

Demande de dérogation pour rapporter une thèse sans HDR **(Passage du dossier en CAc restreint aux Habilité-e-s)**

- **Pièces à fournir accompagnant la Fiche dérogatoire complétée et signée selon votre demande** (seuls les dossiers complets seront examinés) :
 - ☐ CV du/de la rapporteur-e envisagé-e avec la liste de ses publications. Le CV indiquera, le cas échéant le nombre de thèses encadrées, en cours avec le pourcentage d'encadrement et le nombre de participations à des jurys de thèse.
 - ☐ Courrier du/de la directeur-ice de thèse justifiant le choix de ce rapporteur

INFORMATIONS

NOM – Prénom du/de la doctorant-e : VERNET Clara

Titre de la thèse :

Imagerie à haute résolution de la structure crustale le long de la marge du Chili à l'aide de données DAS

Spécialité du Doctorat : DOCTORAT SCIENCES DE LA PLANETE ET DE L'UNIVERS

Laboratoire de rattachement : Géoazur (Valbonne)

Signature du/de la doctorant-e



Avis argumenté de l'École Doctorale :

Avis favorable au vu de l'expertise de M. Aurélien MORDRET, et de l'argumentaire fourni avec la demande

Signature de l'école doctorale :

ECOLE DOCTORALE
Sciences Fondamentales et Appliquées
Directrice
Giovanna TISSONI




	RAPPORTEUR·E
Sexe	Masculin
Nom	MORDRET
Prénom	Aurélien
Qualité	Professeur de sismologie
Établissement / Structure de rattachement	Geological Survey of Denmark and Greenland (GEUS, Copenhagen, Denmark)

AVIS DU CONSEIL ACADÉMIQUE

Date du passage en CAc restreint aux Habilité·e·s :

Avis du Conseil Académique d'Université Côte d'Azur :

Si report ou avis défavorable, observations :

Date du passage en CAc restreint aux Habilité·e·s (si report) :

Avis du Conseil Académique d'Université Côte d'Azur :

Si report ou avis défavorable, observations :

DÉCISION DU PRÉSIDENT d'UNIVERSITÉ CÔTE D'AZUR :

Fait à Nice, le

Le Président d'Université Côte d'Azur

PROFESSIONAL
INFORMATION

Site web: <https://sites.google.com/site/aureliemordretswebpage/home>
<https://pub.geus.dk/en/persons/aur%C3%A9lien-mordret>

ORCID: 0000-0002-7998-5417

Number of peer-reviewed papers: 61 – Citations: 2865 – H-index: 29 (Google Scholar)

Number of abstracts in international conferences: ~120

RESEARCH
INTERESTS**High-resolution passive seismic imaging/Seismic Interferometry**

- Surface wave tomography to characterize the ground structure from near-surface to lithospheric scale.
- Developing innovative imaging techniques with dense seismic networks (DAS, nodal arrays).
- Using machine learning for subsurface imaging.

Poroelastic processes in the critical zone and glacial environments

- Monitoring seismic velocity changes induced by environmental forcing or volcano-tectonic processes.
- Investigating glacier bed structure using passive seismic methods.
- Hydrogeophysics with Distributed Acoustic Sensing

Magmatic system characterization

- Geometry of plumbing systems from radial seismic anisotropy
- Physical modeling of seismic velocities to constrain thermo-mechanical properties of the lithosphere
- Development of geophysical data joint inversion frameworks.

Earthquake swarms

- Greenlandic swarms
- Clustering analysis
- Icequakes.

TRAINING AND
DIPLOMAS**March 2011 – March 2014****PhD in Seismology**

IPGP, Sorbonne Paris Cité, France

Thesis title: *"Using ambient noise correlations within a dense industrial seismic network framework: application to the Valhall network."*. Advisor: Nikolai M. Shapiro (nikolai.shapiro@univ-grenoble-alpes.fr)

September 2006 – December 2010**Engineer in Geophysics, Master degree**

EOST, University Louis Pasteur, Strasbourg, France

PROFESSIONAL
EXPERIENCES**August 1st 2024 –****Research Professor of Seismology**

GEUS, Copenhagen, Denmark

April 1st 2024 – July 31st 2024**Senior Scientist/ Associate Professor**

GEUS, Copenhagen, Denmark

July 2020 – March 2024**Research Scientist**

ISTerre, Grenoble, France

January 2017 – April 2024**Founder/Consultant**

Sisprobe SAS, Grenoble, France

Founder and consultant for the *startup company Sisprobe* specialized in Ambient noise tomography and monitoring for Oil and Gas exploration, Mining and Geotechnical applications.

