CURRICULUM VITAE (August 2022)

Luc L. Lavier, Ph.D.

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scholar.google.com/citations?user=q42H8hEAAAAJ&hl=en
www.researcherid.com/rid/G-6141-2010

RESEARCH INTERESTS

Geodynamic, tectonic and rheological evolution of plate boundaries, rifting, subduction, mountain building, ice sheet evolution and
Rheology of Planetary materials (Rocks, Ice)
Numerical modeling of lithospheric deformation and ice sheets evolution
Development of new computational methods in solid mechanics to simulate large deformation of Earth's materials over multiple time and length scales.

PERSONAL DATA Born 14 October 1967, Dijon, France, married, two children (son, daughter). French and American citizen.

EDUCATION

1999	Ph.D.	Earth & Environmental Sciences, Columbia University, NY
1997	M.Phil.	Earth & Environmental Sciences, Columbia University, NY
1991	M.Sc.	Tectonics & Geophysics (D.E.A.), Université de Montpellier, France
1990	B.S.	Theoretical Physics (Maîtrise), Université de Besançon, France

PROFESSIONAL APPOINTMENTS

2020-	Full Professor, University of Texas Austin (UT), Department of Geological Sciences
2020-	Senior Research Professor, University of Texas Austin, Institute for Geophysics (UTIG)
2014-2020	Associate Professor, University of Texas Austin (UT), Department of Geological Sciences
2014-2020	Associate Research Professor, University of Texas Austin, Institute for Geophysics (UTIG)

2008-	Affiliated faculty member, University of Texas Austin (UT), Oden Institute for Computational Engineering and Sciences
2008-2014	Assistant Professor, University of Texas Austin (UT), Department of Geological Sciences
2008-2014	Assistant Research Professor, University of Texas Austin, Institute for Geophysics (UTIG)
2003-2008	Research Associate, University of Texas Austin, Institute for Geophysics (UTIG)
2002-2003	Assistant Research Scientist, Seismological Laboratory, Geological and Planetary Science Division, California Institute of Technology (CALTECH)
2001-2002	Postdoctoral Fellow in Tectonics, Seismological Laboratory, Geological and Planetary Science Division, California Institute of Technology (CALTECH)
1999-2001	Postdoctoral Scholar, GeoForschungZentrum Potsdam (GFZ), Potsdam, Germany
1994-1999	Graduate Research Assistant, Department of Earth and Environmental Sciences, Lamont-Doherty Earth Observatory, Columbia University, NY
1994-1999	Graduate Research Assistant, Department of Earth and Environmental
1992-1994	Research Assistant (employed by Elf Exploration Production), Lamont-Doherty Earth Observatory, Columbia University, NY
1990-1992	Research Assistant, Research Center in Pau, Elf Exploration Production, Pau, France

PROFESSIONAL AWARDS AND RECOGNITION

2019	First place in contest for “Professeur des Universités at the Sorbonne Université of Paris”.
2019	Evgenii Burov Medal of International Lithosphere Program at the European Geosciences Union for strong scientific contributions in lithospheric dynamics through high-quality and innovative research in an open and collaborative spirit.
2017	Honorable mention winners at the The Brazilian Petroleum, Gas and Biofuels Institute and the Technical Committee of Rio Oil & Gas Conference 2016 for the paper “IBP1861_16 - Relating rifted margin domains to exploration risk assessment”.
2017	UTIG’s Director Circle of Excellence. University of Texas Institute for Geophysics.
2014	Invited Professor (15 January 2014-15 February 2014), Conseil National des Universités (CNU, France), Institut de Physique du Globe de Paris, Paris, France.

