

Publications

Journal Articles

- [A1] Melchior Schuh-Senlis, Cedric Thieulot, Paul Cupillard, Guillaume Caumon. “Towards the application of Stokes flow equations to structural restoration simulations”. In: *Solid Earth* 11.5 (2020), pp. 1909–1930. DOI: 10.5194/se-11-1909-2020.
- [A2] Pierre Anquez, Jeanne Pellerin, Modeste Irakarama, Paul Cupillard, Bruno Lévy, Guillaume Caumon. “Automatic correction and simplification of geological maps and cross-sections for numerical simulations”. In: *Comptes Rendus Géoscience* 351.1 (2019), pp. 48–58. DOI: 10.1016/j.crte.2018.12.001.
- [A3] Modeste Irakarama, Paul Cupillard, Guillaume Caumon, Paul Sava, Jonathan Edwards. “Appraising structural interpretations using seismic data-theoretical elements”. In: *Geophysics* 84.2 (2019), N29–N40. DOI: 10.1190/geo2018-0128.1.
- [A4] Paul Cupillard, Yann Capdeville. “Non-periodic homogenization of 3-D elastic media for the seismic wave equation”. In: *Geophysical Journal International* 213.2 (2018), pp. 983–1001. DOI: 10.1093/gji/ggy032.
- [A5] Andreas Fichtner, Dirk-Philip Van Herwaarden, Michael Afanasiev, Saulé Simuté, Lion Krischer, Yeşim Çubuk-Sabuncu, Tuncay Taymaz, Lorenzo Colli, Erdinc Saygin, Antonio Villaseñor, Jeannot Trampert, Paul Cupillard, Hans-Peter Bunge, Heiner Igel. “The Collaborative Seismic Earth Model: Generation 1”. In: *Geophysical Research Letters* 45.9 (2018), pp. 4007–4016. DOI: 10.1029/2018GL077338.
- [A6] Antoine Mazuyer, Paul Cupillard, Richard Giot, Marianne Conin, Yves Leroy, Pierre Thore. “Stress estimation in reservoirs using an integrated inverse method”. In: *Computers & Geosciences* 114 (2018), pp. 30–40. DOI: 10.1016/j.cageo.2018.01.004.
- [A7] Yann Capdeville, Ming Zhao, Paul Cupillard. “Fast Fourier homogenization for elastic wave propagation in complex media”. In: *Wave Motion* 54 (2015), pp. 170–186. DOI: 10.1016/j.wavemoti.2014.12.006.
- [A8] M. Saade, J. P. Montagner, P. Roux, Paul Cupillard, S. Durand, F. Brenguier. “Influence of seismic anisotropy on the cross correlation tensor: numerical investigations”. In: *Geophysical Journal International* 201.2 (2015), pp. 595–604. DOI: 10.1093/gji/ggu470.
- [A9] Yder J. Masson, Paul Cupillard, Yann Capdeville, Barbara Romanowicz. “On the numerical implementation of time-reversal mirrors for tomographic imaging”. In: *Geophysical Journal International* 196.3 (2014), pp. 1580–1599. DOI: 10.1093/gji/ggt459.
- [A10] Huaiyu Yuan, Scott French, Paul Cupillard, Barbara Romanowicz. “Lithospheric expression of geological units in central and eastern North America from full waveform tomography”. In: *Earth and Planetary Science Letters* 402.SI (2014), pp. 176–186. DOI: 10.1016/j.epsl.2013.11.057.
- [A11] A. Fichtner, E. Saygin, T. Taymaz, P. Cupillard, Y. Capdeville, J. Trampert. “The deep structure of the North Anatolian Fault Zone”. In: *Earth and Planetary Science Letters* 373 (2013), pp. 109–117. DOI: 10.1016/j.epsl.2013.04.027.
- [A12] A. Fichtner, J. Trampert, P. Cupillard, E. Saygin, T. Taymaz, Y. Capdeville, A. Villasenor. “Multiscale full waveform inversion”. In: *Geophysical Journal International* 194.1 (2013), pp. 534–556. DOI: 10.1093/gji/ggt118.
- [A13] P. Cupillard, L. Stehly, B. Romanowicz. “The one-bit noise correlation: a theory based on the concepts of coherent and incoherent noise”. In: *Geophysical Journal International* 184.3 (2011), pp. 1397–1414. DOI: 10.1111/j.1365-246X.2010.04923.x.
- [A14] Paul Cupillard, Elise Delavaud, Gaël Burgos, Geatano Festa, Jean-Pierre Vilotte, Yann Capdeville, Jean-Paul Montagner. “RegSEM: a versatile code based on the spectral element method to compute seismic wave propagation at the regional scale”. In: *Geophysical Journal International* 188.3 (2011), pp. 1203–1220. DOI: 10.1111/j.1365-246X.2011.05311.x.
- [A15] L. Stehly, P. Cupillard, B. Romanowicz. “Towards improving ambient noise tomography using simultaneously curvelet denoising filters and SEM simulations of seismic ambient noise”. In: *Comptes Rendus Géoscience* 343.8-9 (2011), pp. 591–599. DOI: 10.1016/j.crte.2011.03.005.
- [A16] Paul Cupillard, Yann Capdeville. “On the amplitude of surface waves obtained by noise correlation and the capability to recover the attenuation: a numerical approach”. In: *Geophysical Journal International* 181.3 (2010), pp. 1687–1700. DOI: 10.1111/j.1365-246X.2010.04586.x.