September 2019 – June 2020**Postdoc**

ISTerre, Université Grenoble Alpes, Grenoble, France

Advisor : Florent Brenguier (florent.brenguier@univ-grenoble-alpes.fr)

August 2014 – July 2019**Postdoc Fellow/Associate**

Massachusetts Institute of Technology, Cambridge, MA, USA

Advisor : Germán A. Prieto (gaprietogo@unal.edu.co), Brent Minchew (minchew@mit.edu)

March 2014 – July 2014**Postdoc**

Institut de Physique du Globe de Paris, Paris, France

Advisor : Nikolai M. Shapiro

March 2011 – March 2014

PhD candidate

Institut de Physique du Globe de Paris, Paris, France

PhD in Seismology, defended on March 10, 2014, PhD advisor : Nikolai M. Shapiro.

June 2008 – June 2009

Research assistant

GNS Science, Taupo, Nouvelle-Zélande

Adviser: Arthur D. Jolly (A.Jolly@gns.cri.nz).

MENTORING AND CO-DIRECTION

Ph.D. students

GEUS, IPGP, MIT, UGA-ISTerre

Lisa Operto, (Strasbourg University, ongoing, 30%), Quentin Higueret, (ISTerre, 2022-2025, 50%), Alec Yates, (ISTerre, 2021-2023, 50%), Zbigniew Wilczynski, (Uppsala University, 2 months internship at GEUS, 2025), Laura Pinzon Rincon, (ISTerre, 2019-2021, mentoring), Destin Nziengui Bâ, (ISTerre, 2023-2025, mentoring), Shujuan Mao, (MIT, 2018, mentoring as postdoc) Gaurav Tomar, (IPGP, 2014, mentoring as postdoc)

Postdocs

GEUS, ISTerre, UGA

Catalina Ramos (GEUS, ongoing), Yixiao Sheng (ISTerre, 2020-2024), Korbinian Sager (ISTerre, 2020), Daniela Teodor (ISTerre, 2021), Chloé Gradon (ISTerre, 2020-2022), Laura Pinzon Rincon (ISTerre, 2021-2024), Francois Lavoué (ISTerre, 2023-2026)

Master students

GEUS, ISTerre, UGA, MIT

Gauthier Guerin, Quentin Higueret, Laure Brenot, Jarod Domenge, Eske Oliver Bay Holm, Mara Schrader, Carolin Benfer,

Undergrads

GEUS, ISTerre, UGA, MIT

Astrid Olsen, Cyprien Deniaud, Annalena Büchner,

Thesis jury participations

José Cunha Teixeira, Sorbonne University, 24/02/2025, Examiner, Laure Brenot, Université Libre de Bruxelles, 17/11/2026, Reviewer.

AWARDS AND GRANTS

Dec. 2025 - Dec. 2028

CETP SAFE-C (4.5 M€)

WP-lead, GEUS

Safeguarding CO2 storages in the greater North Sea region through advanced monitoring

March 2024 - June 2024

ANDRA DAS (25 k€)

PI, ISTerre/ANDRA

DAS measurements for Cigéo project

March 2023 - March 2028

ANR MACIV (850 k€)

Co-PI, ISTerre

Multiscale seismic imaging of MASSIF Central focusing on recent Intraplate Volcanism

September 2022 - September 2024

ANR Plan de relance (101 k€)

Co-PI, ISTerre

Numerical modeling of correlations of DAS data

January 2021 - January 2022

EIT Booster grant (57 k€)

PI, ISTerre/Sisprobe

Monitoring tailings dams with DAS and optical fibers

June 2019 - June 2025

ERC FaultScan (2.5 M€)

Postdoc then Collaborator, UGA

Passive seismic scanning of the preparation phase of damaging earthquakes

January 2019 - January 2020

Data Science Initiative Award (US\$48 906)

Co-PI, Stanford/MIT

Central California Decadal Groundwater Monitoring and Imaging From Ballistic Rayleigh Wave Dispersion

February 2018 - January 2019

SCEC Award #18223 (US\$7 065)