2013	UTIG's Director Circle of Excellence. University of Texas Institute for Geophysics.
2012	UTIG's Director Circle of Excellence. University of Texas Institute for Geophysics.
2013-2023	Qualifié aux fonctions de professeur des universités, section Terre solide: Géodynamique des enveloppes supérieures, Spring 2013: Conseil National des Universités, France
2007- 2009	Jackson School of Geosciences, Jackson Research Excellence Fellow Award, University of Texas (UT)
2007- 2008	Invited Professor (3 summer months), Herbette fellowship, Swiss National Science Foundation, University of Lausanne, Department of Petrology, Switzerland.
2004- 2005	Invited Researcher (2 summer months), Conseil National des Universités (CNU, France), University Louis Pasteur, Department of Geology, Strasbourg, France.
2001- 2002	California Institute of Technology, Postdoctoral Fellowship in Tectonics, Division Geological and Planetary Sciences (CALTECH).
1999- 2001	GeoForschungsZentrum Potsdam Postdoctoral Fellowship, GeoForschungsZentrum Potsdam, Germany (GFZ).
1994-1999	Columbia University Faculty Fellowship, Columbia University, Dept. of Earth & Environmental Sciences. Columbia University, NY.
1992-1994	Foreign Research Program (Volontaire Service National Scientifique), French Foreign Ministry, France.

ADVISING AND STUDENT SERVICE

Graduate student supervision (UT), 13 Ph.D. (11 completed) and 2 M.Sc. (2 completed) (Name, degree, **period supervised, supervision, expected completion, advancement,** research title)

16 Simone Puel, Ph.D. student in the Department of Geological Sciences
Period: 08/2018-current, Lavier co-supervisor, Temporary tile: Multi-scale models of subduction zone earthquake cycle observations.

15 Nicholas Montiel, Ph.D. student in the Department of Geological Sciences
Period: 08/2018-current, Lavier supervisor, Temporary tile: Dynamic Models of Rifted Margins in 2D and 3D: applications to South Atlantic Basin Analysis.

14 Gabriel Tagliaro, Ph.D. student in the Department of Geological Sciences
Period: 08/2015-2019, Lavier co-supervisor, **Fall 2015,** Middle-late Miocene siliciclastic influx on the Australian Northwest Shelf: origins and potential links to global events.

13 James Biemiller, Ph.D. student in the Department of Geological Sciences
Period: 08/2015-2020, Lavier supervisor, **Fall 2015, Ph.D. candidate,** Relationship between long-term and short-term deformation mechanisms and patterns in active rift environments and subduction zones.
12. Xinyue Tong, Ph.D. student in the Department of Geological Sciences
Period: 08/2014-08/2019, Lavier supervisor, **degree completed 2019,** Earthquakes and Slip Transients Through Multi-dimension and Multi-physics Thermomechanical Modeling.
11. Rodrigo D Lima, Ph.D. student in the Department of Geological Sciences
Period: 08/2013-06/2018, Lavier co-supervisor, degree completed 2018, From Mountain Belts to continental Margins: Causes and Controls of Rheological Inheritance during Extension.
10. Kunpeng Liao, M.Sc. student in the Department of Geological Sciences
Period: 08/2016-06/2018. **Lavier co-supervisor, degree completed 2018**, Impact of Lithospheric Rheology on Surface Topography.
9. Nicole Rita Hart, M.Sc. student in the Department of Geological Sciences
Period: 08/2012-06/2015. Lavier co-supervisor, degree completed 2015, Coupled bedrock and detrital thermochronometry of a hyper-extended continental margin, Mauléon, Pyrenees.
8. Joshua K. Davis, Ph.D student in the Department of Geological Sciences
Period: 08/2011-06/2016. Lavier supervisor, Spring 2016, degree completed 05/2017, Plate tectonic reconstruction including continental deformation evaluation.
7. Anna Svartman Dias, Ph.D student in the Department of Geological Sciences
Period: 07/2011-12/2015. Lavier supervisor, **Fall 2015, degree completed 12/2015,** Subsidence and thermal evolution of hyperextended rifted margins.
6. Guangliang Wu, Ph.D. student in the Department of Geological Sciences
Period: 07/2010-12/2014. Lavier supervisor, **Fall 2014, degree completed 06/2016,** Lithospheric extension in orogens: State of stress, crustal flow,
and metamorphic core complexes.
5. Guy Gregory Fitz, Master student in the Department of Geological Sciences
Period: 07/2009-08/2011. Lavier co-supervisor, degree completed, Offshore mapping and modeling of Miocene-Recent extensional basins adjacent to metamorphic gneiss domes of the D'Entrecasteaux Islands, eastern Papua New Guinea.
4. Elizabeth Stacia Logan, Ph. D student in the Department of Geological Sciences
Period: 07/2009-12/2015. Lavier supervisor, degree completed 12/2015, Modes of Deformation in Ice: the Formation of basal Crevasses and their role in Iceberg Calving.
3. Dan Eakin, Ph. D student in the Department of Geological Sciences
Period: 07/2009-12/2015. Lavier supervisor, **degree completed 11/2014,** An analysis of subduction related tectonics offshore southern and eastern Taiwan.
2. Ryan Lester, Ph. D student in the Department of Geological Sciences

