Welcome to the eighth *TCCS Newsletter*!

The Texas Consortium for Computational Seismology is a joint initiative of the Bureau of Economic Geology (BEG) and the Institute for Computational Engineering and Sciences (ICES) at The University of Texas at Austin. Its mission is to address the most important and challenging research problems in computational geophysics as experienced by the energy industry while educating the next generation of research geophysicists and computational scientists.

TCCS Sponsors

TCCS appreciates the support of its 2015 sponsors: BP, CGG, Chevron, ConocoPhillips, ExxonMobil, FairfieldNodal, Saudi Aramco, Schlumberger, Statoil, and Total.

For sponsorship opportunities, please contact sergey.fomel@beg.utexas.edu.

Fall Meeting

The Fall 2015 Research Meeting of the Texas Consortium for Computational Seismology will take place in Austin on October 26–27. Hosted by ICES, it will be held in the Peter O'Donnell Building (POB) at The University of Texas at Austin main campus.

Representatives of participating companies are invited to register for the meeting by following the link at http://www.beg.utexas.edu/tccs/.

Presentations at SEG in New Orleans

TCCS members and collaborators will make a number of presentations at the upcoming SEG 2015 Annual Meeting in New Orleans.

Monday, Oct. 19	1:30 pm	SPMI: Q Compensation	J. Sun and T. Zhu	Stable attenuation compensation in reverse time migration
	2:45 pm	ST-EP: Seismic Filters and Transformation	Y. Lai, E. Price, R. Ward, and S. Fomel	Median balancing: A linearly convergent algorithm for time gain power correction
	2:45 pm	SPMI: Q Compensation	J. Sun, T. Zhu, and S. Fomel	Preconditioning least-squares RTM in viscoacoustic media by Q-compensated RTM
	3:35 pm	SPMI: Q Compensation	T. Zhu	Wave propagation and wavefield reconstruction in viscoelastic media
	4:25 pm	SM: Finite Differences	G. Fang, J. Hu, and S. Fomel	Weighted least square based lowrank finite difference for seismic-wave extrapolation
	4:25 pm	ST-EP: Seismic Filters and Transformation	Y. Sripanich and S. Fomel	3D generalized nonhyperboloidal moveout approximation
	4:25 pm	SPIR 1: Multidimensional Interpolation Algorithms	S. Gan, S. Wang, Y. Chen, and X. Chen	Seismic data reconstruction via fast projection onto convex sets in the seislet transform domain
Tuesday, Oct. 20	10:35 am	SPNA P1: Random Noise Attenuation - Part 1	Y. Chen and S. Fomel	EMD-seislet transform
	10:35 am	FWI-EP: Different Domains & Efficiency	Z. Xue and H. Zhu	Full-waveform inversion with sparsity constraint in seislet domain
	11:00 am	SPIR: Seismic Reconstruction Domains	R. Swindeman and S. Fomel	Seismic data interpolation using plane-wave shaping regularization
	11:25 am	SPIR: Seismic Reconstruction Domains	K. Regimbal and S. Fomel	Improving resolution of NMO stack using shaping regularization
	1:30 pm	ACQ 2: Simultaneous Source Deblending	S. Zu, H. Zhou, Y. Chen, Y. Liu, and S. Qu	A periodically variational dithering code for improving deblending performance
	2:45 pm	ACQ 2: Simultaneous Source Deblending	Y. Chen	Deblending by iterative signal-and-noise orthogonalization and seislet thresholding
	3:10 pm	ACQ 2: Simultaneous Source Deblending	S. Gan, S. Wang, Y. Chen, and X. Chen	Deblending using a structural-oriented median filter
	3:35 pm	SI 1: Recent Advances	Y. Chen	Application of similarity-weighted stacking to poststack quality factor estimation
	3:35 pm	ACQ 2: Simultaneous Source Deblending	S. Gan, S. Wang, Y. Chen, and X. Chen	Deblending of distance separated simultaneous-source data using seislet frames in the shot domain
	4:25 pm	SPNA E-P1: Imaging Enhancement	W. Huang, R. Wang, M. Zhang, and Y. Chen	Damped multichannel singular spectrum analysis for 3D random noise
Wednesday, Oct. 21	8:30 am	RC: Diverse Seismic Attribute Applications	P. Karimi and S. Fomel	Image-guided well-log interpolation using predictive painting
	9:20 am	SPNA P1: Random Noise Attenuation - Part 2	Y. Chen, G. Zhang, S. Gan, and C. Zhang	Empirical mode decomposition based smoothing in the flattened domain
	9:20 am	SPIR P1: High-Resolution Reconstruction Techniques - Part 1	S. Gan, S. Wang, Y. Chen, Y. Zhang, and Z. Jin	De-aliased seismic data interpolation using seislet transform with low-frequency constraint
	10:00 am	SM E-P2: New Techniques	Y. Shen and T. Zhu	Image-based Q tomography using reverse time Q migration
	10:35 am	SPNA E-P2: Coherent Noise Removal	Y. Chen, S. Jiao, S. Gan, and W. Yang	Ground rolls attenuation using bandlimited signal-and-noise orthogonalization - the OZ-25 dataset case study
	10:35 am	SPMI: Amplitudes and Diffractions	D. Merzlikin and S. Fomel	An efficient workflow for path-integral imaging of seismic diffractions
	10:35 am	PS: Location	J. Sun, T. Zhu, S. Fomel, and W. Song	Investigating the possibility of locating microseismic sources using distributed sensor networks
	11:00 am	SPNA E-P2: Coherent Noise Removal	S. Jiao, Y. Chen, W. Yang, S. Gan, and E. Wang	Ground rolls attenuation using nonstationary matching filtering
	1:30 pm	SPIR P1: High Resolution Reconstruction Techniques - Part 2	Y. Chen, Z. Jin, S. Gan, W. Yang, and K. Xiang	Deblending using a combined PNMO-MF-FK coherency filter
	2:20 pm	FWI-EP: Uncertainty & Examples	H. Zhu, S. Li, S. Fomel, G. Stadler, and O. Ghattas	Uncertainty estimation for full-waveform inversion with a prior information from depth migration
	4:00 pm	RC E-P: Spectral	G. Zhang, Z. Wang, Y. Sun, and Y. Chen	Characterization method of tight dolomitic reservoir of Fengcheng formation in the west slope of Mahu sag, Junggar Basin, China

