# Romain Brossier

*Associate Professor*

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## Research topics

**Subject** High resolution imaging of the Earth at different scales using full waveform inversion and migration.

**Data and targets** Full waveform of body and surface waves ; active seismic and noise correlation data ; near-surface scales ; reservoir characterization, deep crustal and lithospehric scales ; monitoring et 4D characterization ; lab scales, ocean acoustic ; EM waves

**Tools** High resolution tomography using the full waveform, migration, large scale non-linear inverse problems, multi-parameter inversion, local optimization methods, numerical modeling of wave propagation, spectral finite-elements, linear system resolutio, high performances computing.

**Projects** PI of the SEISCOPE Consortium (2013-2024, 9-14 industrials sponsors), partner of French HI-WAI project (2016-2021), partner of EU ENERXICO project(2019-2021)

## Positions

**2016-today** Associate Professor at university Grenoble Alpes, UFR PHITEM and Laboratory ISTerre.

**2011-2016** Assistant Professor at Univ. Grenoble Alpes, UFR PHITEM and Laboratory ISTerre.

**2010–2011** Post-doc fellow at LGIT/ISTerre, university Joseph Fourier, Grenoble. *Multi-scale imaging by full waveform inversion*

**2006–2009** PhD project at Géoazur lab, university of Nice-Sophia Antipolis. *Visco-elastic Seismic imaging by full waveform inversion*, in the frame of the SEISCOPE project

## Education and Diploma

**2016** Habilitation (HDR), « Contributions to developments and applications of Full Waveform Modeling and Inversion », Univ. Grenoble Alpes

**2006–2009** Ph.D. in Geophysics, University of Nice-Sophia Antipolis, prepared at Géoazur lab, Sophia-Antipolis, under supervision of Jean Virieux and Stéphane Operto, in the frame of the SEISCOPE consortium, « Imagerie sismique à deux dimensions des milieux visco-élastiques par inversion des formes d'ondes : développements méthodologiques et applications », mention *très honorable*

**2006** Master degree in Mechanical and Civil Engineering, University of Bourgogne, prepared at Institut Supérieur de l'Automobile et des Transports and at Laboratoire de Recherche en Mécanique et Acoustique, Nevers, mention *Très Bien*

**2002–2006** Engineering degree in mechanics, Institut Supérieur de l'Automobile et des Transports, University of Bourgogne, Nevers

## Teaching

**2019-today** Responsible of the "L3 Sciences de la Terre et de l'Environnement" year at UFR PhiTEM, Université Grenoble Aples

**2011-today** Teaching in geophysics at UFR PhiTEM, Univ. Grenoble Alpes

**2019** Visiting professor at Federal University of Rio Grande del Norde, Natal, Brasil

2011-today several industrial training on Full Waveform Inversion

2016 course on Full Waveform Inversion at Ecole Doctorale TUE

2011 International course on Full Waveform Inversion (1 day), SBGF congress, Rio de Janeiro, Brasil.

## PhD Students supervision

2023-today Co-supervisor with C. Bouligand, of Lahcène Bellounis, Univ. Grenoble. "*Geophysical imaging of the Krafla geothermal site, Icelande, with potential methods*"

2022-today Co-supervisor with L. Métivier & P. Roux, of Arthur Grange, Univ. Grenoble. "*Icequake localization and 3D characterization of Argentière glacier using full waveform inversion*"

2022-today Co-supervisor with L. Métivier & L. Moreau, of Hooshmand Zandi, Univ. Grenoble. "*Sea Ice characterization with full waveform inversion*"

2022-today Co-supervisor with L. Métivier, of Mustapha Benziane, Univ. Grenoble. "*Mitigating non-linearity in full waveform inversion with receiver relocalization extention*"

2021-2025 Advisor of Mirko Baccale (sup. M. Campillo & Helle Pedersen) Univ. Grenoble. "*The seismic wavefield and its gradients in complex scattering media : Numerical simulations with applications to shallow heterogeneity detection and in-situ characterization of a volcanic magmatic structure*"

2021-2024 Co-supervisor with L. Métivier & E. Oudet, of Amine Abdellaziz, Univ. Grenoble. "*Optimal Design of seismic acquisition*"

2021-2024 Co-supervisor with L. Métivier, of Fandy Fachtony, Univ. Grenoble. "*4F FWI*"