Period: 07/2009-06/2013. **Lavier supervisor**, **degree completed 05/2013**, From Rifting To Collision: The Evolution Of The Taiwan Mountain Belt.

1. Patel Paresh, PhD candidate in the Department of Geological Sciences

Period 2003-2012. Lavier co-supervisor, student terminated

Graduate students research committee service (UT)

IN PROGRESS

24. **Jialong Ren**, Ph.D student in the Department of Geological Sciences

Period: 08/2020-current. Supervisor: Marc Hesse

23. **Molly Zekber,** Ph.D student in the Department of Geological Sciences

Period: 08/2020-current. Supervisor: Ann Chen, Marc Hesse

22. Ken Ideka, Ph.D student in the Department of Geological Sciences

Period: 08/2016-current. Supervisor: Nicola Tisato

21. Brandon Shuck, Ph.D student in the Department of Geological Sciences

Period: 08/2016-current. Supervisor: Harm Van Avendonk

20. Wanyin Wang, Ph.D student in the Department of Geological Sciences

Period: 08/2016-current. Supervisor: Thorsten Becker

19. Kelly Olsen, Ph.D student in the Department of Geological Sciences

Period: 08/2016-current. Supervisor: Nathan Bangs

18. Erin Heilman, Ph.D. student in the Department of Geological Sciences

Period: 08/2019-current. Supervisor: Thorsten Becker

17. Omar Alamoudi, Ph.D. student in the Department of Geological Sciences

Period: 08/2019-current. Supervisor: Nicola Tisato

COMPLETED

19. Pamela Speciale, Ph.D student in the Department of Geological Sciences

Ph.D. Dissertation title: Mechanisms And Longevity Of Strain Localization During Dynamic Recrystallization Of Olivine.

Period: 08/2016-2021. Supervisor: Whitney Behr, Greg Hirth (Brown)

18. Kelly Olsen, Ph.D student in the Department of Geological Sciences

Ph.D. Dissertation title: Investigating Trench Sediment Consolidation And Upper Plate Structures And Their Links To Seismic Behavior Using Active-Source 2d Seismic Data in South-Central Chile and Hikurangi.

Period: 08/2016-2021. Supervisor: Nathan Bangs

17. Ken Ideka, Ph.D student in the Department of Geological Sciences

Ph.D. Dissertation title: Frequency-Dependent Elastic Properties Of Geomaterials: Laboratory Experiments And Digital Rock Physics.

Period: 08/2015-2020. Supervisor: Nicola Tisato

16. Dominik Kardell, Ph.D student in the Department of Geological Sciences

Ph.D. Dissertation title: The Structural And Thermal Evolution Of Upper Oceanic Crust In The Western South Atlantic: Insights From Seismic Velocities and modeling.

Period: 08/2015-2020. Supervisor: Gail Christeson

15. Jennifer Harding, Ph.D student in the Department of Geological Sciences
Ph.D. Dissertation title: Crustal accretion at a spreading rate end-member, the Mid-Cayman Spreading Center: insights from seismic, gravity, and geochemistry.
Period: 08/2014-2020. Supervisor: Harm Van Avendonk

14. Brooklyn Gose, M.Sc. student in the Department of Geological Sciences
M.Sc. title: Kinematic Restoration of the Costa Rican Convergent Margin: Exploring the Effects of a Rough Subducting Seafloor
Period: 08/2017-2020. Supervisor: Nathan Bangs

13. Enrica Quartini, Ph.D student in the Department of Geological Sciences
Period: 08/2012-08/2018. Supervisor: Don Blankenship.
Ph.D. Dissertation title: The distribution of geothermal flux in West Antarctica.

