

Curriculum Vitae – Stéphane Rondenay

Dept. of Earth Science, University of Bergen
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Degrees:

- Ph.D., Geophysics, University of British Columbia, 2001, Thesis Advisor: Michael G. Bostock
- M.S., Mineral Engineering, Ecole Polytechnique de Montréal, 1996, Thesis Advisors: Marianne Mareschal, Michel Chouteau
- B.S., Geological Engineering, Ecole Polytechnique de Montréal, 1994, Thesis Advisor: Marianne Mareschal

Employment:

- University of Bergen, Department of Earth Science: Professor of Geophysics (Sept 2012-present), Associate Professor (Sept 2011-Sept 2012).
- Massachusetts Institute of Technology, Department of Earth, Atmospheric and Planetary Sciences: Associate Professor (2008-2011), Assistant Professor (2003-2008)
- Brown University, Department of Geological Sciences: Postdoctoral Research Associate (2001-2003)
- Geological Survey of Canada: Intern in geophysics (1993, 1994, 1995)
- Total S.A.: Intern in stratigraphy-sedimentology (1992)
- L.G.L. Engineering: Intern in geotechnical engineering (1989, 1991)
- Minnova Corp: Junior geologist - exploration (1990)

External Positions Held:

- Imperial College London: Guest Researcher (2016-present)
- Institut de Physique du Globe de Paris: Visiting Scientist (2009)
- Woods Hole Oceanographic Institution: MIT-WHOI Joint Program Guest (2005-2011)
- MIT Earth Resources Laboratory: Associate Faculty (2003-2011)
- University of Bergen: Visiting Scientist (2007)

Honours:

- Marie Curie Career Integration Grant, European Commission FP7, 2012-2016
- Kerr-McGee Career Development Chair, Massachusetts Institute of Technology, 2003-2008
- Postdoctoral Fellowship, NSERC (Canada), 2001-2002
- Outstanding Student Paper Award in Seismology, American Geophysical Union, 2000
- Graduate Fellowship, FCAR (Québec), 1998-1999, 1994-1996
- Graduate Fellowship, Natural Sciences and Engineering Research Council of Canada, 1996-1998
- Undergraduate Research Scholarship, Ecole Polytechnique de Montréal, 1993

B.S. Student Theses Supervised:

- Alexandra Jordan, 2011, MIT, An overview of the volcano-tectonic hazards of Portland, Oregon, and an assessment of emergency preparedness, Current Position: Paralegal at Wyman & Isaacs, LLP, Los Angeles, CA
- Pesce, Katie, 2010, MIT, Comparison of Receiver Function Deconvolution Techniques
- Hosa, Aleksandra, 2008, MIT, Imaging of the Hellenic subduction zone by seismic tomography, Current Position: PhD student, School of Geosciences, The University of Edinburgh

M.Sc. Students Supervised:

- In progress at UiB: Mari Farestveit, Anne Drottning, Maren Veim, Lucas Sawade
- Tse, Kwan Ming Deuts, co-advisor, 2014, UiO, Linking earthquakes and serpentinization of the oceanic lithosphere.

- Grool, Arjan, co-advisor, 2012 (half-year Masters), UiB, Determining important factors in the occurrence of subduction rollback through numerical modelling, Current Position, PhD student and UiB.
- Perozzi, Lorenzo, co-advisor, 2008-2010 at INRS (Québec, Canada), Using Stochastic Crosshole Seismic Velocity Tomography and Bayesian Simulation to Estimate Ni Grades: Case Study from Voysey's Bay, Canada, Current Position: PhD student at INRS

Ph.D. Students Supervised:

