. Shipley, 1995, 3-D prestack Kirchhoff depth migration of OBS data from offshore Costa Rica, *EOS Trans. AGU*, Nov. 7, F550.

Pulliam, J., **M. K. Sen**, and P. L. Stoffa, 1995, Downsizing the seismic workplace: compression and denoising of seismic data, presented at the *IRIS worksho*p.

Sen, M. K., and P. L. Stoffa, 1995, Bayesian inversion in geophysics, presented at *IUGG meeting*, Boulder, Colorado.

Sen, M. K., and C. Calderón-Macías, 1995, Mean field annealing in seismic deconvolution and multiple elimination, presented at *IUGG meeting*, Boulder, Colorado.

Calderón-Macías, C, **M. K. Sen**, and P. L. Stoffa, 1995, A neural network based approach to NMO correction and velocity estimation, presented at *IUGG meeting*, Boulder, Colorado.

Chunduru, C. K., **M. K. Sen**, and P. L. Stoffa, 1995, Seismic and resistivity inversion by hybrid optimization, presented at *IUGG meeting*, Boulder, Colorado.

Varela, C., P. L. Stoffa, and **M. K. Sen**, 1995, Migration velocity estimation, presented at *IUGG meeting*, Boulder, Colorado.

Sen, M. K., and P. L. Stoffa, 1995, Computational seismological research at UTIG using Cray supercomputers, presented at *UNAM-Cray symposium.*

Zhao, L. S., **M. K. Sen**, P. L. Stoffa, and C. Frohlich, 1995, Application of very fast simulated annealing to the inversion of receiver structure, presented at the *Seismological Society of America meeting* at El Paso, Texas.

Calderón-Macías, C., and **M. K. Sen**, 1995, Mean field annealing method in deconvolution and geophysical inversion, *3rd SIAM Conference on mathematical and computational issues in geosciences*, San Antonio, Texas.

Sen, M. K., and P. L. Stoffa, 1994, Sampling based approaches to estimating uncertainties in geophysical inversion, *EOS Trans. AGU*, 75 (4), 457.

Xia, G., **M. K. Sen**, and P. L. Stoffa, 1994, Preliminary AVO analysis of Mobil data in the tau-p domain, paper presented at the AVO workshop at the *SEG 1994 meeting*.

Sen, V., **M. K. Sen**, and P. L. Stoffa, 1994, Seismic Processing Using PVM: Prestack 3D Kirchhoff Migration and Modeling, 1994, *PVM Users' Group Meeting*, Oak Ridge, Tennessee.

Akbar, F.E., **M. K. Sen**, and P.L. Stoffa, 1994, Rapid 2-D Plane Wave Kirchhoff Migration using PVM, 1994, *PVM Users' Group Meeting*, Oak Ridge, Tennessee.

Wood, W. T., and **M. K. Sen**, 1994, Nonlinear inversion by successive approximation of marginal density function, *Proceedings of the NATO Conference on Full Field Inversion Methods in Ocean and Seismic Acoustics*, La Spezia, Italy.

Lindwall, D., **M. K. Sen**, J. F. Gettrust, 1994, Detection of high shear velocity in marine sediments from seismic waveform data, *Proceedings of the NATO Conference on Full Field Inversion Methods in Ocean and Seismic Acoustics*, La Spezia, Italy.

Stoffa, P. L., and **M. K. Sen**, 1994, Migration and inversion of seismic data, *NATO Workshop of Rifted Ocean-Continent Boundaries*, Mallorca, Spain.

Zhao, L.-S., **M. K. Sen**, and P. L. Stoffa, 1994, Statistical Study of Norms of Waveform Fit for Source Estimation from Regional Seismograms, *89th Annual Meeting of the Seismological Society of America*, 65(1), 29.

Sen, M. K., and P. L. Stoffa, 1993, Geophysical Inversion Using Global Optimization, *Society of Industrial and Applied Mathematics Conference on Mathematical and Computational Issues in the Geosciences*, Houston, Texas.

Sen, M. K., F. A. Akbar, P. L. Stoffa, and J. F. Gettrust, 1993, Imaging of ocean subbottom structure using swath mapping data: Feasibility studies, *J. Acoust. Soc. Am.*, 93(2), 2341.

Sen, M. K., P. L. Stoffa, and J. A. Austin, Jr., 1993, High resolution shallow water 3-D survey and inversion for geophysical parameters, *J. Acoust. Soc. Am.*, 93(2), 2269.

Porsani, M., **M. K. Sen**, P. L. Stoffa, R. Chunduru, and W. T. Wood, 1993, Seismic Waveform Inversion by a Hybrid Linearized-Genetic Algorithm, *EOS Trans. AGU*, 74(16), 201.

Jervis, M., P. L. Stoffa, and **M. K. Sen**, 1993, 2-D Velocity Estimation Using a Genetic Algorithm, *EOS Trans. AGU*, 74(16), 201.

Sen, M. K., and P. L. Stoffa, 1992, Multilayer AVO inversion by genetic algorithms, *Proceedings of the Society of Exploration Geophysicists 62nd Annual International Meting and Exposition*, New Orleans, Louisiana.

Bhattacharya, B.B., **M. K. Sen**, and P.L. Stoffa, 1992, Nonlinear inversion of resistivity sounding data, *Proceedings of the SEG/Moscow '92 International Conference and Exposition on Exploration and Development Geophysics*, Moscow, Russia, 171.

Sen, M. K., and P. L. Stoffa, 1992, Multilayer AVO inversion by genetic algorithms, *Proceedings of the SEG/EAEG Summer Research Workshop*, Big Sky, Montana, 581-589.

Saikia, C. K. , **Sen, M. K.** , Helmberger, Donald V., Analysis of regional phases from NTS seismograms recorded in Los Angeles Basin, *Seismological Research Letters* (Mar. 1, 1991)

Sen, M. K., and P. L. Stoffa, 1990, Pre-stack migration in shot-geophone coordinates using the split-step Fourier algorithm, presented at the *SEG/Midwest Meeting*, Mar. 25-27, Midland, Texas.

Stoffa, P. L., **M. K. Sen**, J. T. Fokkema, W. Kessinger, and R. Tatalovic, 1990, Pre-stack Shot Point and Common Midpoint Migration Using the Split-step Fourier Algorithm, *Proceedings of the 52nd European Association of Exploration Geophysicists Meeting and Technical Exhibition*, Copenhagen, Denmark.

Tajima, F., and **M. K. Sen**, 1990, Spectral characteristics of the aftershocks of the Loma Prieta earthquake, presented at the *1990 Western Pacific AGU meeting*.

Tatalovic, R., P. L. Stoffa, J. T. Fokkema, and **M. K. Sen**, 1990, Velocity Estimation Using the Pre-stack Split-step Fourier Migration Algorithm for Plane Wave Decomposed CMP Data, *Proceedings of the EAEG/SEG Research Workshop on Estimation and Practical Use of Seismic Velocities*, Cambridge, UK.

Saikia, C. K., and **M. K. Sen**, 1989, Long range and high frequency synthetic seismograms using 1-D techniques, *EOS Trans. AGU*, 79(43), 1200.

Sen, M. K., 1989, Modeling of wave propagation in the Los Angeles basin, *EOS Trans. AGU*, 70(43), 1192.