12. Laura E. Lindzey, M.Sc student in the Department of Geological Sciences
Period: 08/2016-06/2018. Supervisor: Don Blankenship.
M.Sc. title: Boundary conditions for an active subglacial lake in the David Glacier catchment, Antarctica.

11. Emily Hernandez Goldstein, Ph.D student in the Department of Geological Sciences
Period: 07/2012-2016. Supervisor: Daniel Stockli
Ph.D. Dissertation title: Unraveling alteration histories in serpentinites and associated ultramafic rocks with magnetite (U-Th)/He geochronology.

10. Marina C. Frederik, Ph.D student in the Department of Geological Sciences
Period: 07/2011-2016. Supervisor: Sean Gulick
Ph.D. Dissertation title: Morphology And Structure Of The Accretionary Prism Offshore North Sumatra, Indonesia And Offshore Kodiak Island, USA - A Comparison To Seek a Link Between Prism Formation and Hazard Potential.

9. Jeff Liu, Ph.D student in the Department of Geological Sciences
Period: 07/2010-2016. Supervisor: Jung Fu Lin
Ph.D. Dissertation title: Sound velocities of iron alloys in the Earth's core.

8. Ruddra Chaterjee, Ph. D student in the Department of Geological Sciences
Period: 2009-2016. Supervisor: John Lassiter
Ph.D. Dissertation title: Os isotopic compositions of mantle peridotites and steels: Implications for Pt-Re-Os evolution of the Earth's upper mantle and continental crust.

7. Drew Eddy, Ph.D student in the Department of Geological Sciences
Period: 2010-2014. Supervisor: Harm Van Avendonk
Ph.D. Dissertation title: Mesozoic rifting along the eastern seaboard of North America: insights from the seismic velocity structure of the Newfoundland margin and the northern Gulf of Mexico.

6. Xia Yu, Ph.D student in Department of Geological Sciences
Period: 2006-2013. Supervisor: Steve Grand
Ph.D. Dissertation title**:** Dynamics of the eastern edge of the Rio Grande Rift

5. Yang Wang, M.Sc. student in the Department of Geological Sciences
Period: 2010-2013. Supervisor, Steve Grand,

Ph.D. Dissertation title: Shear Velocity Structure and Mineralogy of the Transition Zone beneath the East Pacific Rise.

4. Jennifer Worthen, Ph.D student in the Computational and Applied Mathematics,
Period: 2007-2012. Supervisor: Omar Ghattas,
Ph.D. Dissertation title: Inverse Problems in Mantle Convection: Models, Algorithms, and Applications.

3. Kylara Martin, Ph.D student in the Department of Geological Sciences
Period: 2005-2010. Supervisor: Sean Gulick
Ph.D. Dissertation title: Geophysical investigations in the Nankai Trough and Sumatran subduction zones.

2. Lindsay Lowe, Ph. D student in the Department of Geological Sciences
Period: 2005-2010. Supervisor: Sean Gulick
Ph.D. Dissertation title: New Geophysical Parameters for Understanding the Evolution of the St. Elias Orogen, Southern Alaska.

1. Derek Sawyer, Ph. D student in the Department of Geological Sciences
Period: 2007-2010. Supervisor: Peter Flemings
Ph.D. Dissertation title: Failure Mechanics, Transport Behavior, and Morphology Of Submarine Landslides.

Undergraduate Student research supervision (UT)

1. John B. Desanto, Undergraduate Honors Thesis (completed).
Period 2011-2013. Lavier, co-supervisor

Graduate students supervision (Outside UT), 4 Ph.D. (4 completed) (name, degree, place, **Period, supervision, expected completion,** research title when completed)

5. Manon Bickert, Ph.D student at the Institut de Physique du Globe, Paris, France
Period: 2016-2020 Lavier co-supervisor (supervisor: Mathilde Cannat), degree completed, Strain localization in oceanic detachment faults: the extreme case of a magma-starved slow spreading ridge.

4. Pauline Chenin, Ph.D student at the University Louis Pasteur, Strasbourg, France
Period: 2012-2016. Lavier co-supervisor (supervisor: Gianreto Manatschal),degree completed, Unravelling the impact of inheritance on the Wilson Cycle: a combined mapping and numerical modelling approach applied to the North Atlantic rift system.