- In progress at UiB as main advisor: Kathrin Spieker, Felix Halpaap
- In progress at Lyon-UiB as co-advisor: Florian Millet
- Olive, Jean-Arthur, co-advisor, MIT-WHOI, 2014, Current position: Postdoctoral Research scientist, LDEO
- Pearce, Frederick, advisor, MIT, 2014, Seismic imaging of the western Hellenic subduction zone: The relationship between slab composition, retreat rate, and overriding lithosphere genesis
- McGary, Shane, co-advisor, MIT-WHOI joint program, 2013, The CAFE experiment: A joint seismic and MT investigation of the Cascadia subduction system, Current position: Assistant Professor, James Madison University
- Suckale, Jenny, advisor at MIT between 2005-2008, Current Position: Assistant Professor, Stanford University
- Chen, Chin-Wu, advisor, MIT, 2009, Teleseismic imaging of the Slave craton and implications for the assembly of cratonic lithosphere, Current Position: Assistant Professor, Institute of Oceanography, National Taiwan University
- Van Ark, Emily, co-advisor, MIT-WHOI, 2007, Seismic and gravitational studies of melting in the mantle's thermal boundary layers, Current Position: Business Consultant, Boston Consulting

Postdoctoral Researchers Supervised:

- Wang, Hongliang, UiB, 2015-present, co-supervisor.
- Seher, Tim, MIT-ERL, 2009-2011, Current position: Research Geophysicist, CGG
- Bleibinhaus, Florian, MIT-ERL, 2007-2008, Current position: Professor of Applied Geophysics, Friedrich Schiller University Jena, Germany.
- Campman, Xander, MIT-ERL, 2005-2006, Current position: Geophysicist, Exploratory Research, Shell International Exploration and Production, The Hague, The Netherlands.

Teaching:

- GEOV111, Geophysical Methods, UiB, 2014
- GEOV112, Physics of the Solid Earth, UiB, 2012, 2013, 2014, 2015, 2016
- GEOV113, Seismic Reflection Data: Acquisition and Processing, UiB, 2012, 2013, 2014, 2015, 2016
- GEOV219, Computational Methods in Solid Earth Physics, UiB, 2012, 2013, 2014, 2015
- 12.552/560, Advanced Seismology I – Seismic Imaging: Theory and Applications, MIT, 2005, 2006, 2008, 2009, 2010
- 12.103, Science and Policy of Natural Hazards, MIT, 2008, 2009, 2010
- 12.080, Earth, Atmospheric and Planetary Sciences undergraduate seminar, MIT, 2007, 2008, 2009, 2010
- 12.474, Origin and Evolution of the Earth's Crust, MIT, 2005, 2008
- 12.221, Geophysics field camp, MIT, 2008
- 12.571, Deep Water – A Geophysical Perspective, MIT, 2005
- 12.570, Structure and Dynamics of the Core-Mantle Boundary (CMB) region, MIT, 2004
- Geophysics, Brown University, Lecturer, 2002
- Introductory Geophysics, UBC, Teaching assistant, 1998, 1999
- Geophysics field camp, Ecole Polytechnique de Montréal, Teaching assistant, 1996
- Introductory Geophysics, Ecole Polytechnique de Montréal, Lecturer, 1996

Service:

- Internal*
- Founder and coordinator of the Department of Earth Science Undergraduate Mentor Program, UiB, 2013-present
 - Organizer of local geology field trips for the UiB community, 2015-present
 - Member of the Mathematics and Natural Sciences Faculty Horizons Lecture Committee, UiB, 2015-present
 - Member of the Mathematics and Natural Sciences Faculty Calculator committee, UiB, 2013-present
 - Member of the Department of Earth Science Institute Board, UiB, 2013-present
 - Member of the graduate studies committee, UiB, 2016-present
 - Academic advisor of EAPS majors, MIT, 2005-2011
 - UROP advisor, MIT, 2006-2010
 - Member of thesis/general examination committee of more than 20 students at MIT, 2003-2011
 - Co-organizer of the Independent Activities Period (IAP) EAPS geophysics field camp, MIT, 2009
 - Facilitator of seismic fieldwork opportunities for EAPS graduate students, MIT, 2003-2011
 - Organizer of the EAPS undergraduate seminar, MIT, 2007-2010
 - Chair - Computer and Data Systems Committee, MIT, 2007-2010
 - Member of the MIT-WHOI Joint Committee for Marine Geology and Geophysics, 2004-2010
 - Organizer of the MIT-WHOI Joint Program Open House for Marine Geology and Geophysics, 2004-2010
 - Member of the Graduate Admissions Committee, MIT-EAPS, 2006-2007
 - IAP EAPS faculty coordinator, MIT, 2005
- External*
- Reviewer of research articles for the following journals and publications: Science, Geology, Nature Geoscience, Geophysical Research Letters, Physics of the Earth and Planetary Interiors, Journal of Geophysical Research, Earth and Planetary Science Letters, Geophysical Journal International, Geophysics, Geosphere, Bulletin of the Seismological Society of America, and AGU monographs
 - Associate Guest Editor, Subduction Top to Bottom 2, Special Volume of Geosphere, Geological Society of America, 2015-2017
 - AGU Bucher Medal Committee, 2015-2017
 - Reviewer of research proposals and fellowship awards for the National Science Foundation (US), the Agence National de la Recherche (France)
 - External thesis/general examiner at international institutions (Boston University, University of Connecticut, Queen's University, University of Western Ontario, Institut de Physique du Globe de Paris, Ecole Normale Supérieure de Lyon, University of Bristol, Aarhus University, Macquarie University, University College Dublin)
 - Member and co-chair of the Scientific Advisory Committee, French Seismic and Geodetic Network RESIF, 2013-present
 - Committee member of the USArray Electromagnetic Working Group (EMWoG), Incorporated Research Institutions for Seismology, 2009-2011
 - Meeting coordinator for the seismology section, AGU Spring Meetings, 2009-2011
 - Member of standing committee, IRIS-PASSCAL, 2005-2008
 - Organizer of special sessions at meetings of the American Geophysical Union, the Geochemical Society, and the European Geosciences Union