- [A17] J. Ritsema, Paul Cupillard, B. Tauzin, Wei-Jiang Xu, L. Stixrude, C. Lithgow-Bertelloni. “Joint mineral physics and seismic wave traveltime analysis of upper mantle temperature”. In: *Geology* 37 (2009), pp. 363–366. DOI: 10.1130/G25428A.1.

Book Chapters

- [BC1] Yann Capdeville, Paul Cupillard, Sneha Singh. “An introduction to the two-scale homogenization method for seismology”. In: *Advances in Geophysics*. Ed. by B. Moseley and L. Krischer. Vol. 61. Elsevier, 2020, pp. 217–306. DOI: 10.1016/bs.agph.2020.07.001.
- [BC2] A. Zunino, A. Khan, Paul Cupillard, K. Mosegaard. “Constitution and Structure of Earth’s Mantle : Insights from Mineral Physics and Seismology”. In: *Integrated Imaging of the Earth : Theory and Applications*. AGU Monograph Series. 2016, pp. 219–243. DOI: 10.1002/9781118929063.

Conferences with Proceedings

- [iP1] Paul Cupillard, Wim A. Mulder, Pierre Anquez, Antoine Mazuyer, Jean-François Barthélémy. “The Apparent Anisotropy of the SEG-EAGE Overthrust Model”. In: *82nd EAGE Conference and Exhibition*. Online, Dec. 2020. DOI: 10.3997/2214-4609.202011955.
- [iP2] Schuh-Senlis Melchior, Cedric Thieulot, Paul Cupillard, Guillaume Caumon. “Structural Restoration of Geological Structures with Viscous Stokes Flow - Principle and First Results”. In: *82nd EAGE Conference and Exhibition*. Online, Dec. 2020. DOI: 10.3997/2214-4609.202010733.
- [iP3] François Bonneau, M. Ragueneil, L. Scholtes, Paul Cupillard. “Simulating Micro-seismic Activity with a Discrete Geomechanical Model”. In: *79th EAGE Conference and Exhibition*. Paris, France, June 2017. DOI: 10.3997/2214-4609.201701223.
- [iP4] Paul Cupillard, Y. Capdeville. “Performance and Convergence of the Non-periodic Homogenization for the 3D Elastic Wave Equation”. In: *79th EAGE Conference and Exhibition*. Paris, France, June 2017. DOI: 10.3997/2214-4609.201700524.
- [iP5] M. Irakarama, Paul Cupillard, G. Caumon, P. Sava. “Appraising Structural Interpretations Using Seismic Data Misfit Functionals”. In: *79th EAGE Conference and Exhibition*. Paris, France, June 2017. DOI: 10.3997/2214-4609.201700536.
- [iP6] Modeste Irakarama, Paul Cupillard, Guillaume Caumon, Paul Sava. “Appraising structural models using seismic data: Problem and challenges”. In: *SEG Technical Program Expanded Abstracts*. Houston, TX, United States: Society of Exploration Geophysicists, Sept. 2017. DOI: 10.1190/segam2017-17791860.1.
- [iP7] A. Mazuyer, Paul Cupillard, R. Giot, M. Conin, P. Thore, Y. Leroy. “Integrated Inverse Method to Estimate Virgin Stress State in Reservoirs and Overburden”. In: *79th EAGE Conference and Exhibition*. Paris, France, June 2017. DOI: 10.3997/2214-4609.201700935.
- [iP8] Modeste Irakarama, Paul Cupillard, Guillaume Caumon. “Reduction of Fault Uncertainty Using Vertical Seismic Profiling Data”. In: *78th EAGE Conference and Exhibition*. Vienna, Austria, May 2016. DOI: 10.3997/2214-4609.201600681.
- [iP9] Paul Cupillard, Yann Capdeville, Arnaud Botella. “Homogenization of 3d geological models for seismic wave propagation”. In: *SEG Technical Program Expanded Abstracts*. New Orleans, LA, United States, Oct. 2015. DOI: 10.1190/segam2015-5907841.1.
- [iP10] Philippe Roux, Jean-Paul Montagner, Florent Brenguier, Stéphanie Durand, Paul Cupillard, Lucia Zaccarelli. “Monitoring of Fractured Media by Temporal Changes of Anisotropy Using Ambient Seismic Noise”. In: *74th EAGE Conference and Exhibition*. Copenhagen, Denmark, June 2012. DOI: 10.3997/2214-4609.20148753.