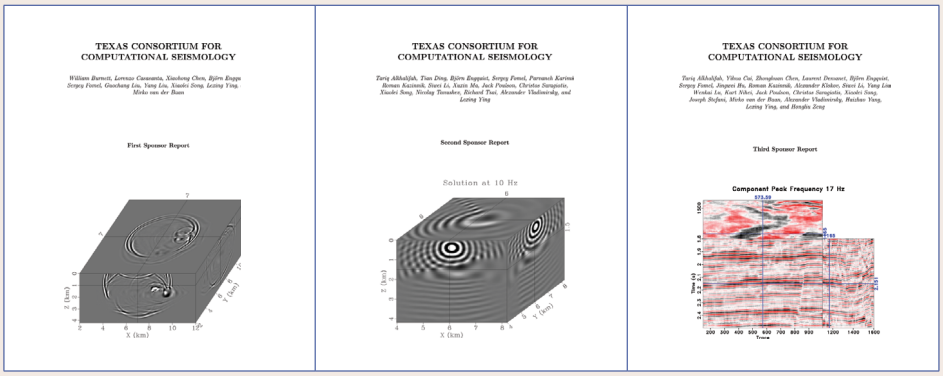
Continued on page 2

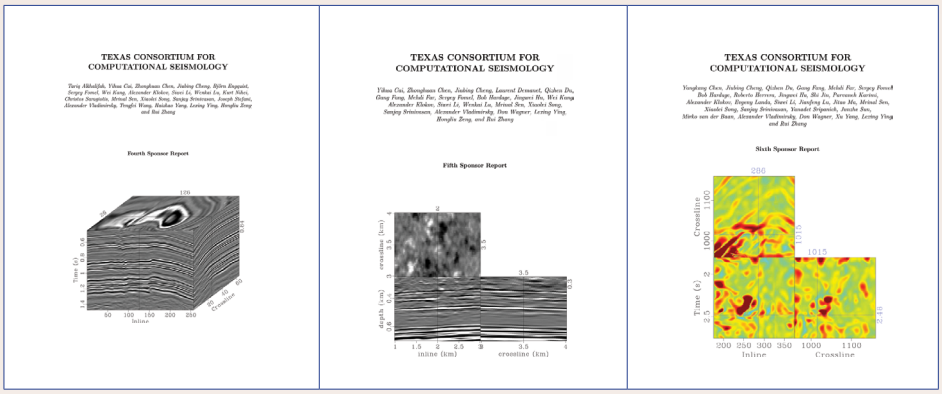
Presentations at SEG in New Orleans

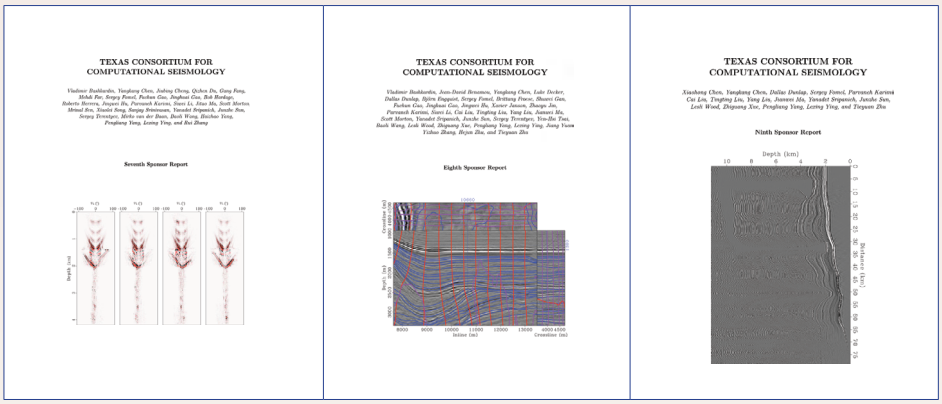
Thursday, Oct. 22	8:55 am	AVO 2: AVO Theory and Methods	P. Deng, X. Huang, Y. Chen, W. Huang, Y. Zhang, and H. Zhou	Stacking AVO seismic data using AB semblance and local similarity
	10:10 am	SPMI: Resolution and Sampling	Z. Xue, S. Fomel, and Junzhe Sun	RTM interpolation using time-shift gathers
	10:10 am	ANI-EP: Theory: Orthorhombic	Y. Sripanich, S. Fomel, J. Sun, and J. Cheng	Elastic wave-vector decomposition in orthorhombic media
	11:00 am	INT: Salt, Karst, and Volcanics Mapping	Y. Chen, S.X. Li, G. Zhang, and S. Gan	Delineating karstification using synchrosqueezing wavelet transform
Friday, Oct. 23	11:30 am	W-18: Advances in Computational Mathematics for Geophysicists	J. Sun, S. Fomel, and T. Zhu	Practical challenges of attenuation compensation in RTM and LSRTM
	12:00 pm	W-18: Advances in Computational Mathematics for Geophysicists	S. Fomel and D. Merzlikin	Advances in time-domain diffraction imaging

Continued from page 1

Sponsor Report Gallery







Professional Awards

- At the International Congress for Industrial and Applied Mathematics (ICIAM) in Beijing, China, in August 2015, **Björn Enquist**

was awarded the Pioneer Prize, an award "for pioneering work introducing applied mathematical methods and scientific computing techniques to an industrial problem area or a new scientific field of applications." As a part of the recognition, Björn gave a keynote presentation titled *Seismic full waveform inversion and the Monge-Ampère equation.*

- Earlier this year, **Björn Enquist** was elected to the prestigious American Academy of Arts and Sciences (AAAS). Members of the 2015 AAAS class include winners of the Nobel Prize and the Pulitzer Prize; MacArthur and Guggenheim fellowships; and Grammy, Emmy, Oscar, and Tony awards.

- TCCS staff members will receive two presentation awards at the upcoming SEG Annual Meeting in New Orleans: Honorable Mention, Best Poster, for