3. Suzon Jammes, Ph.D student at the University Louis Pasteur, Strasbourg, France
Period: 2006-2009. Lavier co-supervisor (supervisor: Gianreto Manatschal), degree completed, Processus d'amincissement crustal en contexte transtensif: L'exemple du golfe de Gascogne et des Pyrenees Basques.

2. Eun-Seo Choi, Ph.D student at the Seismological Laboratory, California Institute of Technology (CALTECH), Pasadena

Period: 2003-2008. Supervisor: Michael Gurnis, degree completed, Computational approaches to localized deformation within the lithosphere and for crust-mantle interactions.

1. Patricia Persaud, Ph. D. student at the Seismological Laboratory, California Institute of Technology (CALTECH), Pasadena

Period: 2003-2008. Supervisor: Joann Stoke, degree completed, Images of Early Continental Breakup in and around the Gulf of California and the Role of Basal Shear in Producing Wide Plate Boundaries

Student research theses: thesis title, degree, institution, supervision

James Biemiller, 2020, Relationship between long-term and short-term deformation mechanisms and patterns in active rift environments**,** *Ph.D. thesis, University of Texas at Austin***, Lavier supervisor**.

Xinyue Tong, 2019, Earthquakes and Slip Transients Through Multi-dimension and Multi-physics Thermomechanical Modeling **,** *Ph.D. thesis, University of Texas at Austin***, Lavier supervisor**.

Rodrigo D Lima, 2018, FROM MOUNTAIN BELTS TO CONTINETAL MARGINS: Causes and Controls of Rheological Inheritance during Extension**,** *Ph.D. thesis, University of Texas at Austin***, Lavier co-supervisor**.

Kunpeng Liao, 2018, *Impact of Lithospheric Rheology on Surface Topography, M.Sc. thesis, University of Texas at Austin,* **Lavier co-supervisor.**

Davis, Joshua, 2017**,** *THE BREAKUP OF EAST GONDWANA: insights from plate modeling, basin analysis, and numerical experiments*, *Ph.D. thesis, University of Texas at Austin***, Lavier supervisor**.

Wu, Guangliang, 2016, *Continental extension in orogenic belts: Modes of extension, origin of core complexes, and two-phase postorogenic extension, Ph.D. thesis, University of Texas at Austin,* **Lavier supervisor.**

Logan, E. S., 2015, *Modes Of Deformation In Ice In Dynamic Regions: Applications To Basal Crevasses And Calving, Ph.D. thesis, University of Texas at Austin,* **Lavier supervisor.**

Svartman Dias, A. E., 2015, *THE EVOLUTION OF HYPEREXTENDED RIFTED MARGINS: linking variations on the width, asymmetry, and strain distribution to lithospheric strength and geodynamic processes Ph.D. thesis, University of Texas at Austin,* **Lavier supervisor.**

Hart, N. H., 2015, *Coupled bedrock and detrital thermochronometry of a hyper-extended continental margin, Mauléon, Pyrenees, , M.Sc. thesis, University of Texas at Austin,* **Lavier co-supervisor.**

Eakin, D. H., 2014**,** *An analysis of subduction related tectonics offshore southern and eastern Taiwan, University of Texas at Austin,* **Lavier supervisor.**

Lester, W. R., 2013, *From Rifting To Collision: The Evolution Of The Taiwan Mountain Belt, Ph.D. thesis, University of Texas at Austin,* **Lavier supervisor.**

Fitz, G. G., 2011, *Offshore mapping and modeling of Miocene-Recent extensional basins adjacent to metamorphic gneiss domes of the D'Entrecasteaux Islands, eastern Papua*

New Guinea, M.Sc. thesis, University of Texas at Austin, **Lavier co-supervisor.**
Jammes, S., 2009, *Extreme crustal thinning in a transtensional setting : the example of Bay of Biscay-Western Pyrenees. Thèses de doctorat, Université de Strasbourg,* **Lavier co-supervisor.**
Choi, E., 2009, *Computational approaches to localized deformation within the lithosphere and for crust-mantle interaction, Ph.D. thesis, CALTECH,* **Lavier Collaborator/advisor**.
Persaud, P., 2004, *Images of Early Continental Breakup in and around the Gulf of California and the Role of Basal Shear in Producing Wide Plate Boundaries, Ph.D. thesis, CALTECH,* **Lavier Collaborator/advisor**.

