

CHRISTOPHER L. LINER

Professor, Petroleum Seismology
Associate Director Allied Geophysical Labs
University of Houston
312 Science and Research Building 1, Room 510F
Houston, TX 77204-5007
Phone: (713) 743-9119 (office)
FAX: (713) 748-7906
Blog : <http://seismosblog.blogspot.com/>
email: cliner@uh.edu
email: chris.liner@gmail.com

PRINCIPAL RESEARCH INTERESTS

Petroleum reservoir characterization and monitoring, CO₂ sequestration geophysics, advanced seismic interpretation methods, seismic data analysis and processing, near surface, anisotropy, and seismic wave propagation.

PROFESSIONAL SERVICE, AWARDS, AND ACCOMPLISHMENTS

- Ongoing: Seismos column in The Leading Edge (1992-)
Member European Academy of Sciences
Member Editorial board Journal of Seismic Exploration
SEG Leading Edge editorial board
Member SEG CO2 committee
U. of Arkansas Geosciences External Advisory Board
- 2009: Selected for SEG Distinguished Instructor Short Course (2012)
Chairman, Society of Exploration Geophysicists (SEG) Online Content Committee (2008-2009)
Member SEG Annual Meeting Technical Program Committee
Geophysics Associate Editor for Leading Edge Preview
Member, U. of Arkansas Geosciences External Advisory Board (2008-present)
- 2008: Paper selected for inclusion in Best of D&P Forum at Annual SEG Meeting
Member, SEG CO2 Committee
- 2006: Member, Editorial board Journal of Seismic Exploration
Member and Co-Chair, Technical Program Committee EAGE Passive Seismic Forum
- 2005: Member, Executive Committee Dhahran Geoscience Society (professional development, 2005-06)
Technical Session Chairman, Geophysical Reservoir Monitoring Forum (Bahrain, Mar. 2005)
- 2004: Author: *Elements of 3D Seismology: Second Edition*
Lead author on 2 of the top 25 presentations at Annual SEG Meeting
Patent co-inventor, "Wavelet-based analysis of singularities in seismic data" (No. 6,745,129)
Visiting scholar Stanford Exploration Project, Stanford University
- 2003: Member, Organizing Committee TLE Forum III: Future Computing
- 2002: Member, European Academy of Sciences
National Science Foundation SBIR review panelist
Visiting scholar Stanford Exploration Project, Stanford University
Member, Technical Audit Team for Petroleum Development Oman
- 2001: Member, SEG Leading Edge Editorial Board (2001-03)
Chairman, First TLE Forum: Geophysics and the Environment
Chairman, SEG Publications Committee (2001-04)
Invited Session Chairman, Land Seismic Imaging Forum, Bahrain
- 1999: Author: *Elements of 3D Seismology*
Editor, GEOPHYSICS (1999-2001) and SEG Executive Committee Member
Honorable mention for Best Paper in Geophysics
- 1998: Best Poster Presentation at SEG Annual Meeting
- 1997: Author, *Greek Seismology: Earthquake Theories in Classical Antiquity* (avail. Samizdat Free Press)
- 1995: Assistant Editor, Geophysics (1995-99)

SOCIETY AFFILIATIONS

Society of Exploration Geophysicists
American Geophysical Union
American Association of Petroleum Geologists
Society of Petroleum Engineers
European Academy of Sciences

EDUCATION

Ph.D., 1989, Geophysics Colorado School of Mines
M.Sc., 1980, Geophysics University of Tulsa
B.Sc., 1978, Geology University of Arkansas

EMPLOYMENT HISTORY

University of Houston, Professor, 2008
Saudi Aramco, Research Geophysicist, Dhahran, Saudi Arabia, 2005-2007
University of Tulsa, Associate Professor 1996-2004
University of Tulsa, Assistant Professor, 1990-95
Golden Geophysical Corp., Denver, 1989-90
Conoco, Oklahoma City, Explorationist, 1981-86
Western Geophysical Company, London, UK, Research Geophysicist, 1980-81
Western Geophysical Company, Field Crew, 1978-79 (summers)

OTHER AFFILIATIONS

Research Associate 2009- U. of Tulsa, Geosciences Department

CONSULTING HISTORY

Geokinetics (USA)	2008-	Seismic data analysis, acquisition methods
Aspect Energy (Iraq)	2009	Seismic data processing
Amoco Research	1992-1998	Geophysics research
Pertamina (Indonesia)	1993-1996	3D Seismic methods
ETAP (Tunisia)	1993	3D Seismic methods