Sergey Fomel's presentation *Transforming prestack seismic data by Gardner continuation* and Award of Merit, Best Student Poster, for

Yanadet Sripanich's presentation *Modified anelliptic approximations for qP velocities in transversely isotropic media.* Both presentations were given at the previous SEG Annual Meeting in Houston in 2014.

Papers Accepted and Published 2014–2015

http://www.beg.utexas.edu/tccs/pubs.php

Accepted

Y. Chen, 2015, Deblending using a space-varying median filter: Exploration Geophysics, accepted.

Y. Chen, 2015, Iterative deblending with multiple constraints based on shaping regularization: IEEE Geoscience and Remote Sensing Letters, accepted.

Y. Chen, S. Jiao, J. Ma, H. Chen, Y. Zhou, and S. Gan, 2015, Ground-roll noise attenuation using a simple and effective approach based on local band-limited orthogonalization: IEEE Geoscience and Remote Sensing Letters, accepted.

M. Far and B. Hardage, 2015, Fracture characterization using converted waves: Geophysical Prospecting, accepted.

Y. Liu, S. Fomel, and C. Liu, 2015, Signal and noise separation in prestack seismic data using velocity-dependent seislet transform: Geophysics, accepted.

A. Stovas and S. Fomel, 2015, Mapping of moveout attributes using local slopes: Geophysical Prospecting, accepted.

J. Sun, S. Fomel, and L. Ying, 2015, Lowrank one-step wave extrapolation: Geophysics, accepted.

Z. Xue, Y. Chen, S. Fomel, and J. Sun, 2015, Imaging incomplete data and simultaneous-source data using least-squares reverse-time migration with shaping regularization: Geophysics, accepted.

Published 2015

T. Alkhalifah, S. Fomel, and Z. Wu, 2015, Source-receiver two-way wave extrapolation for prestack exploding-reflector modeling and migration: Geophysical Prospecting, v. 63, 23–34.

W. Burnett, A. Klokov, S. Fomel, R. Bansal, E. Liu, and T. Jenkinson, 2015, Seismic diffraction interpretation at Piceance Creek: Interpretation, v. 3, SF1–SF14.

Y. Chen and S. Fomel, 2015, Random noise attenuation using local signal-and-noise orthogonalization: Geophysics, v. 80, WD1–WD9.