- Radio/television interviews (CBC, SRC, Discovery Channel) and public lectures regarding seismic activity on the west coast of North America and diamond exploration in the Canadian Shield

Publications (* indicates papers by supervised students/postdocs):

- *Spieker, K., S. Rondenay, R. Ramalho, C. Thomas, and G. Helffrich, Fine-scale crustal structure of the Azores Islands from teleseismic receiver functions, *Geophysical Journal International*, submitted, 2017.
- Boyce, A., I.D. Bastow, S. Rondenay, and R.D. van der Hilst, From relative to absolute arrival-times, *Bulletin of the Seismological Society of America*, in press, 2017
- Rondenay, S., K. Spieker, L. Sawade, F. Halpaap, and M. Farestveit, GLImER – A new global database of teleseismic receiver functions for imaging Earth structure, *Seismological Research Letters*, 88, 39-48, 2017.
- Hopper, E., K.M. Fischer, S. Rondenay, R.B. Hawman, and L.S. Wagner, Imaging crustal structure beneath the southern Appalachians with wavefield migration, *Geophys. Res. Lett.*, 43, 12054-12062, 2016.
- *McGary, R.S., R.L. Evans, P.E. Wannamaker, J. Elsenbeck and S. Rondenay, Pathway from subducting slab to surface for melt and fluids beneath Mount Rainier, *Nature*, 511, 338-340, 2014.
- Kim, Y., G.A. Abers, J. Li, D. Christensen, J. Calkins, and S. Rondenay, Alaska Megathrust 2: Imaging the megathrust zone and Yakutat/Pacific plate interface in the Alaska subduction zone, *J. Geophys. Res.*, 119, 1924-1941, 2014.
- *Seher, T., S. Rondenay, and H. Djikpesse, Tube wave to shear wave conversion at borehole plugs, *Geophysical Prospecting*, 62, 540-551, 2014.
- *Olive, J.-A., F. Pearce, S. Rondenay, and M.D. Behn, Pronounced zonation of seismic anisotropy in the Western Hellenic subduction zone and its geodynamic significance, *Earth Planet. Sc. Lett.*, 391, 100-109, 2014.
- Unsworth, M., and S. Rondenay, Actively observing fluid movement in the mid to deep crust and lithospheric mantle utilizing geophysical methods, in “Metasomatism and Metamorphism: The role of fluids in crustal and upper mantle processes”, edited by D. Harlov and H. Austrheim, *Lecture Notes in Earth System Sciences*, 535-598, Springer, 2013.
- *Pearce, F.D., S. Rondenay, M. Sachpazi, M. Charalampakis, and L.H. Royden, Seismic investigation of the transition from continental to oceanic subduction along the western Hellenic Subduction Zone, *J. Geophys. Res.*, 117, B07306, doi:10.1029/2011JB009023, 2012.
- Poliannikov, O.V., S. Rondenay, and L. Chen, Interferometric imaging of the underside of a subduction crust, *Geophys. J. Int.*, 189, 681-690, 2012.
- *Perozzi, L., E. Gloaguen, S. Rondenay, A. Leite, G. McDowell and R. Wheeler, Using Stochastic Crosshole Seismic Velocity Tomography and Bayesian Simulation to Estimate Ni Grades: Case Study from Voysey's Bay, Canada, *J. App. Geophys.*, 72, 85-93, 2012.
- Klemd, R., T. John, E.E. Scherer, S. Rondenay, and J. Gao, Changes in dip of subducted slabs at depths: petrological and geochronological evidence from HP-UHP rocks (Tianshan, NW-China), *Earth Planet. Sc. Lett.*, 310, 9-20, 2011.
- Calkins, J.A., G.A. Abers, G. Ekström, K.C. Creager, and S. Rondenay, Shallow structure of the Cascadia subduction zone beneath western Washington from spectral ambient noise correlation, *J. Geophys. Res.*, 116, B07302, doi:10.1029/2010JB007657, 2011.
- Rondenay, S., L.G.J. Montési, and G.A. Abers, New geophysical insight into the origin of the Denali volcanic gap, *Geophys. J. Int.*, 182, 613-630, 2010.
- *Chen, C.-W., D.E. Miller, H.A. Djikpesse, J.B.U. Haldorsen, and S. Rondenay, Array-conditioned deconvolution of multiple component teleseismic recordings, *Geophys. J. Int.*, 182, 967-976, 2010.
- MacKenzie, L., G.A. Abers, S. Rondenay, and K.M. Fischer, Imaging a steeply dipping subducting slab in southern Central America, *Earth Planet. Sc. Lett.*, 296, 459-468, 2010.
- Rondenay, S., V.F. Cormier, and E.M. Van Ark, SKS and SPdKS sensitivity to two-dimensional ultra-low velocity zones, *J. Geophys. Res.*, 115, B04311, doi: 10.1029/2009JB006733, 2010.