Conferences without Proceedings

- [C1] Paul Cupillard, Wim A. Mulder, Modeste Irakarama, Antoine Mazuyer, Pierre Anquez. “Small-scale-induced anisotropy of a 3D subsurface model: quantitative analysis and numerical simulations of waves within”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2019.

- [C2] Corentin Gouache, Paul Cupillard, Pierre Tinard. “Calibration de lois d’atténuation par simulation de propagation d’ondes sismiques”. In: *Colloque National de l’AFPS*. Strasbourg, France, Sept. 2019.
- [C3] Melchior Schuh-Senlis, Guillaume Caumon, Paul Cupillard. “Representing faults in a geomechanical restoration scheme using creeping flow equations”. In: *20th Annual Conference of the IAMG*. State College, PA, United States, Aug. 2019.
- [C4] Paul Cupillard, Yann Capdeville, Ming Zhao. “Non-periodic homogenization for the elastic wave equation in 3D”. In: *13ème Congrès Français d’Acoustique*. Le Mans, France, Apr. 2016.
- [C5] Antoine Mazuyer, Richard Giot, Paul Cupillard, Marianne Conin, Pierre Thore. “Stress Estimation in Reservoirs by a Stochastic Inverse Approach”. In: *7th International Symposium on In-Situ Rock Stress*. Tampere, Finland, May 2016.
- [C6] Yder J. Masson, Barbara Romanowicz, Pierre Clouzet, Paul Cupillard, Scott French. “Continental scale waveform tomography using both global and regional data: Application to the North American craton”. In: *EGU General Assembly*. Vienna, Austria, Apr. 2015.
- [C7] Antoine Mazuyer, Marianne Conin, Richard Giot, Paul Cupillard. “Could faults be modelled with elastic materials ?” In: *The Geology of Geomechanics*. London, United Kingdom, Oct. 2015.
- [C8] Laurent Stehly, Pierre Boué, Paul Cupillard. “Computing sensitivity kernels of noise correlations with respect to noise sources”. In: *26th IUGG General Assembly*. Prague, Czech Republic, June 2015.
- [C9] Paul Cupillard, Yann Capdeville, Arnaud Botella. “Numerical homogenization for seismic wave propagation in 3D geological media”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2014.
- [C10] Paul Cupillard, Yann Capdeville. “Upscaling 3D Complex Geological Media for the Elastic Wave Equation”. In: *SIAM Conference on Mathematical and Computational Issues in the Geosciences*. Padova, Italy, June 2013.
- [C11] Andreas Fichtner, Paul Cupillard, Erdinc Saygin, Jeannot Trampert, Tuncay Taymaz, Yann Capdeville. “The deep structure of the North Anatolian Fault Zone”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2013.
- [C12] M. Saade, Jean-Paul Montagner, Philippe Roux, Paul Cupillard, F. Brenguier, Bogdan Enescu, K. Shiomi. “Spatio-temporal changes of seismic anisotropy in seismogenic zones”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2013.
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- [C15] Andreas Fichtner, Jeannot Trampert, Paul Cupillard, Erdinc Saygin, Tuncay Taymaz, Antonio Villasenor. “Imaging the North Anatolian Fault Zone with multi-scale full waveform inversion”. In: *AGU Fall Meeting*. San Francisco, United States, Dec. 2012.
- [C16] Shravan M. Hanasoge, L. Stehly, Tarje Nissen-Meyer, Paul Cupillard. “Non-linear iterative inversions for the distribution of noise sources”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2012.
- [C17] Tarje Nissen-Meyer, Shravan M. Hanasoge, Laurent Stehly, Paul Cupillard. “Non-linear inversions for the origin of ambient noise”. In: *EGU General Assembly*. Vienna, Austria, Apr. 2012.
- [C18] Nian Wang, Jean-Paul Montagner, Yann Capdeville, Gael Burgos, Paul Cupillard. “How to separate intrinsic and artificial anisotropy”. In: *EGU General Assembly*. Vienna, Austria, Apr. 2012.
- [C19] Lucia Zaccarelli, M. Saade, Paul Cupillard, Philippe Roux, Jean-Paul Montagner, F. Brenguier. “Crustal anisotropy viewed by noise cross-correlations”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2012.
- [C20] Paul Cupillard, Yann Capdeville. “Implementation of the homogenization technique for wave propagation in 3D elastic media”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2011.
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- [C22] Barbara Romanowicz, Huaiyu Yuan, Paul Cupillard. “Refining Upper Mantle Structure in the North American continent using Spectral Element method”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2011.