Somerville, P. G., J. P. McLaren, **M. K. Sen**, and D. V. Helmberger, 1989, Source and strong motion modeling of November 25, 1988 Saguenay, Quebec earthquake, *EOS Trans. AGU*, 70(43), 1191.

Cohee, B. P., P. G. Somerville, and **M. K. Sen**, 1989, Strong ground motions in the Seattle-Portland region from hypothesized Mw=8 subduction earthquakes, *EOS Trans. AGU*, 70(43), 1191.

Sen, M. K., C. K. Saikia, and J. P. McLaren, 1988, Modeling ground motion attenuation in the Mississippi embayment, *EOS Trans. AGU*, 69(16), 408.

Saikia, C. K., and **M. K. Sen**, 1988, Analysis of regional seismograms from quarry blasts near the southern Mississippi embayment, *EOS Trans. AGU*, 69(16), 408.

Sen, M. K., 1988, High frequency body wave synthetic seismograms in laterally varying media (presented at the *SSA eastern section meeting* at Penn State University).

Frazer, L. N., and **M. K. Sen**, 1986, Notes on two wide angle P. E. (presented at the *ASA meeting* at Cleveland, Ohio).

Sen, M. K., N. R. Chapman, S. Mallick, and L. N. Frazer, 1986, Analysis of multipath sound propagation in an oceanic wedge (presented at the *AGU Fall Meeting*).

Sen, M. K., and L. N. Frazer, 1985, Computation of multifold path integral synthetic seismograms, *Earthquake Notes*, 55, 9.

Frazer, L. N., and **M. K. Sen**, 1985, Multifold phase space path integrals, *Earthquake Notes*, 55, 9.

Frazer, L. N., and **M. K. Sen**, 1983, Notes on two asymptotic methods of computing synthetic seismograms in laterally variable media, *Earthquake Notes*, 54, 78.

Sen, M. K., and L. N. Frazer, 1983, Modeling reflections from laterally variable multi-layered elastic medium, *EOS Trans. AGU*, 64(45), 773.

Technical Reports:

Barhen, J., J.G. Berryman, L. Borcea, J. Dennis, C. de Groot-Hedlin, F. Gilbert, P. Gill, M. Heinkenschloss, L. Johnson, T. McEvilly, J. More, G. Newman, D. Oldenburg, P. Parker, B. Porto, **M. K. Sen**, V. Torczon, D. Vasco, and N.B.Woodward, 2000: *Optimization and Geophysical Inverse Problems*, Report of a Workshop at San Jose, California, Feb. 5-6, 1999. Lawrence Berkeley National Laboratory report number 46959, 33pp.

Sen, M. K., P. L. Stoffa, and R. Sefiullaev, 2001, Air-borne GPR for the detection of underground facilities, Report to the Institute of Advanced Technology, University of Texas at Austin.

Sen, M. K., and F. Liu, 1996, A unified approach to free surface multiple elimination methods, UTIG Technical Report TR-150.

Sen, V., **M. K. Sen** and P. L. Stoffa, 1996, Parallel algorithms for automatic estimation of seismic velocities, Final Report UTIG Technical Report TR-147 to Cray Research Inc.

Sen, M. K., P. L. Stoffa, and C. Calderón-Macías, 1995, Velocity analysis and seismic processing using neural network, Final report UTIG Technical Report TR-135 to Cray Research Inc.

Tanis, M. C., A. W. Mulder, P. L. Stoffa, **M. K. Sen**, and J. T. Fokkema, 1995, Pre-stack split-step Fourier depth migration in the p_O-p_S domain, UTIG Technical Report TR-133.

Sen, M. K., 1991, Deep structural complexity and site response in Los Angeles basin, USGS open-file report.

SUMMARY OF STUDENT ACTIVITIES:

CURRENT STUDENTS

MRINAL K. SEN
Supervisor (Current)

207. Anthony Barone, PhD student, DGS
208. Badr A. Alulaiw, PhD student, DGS
209. Reetam Biswas, PhD student, DGS
210. Janaki Vamaraju, PhD student, DGS
211. Son Phan, PhD student, DGS
212. Hala Alqatari, MS student, DGS
213. Xin Liu, PhD student, DGS (joining in fall 2018)
214. Ricardo DeBreganza, PhD student, DGS (joining in fall 2018)
215. Jackson Tomski, MS student, DGS (joining in fall 2018)

PAST STUDENTS

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1. **Pedro Alejandro**, **MS, Spring 2018**, DGS, UT Austin
2. **Debanjan Datta, PhD, fall 2017**, DGS, UT Austin
3. **Han Liu (co-supervision with Kyle Spikes),** Spring 2016, PhD, DGS, UT Austin
4. **M. Chauhan (co-supervision with Prof. Maurizio Fedi) , Fall 2017, PhD, University of Naples Federico, Italy**.
5. **P. K. Mishra (co-supervisor with Prof. S. K. Nath), Fall 2017, PhD, Indian Institute of Technology, Kharagpur, India.**
6. **Pan Bei, PhD Spring 2016**, **China University of Geosciences, Wuhan**, *Estimation of fluid factor in fractured media from multi-component seismic data (Exchange PhD Student)*
7. **Qi Ren, PhD Spring 2016, UT-DGS,** *Seismogram synthesis, imaging, and rock physics for reservoir characterization*
8. **Zeyu Zhao, PhD Spring 2016, UT-DGS,** *Double plane wave reverse time migration*
9. **Biswajit Mandal, PhD Spring 2014, NGRI, India,** *Velocity-independent imaging of DSS data*
10. **Yang Xue, PhD Fall 2013, UT-DGS,** *Seismic inversion for reservoir characterization and monitoring*
11. **Kumar Das, MS Spring 2013, UT-DGS,** *Seismic inversion and estimation of hydrate saturation*
12. **Mohammed Alhussain, PhD Spring 2013, UT-DGS,** *Overbuden removal and new AVOA method for fracture characterization*
13. **Yi Tao, PhD Fall 2012, UT-DGS,** *Seismic interferometry and full waveform inversion in plane wave domain.*