2019-2022 Co-supervisor with L. Stehly, of Ahmed Nouibat, Univ. Grenoble. "*3D characterization of the deep Alps*"

2016-2021 Co-supervisor with L. Métivier, of Arnaud Pladys, Univ. Grenoble. "*Misfit function in Full waveform inversion*"

2017-2021 Co-supervisor with L. Métivier, of Marwan Irnaka, Univ. Grenoble. "*3D elastic full waveform inversion for subsurface characterization - Study of a shallow seismic multicomponent field data*"

2017-2020 Co-supervisor with C. Comina, V. Socco and J. Virieux, of Daniela Theodor, Univ. Torino (It). "*Initial S - wave and P - wave velocity models for full-waveform inversion from surface wave dispersion curves analysis*"

2016-2020 Co-supervisor with L. Métivier, of Julien Thurin, Univ. Grenoble. "*Uncertainties estimation in Full Waveform Inversion using Ensemble methods*"

2015-2018 Co-supervisor with L. Métivier and J. Virieux of Phuong-Thu Trinh, Univ. Grenoble. "*3D Multiparameters Full Waveform Inversion for challenging land targets*", Geophysicist TOTAL

2013-2016 Co-supervisor with S. Garambois and J. Virieux of Paul Wellington, PhD student Univ. Grenoble. "*Efficient 1D, 2D and 3D Geostatistical constraints and their application to Full Waveform Inversion*", Geophysicist Chevron

2013-2016 Co-supervisor with S. Operto and J. Virieux of Wei Zhou, PhD student Univ. Grenoble. "*Full Waveform Inversion of Early Arrivals and Reflections for Velocity Model Building and Case Study with Gas Cloud Effect*", now Post-doc UGA-TOTAL

2012-2016 Co-supervisor with J. Virieux of Isabella Masoni, PhD student Univ. Grenoble. "*Inversion of Surface Waves in an Oil and Gas Context*", Geophysicist TOTAL

2013-2015 Co-supervisor with L. Métivier and J. Virieux of Yang Li, PhD student from Har Binh University, China "*Kaczmarz-based linear iterative solver for acoustic and elastic wave propagation modeling*"

2010-2014 Advisor for F. Lavoué, PhD student Univ. Grenoble (supervisors S. Garambois and J. Virieux). "*2D Full waveform inversion of ground penetrating radar data Towards multiparameter imaging from surface data*". Post-Doc Dublin

2010-2013 Advisor for C. Castellanos, PhD student Univ. Nice (supervisor S. Operto). "*Accélération et régularisation de la méthode d'inversion des formes d'ondes complètes en exploration sismique*", scientist at Schlumberger

2010-2013 Advisor for A. Asnaashari, PhD student Univ. Grenoble (supervisors S. Garambois and J. Virieux)."*Quantitative 4D seismic imaging in complex media using 2D full waveform inversion*". Geophysicist at PGS

2008-2012 Advisor for D. Pageot, PhD Univ. Nice (supervisors S. Operto and M. Vallée). "*Imagerie de la lithosphère par inversion de formes d'ondes de données télésismiques.*", Post-Doc IFSTTAR.

2008-2012 Advisor for A. Roques, PhD Univ. Grenoble (supervisors J. Virieux and J. Mars). "*Imagerie sismique appliquée à la caractérisation géométrique des fondations de pylônes électriques très haute tension*". Enseignant

2009-2012 Advisor for Y. Gholami, PhD Univ. Nice (supervisors S. Operto and A. Ribodetti). "*Two-dimensional seismic imaging of anisotropic media by full waveform inversion*". Geophysicist CGG

2009-2012 Advisor for G. Hu, PhD Univ. Grenoble (supervisors S. Operto and J. Virieux). "*Three-dimensional acoustic Full Waveform Inversion : method, algorithms and application to the Valhall petroleum field*". Geophysicist SINOPEC

2008-2012 Advisor for V. Prieux, PhD Univ. Nice (supervisors S. Operto and J. Virieux).. "*Imagerie sismique des milieux visco-acoustiques et visco-élastiques à deux dimensions par stéréotomographie et inversion des formes d'ondes : applications au champ pétrolier de Valhall*". Geophysicist CGG