- Bleibinhaus, F., and S. Rondenay, Effects of Surface Scattering in Waveform Inversion, *Geophysics*, 74 (6), WCC69-WCC77, 2009.
- Abers, G.A., L.S. MacKenzie, S. Rondenay, Z. Zhang, A.G. Wech, and K.C. Creager, Imaging the source region of Cascadia tremor and intermediate-depth earthquakes, *Geology*, 37, 1119-1122, 2009.
- *Chen, C-W, S. Rondenay, R.L. Evans, and D.B. Snyder, Geophysical detection of relict metasomatism from an Archean (ca. 3.5 Ga) subduction zone, *Science*, 326, no 5956, 1089-1091, doi: 10.1126/science.1178477, 2009.
- Rondenay, S, Upper mantle imaging with array recordings of converted and scattered teleseismic waves, *Surv. Geophys.*, 30, 377-405, doi: 10.1007/s10712-009-9071-5, 2009.
- *Suckale, J., S. Rondenay, M. Sachpazi, M. Charalampakis, A. Hosa, and L.H. Royden, High-resolution seismic imaging of the western Hellenic subduction zone using teleseismic scattered waves, *Geophys. J. Int.*, 178, 775-791, doi: 10.1111/j.1365-246X.2009.04170.x, 2009.
- Rondenay, S., G.A. Abers, and P.E. van Keken, Seismic imaging of subduction zone metamorphism, *Geology*, 36, 275-278, doi:10.1130/G24112A.1, 2008.
- *Xu, L., S. Rondenay, and R.D. van der Hilst, Structure of the crust beneath the Southeastern Tibetan Plateau from teleseismic receiver functions, *Phys. Earth Planet. Int.*, 165, 176--193, 2007.
- Frederiksen, A.W., S.-K. Miong, F.A. Darbyshire, D.W. Eaton, S. Rondenay, and S. Sol, Lithospheric Variations Across the Superior Province, Ontario, Canada: Evidence from Tomography and Shear-Wave Splitting, *J. Geophys. Res.*, 112 (B7), B07318, doi:10.1029/2006JB004861, 2007.
- Rychert, C.A., S. Rondenay, and K.M. Fischer, P-to-S and S-to-P imaging of a sharp lithosphere-asthenosphere boundary beneath eastern North America, *J. Geophys. Res.*, 112 (B8), B08314, doi:10.1029/2006JB004619, 2007.
- *Chen, C.-W., S. Rondenay, D. Weeraratne, and D.B. Snyder, New constraints on the upper mantle structure of the Slave craton from Rayleigh wave inversion, *Geophys. Res. Lett.*, 34, L10301, doi:10.1029/2007GL029535, 2007.
- Fouch, M.J., and S. Rondenay, Continental seismic anisotropy, *Phys. Earth Planet. Int.*, 158, 292-320, 2006.
- Rossi, G., G.A. Abers, S. Rondenay, and D.H. Christensen, Unusual mantle Poisson's ratio, subduction and crustal structure in central Alaska, *J. Geophys. Res.*, 111, B09311, doi:10.1029/2005JB003956, 2006.
- Rychert, C., K.M. Fischer and S. Rondenay, A sharp lithosphere asthenosphere boundary imaged beneath eastern North America, *Nature*, 436, 542-545, 2005.
- Rondenay, S., Bostock, M.G., and Fischer K.M., Multichannel inversion of scattered teleseismic body waves: practical considerations and applicability, in "Seismic Earth: Array analysis of broadband seismograms", edited by A. Levander and G. Nolet, AGU Geophysical Monograph Series, 157, 187-203, 2005.
- Snyder, D.B., S. Rondenay, M.G. Bostock and G.D. Lockhart, Mapping the Mantle Lithosphere for Diamond Potential, *Lithos*, 77, 859-872, 2004.
- Rondenay, S., and Fischer K.M., Constraints on localized CMB structure from multichannel, broadband SKS coda analysis, *J. Geophys. Res.*, 108, 2537, doi:10.1029/2003JB002518, 2003.
- Bostock, M. G., R. D. Hyndman, S. Rondenay, S. M. Peacock. An inverted continental Moho and serpentinization of the forearc mantle, *Nature*, 417, 536-538, 2002.
- Bostock, M. G., S. Rondenay, and J. Shragge, Multiparameter two-dimensional inversion of scattered teleseismic body waves, 1, Theory for oblique incidence, *J. Geophys. Res.*, 106, 30,771-30,782, 2001.
- Shragge, J., M. G. Bostock, and S. Rondenay, Multiparameter two-dimensional inversion of scattered teleseismic body waves, 2, Numerical examples, *J. Geophys. Res.*, 106, 30,783-30,794, 2001.
- Rondenay, S., M. G. Bostock, and J. Shragge, Multiparameter two-dimensional inversion of scattered teleseismic body waves, 3, Application to the Cascadia 1993 data set, *J. Geophys. Res.*, 106, 30,795-30,808, 2001.