14. **Corey Joy, MS Summer 2011, UT-DGS,** *Effective medium modeling of carbon sequestered reservoirs.*
15. **Son Phan, MS Spring 2011, UT-DGS,** *Uncertainty in reservoir parameter estimation,*
16. **Ma Jitao, PhD Spring 2009, China University of Petroleum,** *Multiple attenuation in plane wave domain.*
17. **Jonas De Basabe, PhD Spring 2009, Computational and Applied Math,** *Numerical Simulation of Elastic Wave Propagation*
18. **Samik Sil, PhD Spring 2009, UT-DGS,** *Two-way travel time analysis for seismic reservoir characterization*
19. **Tao Liu, Exchange PhD Student 2009, Beijing University, Dept of Geophysics,** *Hybrid finite difference-finite element of seismic wave propagation.*
20. **Daniel Smith, MS Fall 2008, UT-DGS,** *Seismic Trace Regularization and Datuming*
21. **Abdul Aziz Al-Aslani, MS Summer 2008, UT-DGS,** *Post-stack and pre-stack inversion for porosity estimation of carbonate reservoirs*
22. **Tiancong Hong, PhD Summer 2008, UT-DGS,** *MCMC Algorithm, Integrated 4D Seismic Reservoir Characterization and Uncertainty Analysis in a Bayesian Framework*
23. **Sanjay Sood, MS Fall 2007, UT-DGS,** *Estimation of Q from seismic refractions data*
24. **Reeshidev Bansal, PhD Spring 2007, UT-DGS,** *Seismic Characterization of Naturally Fractured Rerservoirs*
25. **Gregory Russell Young, MS Spring 2007, UT-DGS,** *Effective Porosity Estimation from 3D Seismic: Marco Polo Field*
26. **Dhananjay Kumar, PhD Spring 2005, UT-DGS,** *Analysis of multicomponent seismic data from the Hydrate Ridge, offshore Oregon*
27. **Jiao Xue, PhD (Visiting Student), China University of Geosciences,** *Anisotropy parameter estimation and inversion for reservoir characterization*
28. **Adam Allan, BS Fall 2009 (Dec) Honors Program, DGS-UT (Undergraduate),** *Regularization methods*
29. **Chandan Kumar, PhD Fall 2006, UT-DGS,** *Stress estimation from fault plane reflection coefficient,*
30. **Joost Van der Noot, Exchange MS Student 2005, Applied Geophysics, Delft University of Technology, Netherlands,** *Stress induced anisotropy*
31. **Armando Sena, PhD Fall 2004 (Dec), UT-DGS,** *Imaging and analysis of GPR data*
32. **Heidi Poot, Exchange PhD Student 2003, Applied Geophysics, Delft University of Technology, Netherlands,** *Imaging methods for acoustical data.*
33. **Chengshu Wang, PhD Summer 2003 (Aug), UT-DGS,** *Velocity estimation of gas hydrate.*
34. **Gijs Meek, Exchange MS Student 2003, Mining Engr and Applied Geophysics, Delft University of Technology, Netherlands,** *Integrated subsurface modelling,*
35. **Anubrati Mukherjee, PhD Spring 2002 (May), UT-DGS,** *Seismic Processing in transversely isotropic media: A tau-p approach.*
36. **Abdul-Aziz Saleh Alaslani, PhD Fall 2001 (Dec), UT-DGS,** *Developing, testing, and evaluating wave equation based multiple removal methods for marine seismic data.*
37. **Saleh Mohammad Al-saleh, MS Summer 2001 (Aug), UT-DGS,** *Processing of ocean bottom cable data.*
38. **Faqi Liu, PhD Summer 1999 (Aug), UT-DGS,** *Free surface multiple elimination operators and their applications.*
39. **Mehmet Tanis, PhD Fall 1989 (Dec), UT-DGS,** *A Comparison of Migration Methods in Laterally Varying Media.*
40. **Ganyuan Xia, PhD Summer 1997 (Aug), UT-DGS,** *Prestack Migration and Inversion.*
41. **Carlos Calderon-Macias, PhD Summer 1997 (Aug), UT-DGS,** *Feedforward NN, Hopfield network and mean field annealing in seismic waveform inversion.*
42. **Faruq Akbar, PhD Summer 1997 (Aug), UT-DGS,** *Three-dimensional prestack plane-wave*

Kirchhoff depth migration in laterally varying media.

43. **Eddy Luhurbudi, MA Spring 1997 (May), UT-DGS,** *Traveltime calculation in 3-D.*
44. **Raghu Chunduru, PhD Spring 1996 (May), UT-DGS,** *Hybrid linear/nonlinear inversion of geophysical data.*
45. **Setiyono Kriyanti, MS Fall 1996 (May), UT-DGS,** *Comparison of Multiple Elimination Methods*

POST-DOCTORAL AND VISITING SCIENTISTS SPONSORED

1. **Debanjan Datta,** Jan 18-
2. **Xiaohui Cai,** October 17-
3. **Zeyu Zhao,** Jan 16-
4. **Piyoosh Jaisval,** July 16-
5. **Chunmei Luo**, Oct 15-Oct 16
6. **Maheswar Ojha,** Jan 15-April 15
7. **Dr. Rui Zhang,** Jan 11 - Sep-13
8. **Dr. Ranjana Ghosh,** Apr-11 – Mar-13
9. **Dr. Deng Zhiwen,** Mar-10 - Sep-11
10. **Dr. Jonas DeBasabe,** Apr-09 - Sep-11
11. **Dr. Ma Jitao,** Sep-09 - Mar-10
12. **Puneet Saraswat,** Jul-10 - Aug-10(Undergrad from ISM Dhanbad) ISM Dhanbad
13. **Prof. Utpal Dutta**, Jun-07 - Aug-10, (Summers 2007-2010) University of Alaska
14. **Prof. Yang Liu**, Sep-08 - Aug-09, China University of Petroleum
15. **Dr. Adrian Ciuciavara**, Jan-08 - May-09
16. **T. Vikranth Babu**, Jun-09 - Jul-09, (Undergrad from IIT Madras) IIT Madras
17. **Dr. Ravi Srivastava**, Mar-08 - May-09
18. **Dr. Armando Sena**, Oct-07 - Jun-09
19. **Dr. Jin Long**, May-06 - Sep-08
20. **Dr. A. Pal**, May-06 - Apr-08
21. **Dr. Abhijit Gangopadhyay,** Jan-06 - Oct-07
22. **Dr. Nimiisha Vedanti**, May-07 - Apr-08
23. **S. Rajput**, Dec-06 - Feb-07
24. **Joost van der Noot**, Jan-06 - Apr-06
25. **S. Rajput**,Oct-06 – Nov-06 , Visiting Graduate Student NGRI India
26. **Dr. Utpal Dutta**, Jul-05 - Jul-05
27. **Dr. Murthi Guddati,** Jun-04 - Jul-04, Asst. Prof., University of North Carolina
28. **Dr. Y. Xia**, Jan-02 - Dec-03
29. **Dr. Qiaozhen Mu**, Jan-02 - Dec-03, Post-doctoral Fellow
30. **Dr. Wulfgang Bangerth**, Sep-03 - May-05, Post-doctoral Research Fellow (joint position Institute for Computational Engineering and Sciences (ICES) and UTIG
31. **Dr. Indrajit G. Roy,** Nov-00 - Aug-03
32. **Dr. Zhan Wu**, Sep-03 - May-04
33. **Dr. Ranjit K. Shaw**, Jun-02 - May-03
34. **Dr. Lopamudra Roy**, Jun-02 - May-03
35. **Prof. Robert Nowack**, Feb-01 - Feb-01, Visiting Scientist Purdue University
36. **Prof. Milton Porsani**, Jan-01 - Feb-01, Visiting Scientist
37. **Dr. J. Pestana**, Sep-98 - Aug-99
38. **Dr. Farup Akbar**, Jul-97 - Sep-98
39. **Dr. Roustam Seif**, Sep-98 - Aug-04 , Research Fellow Programmer
40. **Dr. Jay Pulliam**, Jan-95 - Aug-97, Post-doctoral Fellow
41. **Dr. R. Phillip Bording**, Aug-95 - Jul-97

INVITED LECTURES:

2017

"Trans-dimensional Geophysical Inversion and Uncertainty Quantification", Indian Institute of Technology, Dhanbad, India, June 2018.

"Seismic waves and hazard", Geological Society of Mizoram meeting, Aizawl, Mizoram, India, June 2018.

"Trans-dimensional Geophysical Inversion and Uncertainty Quantification", Exxon-Mobil, Houston, May 2018.

"Trans-dimensional Geophysical Inversion and Uncertainty Quantification", Electrotek and Geomatics Endowed Lecture (Gold medal of the Indian Geophysical Union), Indian Institute of Technology, Bombay, India, December 2017.