PEER-REVIEWED PUBLICATIONS

1. Broadhead, M., Liner, C., Ulrych, T. and Treitel, S., 2009, Predictive deconvolution by frequency domain Wiener filtering, Journal of Seismic Exploration, Accepted.
2. Vesnaver, A, Bridle, R., Ley, R., and Liner, C., 2009, Painting the near surface using geology, geophysics, and satellites, Geophysics **74**, B61
3. Liner, C. L., 2008, The seismic sand curve revisited, GEOPHYSICS, **73**, A7
4. Fei, T., and Liner C. L., 2008, Hybrid fourier finite difference 3D depth migration for anisotropic media, Geophysics, GEOPHYSICS, **73**, S27
5. Li, C.-F., and Liner C. L., 2008, Wavelet-based detection of singularities in acoustic impedance from surface reflection data, GEOPHYSICS, **73**, V1
6. Liner, C. L., and Fei, T., 2006, Layer-Induced Seismic Anisotropy from Full Wave Sonic Logs: Theory, application, and validation, GEOPHYSICS, **71**, D183
7. Liner, C. L., and Clapp, R. G., 2004, Nonlinear pairwise alignment of seismic traces, GEOPHYSICS, **69**, 1552
8. Liner, C. L., and Li, C.-F., 2004, Application of the continuous wavelet transform to broadband wavefield data, Euro. Acad. of Sci. Annals.
9. Ronen, S. and Liner, C. L., 2000, Least-squares DMO and migration, GEOPHYSICS, **65**, 1364-1371.
10. Liner, C. L. and Underwood, W. D., 1999, 3-D seismic survey design for linear $v(z)$ media, GEOPHYSICS, **64**, 486-493.
11. Liner, C. L., 1999, Concepts of normal and dip moveout, GEOPHYSICS, **64**, 1637-1647. (Honorable mention for Best Paper)
12. Liner, C. L., Bozkurt, G. and Cox, V. D., 1996, Shooting direction and crosswell seismic data acquisition, GEOPHYSICS, **61**, 1489-1498.
13. Liner, C. L., 1995, Some analytic aspects of a 2.5-D wave equation: GEOPHYSICS, **60**, 1536-1540.

14. Liner, C. L., 1994, Rayleigh wave approximations: *Journal of Seismic Exploration*, **3**, 273-281.
15. Liner, C. L., and Lines, L. R., 1994, Simple prestack migration of crosswell seismic data, *Journal of Seismic Exploration*, **3**, 101-112
16. Liner, C. L., 1991, Born theory of wave-equation dip moveout, *GEOPHYSICS*, **56**, 182-189.
17. Liner, C. L., 1991, Theory of a 2.5-D acoustic wave equation for constant density media (short note), *GEOPHYSICS*, **56**, 2114-2117.
18. Liner, C., 1990, General theory and comparative anatomy of dip moveout, *GEOPHYSICS*, **55**, 595-607.

BOOKS

1. *Elements of 3-D Seismology*, 2004, (Pennwell, 2nd edition, 607 pp)
2. *Elements of 3-D Seismology*, 1999, (Pennwell, 1st edition, 450 pp)
3. *Greek Seismology: Earthquake Theories in Classical Antiquity* (Samizdat Press) 1986; revised 1997

OTHER SIGNIFICANT PUBLICATIONS

1. Liner, C. L., and Fei, T., 2007, The Backus number. *The Leading Edge*, 26, 420
2. Smythe, J., Gersztenkorn, A., Radovich, B., Liner, C., and Li, C.-F., 2004, SPICE: Layered Gulf of Mexico Shelf Framework from Spectral Imaging, *The Leading Edge*, 23, 921
3. Liner, C. L., and Clapp, R. G., 2004, Nonlinear pairwise alignment of seismic traces. *The Leading Edge*, 23, 1146
4. Liner, C. L. and Liner, J. L., 1997, Application of GPR to a site investigation involving shallow faults: *The Leading Edge*, 16, no. 11, 1649-1651.
5. Liner, C. L. and Liner, J. L., 1995, Ground-penetrating radar: A near-face experience from Washington county, Arkansas : *The Leading Edge*, 14, no. 01, 17-21. (* Discussion in TLE-14-6-644 and TLE-14-5-311)