## Master Students supervision

2023 Supervisor (with C. Bouligand and L. Métivier) of Lhacene Bellounis, (Master degree Univ. Grenoble) "*Spectral element modeling for gravity and magnetic fields*"

2022 Supervisor (with L. Métivier) of Keijdi Lleshi, (Master degree Univ. Grenoble) "*Icequake recolocalization in Argentiere galcier with full waveform time-reversal*"

2022 Supervisor (with L. Métivier & L. Moreau) of Hooshmand Zandi (Master degree Univ. Grenoble). "*Sea-ice characterization with full waveform modeling*"

2022 Supervisor (with L. Métivier) of Mustapha Benziane (Master degree Univ. Grenoble). "*Time-dependant receiver relocalization extention in full waveform inversion*"

2021 Supervisor (with L. Métivier) of Mohammad Aminpanah, Master degree Univ. Grenoble "*FWI with receiver location extention*"

2020 Supervisor (with L. Métivier) of Mohamed Bachir, Master degree Univ. Grenoble "*4D attributes extraction from seismic data*"

2016 Supervisor (with L. Métivier) of Julien Thurin, Master degree Univ. Grenoble "*Data Assimilation-based uncertainty analysis in Full Waveform Inversion*"

2016 Supervisor (with L. Métivier) of Arnaud Pladys, Master degree Univ. Grenoble "*Sensibility of several misfit functions for Full Waveform Inversion : theoretical analysis, implementation and comparative study on multiple realistic cases*"

2016 Supervisor (with L. Moreau) of Alice Dinsenmeyer, Master degree University of Maine."*Imagerie ultrasonore par inversion de formes d'onde*"

2015 Supervisor of Marwan Irnaka, Master degree Grenoble University."*Numerical Simulation of Seismic Wave Propagation in Elastic Medium : Performance's Evaluation of Several Numerical Methods for The Application of Full-Waveform Inversion*"

2014 Supervisor of Théo Masson, Master degree Univ. Grenoble "*Déconvolution non-linéaire pour l'inversion des formes d'ondes*"

2013 Supervisor of Boussad Beldjena, Master degree univ. Grenoble "*Seismic data processing of Chevron GOM benchmark for FWI initial model construction*"

2012 Supervisor of Cécile Bruyant, Master degree Polytech Grenoble."*Imagerie sismique haute résolutions sur le système de failles normales de Celano en Italie*"

## Scientific production

101 articles in peer-reviewed international journals

5 book chapters

166 proceedings of international conferences with peer-review

H-index : 48 (Google Scholar 06/2025)

## Editorial activities

2008-today Reviewer for journals *Geophysical Journal International*, *Geophysics*, *Geophysical Prospecting*, *Journal of Applied Geophysics*, *Exploration Geophysics*, *Geophysical Research Letters*, for proceedings of conferences *SEG* and *EAGE*.

## PhD commitee participation

2024 Reviewer for the PhD work of Quentin Didier, Univ. Avignon, supervized by Gaëlle LEFEUVE-MESGOUEZ and Slimane Arhab : *Caractérisation de milieux naturels à l'échelle macroscopique par approches ondulatoires mécanique et électromagnétique. Application à l'étude de l'impact de la teneur en eau sur les caractéristiques physiques d'un milieu hétérogène.*

2024 Examinator for the PhD work of Ivana FALCO, Univ. Grenoble Alpes, supervized by Emmanuel BOSSY and Bastien ARNAL : *Novel approaches for quantitative photoacoustic imaging : contribution of ultrasound imaging of blood vessels and deep learning*

2024 Reviewer for the PhD work of Frichnel Mamfoumbi, Univ. Cote d'Azur, supervized by Stéphane Operto : *Inversion de formes d'ondes complètes dans le domaine fréquentiel en se basant sur un espace de recherche étendu : comprendre les limites*

2022 Reviewer for the PhD work of Silvio Pierini, University de Pisa (Italy), supervized by Eusebio Stucchi and Alfredo Mazzotti : *Big Data analytics in Exploration Geophysics*

2021 Reviewer for the PhD work of Julien Porté, University of Strasbourg, supervized by J.F. Girard & F. Bretaudeau : *Imagerie de la résistivité complexe à partir de données électromagnétiques à source controllée*

2021 Examinator for the PhD work of Milad Farshad, Mines ParisTech, supervized by Hervé Chauris : *Multi-parameter seismic linear waveform imaging*