- [C23] Paul Cupillard, Huaiyu Yuan, Barbara Romanowicz, Yann Capdeville, Jean-Paul Montagner, Gaetano Festa. “RegSEM, a flexible regional Spectral Element code: application to continental scale problems”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2010.
- [C24] Stephanie Durand, Jean-Paul Montagner, Philippe Roux, Florent Brenguier, S. Saumet, Paul Cupillard, Gael Burgos. “Passive monitoring of anisotropy change for the Parkfield 2004 earthquake”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2010.
- [C25] Laurent Stehly, Paul Cupillard, Barbara Romanowicz. “Using simultaneously curvelet filters and SEM simulation of seismic ambient noise: a possible way to improve ambient noise tomography”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2010.
- [C26] Huaiyu Yuan, Paul Cupillard, Scott French, Barbara Romanowicz. “Refining the cratonic upper mantle: modeling North American upper mantle and crustal structure using the Spectral Element method”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2010.
- [C27] Sanne Cottaar, Paul Cupillard, Alen McNamara, Barbara Romanowicz, Rudy Wenk. “Forward modeling the origin of seismic anisotropy at the base of the mantle”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2009.
- [C28] Paul Cupillard, Yann Capdeville. “Recovering the attenuation of surface waves from noise correlation: synthetic tests in a spherically symmetric Earth”. In: *CIDER '09 Community Workshop*. Marconi Center, CA, United States, May 2009.
- [C29] Paul Cupillard, Yann P Capdeville, Laurent Stehly, Jean-Paul Montagner, Barbara Romanowicz. “Spectral Element Simulation of Waveforms Obtained by Correlation of Ambient Seismic Noise”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2009.
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- [C32] Laurent Stehly, Paul Cupillard, Aimin Cao, Barbara Romanowicz. “Regional 3D tomography of the upper mantle using a summed source approach”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2008.
- [C33] Elise Delavaud, Paul Cupillard, Gaetano Festa, Jean-Pierre Vilotte. “3D Spectral Element Method simulations of the seismic response of Caracas (Venezuela) basin”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2007.
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- [C35] Elise Delavaud, Paul Cupillard, Gaetano Festa, Jean-Pierre Vilotte. “3D Spectral Element Method simulations of the seismic response in complex media: application to the Caracas valley”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2006.
- [C36] Elise Delavaud, Paul Cupillard, Gaetano Festa, Jean-Pierre Vilotte. “3D Spectral Element Method Simulations of the Seismic Response in the Caracas Basin”. In: *Third International Symposium on the Effects of Surface Geology on Seismic Motion*. Vol. 1. Grenoble, France, Aug. 2006, pp. 512–522.
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- [C39] Jeroen Ritsema, Paul Cupillard, Saskia Goes, Lithgow-Bertelloni C. Stixrude L. “Transition zone structure of California from Ps converted waves”. In: *AGU Fall Meeting*. San Francisco, CA, United States, Dec. 2005.