CONFERENCE PROCEEDINGS

1. Jervis, M., Liner, C., Broadhead, M., and Sinadinovski, C., 2010, Saudi Aramco Low frequency seismic spectroscopy field test, GEO2010, Manama, Bahrain
2. Liner, C., Bell, L. and Verm, R., 2009, Direct imaging of group velocity dispersion curves in shallow water, 79th Ann. Internat. Mtg: Soc. Of Expl. Geophys.
3. Liner, C., Geng, P., Zeng, J., and King, H. 2009, Toward flow simulation for CO2 sequestration at the Dickman Oilfield, Ness Co., Kansas, 79th Ann. Internat. Mtg: Soc. Of Expl. Geophys.
4. Liner, C., 2009, Geophysics of Tight Gas Sands, SPE/AAPG/SEG Workshop from macro to micro - the description and analysis of tight gas sand reservoirs
5. Liner, C. and Bodmann, B., 2008, Early work on reflectivity dispersion. 78th Ann. Internat. Mtg: Soc. Of Expl. Geophys.
6. Liner, C. and Goloshubin, G., 2008, The Physical basis of reflectivity dispersion (Best of D&P Forum). 78th Ann. Internat. Mtg: Soc. Of Expl. Geophys.
7. Fei, T. and Liner, C., 2006, Hybrid fourier finite-difference 3D prestack depth migration for VTI media. 76th Ann. Internat. Mtg.: Soc. of Expl. Geophys., 2377-2381.
8. Liner, C., 2006, Layer-induced seismic anisotropy from full wave sonic logs. 76th Ann. Internat. Mtg.: Soc. of Expl. Geophys., 159-163.
9. Liner, C., and Vlad, I., 2005, Analytical traveltimes for arbitrary multiples in constant velocity. 75th Ann. Internat. Mtg.: Soc. of Expl. Geophys., 2127-2129.
10. Liner, C., Li, C.-F., Gersztenkorn, A., and Smythe, J., 2004, SPICE: A new general seismic attribute. 74th Ann. Internat. Mtg.: Soc. of Expl. Geophys., 433-436.
11. Liner, C., and Clapp, R., 2004, Nonlinear pairwise alignment of seismic traces. 74th Ann. Internat. Mtg.: Soc. of Expl. Geophys., 2072-2075
12. Al-Moughraby, B. and Liner, C., 2003, Seismic frequency enhancement through spectral borrowing, 73rd Ann. Internat. Mtg.: Soc. of Expl. Geophys., 2016-2019.
13. Chung, C., Liner, C., Epili, D., Underwood, W. and Gobeli, R., 2000, Depth focusing reflection tomography with application to prestack depth migration, 70th Ann. Internat. Mtg: Soc. of Expl. Geophys., 918-921.
14. Bozkurt, G., Epili, D. and Liner, C., 1999, Anisotropic tomography of the Glenn Pool crosswell data, 69th Ann. Internat. Mtg: Soc. of Expl. Geophys., 239-242.