Y. Chen, S. Gan, T. Liu, J. Yuan, Y. Zhang, and Z. Jin, 2015, Random noise attenuation by a selective hybrid approach using f-x empirical mode decomposition: Journal of Geophysics and Engineering, v. 12, 12–25.

Y. Chen, S. Gan, S. Qu, and S. Zu, 2015, Sparse inversion for water bubble removal and spectral enhancement: Journal of Applied Geophysics, v. 117, 81–90.

Y. Chen, Z. Jin, K. Xiang, M. Bai, and W. Huang, 2015, Iterative deblending using shaping regularization with a combined PNMO-MF-FK coherency filter: Journal of Applied Geophysics, v. 122, 18–27.

Y. Chen, T. Liu, and X. Chen, 2015, Velocity analysis using similarity-weighted semblance: Geophysics, v. 80, A75–A82.

Y. Chen, J. Yuan, S. Zu, S. Qu, and S. Gan, 2015, Seismic imaging of simultaneous-source data using constrained least-squares reverse time migration: Journal of Applied Geophysics, v. 114, 32–35.

Y. Chen, G. Zhang, S. Gan, and C. Zhang, 2015, Enhancing seismic reflections using empirical mode decomposition in the flattened domain: Journal of Applied Geophysics, v. 119, 99–105.

Y. Chen, L. Zhang, and L. Mo, 2015, Seismic data interpolation using nonlinear shaping regularization: Journal of Seismic Exploration, v. 24, 327–342.

L. Decker, X. Janson, and S. Fomel, 2015, Carbonate reservoir characterization using seismic diffraction imaging: Interpretation, v. 3, SF21–SF30.

B. Engquist, B. Froese, and R. Tsai, 2015, Fast sweeping methods for hyperbolic systems of conservation laws at steady state II: Journal of Computational Physics, v. 286, 70–86.

S. Fomel, 2015, Reproducible research as a community effort: Lessons from the Madagascar project: Computing in Science and Engineering, v. 17, 20–26.

S. Gan, Y. Chen, S. Zu, S. Qu, and W. Zhong, 2015, Structure-oriented singular value decomposition for random noise attenuation of seismic data: Journal of Geophysics and Engineering, v. 12, 262–272.

J. Hu, S. Fomel, and L. Ying, 2015, A fast algorithm for 3D azimuthally anisotropic velocity scan: Geophysical Prospecting, v. 63, 368–377.

J. Hu and L. Ying, 2015, A fast algorithm for the energy space boson Boltzmann collision operator: Mathematics of Computation, v. 84, 271–288.

P. Karimi, 2015, Structure-constrained relative acoustic impedance using stratigraphic coordinates: Geophysics, v. 80, A63–A67.

P. Karimi and S. Fomel, 2015, Stratigraphic coordinates: A coordinate system tailored to seismic interpretation: Geophysical Prospecting, v. 63, 1246–1255.

P. Karimi, S. Fomel, L. Wood, and D. Dunlap, 2015, Predictive coherency: Interpretation, v. 3, SAE1–SAE7.

S. Li and S. Fomel, 2015, A robust approach to time-to-depth conversion and interval velocity estimation from time migration in the presence of lateral velocity variations: Geophysical Prospecting, v. 63, 315–337.

S. Qu, H. Zhou, Y. Chen, S. Yu, H. Zhang, J. Yuan, Y. Yang, and M. Qin, 2015, An effective method for reducing harmonic distortion in correlated vibroseis data: Journal of Applied Geophysics, v. 115, 120–128.

Y. Sripanich and S. Fomel, 2015, On anelliptic approximations for qP velocities in transversely isotropic and orthorhombic media: Geophysics, v. 80, C89–C105.

J. Sun, T. Zhu, and S. Fomel, 2015, Viscoacoustic modeling and imaging using low-rank approximation: Geophysics, v. 80, A103–A108.

P. Yang and S. Fomel, 2015, Seislet-based morphological component analysis using scale-dependent exponential shrinkage: Journal of Applied Geophysics, v. 118, 66–74.

W. Yang, R. Wang, Y. Chen, J. Wu, S. Qu, J. Yuan, and S. Gan, 2015, Application of spectral decomposition using regularized non-stationary autoregression to random noise attenuation: Journal of Geophysics and Engineering, v. 12, 175–187.

W. Yang, R. Wang, J. Wu, Y. Chen, S. Gan, and W. Zhong, 2015, An efficient and effective common reflection surface stacking approach using local similarity and plane-wave flattening: Journal of Applied Geophysics, v. 117, 67–72.

H. Zhu, E. Bozdag, and J. Tromp, 2015, Seismic structure of the European crust and upper mantle based on adjoint tomography: Geophysical Journal International, v. 201, 18–52.

T. Zhu, 2015, Viscoelastic time-reversal imaging: Geophysics, v. 80, A45–A50.

T. Zhu and J. M. Harris, 2015, Application of boundary-preserving seismic inversion for delineating reservoir boundaries and zone of CO2 saturation: Geophysics, v. 80, M33–M41.