2021 Examinator for the PhD work of Serge Sambolian, Université Cote d'Azur, supervized by Alessandra Ribodetti and Stephane Operto : *Kinematically consistent slope tomography using eikonal solvers and the adjoint-state method Theory and applications to velocity model building and event location*

2021 Reviewer for the PhD work of Aline Robin, University of Paris, supervized by Satish Singh and Mark Noble : *Elastic full waveform inversion in anisotropic media Methodology and Application to ocean bottom node data from the North Sea*

2020 Reviewer for the PhD work of Sneha Singh, University of Nantes, supervized by Yann Capdeville and Heiner Igel : *Wavefield gradients and small-scale heterogeneities*

2020 Reviewer for the PhD work of Bhargav Boddupalli, University of Southampton, supervized by Tim Minshull and Gaye Bayrakci : *Imaging the Deep Galicia Margin using Ocean Botton Seismic Data*

2020 Reviewer for the PhD work of Tianyou Zhou, Mines ParisTech, supervized by Hervé Chauris : *Migration velocity analysis : selection of user parameters and introduction of transmitted waves*

2019 Reviewer for the PhD work of Hao Jiang, Mines ParisTech, supervized by Hervé Chauris : *Seismic imaging : strategies for visco-acoustic full waveform inversion*

2018 Examinator for the PhD work of Yubing Li, Mines ParisTech, supervised by Hervé Chauris : *Subsurface seismic imaging based on inversion velocity analysis in both image and data domains*

2017 Reviewer for the PhD work of Filip Kubina, Comenius University in Bratislava, supervised by Peter Moczo : *Adjoint tomography of 2D local surface sedimentary structures*

2017 Reviewer for the PhD work of Weiguang He, IPGP, supervised by René-Edouard Plessix and Satish Singh : *Elastic full waveform inversion in vertically transversely isotropic media*

2015 Examinator for the PhD defense of Fang Wang, Mines ParisTech, supervised by Hervé Chauris and Daniella Donno : *Waveform inversion based on wavefield decomposition.*

2014 Examinator for the PhD defense of Raphaël Valensi, Univ. Nantes, supervised by Philippe Côte and Donatienne Leparoux : *Développements méthodologiques à partir de formes d'ondes multicomposantes en vue de l'imagerie sismique quantitative de la proche surface : modélisation physique à échelle réduite, traitements et inversion de la polarisation.*

2013 Examinator for the PhD defense of Elodie Estecahandy, Univ. Pau et des Pays de l'Adour, supervised by Hélène Barrucq and Rabia Djellouli : *Contribution à l'analyse mathématique et à la résolution numérique d'un problème inverse de scattering élasto-acoustique.*

## Honors and Awards

2023 Recipient of the *Michel Gouilloud Schlumberger* award from Académie des Sciences

2020 *top 25 papers* for the expended abstract J. Cao, R. Brossier and L. Métivier presented at SEG annual meeting (virtual conf)

2019-2022 Recipient of the "PEDR"

2017 SIGEST award from SIAM for paper Métivier at al. "FULL WAVEFORM INVERSION AND THE TRUNCATED NEWTON METHOD"

2016 *outstanding reviewer of the year 2016* at *Geophysical Journal International*

2015 *Arie van Weelden, Young Professional Award* 2015 of EAGE

2015 *Honorable Mention* Award 2015 of SEG for paper S. Operto et al. in Geophysics

2014-2018 Recipient of the "PEDR"

2013 *Best student paper award* for proceeding F. Lavoué et al. presented at IWAGPR meeting, Nantes (Fr)

2012 *top 30 papers* for proceeding A. Asnaashari, R. Brossier et al. presented at SEG annual meeting, Las Vegas (US)

2011 *outstanding reviewer of the year 2011* at *Geophysical Journal International*

2011 *Award of Merit* (Best student paper) for proceeding A. Asnaashari, R. Brossier et al. presented at SEG Annual Meeting, San Antonio (US)

2010 C3I (Certificat de Compétences en Calcul Intensif) label provided by GENCI

2009 *Geophysics Bright Spots* for paper : « Seismic imaging of complex onshore structures by two-dimensional elastic frequency-domain full-waveform inversion » by Brossier R., S. Operto and J. Virieux, (2009),*Geophysics*.