Co-PI, Stanford/MIT

Towards a 3D Shear-Wave Velocity Model of Central California

May 2017 - May 2019

NSF grant: #OPP 1643761 (US\$209 116)

Postdoc, MIT/BSU

Collaborative Research: Monitoring Antarctic Ice Sheet Changes with Ambient Seismic Noise Methods

PROFESSIONAL
ACTIVITIES

- Denmark representative at the **ORFEUS** Board of Directors
- Outstanding Reviewer 2021 for Geophysical Journal International
- Reviewer for *Science*, *Science Advances*, *Nature Communications*, *Journal of Volcanology and Geothermal Research*, *Geophysical Research Letter*, *Earth and Planetary Science Letter*, *Journal of Geophysical Research*, *Geophysical Journal International*, *Tectonophysics*, *Geophysics*, *Journal of Applied Geophysics*,... (more than 2 reviews per month).
- Present and past member of AGU, EGU, ESC, SSA, SEG and EAGE
- Convener of the Seismic Interferometry session (AGU 2022, 2023, 2024)

Publication list – Aurélien Mordret

Link to my online publication list:

<https://sites.google.com/site/aureliemordretswebpage/peer-reviewed-journals>

<https://pub.geus.dk/en/persons/aurélien-mordret>

Number of citations (Google Scholar) : 2908 (2579 on 1st January 2026)

H-index (Google Scholar) : 29

All papers are registered in ISI Web of Science

Stars*, asterisks* and bullets• denote Postdocs, PhD students and Master students that I supervised, respectively.

PUBLISHED PAPERS

2026

61. Barruol, G., Zigone, D., Gimbert, F., Le Meur, E., Togaibekov, A., Lombardi, D., ... & **Mordret, A.** (2026). Cryoseismic activity and dynamics of the Astrolabe Coastal Glacier, East Antarctica-The SEIS-ADELICE project (2020-2025). *Seismica*, 5(1). <https://doi.org/10.26443/seismica.v5i1.2047>

60. Higuieret*, Q., Brenguier, F., **Mordret, A.**, Sheng*, Y., Vernon, F., Hollis, D., ... & Ben-Zion, Y. (2026). The FaultScan Long-Term Dense Nodal Array to Study the San Jacinto Fault (Southern California). *Seismological Research Letters*. <https://doi.org/10.1785/0220250413>

59. Torset, S., Keiding, M., Voss, P. H., Sauvin, G. C., Jensen, E. F., **Mordret, A.**, ... & Nørmark, E. (2026). Initial observations from testing surface fiber optics aimed at onshore CCS monitoring in Denmark. *The Leading Edge*. <https://doi.org/10.1190/tle-2025-1037>

2025

58. Carrasco, H. R., Schirmann, J., **Mordret, A.**, & Grushin, A. G. (2025). A Family of Aperiodic Tilings with Tunable Quantum Geometric Tensor. *Physical Review Letters*. <https://doi.org/10.1103/dzqm-9kwj>.

57. Share, P. E., Tréhu, A. M., Stuedlein, A., Reinhard, H. R., **Mordret, A.**, & Way, R. A. (2025). Seismic Lessons from the Implosion of Reser Stadium's Western Stands and the Dense 177-Node Corvallis Array. *Seismological Research Letters*. <https://doi.org/10.1785/0220250098>.

56. Shapiro, N. M., Aubert, C., Chevrot, S., **Mordret, A.**, Paul, A., Sylvander, M., et al. (2025). Deep long period earthquakes beneath volcanoes of the French Massif Central. *Geophysical Research Letters*, 52, e2025GL114904. <https://doi.org/10.1029/2025GL114904>

55. Pinzon-Rincon*, L., Nziengui Bâ*, D., **Mordret, A.**, Coutant, O., and Brenguier, F. (2025). Monitoring near surface seismic attenuation variations using train tremors. *Geophysical Research Letters*, 52, e2024GL113935. <https://doi.org/10.1029/2024GL113935>.

54. Aubert, C., Scheiblin, G., Paul, A., Helene, P., **Mordret, A.**, Baudot, V., Sébastien, C., Cluzel, N., Douste-Bacqué, I., Grimaud, F., Jung, A., Mercier, S., Pawlowski, P., Roussel, S., Souriot, T., Shapiro, N., Sylvander, M., Vial, B., and Wolyniec, D. (2025). The MACIV multiscale seismic experiments in the French Massif Central (2023-2027): deployment, data quality and availability. *Annals of Geophysics*, 68. <https://doi.org/10.4401/ag-9264>.