T. Zhu and J. M. Harris, 2015, Improved seismic images by Q-compensated reverse-time migration: Application to the crosswell field data, west Texas: Geophysics, v. 80, B61–B67.

Published 2014

G. Ariel, B. Engquist, S. J. Kim, and R. Tsai, 2014, Iterated averaging of three-scale oscillatory systems: Communications in Mathematical Sciences, v. 12, 791–824.

J.-D. Benamou, B. D. Froese, and A. M. Oberman, 2014, Numerical solution of the optimal transportation problem using the Monge-Ampère equation: Journal of Computational Physics, v. 260, 107–126.

A. R. Benson, J. Poulson, K. Tran, B. Engquist, and L. Ying, 2014, A parallel directional fast multipole method: SIAM Journal on Scientific Computing, 36(4), C335–C352.

Y. Chen, K. Chen, P. Shi, and Y. Wang, 2014, Irregular seismic data reconstruction using a percentile-half-thresholding algorithm: Journal of Geophysics and Engineering, 11, 065001.

Y. Chen, S. Fomel, and J. Hu, 2014, Iterative deblending of simultaneous-source seismic data using seislet-domain shaping regularization: Geophysics, v. 79, V81–V91.

Y. Chen, T. Liu, X. Chen, J. Li, and E. Wang, 2014, Time-frequency analysis of seismic data using synchrosqueezing wavelet transform: Journal of Seismic Exploration, 23, 303–312.

Y. Chen and J. Ma, 2014, Random noise attenuation by f-x empirical mode decomposition predictive filtering: Geophysics, v. 79, V81–V91.

Y. Chen, J. Yuan, Z. Jin, K. Chen, and L. Zhang, 2014, Deblending using normal moveout and median filtering in common-midpoint gathers: Journal of Geophysics and Engineering, v. 11, 045012.

Y. Chen, C. Zhao, J. Yuan, and Z. Jin, 2014, Applications of empirical mode decomposition in random noise attenuation of seismic data: Journal of Seismic Exploration, v. 23, 481–495.

J. Cheng and S. Fomel, 2014, Fast algorithms for elastic wave-mode separation and vector decomposition using low-rank approximation for anisotropic media: Geophysics, v. 79, C97–C110.

B. Engquist and C. Frederick, 2014, Nonuniform sampling and multiscale computation: Multiscale Modeling and Simulation, v. 12, 1890–1901.

B. Engquist and B. Froese, 2014, Application of the Wasserstein metric to seismic signals: Communications in Mathematical Science, v. 12, 979–988.

G. Fang, S. Fomel, Q. Du, and J. Hu, 2014, Lowrank seismic wave extrapolation on a staggered grid: Geophysics, v. 79, T157–T168.

M. Far, J.S.S. de Figueiredo, D. Han, R. R. Stewart, J. P. Castagna, and N. Dyaur, 2014, Measurements of seismic anisotropy and fracture compliances in synthetic fractured media: Geophysical Journal International,v. 197, 1845–1857.

M. Far and B. Hardage, 2014, Interpretation of fractures and stress anisotropy in Marcellus shale using multicomponent seismic data: Interpretation, 2(2), SE105–SE115. doi: 10.1190/INT-2013-0108.1.

M. Far, B. Hardage, and D. Wagner, 2014, Fracture parameter inversion for Marcellus shale: Geophysics, 79(3), C55–C63. doi: 10.1190/geo2013-0236.1.

S. Fomel and E. Landa, 2014, Structural uncertainty of time-migrated seismic images: Journal of Applied Geophysics, v. 101, 27–30.

S. Fomel and M. van der Baan, 2014, Local skewness attribute as a seismic phase detector: Interpretation, v. 2, SA49–SA56.

R. H. Herrera, S. Fomel, and M. van der Baan, 2014, Automatic approaches for seismic to well tying: Interpretation, v. 2, SD101–SD109.

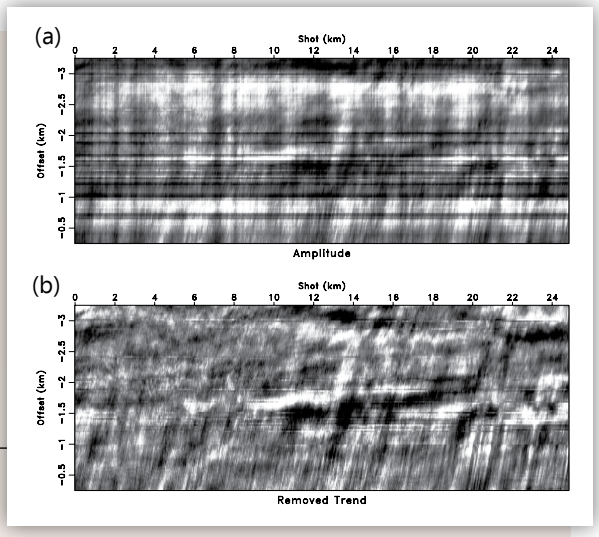
J. Poulson, L. Demanet, N. Maxwell, and L. Ying, 2014, A parallel butterfly algorithm: SIAM Journal on Scientific Computing, v. 36, C49–C65.