2005-2006 Merit grant for Master year

## Publications in peer-reviewed international journals


[1] Ludovic Métivier, Grégory Bièvre, Romain Brossier, Jian Cao, Stéphane Garambois, Ahmed Nouibat, Giuseppe Provenzano, and Alizia Tarayoun. Elastic full-waveform inversion of seismic ambient noise. *The Leading Edge*, 44(5) :373a1–373a12, 2025.

[2] F A Fachtony, R Brossier, B Boddupalli, B Dupuy, L Métivier, and A Romdhane. Co2 monitoring at sleipner field using reflection oriented full waveform inversion : part 2—4d investigation. *Geophysical Journal International*, 242(1) :ggaf185, 05 2025.

[3] F A Fachtony, R Brossier, B Boddupalli, B Dupuy, L Métivier, and A Romdhane. Co2 monitoring at sleipner field using reflection oriented full waveform inversion—part 1 : baseline reconstruction. *Geophysical Journal International*, 241(2) :1226–1242, 03 2025.

[4] Andrzej Górszczyk, Rafael Almeida, Romain Brossier, Ludovic Métivier, and Stéphane Operto. Constraining the effect of bathymetric high subduction in an accretionary wedge : Evidence from the tokai area of the nankai trough, japan. *Geochemistry, Geophysics, Geosystems*, 26(3) :e2024GC011754, 2025. e2024GC011754 2024GC011754.

[5] L Métivier and R Brossier. On the adjoint state method for the gradient computation in full waveform inversion : a complete mathematical derivation for the (visco-)elastodynamics approximation. *Geophysical Journal International*, 240(2) :942–966, 11 2024.

[6] Amine Abdellaziz, Romain Brossier, Ludovic Métivier, and Édouard Oudet. Optimal experimental design for full waveform inversion using a wavenumber sampling criterion—part 1 : 2-d to methodological development. *Geophysical Journal International*, 240(3) :1429–1459, 12 2024.

[7] Amine Abdellaziz, Romain Brossier, Ludovic Métivier, and Édouard Oudet. Optimal experimental design for full waveform inversion using a wavenumber sampling criterion—part 2 : 3-d extension and practical application. *Geophysical Journal International*, 240(3) :1460–1480, 12 2024.

[8] Peng Yong, Romain Brossier, and Ludovic Métivier. Inversion strategies for q estimation in viscoacoustic full-waveform inversion. *GEOPHYSICS*, 89(5) :R399–R413, 2024.

[9] Alain Manceau, Romain Brossier, Olivier Mathon, Kirill A. Lomachenko, Marius Retegan, Pieter Glatzel, and Stephan N. Steinmann. DFT2FEFFIT : a density-functional-theory-based structural toolkit to analyze EXAFS spectra. *Journal of Applied Crystallography*, 57(4), Aug 2024.

[10] J Cao, R Brossier, Y Capdeville, L Métivier, and S Sambolian. A fully scalable homogenization method to upscale 3-D elastic media. *Geophysical Journal International*, 238(1) :72–90, 04 2024.

[11] Alexandre Hoffmann, Romain Brossier, Ludovic Métivier, and Alizia Tarayoun. Local uncertainty quantification for 3-D time-domain full-waveform inversion with ensemble Kalman filters : application to a North Sea OBC data set. *Geophysical Journal International*, 237(3) :1353–1383, 03 2024.

[12] Andrzej Górszczyk, Romain Brossier, and Ludovic Métivier. On the effect of 3d wave propagation on 2d regional-scale velocity model building. *Journal of Geophysical Research : Solid Earth*, 129(3) :e2023JB028172, 2024. e2023JB028172 2023JB028172.

[13] Alain Manceau, Olivier Mathon, Kirill A. Lomachenko, Mauro Rovezzi, Kristina O. Kvashnina, Marie-Christine Boiron, Romain Brossier, and Stephan N. Steinmann. Revealing the incorporation of cerium in fluorapatite. *ACS Earth and Space Chemistry*, 8(1) :119–128, 2024.

[14] Ludovic Métivier, Romain Brossier, Alexandre Hoffmann, Jean-Marie Mirebeau, Giuseppe Provenzano, Alizia Tarayoun, and Peng Yong. Coherence-enhancing anisotropic diffusion filter for 3d high-resolution reconstruction of p-wave velocity and density using full-waveform inversion : Application to a north sea ocean bottom cable data set. *GEOPHYSICS*, 89(1) :R33–R58, 2024.