53. Yates*, A., Caudron, C., **Mordret, A.**, Lesage, P., Cannata, A., Cannavo, F., Lecocq, T., Pinel, V. and Zaccarelli, L. (2025) Precursory velocity changes prior to the 2019 paroxysms at Stromboli volcano, Italy, from coda wave interferometry, *Volcanica*, 8(1), pp. 203–223. <https://doi.org/10.30909/vol1/cyrk413>.

52. **Mordret, A.**, and Grushin, A. G. (2025). Beating the aliasing limit with aperiodic monotile arrays. *Physical Review Applied*, 23(3), 034021.

51. Yates*, A. S., Caudron, C., **Mordret, A.**, Lesage, P., Pinel, V., Lecocq, T., Miller, C. A., Lamb, O. D. & Fournier, N. (2024). Seasonal snow cycles and their possible influence on seismic velocity changes and eruptive activity at Ruapehu volcano, New Zealand. *Journal of Geophysical Research: Solid Earth*, 129(12), e2024JB029568. <https://doi.org/10.1029/2024JB029568>
50. Higuieret*, Q., Sheng*, Y., **Mordret, A.**, Brenguier, F., Boué, P., Fichtner, A., ... & Ben-Zion, Y. (2024). Body-waves from train noise correlations: Potential and limits for monitoring the San Jacinto Fault, CA. *Geophysical Journal International*, ggae409. <https://doi.org/10.1093/gji/ggae409>
49. Svennevig, K., Hicks, S. P., Forbriger, T., Lecocq, T., Widmer-Schmidrig, R., Mangeney, A., Clément Hibert, Niels J Korsgaard, Antoine Lucas, Claudio Satriano, Robert E Anthony, **Aurélien Mordret**, Sven Schippkus, Søren Rysgaard, Wieter Boone, Steven J Gibbons, Kristen L Cook, Sylfest Glimsdal, Finn Løvholt, Koen Van Noten, Jelle D Assink, Alexis Marboeuf, Anthony Lomax, Kris Vanneste, Taka'aki Taira, Matteo Spagnolo, Raphael De Plaen, Paula Koelemeijer, Carl Ebeling, Andrea Cannata, William D Harcourt, David G Cornwell, Corentin Caudron, Piero Poli, Pascal Bernard, Eric Larose, Eleonore Stutzmann, Peter H Voss, Bjorn Lund, Flavio Cannavo, Manuel J Castro-Díaz, Esteban Chaves, Trine Dahl-Jensen, Nicolas De Pinho Dias, Aline Déprez, Roeland Develter, Douglas Dreger, Láslo G Evers, Enrique D Fernández-Nieto, Ana MG Ferreira, Gareth Funning, Alice-Agnes Gabriel, Marc Hendrickx, Alan L Kafka, Marie Keiding, Jeffrey Kerby, Shfaqat A Khan, Andreas Kjær Dideriksen, Oliver D Lamb, Tine B Larsen, Bradley Lipovsky, Ikha Magdalena, Jean-Philippe Malet, Mikkel Myrup, Luis Rivera, Eugenio Ruiz-Castillo, Selina Wetter, & Wirtz, B. (2024). A rockslide-generated tsunami in a Greenland fjord rang Earth for 9 days. *Science*, 385(6714), 1196-1205. <https://doi.org/10.1126/science.adm9247>
48. Sheng*, Y., Brenguier, F., **Mordret, A.**, Higuieret*, Q., Aubert, C., Pinzon-Rincon*, L., et al. (2024). In situ velocity-strain sensitivity near the San Jacinto Fault Zone analyzed through train tremors. *Geophysical Research Letters*, 51, e2024GL110113. <https://doi.org/10.1029/2024GL110113> .
47. Wu, S.-M., Sánchez-Pastor, P., Ágústsdóttir, T., Hersir, G. P., **Mordret, A.**, Hjörleifsdóttir, V., & Obermann, A. (2024). Crustal characterization of the Hengill geothermal fields: Insights from isotropic and anisotropic seismic noise imaging using a 500-node array. *Journal of Geophysical Research: Solid Earth*, 129, e2024JB028915. <https://doi.org/10.1029/2024JB028915>
46. Çubuk-Sabuncu, Y., Jónsdóttir, K., Árnadóttir, T., **Mordret, A.**, Caudron, C., Lecocq, T., & De Plaen, R. (2024). Temporal seismic velocity changes associated with the Mw 6.1, May 2008 Ölfus doublet, South Iceland: A joint interpretation from dv/v and GPS. *Journal of Geophysical Research: Solid Earth*, 129(4), e2023JB027064. <https://doi.org/10.1029/2023JB027064>.
45. Sheng*, Y., **Mordret, A.**, Brenguier, F., Lisa Tomasetto, Quentin Higuieret*, Coralie Aubert, Dan Hollis, Frank Vernon, & Yehuda Ben-Zion; Tracking Seismic Velocity Perturbations at Ridgecrest Using Ballistic Correlation Functions. *Seismological Research Letters* 2024; <https://doi.org/10.1785/0220230348>.