"DAS: A new tool for subsurface monitoring", Academy of Scientific and Industrial research, National Geophysical Research Institute, Hyderabad, India, December 2017.

"Trans-dimensional Geophysical Inversion", Keynote lecture at the Indian Geophysical Union, Hyderabad, India, December 2017.

"Time-lapse seismic monitoring of reservoirs", Department of Geological Sciences, Baylor University, Texas, October 2017.

"Machine leaning applications in Geophysics", Anadarko Corporation, Houston, TX, October 2017.

"Seismic modeling of a fractured reservoir", Apache Corporation, Houston, TX, May 2017.

"FWI & Seismic modeling of a fractured reservoir", Chevron R&D, Houston, TX, May 2017.

"Global Optimization for geophysical inversion", NSF workshop on 'mathematics for oil and gas exploration and production', Institute of Pure and Applied Mathematics, UCLA, March 2017.

"Uncertainty quantification in Geophysics", NSF workshop on 'mathematics for oil and gas exploration and production', Institute of Pure and Applied Mathematics, UCLA, March 2017.

2016

"Modeling of seismic wave propagation in fractured media", IA meeting, CSM, ICES, UT Austin, October 2016.

"Seismic modeling of a fractured reservoir", keynote lecture, International workshop on seismic anisotropy 17, Horseshoe Bay, September 2016

"Geophysical characterization of a shale gas reservoir", Indian Institute of Technology (ISM), Dhanbad, India, July 2016

"Full waveform inversion", CNPC, Beijing, China, July 2016.

"Full waveform inversion", China university of Petroleum, Beijing, China, July 2016.

"Seismic Inversion for reservoir characterization", China university of Petroleum, Qingdao, China, July 2016.

"Strategies for full waveform inversion", Computational Energy Day workshop, Institute of computational engineering and sciences, UT Austin, February 2016.

2015

"Mitigation of cycle skipping in full waveform inversion", Chevron FWI workshop, Houston, TX, December 2015.

"Starting models in full waveform inversion: global optimization approach", SEG post-conference workshop, New Orleans, LA, October 2015.

"Full waveform modeling and inversion", Statoil, Bergen, Norway, May 2015.

"Stochastic inversion of Cana field data", Cimarex Tulsa, Oklahoma, April 2015.

"Trans-dimensional seismic inversion", Geophysical Society of Houston symposium honoring Leon Thomsen, March 2015

"Pushing the limits of seismic resolution", Department of Geological Sciences, The University of Texas at El Paso, March 2015.

"Inversion of time-lapse seismic data", Indian School of Mines, Dhanbad, February 2015.

2014

"Recent results from seismic waveform inversion", Exxon Research, Houston, TX, December 2014.

"Hybrid optimization methods for full waveform inversion", Chevron Research, Houston, TX, September 2014.

"Hybrid optimization methods for full waveform inversion", Hess corporation, Houston, TX, July 2014.

"Full wavefield modeling and inversion", AGU-SEG summer research workshop, Vancouver, Canada, July 2014.

"Critical aspects of numerical simulation of seismic wave propagation", Lawrence Livermore National Laboratory, California, May 2014.

"Critical aspects of numerical simulation of seismic wave propagation", International Conference on theoretical and computational acoustics, Texas A&M University, College Station, March 2014.

"Seismic fracture characterization", PEMEX oil company, Viallehermosa, Mexico, February, 2014.

"Subsurface Imaging: Challenges and Opportunities", INSPIRE Lecture, University of Tirupati, January, 2014.

2013

"Bayesian Geophysical Inversion: imposing constraints and uncertainty quantification", keynote lecture, international conference statistics 2013, C. R. Rao institute of advanced mathematics, computer science and statistics, University of Hyderabad, December 2013.

"Fundamantals of forward and inverse problems in Geophysics", short course on mathematical geosciences at Wadia Institute of Himalayan Geology, December 2013.

"Uncertainty quantification in Geophysics", short course on mathematical geosciences at Wadia Institute of Himalayan Geology, December 2013.

"Pushing the limits of seismic resolution", Cairn Energy Technology Forum 2013, Delhi, India, December 2013.

"Critical aspects of full waveform modeling and inversion", Petronas, Kuala Lampur, Malayasia, November 2013.

"Seismic inversion for reservoir characterization", Technical University of Petronas, Kuala Lampur, Malayasia, November 2013.

"Fundamentals of seismic interferometry", Department of Applied Geophysics, ISM, Dhanbad, India, November 2013.

"Large scale data integration: challenges in seismic imaging", Keynote lecture, Geological society of India annual meeting, ISM Dhanbad, India, November 2013.

"Shale gas: how can geophysics help?", Keynote lecture, Coal mine planning and development institute, Ranchi, India, November 2013.

"Geophysics for subsurface mapping", Dr. S. Balakrishna Endowment Lecture, A.P. Akademi of sciences, Nalgonda, India, October 2013.

"Seismic fracture characterization", Dr. Hari Narayan Memorial Lecture, Association of Exploration Geophysicists, Delhi, India, October 2013.

"Subsurface Imaging: Challenges and Opportunities", S. N. Singh memorial lecture, Indian society of paleontologists, Lucknow, India, September 2013.

"Subsurface Imaging: Challenges and Opportunities", Birbal Sahani Institute of paleobotany, Lucknow, India, September 2013.

"Uncertainty Quantification in Geophysics", BRGM, Orleans, France, August, 2013.

"Details in Sparsity?", Gujrat State Petroleum Corporation, Gandhinagar, Gujrat, India, July 17, 2013.

"Details in Sparsity?", Institute of Seismological Research, Gandhinagar, Gujrat, India, July 17, 2013.

"Full waveform inversion: a large scale inverse problem", Workshop on modeling and inversion of electromagnetic waves, NGRI, Hyderabad, India, July 8, 2013.

"Joint inversion of disparate geophysical datasets: A game theoretical approach", IGU workshop at Wadia Institute of Himalayan Geology, Dehradun, India, June 11, 2013.

"Uncertain Uncertainty?", University of Hyderabad, Hyderabad, India, April 17, 2013.

"Uncertain Uncertainty?", Physical Research Laboratory Colloquium, Ahmedabad, India, April 2, 2013.

"Subsurface imaging: challenges and opportunities", Physical Research Laboratory, Ahmedabad, India, April 2, 2013.

"Estimation of fracture parameters from seismic data", Society of Petroleum Geophysicists – Baroda chapter, Baroda, India, April 1, 2013.

"Seismic Reservoir Characterization", CEWELL Oil and Natural Gas Corporation, Baroda, India, April 1, 2013.

"Geophysical Investigation of Impact craters", J. B. Auden Lecture, Wadia Institute of Himalayan Geology, March 18, 2013.

"Geophysical Investigation of Impact craters", Key note speech at the DST conference on exploration geophysics, Osmania University, Hyderabad, March 14, 2013.

"Geophysical Investigation of Impact craters", PLANEX conference, Hyderabad, India, Jan 11, 2013.

"Subsurface Imaging", Indian Science Congress, Kolkata, India, Jan 6, 2013.

2012

"Computational methods for subsurface investigation" Indian National Science Academy annual meet, Pune, India, Dec 27, 2012.

"Challenges and opportunities in subsurface imaging", K. D. Malaviya Memorial Lecture, KDM Institute of petroleum exploration, ONGC, Dehradun, Dec 18, 2012.