[15] Giuseppe Provenzano, Romain Brossier, and Ludovic Métivier. Robust and efficient waveform-based velocity model building by optimal transport in the pseudotime domain : An ocean-bottom cable case study in the north sea. *GEOPHYSICS*, 89(2) :B83–B103, 2024.

[16] Giuseppe Provenzano, Romain Brossier, and Ludovic Métivier. Robust and efficient waveform-based velocity-model-building by optimal-transport in the pseudotime domain : methodology. *Geophysics*, 88(2) :U49–U70, 2023.

[17] A. Nouibat, R. Brossier, L. Stehly, J. Cao, A. Paul, and Cifalps Team and AlpArray Working Group . Ambient-noise wave-equation tomography of the alps and ligurian-provence basin. *Journal of Geophysical Research : Solid Earth*, 128(10) :e2023JB026776, 2023. e2023JB026776 2023JB026776.

[18] Ludovic Métivier and Romain Brossier. On the use of nonlinear anisotropic diffusion filters for seismic imaging using the full waveform. *Inverse Problems*, 38(11) :115001, 2022.

[19] Ludovic Métivier, Romain Brossier, Félix Kpadonou, Jérémie Messud, and Arnaud Pladys. A review of the use of optimal transport distances for high resolution seismic imaging based on the full waveform. *MathematicS In Action*, 11(1) :3–42, 2022.

[20] Peng Yong, Romain Brossier, Ludovic Métivier, and Jean Virieux. Localized adaptive waveform inversion : theory and numerical verification. *Geophysical Journal International*, 233(2) :1055–1080, 2023.

[21] Peng Yong, Romain Brossier, Ludovic Métivier, and Jean Virieux. Localized adaptive waveform inversion : regularizations for Gabor deconvolution and 3-D field data application. *Geophysical Journal International*, 235(1) :448–467, 05 2023.

[22] Giuseppe Provenzano, Romain Brossier, and Ludovic Métivier. Robust and efficient waveform-based velocity-model building by optimal transport in the pseudotime domain : Methodology. *GEOPHYSICS*, 88(2) :U49–U70, 2023.

[23] Jet Hoe Tang, Romain Brossier, and Ludovic Métivier. Fully scalable solver for frequency-domain viscoelastic wave equations in 3d heterogeneous media : A controllability approach. *Journal of Computational Physics*, 468 :111514, 2022.

[24] A. Nouibat, L. Stehly, A. Paul, S. Schwartz, Y. Rolland, T. Dumont, W. C. Crawford, R. Brossier, and Cifalps Team, and AlpArray Working Group . Ambient-noise tomography of the ligurian-provence basin using the alparray onshore-offshore network : Insights for the oceanic domain structure. *Journal of Geophysical Research : Solid Earth*, 127(8) :e2022JB024228, 2022. e2022JB024228 2022JB024228.

[25] Arnaud Pladys, Romain Brossier, Nishant Kamath, and Ludovic Métivier. Robust FWI with graph space optimal transport : application to 3D OBC Valhall data. *Geophysics*, 87(3) :1–76, 2022.

[26] Ludovic Métivier and Romain Brossier. Receiver-extension strategy for time-domain full-waveform inversion using a relocalization approach. *GEOPHYSICS*, 87(1) :R13–R33, 2022.

[27] T M Irnaka, R Brossier, L Métivier, T Bohlen, and Y Pan. 3-D multicomponent full waveform inversion for shallow-seismic target : Ettlingen Line case study. *Geophysical Journal International*, 229(2) :1017–1040, 12 2022.

[28] Jian Cao, Romain Brossier, Andrzej Górszczyk, Ludovic Métivier, and Jean Virieux. 3-D multiparameter full-waveform inversion for ocean-bottom seismic data using an efficient fluid–solid coupled spectral-element solver. *Geophysical Journal International*, 229(1) :671–703, 2022.

[29] A Nouibat, L Stehly, A Paul, S Schwartz, T Bodin, T Dumont, Y Rolland, R Brossier, Cifalps Team, and AlpArray Working Group. Lithospheric transdimensional ambient-noise tomography of W-Europe : implications for crustal-scale geometry of the W-Alps. *Geophysical Journal International*, 229(2) :862–879, 12 2022.