44. Sheng*, Y., **Mordret, A.**, Brenguier, F., Boué, P., Vernon, F., Takeda, T., Y. Aoki, T. Taira, & Ben-Zion, Y. Seeking Repeating Anthropogenic Seismic Sources: Implications for Seismic Velocity Monitoring at Fault Zones. *Journal of Geophysical Research: Solid Earth*, e2022JB024725. <https://doi.org/10.1029/2022JB024725>.
43. Froment, B., A. Olivar-Castaño, M. Ohrnberger, L. Gisselbrecht, K. Hannemann, E. M. Cushing, P. Boué, C. Gélis, A. Haendel, M. Pilz, L. Hillmann, O. Barbaux, S. Beauprêtre, G. Bouzat, E. Chaljub, F. Cotton, F. Lavoué, L. Stehly, C. Zhu, O. Magnin, L. Métral, **A. Mordret**, Y. Richet & A. Tourette. (2023). Complementary Dense Datasets Acquired in a Low-to-Moderate Seismicity Area for Characterizing Site Effects: Application in the French Rhône Valley. *Seismological Research Letters*; 94 (1): 531–547. <https://doi.org/10.1785/0220220244>.

42. Yates*, A., Caudron, C., Lesage, P., **Mordret, A.**, Lecocq, T., & Soubestre, J. (2022). Assessing similarity in continuous seismic cross-correlation functions using hierarchical clustering: application to Ruapehu and Piton de la Fournaise volcanoes. *Geophysical Journal International*, 233(1), 472-489. <https://doi.org/10.1093/gji/ggac469>
41. Caudron, C., Aoki, Y., Lecocq, T., De Plaen, R., Soubestre, J., **Mordret, A.**, ... & Terakawa, T. (2022). Hidden pressurized fluids prior to the 2014 phreatic eruption at Mt Ontake. *Nature communications*, 13(1), 1-9. <https://doi.org/10.1038/s41467-022-32252-w>
40. Sheng*, Y., **A. Mordret**, K. Sager*, F. Brenguier, P. Boué, B. Rousset, F. Vernon, Y. Ben-Zion, Q. Higuieret*. (2022). Monitoring seismic velocity changes across the San Jacinto fault using train-generated seismic tremors. *Geophysical Research Letters*. <https://doi.org/10.1029/2022GL098509> .

2021

39. De Plaen, R. S., **Mordret, A.**, Arámbula-Mendoza, R., Vargas-Bracamontes, D., Márquez-Ramírez, V. H., Lecocq, T., Vázquez, CAR and Amezcua, M. G. (2022). The shallow three-dimensional structure of Volcán de Colima revealed by ambient seismic noise tomography. *Journal of Volcanology and Geothermal Research*, 107578, <https://doi.org/10.1016/j.jvolgeores.2022.107578>.

38. Mikesell, Thomas Dylan, **Mordret, Aurélien**, Xu, Zongbo, Frank, William B. (2022). Crustal Structure across the West Antarctic Rift System from Multicomponent Ambient Noise Surface Wave Tomography. *Seismological Research Letters*; <https://doi.org/10.1785/0220210026>.

37. Naghizadeh, M., Smith, R. S., Rubingh, K., Sherlock, R., Ayer, J. A., Lafrance, B., Cheraghi, S., Snyder, D., Vergne, J., Hollis, D. and **Mordret, A.** (2022). Active and passive seismic imaging of the central Abitibi greenstone belt, Larder Lake, Ontario. *Journal of Geophysical Research: Solid Earth*. <https://doi.org/10.1029/2021JB022334>.