"Seismic inversion for thin bed resolution", Indo-Norwegian conference on CO2 sequestration, Hyderabad, India, Nov. 26, 2012.

"Uncertainty quantification in Geophysics", A.P akademi of Sciences annual meeting, Hyderabad, Oct 24, 2012.

"Uncertainty quantification in Geophysics", Indian Geophysical Union (IGU) decennial gold medal award lecture, Oct 29, 2012.

"Challenges and opportunities in subsurface imaging", First Prof. R. S. Mithal Memorial Lecture, Indian Institute of Technology, Roorkee, Oct 5, 2012.

"The fourth paradigm of seismic imaging", Wadia Institute of Himalayan Geology, India, Aug 27, 2012.

"Dharawar Craton: where is the Moho?" CSIR-NGRI, Hyderabad, India July 24, 2012.

"The fourth paradigm of subsurface imaging", Dr. M. G. Krishna Endowed lecture, Andhra University, Vishakhapattanam, India, July 16, 2012

"Accuracy of finite difference and finite element methods for numerical simulation of seismic wave propagation", Invited Lecture, SINTEF and NTNU, Trondheim, Norway, June 1, 2012.

"Subsurface Imaging: challenges and opportunities", Invited Lecture, Nartional Institute of Oceanography, Goa, India, May 4, 2012.

"Subsurface Imaging: challenges and opportunities", Institute Lecture, Indian Institute of Technology, Kanpur, India, April 9, 2012.

"Subsurface Imaging: challenges and opportunities", Indian Institute of Geomagnetism, Mumbai, India, April 2, 2012.

"Metaheuristics for uncertainty quantification in Gephysics", Dept of Civil Engg, Indian Institute of Sceiences, Bangalore, India, March 25, 2013.

"Some critical issues related to numerical simulation of seismic wave propagation", Key-note talk, SPG Hyderabad, India, February 2012.

"Subsurface imaging: a cross-displiniary science", key-note speech, SPG, Hyderabad, India, February 2012.

"Subsurface imaging: a cross-displiniary science", key-note speech, Indian society of applied geochemists annual conference at Banaras Hindu University, Varanasi, India, February 2012.

"Sub-basalt Imaging", One-day short course taught at Kolkata for SPG,India, February 2012.

"Full waveform Inversion", one day short course taught at GEO 2012 Bahrain for SEG, February 2012.

"Seismic Inversion for reservoir characterization", Osmania University, Hyderabad, India, February 2012.

"High performance computing in geosciences" Center for mathematical modeling and computer simulations, Bangalore, India, February 2012.

"Numerical methods for ground motion simulation: critical aspects", Indo-US joint workshop on intra-plate earthquakes, Seismological Research Institute, Gandhinagar, India, January 16, 2012.

"Possible M9 earthquake at Kashmir valley – critical comments", Ministry of Earth Sciences, New Delhi, India, January 2012.

"Global energy demand", Key-note speech, Indian Mineral Congress, Indian School of Mines, Dhanbad, India, January 2012.

2011

"Seismic inversion and Uncertainty Quantification for reservoir characterization", Cairn Energy, Gurgaon, India, December 9, 2011.

"Challenges in computational seismology: 4th paradigm of subsurface imaging", National Geophysical Research Institute Golden Jubilee, Hyderabad, India, October 12, 2011.

"Some practical aspects of numerical simulation of seismic wave propagation", Exxon-Mobil Research Center, Houston, TX, August 2011.

"Some practical aspects of numerical simulation of seismic wave propagation", BP Research Center, Houston, TX, August 2011.

"Meta-heuristics for uncertainty characterization in geophysical inversion", key-note speech in the session on soft-computing applications in geophysics, AOGS 2011 conference Taipei, Taiwan, August 2011.

"Computational methods for forward and inverse problems of seismology", Indian School of Mines, Dhanbad, India, August 2011.

"Seismic methods for subsurface characterization", Central institute of mining and fuel research, Dhanbad, India, August 2011.

"Computational methods for forward and inverse problems of seismology", Indian Institute of Science Education and Research, Kolkata, India, August 2011.

"Seismic Inversion: computational challenges", National Geophysical Research Institute, India, July 2011.

"Critical issues related to numerical simulation of wave propagation", SEG summer research workshop, Quebec City, Canada, June 2011.

"On some practical aspects of numerical simulation of seismic wave propagation", KAUST-IAMCS workshop on Multi-scale modeling, Advanced discretization techniques, and simulation of wave propagation, King Abdullah University of Science and Technology, May 2011.

"Full waveform inversion for reservoir characterization", BGP Chinese National Oil Comapany, Beijing, China, March 2011.

"Wave propagation in fractured porous media", China University of Petroleun, Beijing, China, March 2011.

"Use of priors and hyper-priors in seismic inversion", workshop on seismic exploration: current status and future directions, King Abdullah University of Science and Technology, Jan 2011

.

2010

"Inverse methods, geostatistics and neural networks for seismic reservoir characterizartion", SPG Dehradun India, Dec 2010.

"Seismic inversion for reservoir characterization: some critical issues", Department of Geophysics, Stanford University, May 2010.

"Use of prior and hyper-prior in seismic inversion for reservoir characterization", Key-note speech, SPG Conference Hyderabad, India, February 2010.

"Role of scientific societies in promoting science and technology", Key-note speech, SPG Conference Hyderabad, India, February 2010.

2009

"Use of marine multi-component seismic data in the estimation of elastic properties of shallow sediments", Invited paper presented at the workshop on 'multi-component seismic data' at the SEG annual meeting, Houston, TX, November, 2009.

"Use of prior and hyper-prior in seismic inversion for reservoir characterization", EGS seminar, UT Austin, October 2009.

"Seismic Inversion" One week short course taught at China University of Petroelum, Beijing, China.

"Seismic Inversion: critical issues", Beijing University, Department of Geophysics, September, 2009

"Shale-gas productivity", SPG North American Chapter Luncheon talk at the University of Houston, July 2009.

"Seismic inversion of Bossier sand data", Anadarko Petroleum Company, Houston, June 2009

"AVO, simulataneous inversion, and full waveform inversion", Whiting Oil Company, Denver, Colorado, June 2009.

"Seismic Inversion for reservoir characterization," TOTAL Research Center, Pau, France, May 2009

"Seismic Interferometry" Indian Institute of Technology, Mumbai, India, May 2009.

"Barnett Shale: Geology, Geophysics, and production engineering issues", EDGER Forum, Austin, TX, February 2009.

"Seismic inversion of time-lapse data from a heavy oil field", EDGER Forum, Austin, TX, February 2009.

2008

"Seismic Interferometry," Geodata Processing and Interpretation Center, Dehradun, ONGC, India, Dec. 2008.

"Density Estimation from seismic reflection data" Reliance India Limited, Mumbai, India, Aug. 08.

"Recent advances in seismic inversion technology," Society of Petroleum Geophysicists, Mumbai, India, Aug. 2008.

"Joint inversion of seismic and fluid flow data for dynamic reservoir characterization," Aramco EXPEC advanced research center, Daharan, Saudi Arabia, July 08.

"Inverse Methods, Geostatistics and Neural Networks for Geophysical Analysis" Aramco EXPEC advanced research center, Daharan, Saudi Arabia, July 08.