15. Bozkurt, G., Epili, D. and Liner, C. L., 1998, Anisotropic parameter estimation using log, core and seismic data in the Glenn Pool Field, Oklahoma, 68th Ann. Internat. Mtg: Soc. of Expl. Geophys., 296-299.
16. Liner, C. L., Gobeli, R. and Underwood, W. D., 1998, 3-D seismic survey design as an optimization problem, 68th Ann. Internat. Mtg: Soc. of Expl. Geophys., 117-120. **(Best Poster Award)**
17. Liner, C. L., Gobeli, R. and Underwood, W. D., 1997, Aspects of 3D seismic survey design for linear $v(z)$ media, 59th Mtg.: Eur. Assn. Geosci. Eng., Session:B002.B002.
18. Liner, C. L. and Gobeli, R., 1997, 3-D seismic survey design and linear $v(z)$, 67th Ann. Internat. Mtg: Soc. of Expl. Geophys., 43-46.
19. Liner, C. L., Gobeli, R. and Underwood, W. D., 1996, Sloping event DMO amplitude, 58th Mtg.: Eur. Assn. Geosci. Eng., Session:P154.
20. Liner, C. L. and Gobeli, R., 1996, Bin size and linear $v(z)$, 66th Ann. Internat. Mtg: Soc. of Expl. Geophys., 47-50.
21. Liner, C. L., Gobeli, R. and Underwood, W. D., 1995, DMO amplitude, 65th Ann. Internat. Mtg: Soc. of Expl. Geophys., 1437-1440.
22. Liner, C. L., Bozkurt, G. and Cox, V. D., 1994, Shooting direction and crosswell seismic data acquisition, 64th Ann. Internat. Mtg: Soc. of Expl. Geophys., 32-36.
23. Bozkurt, G. and Liner, C. L., 1994, Straight ray tomography: Synthetic and real data examples, 64th Ann. Internat. Mtg: Soc. of Expl. Geophys., 174-177.
24. Bozkurt, G., Liner, C. L., Lines, L. R., Tan, H., Eager, J. S., Colethorp, S. L., Beck, J. G., Cox, V. D., Baker, L. D., Hoffpauir, C. G., Sanders, M. E., Stock, J. M. and Williams, J. E., 1994, Glenn Pool project: Crosswell seismic data acquisition overview, 64th Ann. Internat. Mtg: Soc. of Expl. Geophys., 298-301.
25. Vassiliou, A. A., Savage, C. W., Liner, C. L., Bozkurt, G. and Lines, L. R., 1994, Glenn Pool project: Initial tomographic results, 64th Ann. Internat. Mtg: Soc. of Expl. Geophys., 302.
26. Bording, R. P. and Liner, C. L., 1994, Theory of 2.5-D reverse time migration, 64th Ann. Internat. Mtg: Soc. of Expl. Geophys., 692-694.
27. Hwang, S. and Liner, C., 1993, Acoustic seismic modeling in the slowness-time intercept domain, 63rd Ann. Internat. Mtg: Soc. of Expl. Geophys., 920-923.
28. Liner, C. L. and Lines, L., 1993, Simple prestack migration of crosswell seismic data, 63rd Ann. Internat. Mtg: Soc. of Expl. Geophys., 308-312.
29. Bording, R. P. and Liner, C. L., 1993, Some numerical aspects of the 2.5 dimensional wave equation, 63rd Ann. Internat. Mtg: Soc. of Expl. Geophys., 205-207.
30. Liner, C. L. and Stockwell, J. W., Jr., 1993, Some analytic aspects of the 2.5-dimensional wave equation, 63rd Ann. Internat. Mtg: Soc. of Expl. Geophys., 201-204.
31. Liner, C., 1991, Theory of a 2.5 dimensional acoustic wave equation for constant density media, 61st Ann. Internat. Mtg: Soc. of Expl. Geophys., 1595-1597.
32. Liner, C., 1989, DMO amplitude problem: Methods and goals, 59th Ann. Internat. Mtg: Soc. of Expl. Geophys., 1152.
33. Liner, C. L. and Cohen, J. K., 1988, An amplitude-preserving inverse of Hale's DMO, 58th Ann. Internat. Mtg: Soc. of Expl. Geophys., Session:S17.5.
34. Liner, C. L. and Bleistein, N., 1988, Comparative anatomy of common offset dip moveout, 58th Ann. Internat. Mtg: Soc. of Expl. Geophys., Session:S17.1.
35. Ronen, J. and Liner, C., 1987, Theory of spatial antialiasing of log-stretched multichannel reflection data, 57th Ann. Internat. Mtg: Soc. of Expl. Geophys., Session:S14.5.

FUNDING PROPOSALS

<i>Date</i>	<i>Org.</i>	<i>Title</i>	<i>Amount</i>	<i>Status</i>
Aug 2009	DOE/NETL	3D Seismic training for CO2 sequestration	\$298,830	Awarded
May 2009	DOE/NETL	Dickman II Advanced Seismic Methods	\$1,770,324	Declined

RECENT PRESENTATIONS

<i>Date</i>	<i>Org.</i>	<i>Title</i>	<i>Contact</i>
6/29/2009	SEG Tight Gas Wkshop	Geophysics and Tight Gas Sands	Tad Smith
4/29/2009	Ft. Smith Geol Soc	Reservoir Geoph for Petr and CO2	Robert Liner
11/19/2008	U of Tulsa	Reservoir Geoph for Petr and CO2	Bryan Tapp

7/28/2008	SEG D&P Forum	Physical Basis of Reflectivity Dispersion	
7/14/2008	Exxon	Overview of RQL Consortium	Ganglin Chen
6/18/2008	Shell	Overview of RQL Consortium	Ron Masters
5/5/2008	BP	Overview of RQL Consortium	Kevin Dodds
5/1/2008	GSH Symp.	Sherwood and dip movout	
4/16/2008	WesternGeco	Overview of RQL Consortium	Einar Otnes
3/31/2008	Shell	Overview of RQL Consortium	David Mejia
3/20/2008	Texas A&M PE	Overview of RQL Consortium	Steve Holditch
2/20/2008	Fairfield	Overview of RQL Consortium	Bob Shurtleff
1/28/2008	RQL consort.	Overview of RQL Consortium	