P. Tsuji, J. Poulson, B. Engquist, and L. Ying, 2014, Sweeping preconditioners for elastic wave propagation with spectral element methods: ESAIM Mathematical Modelling and Numerical Analysis, v. 48, 433–447.

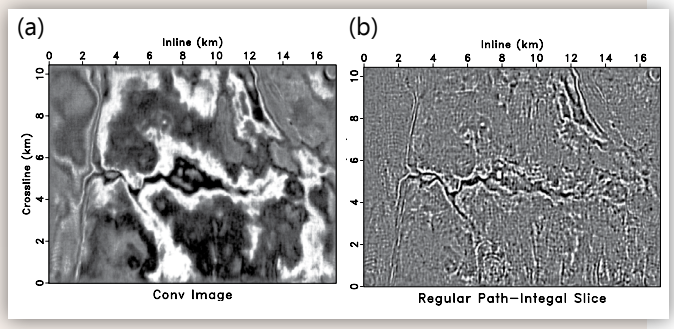
R. Zhang, X. Song, S. Fomel, M. K. Sen, and S. Srinivasan, 2014, Time-lapse prestack seismic data registration and inversion for CO2 sequestration study at Cranfield: Geophysical Prospecting, v. 62, 1028–1039.

Research Highlights

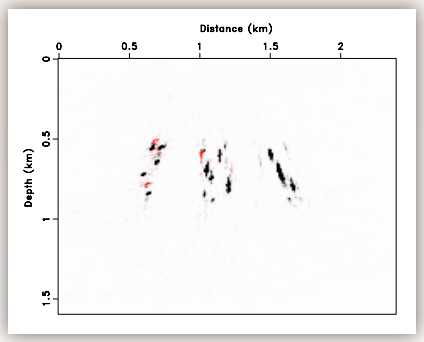
Yenming (Mark) Lai has been working on surface-consistent amplitude and time corrections. To perform amplitude balancing, Mark and his collaborators formulated the problem as an overdetermined system of linear equations and solved it using the method of preconditioned conjugate gradients. Thanks to the structure of the problem, the number of iterations needed for convergence was shown to remain nearly constant with respect to problem size. The method was tested on synthetic data and applied on field data.



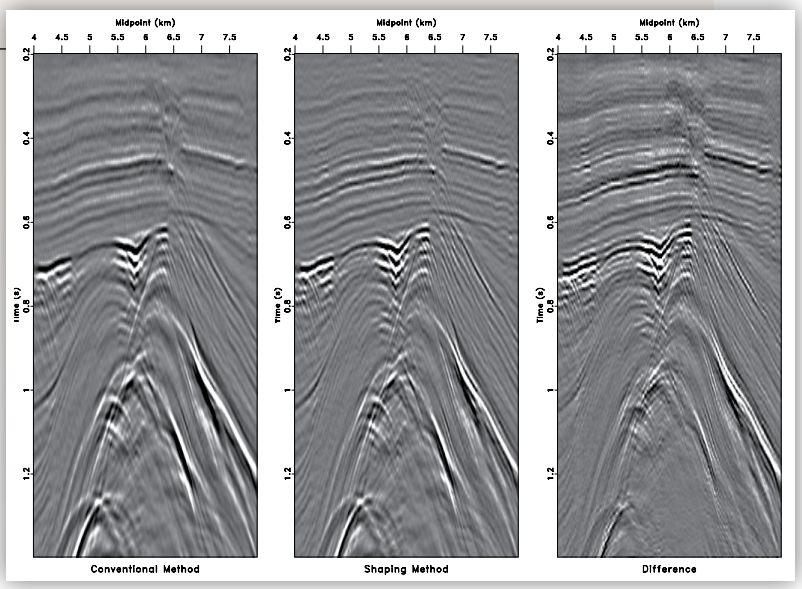
Dmitri Merzlikin has developed an efficient diffraction imaging workflow based on direct and analytical path-integral evaluation. Path integral allows us to perform diffraction imaging without any velocity picking; the analytical expression for its direct evaluation significantly increases computational efficiency of the method. Additionally, double path-integral formulation can be employed as a tool for automatic velocity extraction. The figures show conventional and diffraction images along the target horizon of an unconventional reservoir in Western Australia. The diffraction image appears to exhibit finer scale features in comparison to the conventional one.



Junzhe Sun has investigated the possibility of locating microseismic sources using distributed sensor networks. Instead of the conventional time-reversal imaging condition, the cross-correlation imaging condition is borrowed from active-source seismic imaging to locate multiple microseismic events with unknown start times. The new imaging condition is based on the principle that a true microseismic source must correspond to the location where all the back-propagated events coincide in both space and time. The proposed method is suitable for distributed sensor networks because each wavefield can be computed independently.