"Recent Developments in Inversion Technology," Aramco EXPEC advanced research center, Daharan, Saudi Arabia, July 08.

"Seismic Modeling and amplitude versus azimuth in fractured media" Aramco EXPEC advanced research center, Daharan, Saudi Arabia, July 2008.

"Recent advances in seismic inversion technology," Exxon Production and Research, Houston, TX, June 2008

"Joint inversion of seismic and fluid flow data for dynamic reservoir characterization," Chevron Research Center, San Ramon, California, May 2008

Inverse Methods, Geostatistics and Neural Networks for Geophysical Analysis, Exploration Geophysics Seminar, Jackson School of Geosciences, UT Austin.

Recent Developments in Inversion Technology, Keynote speech—joint session of SPG, APG, EAGE, SEG at the Society of Petroleum Geophysicists conference at Hydearabad, India, Januray 2008.

Seismic Modeling and amplitude versus azimuth in fractured media, Keynote speech—session on "AVO, modeling and inversion," Society of Petroleum Geophysicists conference at Hydearabad, India, Januray 2008.

2007

Pre-stack Full Waveform Inversion for Estimating Elastic Properties of Marine Sediments, Acoustical Society of America meeting, New Orleans, Nov. 28, 2007.

Estimation of uncertainty in some geophysical models, Sandia Workshop on uncertainty estimation in large scale inverse problems, Santa Fe, New Mexico, Sept. 2007.

Bayesian Geophysical Inversion, Department of Physics, UT Austin, Aug. 2007.

New trends in seismic inversion for reservoir characterization, 4th ENAEP Ecuador (4to Encuentro Anual de la Energia y el Petroleo), Aug. 2007.

New trends in seismic Modeling of fractured reservoirs, 4th ENAEP Ecuador (4to Encuentro Anual de la Energia y el Petroleo), Aug. 2007.

Seismic Inversion for Reservoir Characterization, Keynote speech, First International forum on oil and gas for doctoral students, China University of Petroleum, Beijing, China, Aug. 2007.

Seismic Inversion and fracture characterization, BGP, Beijing, China, Aug. 2007.

Need for seismic analysis in reservoir characterization, Oil India Limited, Duliajan, India, June 2007.

Seismic Inversion for Reservoir Characterization: Current Status and Future Direction, Dept. of Geology and Geophysics, University of Wyoming, Laramie, Wyoming, May 2007.

Seismic Modeling of Fractured Reservoirs: Failure of AVOA? Dept. of Geology and Geophysics, University of Wyoming, Laramie, Wyoming, May 2007.

New Results from Seismic Inversion in the Plane Wave Domain, Sheriff Symposium, University of Houston, Apr. 2007.

Stiffness, Compliance and Tensor to Matrix mapping for Fracture Modeling, EGS Lecture, University of Texas at Austin, Apr. 2007.

Seismic Inversion for Reservoir Characterization: Current Status and Future Direction, School of Geology and Geophysics, University of Oklahoma, Norman, Oklahoma, Apr. 2007.

Anomalous AVOA in fractured media, Conoco-Phillips, Houston, Mar. 23, 2007.

Elastic Modeling: Current Status and Future Directions, Conoco-Phillips, Houston, Mar. 23, 2007.

Some analytic results from AVOA over fractured reservoirs, EDGER forum, UT Austin, Feb 07.

2006

Bayesian Geophysical Inversion, EGS Seminar, UT Austin, Oct. 20, 2006.

Uncertainty Estimation in Geophysics, Invited lecture, Joint Statistical Society meeting (JSM), Seattle, Washington, Aug. 7, 2006.

Seismic modeling and inversion: the state of the art, Chevron Texaco Research Center, San Ramon, CA, May 15, 2006.

Seismic Modeling in 3D, SEG forum on new generation seismic models, Apr. 06.

AVOA for fluid detection in fractured resrvoirs, Edger forum, UT Austin, Feb. 06.

True amplitude migration-inversion, keynote speech at the SPG conference, Kolkata India, Jan. 10, 2006.

2005

Seismic Inversion for hydrocarbon exploration, crustal structure, and whole earth modeling AGU-SEG joint session spring meeting, New Orleans, Louisiana, invited.

Seismic modeling of fractured reservoirs, School of Geology and Geophysics, University of Oklahoma, Norman, Oklahoma, Sep. 29, 2005.

Seismic waveform inversion and characterization of gas hydrates offshore Oregon, School of Geology and Geophysics, University of Oklahoma, Norman, Oklahoma, Sep. 29, 2005.

AVO and Seismic Waveform Inversion: present and future, Schlumberger workshop on AVO, Houston, Texas, Sep. 15, 2005.

Fracture Estimation from seismic data: new ideas, Conoco-Phillips, Houston, Texas, July 05.

Seismic Inversion for hydrocarbon exploration, crustal structure and whole earth modeling, AGU-SEG joint session spring meeting, New Orleans, Louisiana.

Constrained pre-stack waveform inversion, Western-Geco/Schlumberger Reservoir Services, Houston, Texas, Apr. 8, 2005.

Free Gas and Gas Hydrate Saturation from multi-component seismic data from offshore Oregon, Rice University, Houston, Texas, Mar. 25, 2005.

Free Gas and Gas Hydrate Saturation from multi-component seismic data from offshore Oregon, Edger Forum meeting, Austin, Texas, Feb. 14, 2005.

Seismic Inversion: State of the art, SPG Kolkata chapter, Kolkata, India, Jan. 5, 2005.

2004

Seismic modeling of fractured reservoirs, SIAM annual meeting, Portland Oregon, July 2004.

Seismic waveform inversion and characterization of gas hydrates offshore Oregon, Dept. of Geological Sciences, Indiana University, Bloomington, Indiana, Apr. 2004.

Seismic imaging in heterogeneous, anisotropic media, Dept. of Geological Sciences, Indiana University, Bloomington, Indiana, Apr. 04.

Seismic Inversion for reservoir characterization, Dept. of Earth Sciences, Memorial University of Newfoundland, Mar. 04.

Analysis and interpretation of OBS and streamer data from Hydrate Ridge, offshore Oregon EDGER forum meeting, University of Texas at Austin, Feb. 17, 2004.

Seismic waveform inversion: Current status and future directions Keynote address, Society of Petroleum Geophysicists (SPG) conference, Hyderabad, India, Jan. 16, 2004.

2003

Seismic Modeling of fractured reservoirs, Industrial Associates meeting, Institute of computational and engineering sciences, The University of Texas at Austin, Oct. 12, 2003.

Gas Hydrates: their resource potential and geophysical characterization, Institute for Geophysics, UNAM, Mexico City, Mexico, Aug. 13, 2003.

Pre-stack Seismic waveform inversion: current status and future directions, Mexican Institute of Petroleum (IMP), Mexico City, Mexico, Aug. 12, 2003.

Gas Hydrates: their resource potential and geophysical characterization, Mexican Institute of Petroleum (IMP), Mexico City, Mexico, Aug. 11, 2003

Synthetic Seismograms in layered fractured media, FRACCITY annual meeting, Jackson Hole, Wyoming, July 21, 2003.

Pre-stack inversion and anisotropic velocity analysis, Jason Geosystems, Rotterdam, Netherlands, Mar. 24, 2003.

Migration velocity estimation by non-linear optimization, Society of Industrial; and Applied Math conference on mathematical and computational issues in geosciences, Mar. 24, 2003.