RECENT UNIVERSITY COURSES TAUGHT

<i>Date</i>	<i>Title</i>	<i>Type</i>	<i>Students</i>
Sum. 2009	Seismic Interpretation I	Shortcourse	18 (Petrobras)
Sum. 2009	Seismic Data Processing	Shortcourse	22 (Petrobras ++)
Spr. 2009	7341 Geophysical Data Proc.	UH	19
Spr. 2009	6398 Imperial Barrel	UH	12 (co with Bhattacharya)
Fall 2008	6390 Seismic Interpretation I	UH	20
Sum. 2008	Seismic Interpretation I	Prof. MS	16
Sum. 2008	Seismic Exploration Method	Prof. MS	16
May 2008	Geophysical Data Proc.	Shortcourse	11 (Petrobras)
Spr. 2008	7341 Geophysical Data Proc.	UH	19
Spr. 2008	SeismicUnix development Tutorial	UH	3 sessions, 5 students each

PHD STUDENTS

<i>Name</i>	<i>Topic</i>	<i>Start</i>	<i>Complete</i>	
Bob Brandt	Attributes and deep water features	Spr. 2008		Chair
Cory Hoetling	Parallel numerical modeling	Sum. 2008		Chair
Chen Lize	Remote Sensing Pakistan	Spr. 2008		Member

MS STUDENTS

<i>Name</i>	<i>Topic</i>	<i>Start</i>	<i>Complete</i>	
Kelly Heyt	2D v. 3D Seis Interp	Spr. 2009		Chair
Krista Mondelli	Salt Recon. Jurassic E. TX	Spr. 2009		Chair
Joseph Idonor	Seismic Multiples	Fall 2008		Chair
Heather King	CO2 sequestration res. charac.	Spr 2008		Chair
Scott Falconer	Seismic Footprint Supression	Spr. 2008	Spr. 2008	Chair
Jiannina Bastidas	Spectral Decomposition	Spr. 2009		Member
Patricia Lee	GoM Minibasin Interp	Spr. 2009		Member
Fernando Ziegler	Shale Rock Physics	Fall 2008	Spr. 2009	Member
Yangjun Liu	Biot Slow Wave	Sum. 2008	Spr. 2009	Member
Chirag Paraekh	Wavelet Resolution	Sum. 2008	Spr. 2009	Member
Grigoriy Perov	Attrib. and stratigraphy	Spr. 2008	Spr. 2009	Member
Cecilia Ramirez	Shallow fault mapping	Spr. 2008		Member
Kate Zogheib	3D seismic interpretation	Spr. 2008		Member
John Chakalis	AVO South TX	Spr. 2008	Fall 2008	Member

JOURNAL PAPER REVIEWS

Journal of Seismic Exploration: "Seismic investigation of two coastal sabkhas, eastern Saudi Arabia."
 Abdullatif A. Al-Shuhail and Abdulaziz M. Al-Shaibani (5/28/2009)

University of Tulsa Data

COURSES TAUGHT AND/OR DEVELOPED

1. Petroleum Seismology
2. Advanced Petroleum Seismology
3. Seismic Data Processing
4. Advanced Seismic Data Processing
5. Seismic Stratigraphy
6. Advanced Seismology
7. Environmental Geophysics
8. The Earth in Space
9. Physical Geology

PHD STUDENTS

1. Bassel Al-Moughraby, 2004, (U Tulsa)
 - *Seismic frequency enhancement through spectral shaping.*
 - Chevron Energy Technology Company
2. Hamed El-Mowafy, 2003, (U Tulsa)
 - *3-D seismic fluvial architecture of the basal middle Frio formation, Stratton and Agua Dulce Fields, South Texas*
3. Chun-Feng Li, 2002, (U Tulsa)
 - *Scaling and wavelet-based singularity analysis for geological and geophysical interpretation*
 - Tongji University, Shanghai, China
4. Gokay Bozkurt, 1998, (U Tulsa)
 - *Crosswell tomography in anisotropic media: Glenn Pool Field, Oklahoma*
 - UNOCAL Corporation
5. Andrew Shatilo, 1996, (U Tulsa)
 - *Estimation of wavelet phase spectrum and its application in seismic exploration.*
 - ExxonMobil Upstream Research
6. Chong Chung, 1994, (U Tulsa)
 - *Depth focusing reflection tomography with application to prestack depth migration*
 - GX Technology
7. Dan Whitmore, 1994, (U Tulsa)
 - *Plane wave pre-stack depth migration in complex structural areas.*
 - ConocoPhillips
8. Yaohui Zhang, 1992, (U Tulsa)
 - *Common conversion point stacking for P-SV converted waves.*
 - BGP (China National Petroleum Corporation)