- Rondenay, S., M. G. Bostock, T. M. Hearn, D. J. White and R. M. Ellis, Lithospheric assembly and modification of the SE Canadian Shield: Abitibi-Grenville Teleseismic Experiment, *J. Geophys. Res.*, 105, 13,735-13,754, 2000.
- Rondenay, S., M. G. Bostock, T. M. Hearn, D. J. White, H. Wu, G. Sénéchal, S. Ji, M. Mareschal, Teleseismic studies of the lithosphere below the Lithoprobe Abitibi-Grenville Transect, *Can. J. Earth Sci.*, 37, 415-426, 2000.
- Bostock, M. G. and S. Rondenay, Migration of scattered teleseismic body waves, *Geophys. J. Int.*, 137, 732-746, 1999.
- Crumeyrolle, P., P. Imbert, O. Plisson and S. Rondenay, Le cône sous-marin actuel du Rhône; un modèle architectural pour l'exploration des réservoirs profonds (Modern Rhone submarine fan; an architectural model for deep reservoir exploration), *Pétrole et Techniques*, 407, 21-22, 1997.
- Sénéchal, G., S. Rondenay, M. Mareschal, J. Guilbert and G. Poupinet, Seismic and electrical anisotropies in the lithosphere across the Grenville Front, Canada, *Geophys. Res. Lett.*, 23, 2255-2258, 1996.
- Ji, S., S. Rondenay, M. Mareschal and G. Sénéchal, Obliquity between seismic and electrical anisotropies as a potential indicator of movement sense for ductile shear zones in the upper mantle, *Geology*, 24, 1033-1036, 1996.
- Boerner, D. E., R. D. Kurtz, J. A. Craven, S. Rondenay and W. Quian, Buried Proterozoic foredeep under Western Canada Sedimentary Basin?, *Geology*, 23, 297-300, 1995.