Estimation of Vp and Vs of shallow sediments offshore Oregon: Implication towards the distribution of gas hydrates, Petrotech Conference, New Delhi, Jan. 9 2003.

Gas Hydrates: their resource potential and geophysical characterization, Prof. Jagdeo Singh Memorial Lecture at Indian School of Mines, Dhanbad, Jan. 6, 2003.

Gas Hydrates: their resource potential and geophysical characterization, Society of Petroleum Geophysicists, Kolkata chapter, Jan. 2, 2003.

2002

Geophysical Inversion–An overview, Schlumberger Oilfield Services, Houston, Oct. 02.

Rock property estimation from reflection seismic data, Shell Oil Company, Houston, Sept. 02.

Techniques for pre-stack waveform inversion, R&D Division, Western Geco, Houston, Apr. 02.

Waveform inversion for reservoir characterization, BP Houston, Mar. 02.

Pre-stack inversion with adaptive regularization, Society of Petroleum Geophysicists meeting, Mumbai, India, Jan. 02.

2001

Seismic Processing in transversely isotropic media: the tau-p approach, Section Mining Engg and Applied Geophysics, Delft Unviersity of Technology, Netherlands, Dec. 01.

Pre-stack inversion: Current status and future directions, SBGF meeting, Bahia, Salvador, Oct. 01.

Pre-stack inversion: Isotropy and Transverse Isotropy, EDGER Forum, University of Texas at Austin, Apr. 01.

Air-borne GPR for the detection of underground facilities, International workshop on GPR, TNO, Netherlands, May 01.

2000

Integrated reservoir characterization, Western Geophysical , Houston, Texas, Aug. 00.

Integrated reservoir characterization, BP , Houston, Texas, July 00.

Inverse Problems and uncertainty estimation in Geophysics, TICAM, UT Austin, Mar. 00.

Seismic waveform inversion: from isotropy to anisotropy, Shell Oil Company, Houston, Texas, March, 00.

Normal moveout and Seismic waveform inversion in transversely isotropic media, Conoco, Ponca City, Oklahoma, Feb. 15, 2000.

Parameter Estimation in Anisotropic Media, Phillips Oil Company, Barttlesville, Oklahoma, Jan. 12, 2000.

1999

Free surface multiple attenuation in reflection seismic data, ONR Broadband Signal Processing Working Group Meeting, Applied Research Laboratory, University of Texas at Austin, Dec. 2, 1999.

Seismic Waveform Inversion and Tomography: Examples of ill-posed geophysical inverse problems, PGS Series, Houston, Texas, Oct. 11, 1999.

Processing of multi-component OBC data, PGS Houston, Sep. 16, 1999.

Geophysical Inversion and Uncertainty Estimation, National Research Council Workshop on 'How uncertainty is treated in ocean science models?' National Academy of Sciences, Washington, D.C, 12-13 Sept. 1999.

Inverse Problems, Statistics and a touch of philosophy, UTIG seminar, Sept. 9, 1999

Free surface multiple attenuation in the plane wave domain, Upstream Strategic Research Division, Mobil Oil Company, Dallas, Texas, June 28, 1999.

Application of active source Seismology in imaging of subsurface structures, DARPA Geophysics Seminar, Mar. 99.

Geophysical Inversion: Application to hydrocarbon exploration, DOE Workshop on Global inversion of Geophysical Data, Feb. 99.

1998

Geophysical Inversion: Theory and Practice, Southwest Research Institute, San Antonio, Texas, Nov. 98.

AVO and Seismic Inversion in he Plane Wave Domain, Mobil Strategic Research Center, Dallas, Texas, Mar. 98.

AVO and Seismic Lithology, Oil and Natural Gas Commission, Calcutta, India, Jan. 98.

AVO and Seismic Waveform Inversion in the Plane Wave Domain: Application to Gas Hydrate Data, Society of Petroleum Geophysicists, Chennai, India, Jan. 98.

1997

Mapping of Elastic properties of gas hydrates, Amoco EPTG, Tulsa, OK, Nov. 97.

Seismic Wave Propagation Modeling: Current Status and Future Trends, Department of Mechanical Engineering, The University of Texas at Austin, Oct. 97.

Practical Approaches to Uncertainty Estimation in Geophysical Inversion, *Sociedade Brasileira de Geofisica*, Sao Paulo, Brazil, Sept. 97.

To Bayes or not to Baye," PPPG, Federal University of Bahia, Salvador, Brazil, Sept. 97.

1996

Global Optimization Methods and Migration Velocity Analysis, Oil and Natural Gas Commission, Calcutta, India, Nov. 96.

"To Bayes or not to Bayes," Society of Petroleum Geophysicists, Oil and Natural Gas Commission Dehradun, India, Dec. 96.

Inverse methods and uncertainty estimation in geophysics, Western Atlas Wireline Service, Houston, Texas, July 96.

1995

Gibbs' sampler and its application to geophysical inversion, SIAM meeting on Geophysical Inverse Problems in Geophysics, Fish Camp, CA, Dec. 95.

Optimization methods for automatic velocity estimation, SIAM meeting on Geophysical Inverse Problems in Geophysics, Fish Camp, CA, Dec. 95.

Nonlinear geophysical inversion, Department of Petroleum and Geosystems Engineering, University of Texas at Austin, Austin, Texas, Feb. 95.

1994

Nonlinear geophysical inversion, Indian Institute of Technology, Kharagpur, India, July 94.

Global optimization methods in geophysical inversion and Seismic migration and modeling in 3-D, National Geophysical Research Institute, Hyderbad, India, July 94.

Nonlinear geophysical inversion, Indian School of Mines, Dhanbad India, July 94.

Nonlinear optimization methods in geophysics, Delft University of Technology, Netherlands, June 94.

Nonlinear optimization methods in geophysics, University of Potsdam, GeoForschungs Zentrum, Potsdam, Germany, June 1994.

Global optimization methods in geophysical inversion, University of Utrecht, Netherlands, June 94.

1993

Bayesian inference, Gibbs' sampler and uncertainty estimation in nonlinear geophysical inversions, Department of Computational and Applied Mathematics, Rice University, Houston, Texas.

Geophysical inversion using global optimization, Society of Industrial and Applied Mathematics Conference on Mathematical and Computational Issues in the Geosciences, Houston, Texas, 1993.

High resolution shallow water 3-D survey and inversion for geophysical parameters, Acoustical Society of America, Ottawa, Canada, 1993.

1992

Nonlinear inversion of geophysical data, Department of Geophysics, Center for Tectonophysics, Texas A&M University, Nov. 1992.

Genetic Algorithms, Naval Research Laboratory, Stennis Space Center, MS, 1992.

1990 and earlier

Modeling of wave propagation in Los Angeles Basin, CICESE, Mexico, 1990.

Multifold path integral synthetic seismograms, Seismological Laboratory, California Institute of Technology, Pasadena, California, 1987.

Kirchhoff-Helmholtz reflection seismograms, SOHIO Petroleum Company, Dallas, Texas, 1985.