Postdoctoral research supervision, 8 postdoctoral associates mentored
9. Srisharan Shreedhara (PhD in Geophysics, PennState, 2021)
Period: 08/01/2021-
8. Jacqueline Reber (PhD in Geology, Uppsala University, 2012) **Now assistant professor at Iowa State University.**
Period: 01/3/2013-2015.
7. Suzon Jammes (PhD in Geophysics, University of Strasbourg, 2009) **Now senior lecturer at Texas State University San Marcos.**
Period: 01/3/2013-2015.
6. Eunseo Choi (PhD in Geodynamics, California Institute of Technology, 2008)
Period: 31/1/2011-31/12/2012. **Now Associate Professor at the University of Memphis, TN, 2013.**
5. Eh Tan (PhD in Geodynamics, California Institute of Technology, 2008)
Period: 9/1/2009-31/1/2011. Now Research Professor in Geodynamics at Academia Sinica in Taipei, Taiwan.
4. Ravindra Duddu (PhD in Computational Mechanics, Northwestern University, 2008)
Period: 9/1/2008-8/2010. Now Assistant Professor at the School of Engineering at Vanderbilt University, Nashville, TN.
3. Corey Trahan (PhD in Physics, University of Texas at Austin, 2003)
Period: 9/1/2008-8/2010. Now at Army Corps of Engineers, Alabama.
2. Nathan Downey (PhD in Geophysics, California Institute of Technology, 2008)
Period: 9/1/2007-8/2009. Now researcher at LANL.
1. Wolgang Bangerth (PhD in Applied Mathematics, University of Heidelberg, Germany, 2002)
Period: 9/1/2003-8/2005. Now Full professor in Applied Mathematics at Texas A&M.

Letters of Recommendation for Students and Postdoctoral scholars
Letters for applications for employment, graduate admissions, and research grants.

Total > 100 since 2003

COMMITTEE SERVICE (UT)

Committees, Jackson School of Geosciences, Department of Geological Sciences, Institute for Geophysics, Institute for Computational Engineering and Sciences

2019- Institute for Geophysics, Member of the UTIG graduate fellowship.
2015- Chair of the IT committee in the Department of Geological Sciences. Development of a service center for IT at the Department of Geological Sciences
2019- 2020 Institute for Geophysics, Member the annual evaluation committee.
2015- 2017 Institute for Geophysics, Member the annual evaluation committee.
2015- 2017 Institute for Geophysics, Member of the strategic plan committee for Tectonophysics.
2014- 2015 Department of Geological Sciences, Chair of the Faculty Geophysics Search Committee.
2013- 2014 Department of Geological Sciences, Member of the Faculty Geophysics Search Committee chaired by Steve Grand.
2012- 2013 Institute for Geophysics, Member of the Research Associate Search Committee chaired by Gail Christeson.
2008- 2010 Institute for Computational Engineering and Sciences, Member of the King Abdullah University of Science and Technology (KAUST) Faculty search committee chaired by Omar Ghattas.
2007- 2009 Jackson School of Geosciences, Chair of the Core/Mantle/Crust Search Committee.
2009- 2010 Department of Geological Sciences, Seminar committee.
2005- 2006 Institute for Geophysics, Computer equipment management committee.

PROFESSIONAL SERVICE

Memberships in Professional Societies

American Geophysical Union since 1994
European Geophysical Union from 2000 to 2005 then since 2013
Geological Society of America since 2003

Editorial service

2015- Associate editor, Tectonics, AGU (American Geophysical Union), (5 years term).
2009-2013 Associate editor, G-cubed, Geophysics-Geochemistry-Geodynamics, AGU

(American Geophysical Union), (5 years term).

Professional committees

2019 Member of the Geophysics Panel for the National Science Fundation.

2017-2018 Main PI and organizing committee for the NSF funded workshop: CTSP: Coupling of Tectonic and Surface Processes (April 25th to 27th 2018, Boulder, Colorado).