Outreach articles:

- Keers, H., S. Rondenay, Y. Harlap, and I. Nordmo, Resources for computational geophysical courses, *Eos Transactions, American Geophysical Union*, 95(37), 335-336, 2014.
- Li, C., and S. Rondenay, Computing the earth from core to clouds, *META Magazine*, Vol 2, www.notur.no/meta-magazine-archive, 2013.

Invited Presentations:

- More than 60 invited presentations (keynote talks, summer schools, departmental seminars) at international conferences and research institutions in Australia, Austria, Brazil, Canada, Denmark, China, France, Germany, Greece, Iceland, Ireland, Korea, Norway, USA, UK.

Research Contracts and Grants:

- The Research Council of Norway, FRINATEK Researcher project, Subduction zone Water and Metamorphism: a Modelling and Imaging Study SWaMMIS (PI), 09/2014-08/2018, €770,000
- Marie Curie Career Integration Grant, Global Lithospheric Imaging using Earthquake Recordings GLImER (PI), 08/2012-07/2016, €100,000
- Schlumberger, Scattered-wave inversion of 4-D hydrofrac data (PI), 11/2008-12/2014, \$150,000
- Shell, Deterministic and interferometric direct/scattered surface wave imaging – faculty support, 01/2007-08/2011, \$60,000
- Shell, Deterministic and interferometric direct/scattered surface wave imaging – postdoc support (through Earth Resources Laboratory), 01/2007-08/2011, \$150,000
- Shell, Passive 3D seismics for oil exploration, 01/2005-12/2006, \$150,000
- National Science Foundation, Collaborative Research: The Siberian Traps and the end-Permian Extinction: Coincidence and Causality (co-PI), 07/2008-06/2013, \$358,209
- National Science Foundation, Collaborative Research: Earthscope integrated investigation of Cascadia subduction zone tremor, structure and process (PI), 01/2006-12/2009, \$320,785
- National Science Foundation, Collaborative Research: Multi-disciplinary Experiment for Dynamic Understanding of Subduction under the Aegean Sea – MEDUSA (Co-I), 08/2004-07/2009, \$2,393,178
- National Science Foundation, Teleseismic probing of the Slave craton: A glimpse into one of Earth's oldest continental lithospheres (PI), 04/2004-06/2008, \$188,455

Field Work – Seismology

- PI on the MEDUSA portable broadband experiment (Greece, 2006-2009)

- Co-PI on the CAFE portable broadband experiment (Washington State, USA, 2006-2008, with UW and BU)
- PI on the MIT Slave craton portable broadband experiment (Northwest Territories and Nunavut, Canada, 2004-2006; with the GSC)
- Deployment team, FLED teleseismic experiment (Florida to Alberta, 2001)
- Deployment team, technical support for PASSCAL equipment deployed in Western Ontario (1997) and Northwest Territories (1999), Canada
- Deployment team, LITHOPROBE-SNORE refraction experiment (Yukon and Northwest Territories, Canada, 1997)
- Organisation and maintenance of the LITHOPROBE-PASSCAL Abitibi teleseismic experiment (Québec and Ontario, Canada, 1996)
- Field assistant, LITHOPROBE-LITHOSCOPE Abitibi-Grenville teleseismic and MT experiment (Québec and Ontario, Canada, 1994)

Field Work – Other

- Deployment of long period magnetotelluric stations, LITHOPROBE Alberta Transect (three field seasons, 1993-1995)
- Mineral exploration (northern Québec, Canada, 1990)