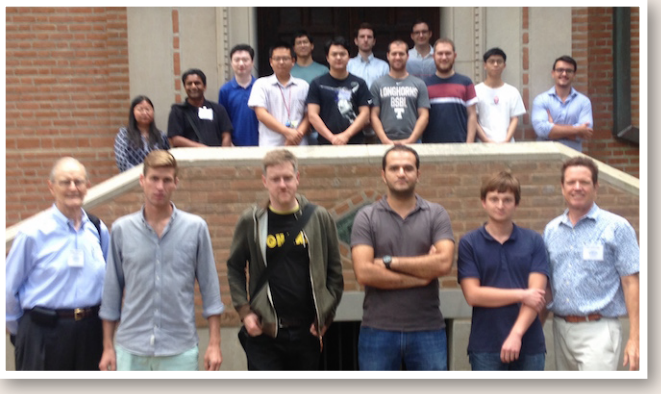


Kelly Regimbal is working on a method that optimizes common midpoint (CMP) stacking and reduces the effects of "normal-moveout (NMO) stretch" by replacing conventional NMO and stack with a regularized inversion to zero offset. Shaping regularization is employed to achieve a stack that has a denser time sampling and contains higher frequencies than the conventional stack. The resulting stack is a model that best fits the data, using additional constraints imposed by shaping regularization. Numerical tests demonstrate that "stretching effects" caused by NMO are reduced and that the resulting stacked section contains higher frequencies and preserves shallow reflectors better than the conventional stacked section.

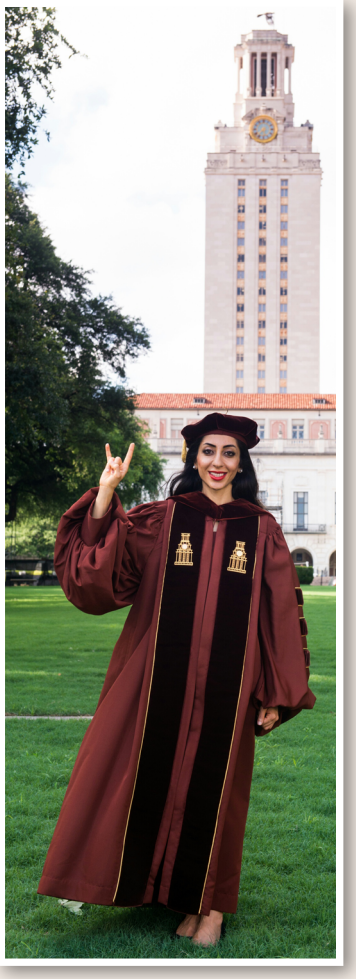


Madagascar Workshops

In August 2015, **Sergey Fomel** and **Zhiguang Xue** traveled to Qingdao, China, to participate in the first Madagascar School for Advanced Users. The school was hosted by China University of Petroleum (East China) and attracted more than 100 participants from 20 different organizations, including 10 Chinese universities.



Also in August 2015, **Karl Schleicher** organized a "working workshop" on 3D seismic field data processing. The workshop, hosted by Rice University in Houston, invited participants to create processing results on the small, open data, 3D land project (Teapot Dome 3D). A diverse group of 25 participants from 16 different organizations participated in the event, including graduate students, postdocs, academic staff, faculty, early career professionals, and senior professionals. For more information see http://ahay.org/wiki/houston_2015.



Ph.D. Dissertations

Name	Year	Title	Current Employer
Parvaneh Karimi	2015	Seismic Interpretation Using Predictive Painting	
Christina Frederick	2014	Numerical Methods for Multiscale Inverse Problems	Georgia Institute of Technology
Vladimir Bashkardin	2014	Phase-Space Imaging of Reflection Seismic Data	BP
Siwei Li	2014	Imaging and Velocity Model Building with Linearized Eikonal Equation and Upwind Finite-Differences	Chevron
Jack Poulson	2012	Fast Parallel Solution of Heterogeneous 3D Time-Harmonic Wave Equations	Stanford University
Xiaolei Song	2012	Application of Fourier Finite Differences and Lowrank Approximation Method for Seismic Modeling and Subsalt Imaging	BP
Paul Tsuji	2012	Fast Algorithms for Frequency-Domain Wave Propagation	Sandia National Laboratory
William Burnett	2011	Multiazimuth Velocity Analysis Using Velocity-Independent Seismic Imaging	ExxonMobil

M.S. Theses

Ryan Swindeman	2015	Iterative Seismic Data Interpolation Using Plane-Wave Shaping	BHP Billiton
Luke Decker	2014	Seismic Diffraction Imaging Methods and Applications	Chevron
Shaunak Ghosh	2013	Multiple Suppression in the t-x-p Domain	CGG
Salah Alhadab	2012	Diffraction Imaging of Sediment Drifts in Canterbury Basin	Saudi Aramco
Yihua Cai	2012	Spectral Recomposition and Multicomponent Seismic Image Registration	Shell