CURRENT RESEARCH GRANTS

Funding Agency	Project	Amount	Duration
NSF	Uncertainty Quantification in Seismic Inversion by Nonlinear Sampling **Sen and Arnulf**	$407,916	06/01/17 - 05/31/20
TOTAL	Global Full Waveform Inversion in 3D and Estimation of Uncertainty for Application in Hydrocarbon Exploration **Sen and Arnulf**	$765,693	09/01/17 - 08/31/20
NSF	NSF Big Data Challenges: fracture characterization **Wheeler, Sen, Srinivasan, Parashar**	$1.2M (my part $280K)	1/1/16-1/15/19
Hess	VFSA inversion for salt bodies **M. K. Sen**	$85,000	1/1/16-5/15/17
Total	Joint inversion of seismic and electromagnetic data **A. Arnulf and M. K. Sen**	$450,000	6/1/16-5/15/18
BP	Spectral AVO and density inversion	$750,000	11/1/15-12/31/18

	M. K. Sen and D. Foster		
Various oil & service companies	EDGER **M. K. Sen, K. Spikes, N. Tisota**	$40,000 per year per sponsor	Multi-year

COMPLETED PROJECTS

Conoco-Philips	Joint Inversion of Seismic and Fluid Flow data **M. K. Sen**	$301,000	09/01/14-08/31/16
US Dept of Energy	Seismic inversion for the estimation of crustal velocity structure–**Sen and Pulliam**	$600,000	06/01/09-08/31/14
Shell-UT Unconventional research	Seismic inversion consrtained by novel rock physics modeling and geostatistical simulation in liquid rich shales **Sen**, **Spikes, Srinivasan and Torres-Verdin**	$867,783	09/01/12-12/31/2016
US Dept of Energy	**Center for Frontiers of Subsurface Energy Security** Gary A. Pope (Director), T. Arbogast, M. Balhoff, P. Bennett, S. Bryant, M. Cardenas, M. Delshad, D. DiCarlo, I. Duncan, P. Eichhubl, S. Hovorka, C. Huh, K. Johnston, L. Lake, **M. K. Sen**, S. Srinivasan, M. Wheeler	$3M/yr	5 years starting Aug 1, 2009
KAUST AEA	Seismic Modeling of fractured reservoirs	$160,000	09/08-08/09
Shell USA/UT Jackson School of Geosciences (Shell Game Changer Project)	WEMI–wave equation migration inversion **Sen**–UTIG, Fornel-BEG	$500,000	01/06–04/08
Conoco-Phillips UT Jackson School of Geosciences Initiative	Joint Inversion of Seismic and Fluid Flow data P. L. Stoffa, **M. K. Sen**	$500,000	06/01/06–05/31/09
NSF Information Technology Research	**Collaborative Research: ITR-:Data Driven Simulation of the Subsurface: Optimization and Uncertainty Estimation–National Science Foundation Information Technology Research**	$1.1 million	10/04–09/08

NSF–Math and Geosciences	**Collaborative Research: CMG: Stochastic Representation of Parameter Uncertainty within Model Predictions of Future Climate National Science Foundation** **Jackson and Sen UTIG**	$600,000	09/04–08/08
NSF Information Technology Research	A Data Intense Challenge–Instrumented oil-field of the future Wheeler, Dawson,–Computational and applied math **Sen**–Institute for Geophysics	$2.3 milllion	09/01–09/05
US Dept of Energy	Determination of crustal structure by inversion of shear-coupled PL waves using global optimization–**Pulliam and Sen**	$600,000	09/04–02/08
Joint industry/JSG initiative Current sponsor–Chevron Texaco More companies are likely to participate	FRST–Fluid Rock Seismic Technology BEG–Fomel, Janette, & Jennings UTIG–**Sen**	$300,000	09/04–08/05 (Multi-year)
Department of Energy	Integrated approach to petrophysical interpretation of post- and pre-stack 3D seismic data, well-log data, core data, geological information and reservoir production data via Bayesian stochastic inversion **Sen**–UTIG, C. Torres-Verdin–UT Petroleum Engr. Dept.	$1.1 million	09/00–08/04
Defense Threat Reduction Agency (DTRA)	Determination of crustal structure by inversion of shear-coupled PL waves using global optimization Pulliam, **Sen**, Frohlich, and Grand	$438,492	08/00–07/06
DTRA (Subcontract from IAT)	Airrbore GPR for the detection of underground facilities Stoffa and **Sen**	$140,000	08/00–12/01
NSF Ocean Sciences	"Collaborative Research: 3-D Seismic Imaging of an Active Margin Hydrate System –Oregon Continental Margin." Nathan L. Bangs, Mrinal K. **Sen** and Yosio Nakamura	$524,993	01/00–12/02
Joint Industry	"SLOSEIS: Slowness Analysis, Waveform Inversion and Uncertainty Estimation in VTI Media." Mrinal K**. Sen** and Paul L. Stoffa	$210,000	01/98–12/01

NSF Earth Sciences EAR-9725427	"Parameter Estimation in Anisotropic Media." Mrinal K. **Sen** and Jay Pulliam	$170,000	01/98–12/01
NSF Ocean Sciences OCE-9724555	"Acquisition of an Origin 2000 for Seismic Research." Stoffa, Shipley, **Sen,** and Bangs	$399,112	09/97–08/00
Mobil Oil Company	3D Multiple Attenuation Methods–Feasibility Studies–Mrinal K. **Sen**	$12,000	01/99–12/99
NSF Ocean Sciences OCE-9503412	"Rock property estimation by AVO inversion of marine seismic data." Mrinal K. **Sen** and Paul L. Stoffa	$292,980	11/95–10/99
Texas Higher Education Coordinating Board	"Anisotropic Earth Model Calculations." Mrinal K. **Sen** and Paul L. Stoffa	$107,157	01/96–08/98
NSF Earth Science EAR-9304417	"Neural Computing in Geophysics." Mrinal K. **Sen** and Paul L. Stoffa	$313,469	07/93–07/96
Texas Higher Education Coordinating Board	"Hybrid Linear/nonlinear of seismic waveform inversion." Mrinal K. **Sen** and Paul L. Stoffa	$128,000	01/94–08/95
Cray Research, Inc.	"Pre-stack plane wave Kirchhoff migration on Cray T3D" Paul L. Stoffa and Mrinal K. **Sen**	$60,000	01/95–12/95
ONR	"Imaging of Ocean Subbottom Structure." Mrinal K. **Sen**	$32,929	09/93–12/95
Cray time award	"Seismic Velocity Analysis using Neural Networks" Mrinal K. **Sen**		
Cray Research, Inc.	"Prestack Migration-Inversion of Seismic Gathers." Paul L. Stoffa and Mrinal K. **Se**n	$49,000	01/93–12/93
ONR N00014-92-J-6001	"Imaging of Ocean Subbottom Structure Using Swath Mapping Data." Mrinal K. **Sen** and Paul L. Stoffa	$69,445	03/92–08/93
Cray Research, Inc.	"Prestack migration velocity analysis in two- and three-dimension." Paul L. Stoffa and Mrinal K. **Sen**	$60,000	01/92–12/92
NSF Earth Science EAR-9105922	"Non-linear inversion of plane wave seismograms uding global optimizaion methods" Mrinal K. **Sen** and Paul L. Stoffa	$157,156	07/91–June 93
NSF Earth Science EAR-90xxxx	"Source and path effects and remnant seismic risk of Loma Prieta earthquake" Mrinal K. **Sen** and Fumiko Tajima	$45,000	09/90–08/91

U.S. Geological Survey	“Deep structural complexity and site response in Los Angeles basin.” Mrinal K. **Sen**	$130,000	88–90