[30] P T C Carvalho, S L E F da Silva, E F Duarte, R Brossier, G Corso, and J M de Araújo. Full waveform inversion based on the non-parametric estimate of the probability distribution of the residuals. *Geophysical Journal International*, 229(1) :35–55, 2022.

[31] Peng Yong, Romain Brossier, and Ludovic Métivier. Parsimonious truncated newton method for time-domain full-waveform inversion based on the fourier-domain full-scattered-field approximation. *Geophysics*, 87(1) :R123–R146, 2022.

[32] Alain Manceau, Romain Brossier, and Brett Poulin. Response to comment on "mercury isotope fractionation by internal demethylation and biomineralization reactions in seabirds : Implications for environmental mercury science" : Principles and limitations of source tracing and process tracing with stable isotope signatures. *Environ. Sci. Technol.*, 56(3) :2065–2068, 2022.

[33] Alain Manceau, Romain Brossier, and Brett Poulin. Mercury isotope fractionation by internal demethylation and biomineralization reactions in seabirds : Implications for environmental mercury science. *Environ. Sci. Technol.*, 55(20) :13942–13952, 2021.

[34] Alain Manceau, Romain Brossier, and Brett Poulin. Chemical forms of mercury in pilot whales determined from species-averaged mercury isotope signatures. *ACS Earth and Space Chemistry*, 5(6) :1591–1599, 2021.

[35] Daniela Teodor, Cesare Comina, Farbod Khosro Anjom, Romain Brossier, Laura Valentina Socco, and Jean Virieux. Challenges in shallow target reconstruction by 3d elastic full-waveform inversion — which initial model ? *GEOPHYSICS*, 86(4) :R433–R446, 2021.

[36] Andrzej Górszczyk, Romain Brossier, and Ludovic Métivier. Graph-space optimal transport concept for time-domain full-waveform inversion of ocean-bottom seismometer data : Nankai trough velocity structure reconstructed from a 1d model. *Journal of Geophysical Research : Solid Earth*, 126(5) :e2020JB021504, 2021. e2020JB021504 2020JB021504.

[37] A. Pladys, R. Brossier, Y. Li, and L. Métivier. On cycle-skipping and misfit function modification for full-wave inversion : Comparison of five recent approaches. *Geophysics*, 86(4) :R563–R587, 2021.

[38] Nishant Kamath, Romain Brossier, Ludovic Métivier, Arnaud Pladys, and Pengliang Yang. Multiparameter full-waveform inversion of 3D OBC data from the Valhall field. *Geophysics*, 86 :B15–B35, 2021.

[39] François Lavoué, Olivier Coutant, Pierre Boué, Laura Pinzon-Rincon, Florent Brenguier, Romain Brossier, Philippe Dales, Meysam Rezaeifar, and Christopher J. Bean. Understanding seismic waves generated by train traffic via modelling : implications for seismic imaging and monitoring. *Seismological Research Letters*, 92(1) :287–300, 2021.

[40] Yang Li, Romain Brossier, and Ludovic Métivier. 3d frequency-domain elastic wave modeling with the spectral element method using a massively parallel direct solver. *GEOPHYSICS*, 85(2) :T71–T88, 2020.

[41] Y Lu, L Stehly, R Brossier, A Paul, and AlpArray Working Group. Imaging Alpine crust using ambient noise wave-equation tomography. *Geophysical Journal International*, 222(1) :69–85, 03 2020.

[42] J Thurin, R Brossier, and L Métivier. Ensemble-based uncertainty estimation in full waveform inversion. *Geophysical Journal International*, 219(3) :1613–1635, 08 2019.

[43] Weiguang He, Romain Brossier, Ludovic Métivier, and René-Édouard Plessix. Land seismic multiparameter full waveform inversion in elastic VTI media by simultaneously interpreting body waves and surface waves with an optimal transport based objective function. *Geophysical Journal International*, 219(3) :1970–1988, 09 2019. ggz414.

[44] Farbod Khosro Anjom, Daniela Teodor, Cesare Comina, Romain Brossier, Jean Virieux, and Laura Valentina Socco. Full waveform matching of vp and vs models from surface waves. *Geophysical Journal International*, 218(3) :1873–1891, 06 2019.

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