B.S. Honors Theses

Lubna Barghouty	2013	Surface-Related Multiple Elimination and Velocity-Independent Imaging of a 2D Seismic Line from the Viking Graben Dataset	MIT
Yanadet Sripanich	2013	An Efficient Algorithm for Two-Point Seismic Ray Tracing	University of Texas at Austin

TCCS Staff

The TCCS group consists of people from six different countries who have come together to move science forward. Our research staff includes Principal Investigators, postdocs, Ph.D. students, M.S. students, B.S. students, and a Senior Research Fellow:

Yangkang Chen (Ph.D. 4th year)
Björn Engquist (PI)
Sergey Fomel (PI)
Mark Lai (postdoc)
Dmitry Merzlikin (Ph.D. 2nd year)
Mason Phillips (M.S. 1st year)
Kelly Regimbal (M.S. 2nd year)
Karl Schleicher (Senior Research Fellow)
Yunzhi Shi (Ph.D. 1st year)
Yanadet Sripanich (Ph.D. 3rd year)
Junzhe Sun (Ph.D. 4th year)
Zhiguang Xue (Ph.D. 3rd year)
Yunan Yang (Ph.D. 2nd year)
Tieyuan Zhu (postdoc)

For more information, see http://www.beg.utexas.edu/tccs/staff.php.

New faces

Yunzhi Shi graduated in 2015 from the University of Science and Technology of China with a B.S. in geophysics. He studied ambient noise correlation method with Prof. Huajian Yao and parallel computing algorithm for RTM with Prof. Xiaofeng Jia. Yunzhi is now a Ph.D. student supervised by Sergey Fomel.

Mason Phillips earned a B.S. in geophysics from The University of Texas at Austin in 2015. His previous research experience includes processing passive seismic data associated with induced seismicity in North Texas. He is currently working with Sergey Fomel at TCCS and pursuing an M.S. in geophysics. Mason's primary interests include seismic data processing, attributes, and interpretation. After graduation, he hopes to find a position in the energy industry.

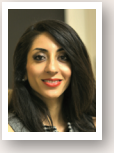
Guoning Wu is an Associate Professor in the College of Science at China University of Petroleum-Beijing. He earned a B.S. in mathematics from ShanXi Normal University in 2001, an M.S. in mathematics from Harbin Institute of Technology in 2003, and a Ph.D. in geophysics from China University of Petroleum-Beijing in 2012. His research focuses mainly on seismic signal processing, sparse time-frequency analysis, and machine learning.

Xinming Wu received a B.S. in geophysics from Central South University, Changsha, China, in 2009 and an M.S. in geophysics from Tongji University, Shanghai, China, in 2012. Xinming joined the Center for Wave Phenomena at the Colorado School of Mines in August 2012 and is working toward a Ph.D. in geophysics with Dr. Dave Hale. He interned twice at Drillinginfo in Littleton, Colorado. Since August 2015, he has been working at TCCS as a visiting Ph.D. student. Xinming is mainly interested in 3D seismic image processing for interpretation. Outside of geophysics, he enjoys reading, watching movies, cooking, traveling, and staying with his family.

Testimonials

Hejun Zhu

"Over the past 2 years, I have had many chances to learn a lot from Sergey and his group on the subjects of seismic imaging and data processing, which has significantly broadened my view on seismology and allowed me to find more common ground between global and exploration seismology. TCCS has also provided me great opportunities to interact with our industry partners. Sergey and his group have built and maintained a wonderful software platform—Madagascar, which provides amazing opportunities for collaborations within the group as well as with scientists from other fields. Thanks to the reproducible research projects, it is much easier for young seismologists to follow and contribute to many frontier research subjects. I have enjoyed the open, friendly, and enthusiastic academic environment in the TCCS."



Parvaneh Karimi

"TCCS is one of the most productive research groups in computational seismology, where the most challenging problems and research are being addressed, and it is my privilege to have been a part of it since its birth. TCCS provided me with the opportunity to work with the most brilliant students and researchers in exploration seismology and to learn from them. I truly enjoyed being a part of the TCCS family."

WenZhan Song

"It was a rewarding experience visiting TCCS from January to May 2015 as a T. J. Oden Faculty Fellow, and I sincerely appreciate the visiting opportunity given to me by TCCS and ICES. I have an interdisciplinary background in computer science and engineering, and seismic data processing and imaging, and saw the great potential of this interdisciplinary research. TCCS and ICES provided a perfect platform for me to exchange ideas with computational scientists and geophysicists. During my stay, I mainly collaborated with Sergey Fomel, Tieyuan Zhu, and Junzhe Sun on exploring the possibility of distributed in situ seismic imaging."