36. Sager*, K., Tsai, V.C., Sheng*, Y., Brenguier, F., Boué, P., **Mordret, A.**, and Igel, H. (2021). Modeling P waves in seismic noise correlations: Advancing fault monitoring using train traffic sources. *Geophysical Journal International*. <https://doi.org/10.1093/gji/ggab389>.

35. Gradon*, C., Brenguier, F., Stammeijer, J., **Mordret, A.**, Hindriks, K., Campman X., Lynch, R., Boué, P. and Chmiel, M. (2021). Seismic velocity response to atmospheric pressure using time-lapse passive seismic interferometry. *Bulletin of the Seismological Society of America*. <https://doi.org/10.1785/0120210069>.

34. Guerin*, G., **Mordret, A.**, Rivet, D., Lipovsky, B. P., and Minchew, B. M. (2021). Frictional origin of slip events of the Whillans Ice Stream, Antarctica. *Geophysical Research Letters*, 48, e2021GL092950. <https://doi.org/10.1029/2021GL092950>.

33. Cubuk-Sabuncu, Y., Jónsdóttir, K., Caudron, C., Lecocq, T., Parks, M.M., Geirsson, H. and **Mordret, A.** (2021). Temporal Seismic Velocity Changes During the 2020 Rapid Inflation at Mt. Thorbjörn-Svartsengi, Iceland, Using Seismic Ambient Noise. *GRL*. <https://doi.org/10.1029/2020GL092265>.

32. Cornou, C., J.-P. Ampuero, C. Aubert, L. Audin, S. Baize, J. Billant, F. Brenguier, M. Causse, M. Chlieh, A. Combey, M. de Michele, B. Delouis, A. Deschamps, M. Ferry, M. Fomelis, B. Froment, C. Gélis, R. Grandin, J.-R. Grasso, E. Hannou, S. Hok, A. Jung, R. Jolivet, M. Langlais, P. Langlaude, C. Larroque, P. H. Leloup, K. Manchuel, L. Marconato, C. Maron, E. Mathot, E. Maufroy, D. Mercierat, M. Metois, E. Nayman, I. Pondaven, L. Provost, J. Régnier, J.-F. Ritz, D. Rivet, A. Schlupp, A. Sladen, C. Voisin, A. Walpersdorf, D. Wolyniec, P. Allemand, E. Beck, E. Bertrand, V. Bertrand, P. Briole, D. Brunel, O. Cavalié, J. Chèze, F. Courboux, I. Douste-Bacque, R. Dretzen, T. Giampietro, M. Godano, P. Grandjean, M. Grunberg, G. Guerin, S. Guillot, E. E. Haber, A. Hernandez, H. Jomard, C. Lasserre, C. Liang, I. Lior, X. Martin, D. Mata, M. Menager, A. Mercier, **A. Mordret**, E. Oral, A. Paul, F. Peix, C. Pequegnat, M. Pernoud, C. Satriano, R. Sassi, M. Schaming, V. Sellier, C. Sira, A. Socquet, C. Sue, A. Trilla, M. Vallée, M. van den Ende, P. Vernant, B. Vial, and H. Weng (2021), Rapid response to the M w 4.9 earthquake of November 11, 2019 in Le Teil, Lower Rhône Valley, France, *Comptes Rendus. Géoscience*, <https://doi:10.5802/crgeos.30>, online first.

31. Grobber, N., **Mordret, A.**, S. Barde-Cabusson, L. Ellison*, M. Lach*, Y.-H. Seo*, T. Viti*, L. Ward* and H. Zhang* (2021). A multi-hydrogeophysical study of a watershed at Kaiwi Coast (Oahu, Hawaii), using seismic ambient noise surface wave tomography and self-potential data. *Water Resources Research*. <https://doi.org/10.1029/2020WR029057>.

2020

30. Pinzon-Rincon*, L., Lavoué, F., **Mordret, A.**, Boué, P., Brenguier, F., Dales, P., Ben-Zion, Y., Vernon, F., Bean, C. J. and Hollis, D. (2020). Humming trains in seismology: an opportune source for probing the shallow crust. *Seismological Research Letter*. <https://doi.org/10.1785/0220200248>

29. **Mordret, A.**, Brenguier, F., Causse, M., Boué, P., Voisin, C., Dumont, I., Vernon, F. and Ampuero, J.-P. (2020). Seismic Stereometry reveals preparatory behavior and source kinematics of intermediate-size earthquakes. *Geophysical Research Letters*, 47, e2020GL088563. <https://doi.org/10.1029/2020GL088563>

28. Cheng, Yifang, Ben-Zion, Yehuda, Brenguier, Florent, Johnson, Christopher W., Li, Zefeng, Share, Pieter-Ewald, **Mordret, Aurélien**, Boué, Pierre and Vernon, Frank (2020). An automated method for developing a catalog of small earthquakes using data of a dense seismic array and nearby stations. *Seismological Research Letters*, 91(5), 2862-2871. <https://doi.org/10.1785/0220200134>.

27. Sergeant, A., Chmiel, M., Lindner, F., Walter, F., Roux, P., Chaput, J., Gimbert, F., and **Mordret,**

- A.** (2020). On the Green's function emergence from interferometry of seismic wave fields generated in high-melt glaciers: implications for passive imaging and monitoring. *The Cryosphere*, 14, 1139–1171. <https://doi.org/10.5194/tc-14-1139-2020>
26. **Mordret, A.**, Courbis, R., Brenguier, F., Chmiel, M., Garambois, S., Mao*, S., Boué, P., Campman, X., Lecocq, T., Van der Veen, W., Postif, S. and Hollis, D. (2020). Noise-based Ballistic Wave Passive Seismic Monitoring – Part 2: Surface-waves. *Geophysical Journal International*. Volume 221, Issue 1, April 2020, Pages 692–705. <https://doi.org/10.1093/gji/ggaa016>
- 2019
25. Mao*, S., **Mordret, A.**, Campillo, M., Fang, H. and van der Hilst, R.D. (2019). On the measurement of seismic traveltime changes in the time-frequency domain with wavelet cross-spectrum analysis. *Geophysical Journal International*. Volume 221, Issue 1, April 2020, Pages 550–568. <https://doi.org/10.1093/gji/ggz495>
24. Guerin*, G., Rivet, D., Deschamps, A., Larroque, C., **Mordret, A.**, Dessa, J.X. and Martin, X. (2019). High resolution ambient noise tomography of the Southwestern Alps and the Ligurian margin. *Geophysical Journal International*, 220(2), 806-820. <https://doi.org/10.1093/gji/ggz477>
23. Brenguier, F., Courbis, R., **Mordret, A.**, Campman, X., Boué, P., Chmiel, M., Takano, T., Lecocq, T., Van der Veen, W., Postif, S. and Hollis, D. (2019). Noise-based Ballistic Wave Passive Seismic Monitoring – Part 1: Body-waves. *Geophysical Journal International*. Volume 221, Issue 1, April 2020, Pages 683–691. <https://doi.org/10.1093/gji/ggz440>
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1. **Massachusetts Institute of Technology**, ERL FISH seminar, 2014. Noise based imaging and monitoring in industrial context: application to the Valhall network.
2. **Columbia University**, Lamont Doherty Earth Observatory, 2014. Noise based imaging and monitoring in industrial context: application to the Valhall network.
3. **Massachusetts Institute of Technology**, ERL Tuesday seminar, 2015. Radial anisotropy ambient noise tomography of volcanoes.
4. **Princeton University**, Brown Bag seminar, 2016. Monitoring southwest Greenland's ice sheet melt with ambient seismic noise.
5. **Nice University**, GéoAzur, 2016. Environmental seismic noise interferometry.
6. **Strasbourg University**, EOOST, 2016. Environmental seismic noise interferometry.
7. **Harvard University**, BISSEPS seminar, 2016. Environmental seismic noise interferometry.
8. **Columbia University**, Lamont Doherty Earth Observatory, 2017. On the use of ambient seismic noise in Greenland.
9. **Tufts University**, Dept. of Civil and Environmental Engineering, 2017. Ambient seismic noise interferometry and the continuous monitoring of high rise buildings.
10. **Grenoble University**, ISTerre, 2017. Toward a 3D thermo-mechanical model of the Greenland lithosphere from ambient noise tomography.
11. **Boise State University**, Environmental Seismology Lab., 2017. Toward a 3D thermo-mechanical model of the Greenland lithosphere from ambient noise tomography.
12. **Stanford University**, Geophysics Department Seminar, 11 October 2018. Exploring the Greenland cryosphere with ambient seismic noise interferometry.
13. **Massachusetts Institute of Technology**, ERL FISH seminar, 2019. Monitoring and imaging water saturation variations using ballistic body- and surface-waves from seismic ambient noise correlations.
14. **ETH Zurich**, Glaciological seminar, October 2019. Imaging bed frictional properties of Whillans Ice Stream, West Antarctica, using seismic interferometry.
15. **ISTerre**, Le Teil earthquake seminar, June 2020. Imaging Le Teil earthquake rupture with seismic stereometry.
16. **Boise State University**, Environmental Seismology Lab., 2021. Imaging bed frictional properties of Whillans Ice Stream, West Antarctica, using seismic interferometry.
17. **ETH Zurich**, June 2022. Imaging bed frictional properties of Whillans Ice Stream, West Antarctica, using seismic interferometry.
18. **ISTeP, Paris, France**, March 2023. Beyond standard coda-wave interferometry monitoring: harnessing the spurious body-wave energy in ambient noise correlations.
19. **ITES, Strasbourg, France**, June 2024. Aperiodic Seismic Arrays.
20. **Münster University, Germany**, November 2025. Aperiodic Seismic Arrays.

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Directeur de thèse de Mme Clara Vernet

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Physicienne Adjointe des Observatoires
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Université Côte d'Azur

Valbonne, 21 septembre 2026

À l'attention de la Direction de l'École Doctorale Sciences Fondamentales et Appliquées de
l'Université Côte d'Azur

**Objet : Justification du choix de M. Aurélien Mordret comme rapporteur de la thèse de
Mme Clara Vernet**

Madame, Monsieur,

Dans le cadre de la demande de soutenance de la thèse de Mme Clara Vernet, intitulée «
Imagerie à haute résolution de la structure crustale le long de la marge du Chili à l'aide de
données DAS », nous vous proposons M. Aurélien Mordret, professeur de sismologie au
Geological Survey of Denmark and Greenland (GEUS, Copenhague, Danemark), en qualité
de rapporteur.

Adéquation avec le sujet de la thèse. Le travail de Mme Vernet repose sur l'exploitation de
données de Distributed Acoustic Sensing (DAS) acquises sur câble sous-marin pour imager la
croûte le long de la marge chilienne, en s'appuyant notamment sur l'interférométrie du bruit
sismique ambiant et l'inversion des ondes de surface. M. Mordret est un spécialiste
internationalement reconnu de la tomographie en ondes de surface à partir du bruit sismique
ambiant et du développement de méthodes d'imagerie à haute résolution exploitant les réseaux
sismologiques denses — problématique directement transposable aux réseaux quasi continus
que constituent les acquisitions DAS. Ses travaux couvrent ainsi le cœur méthodologique de
la thèse : traitement du bruit ambiant, mesure de dispersion, inversion et évaluation de la
résolution des modèles obtenus.

Compétence à évaluer un travail doctoral. M. Mordret est titulaire d'un doctorat de l'Institut de Physique du Globe de Paris (2014) et occupe aujourd'hui un poste de professeur au GEUS, après avoir été chercheur à l'ISTerre (Université Grenoble Alpes) et post-doctorant au Massachusetts Institute of Technology. Il possède une expérience confirmée de l'encadrement doctoral. Son expérience satisfait pleinement aux conditions requises pour rapporter une thèse de doctorat.

Extériorité et indépendance. M. Mordret est rattaché à un établissement étranger, extérieur à l'Université Côte d'Azur et à l'ensemble des laboratoires associés à ce travail. Il n'a participé ni à l'encadrement de Mme Vernet, ni à son comité de suivi individuel, et n'a cosigné aucune publication avec la doctorante. Sa désignation garantit donc une évaluation indépendante du manuscrit.

Équilibre du jury. Sa nomination aux côtés d'Éléonore Stutzmann permet de couvrir de manière complémentaire les deux dimensions du travail — imagerie et méthodes de bruit ambiant d'une part, sismologie DAS / contexte de la subduction chilienne d'autre part — tout en assurant la présence d'un expert étranger au sein du jury et en respectant les règles de composition en vigueur.

Je me tiens à votre disposition pour tout élément complémentaire et vous prie d'agréer, Madame, Monsieur, l'expression de mes salutations distinguées.

Louis De Barros,

Louis De Barros


Diane Rivet



Pièces jointes : curriculum vitae et liste de publications de M. Aurélien Mordret.