2017- Member of the steering committee for NSF GeoPRISMS.

2016-2017 Co-convener for the 2017 GeoPRISMS Theoretical and Experimental Institute on Rift Initiation and Evolution held Feb 8-10 2017 in Albuquerque, NM.

2003- Representative member of the University of Texas at Austin for the Computational Infrastructure in Geodynamics (CIG, www.geodynamics.org), center now located at the University of California Davis and funded by the National Science Foundation.

2008-2010 Computational Infrastructure in Geodynamics (CIG), Science Steering Committee Member. Long-term crustal deformation,

2006 IODP SSEP meeting in Houston May 2006, Intermittent panel member.

2006-2007 Continental break-up mission (IODP), member of the executive writing committee led by John Hopper (TAMU).

2005 Geodynamic modeling of tectonic processes, Colorado, Convener. In collaboration with EAR Tectonics (David Fountain). Co-converners: Dennis Harry (University of Alabama) and Sean Willet (now at ETH Zurich, Switzerland).

2004-2006 Computational Infrastructure in Geodynamics (CIG), group leader with Sean Willett for the development of codes for the Geodynamic Modeling of Tectonic deformation.

Chaired sessions, professional conferences

2021, Co-convener of AGU Session T22B and T25E: From Post-Orogenic Extension to Continental Breakup.

2018, Co-convener of AGU session T039: Shaping Slow and Ultraslow Spreading Seafloor with Faults, Magma, and Fluids.

2017, Co-convener of 2017 EGU session TS6.3: Young narrow rift margins, failed rift basins and their ancient analogues.

2005, American Geophysical Union, spring meeting, New Orleans 2005, session G43B, Regional and Global-scale Plate Kinematics and Dynamics From Geodetic, Geological and Geophysical observation, co-convener: Giovanni Sella, Nothwestern University.

2005, American Geophysical Union, spring meeting, New Orleans 2005, session T42A, The Ocean-Continent Transition at Rifted Continental Margins: What is it, How is it

formed, and How do We Locate it?, co-convener: Ian Norton, Exxon-Mobil.

1998, American Geophysical Union, spring meeting, Boston 1998, session T31, Strain partitioning during continental rifting, co-convener: W.R. Buck.

Professional workshops

2016 June 22-26, Computational Infrastructure in Geodynamics (CIG, NSF), Interdisciplinary Directions in Computational Geophysics Workshop, Davis, California, University of California, Davis.

2016 May 20-22, Future direction in Tectonics, Tectonics program, National Science Foundation, Madison, Wisconsin.

2013, May, Tectonics of Taiwan: an International Conference, Taipei, Taiwan, May 15th.

2012, October, YOung Conjugate MArgin Laboratory (YOCMAL), French National Agency for Research (ANR), Biarritz, France.

2012, August, Computational Infrastructure in Geodynamics (CIG, NSF), Mantle Convection and Lithospheric Dynamics Workshop, Davis, California, University of California, Davis.

2011, September, South California Earthquake Center (SCEC) annual meeting, SDOT Interdisciplinary Group - What Is Needed To Make Progress On Understanding Stress Transfer From Plate Motion To Crustal Faults?

2011, January, NSF Geoprism workshop, Subduction Factory, participant, Austin, TX.

2011, November, Working Group on South Atlantic Margins, Petrobras, Rio de Janeiro, Brazil.

2010, November, NSF Geoprism workshop, Rifting Evolution and Initiation, participant, Santa Fe, NM.

2010, October, 35th Workshop of the International School of Geophysics Non-Steady-State Subduction: Changes in the Calabrian Arc and its Mediterranean Setting, Erice, Sicily, Italy.

2010, June, Computational Infrastructure in Geodynamics (CIG), participant, Golden, CO, Crustal Deformation Modeling Workshop.

2010, January, III Workshop de Riftes e Margens Continentais, Salvador, Brazil.

2008, October, GeoMod, Modeling of Geological Processes International Workshop , Florence, Italy.

2007, August 26th-31st, CATSCAN II, Calabria Geodynamics workshop at LDEO, Columbia University, Activity Report of the NSF Continental Dynamics funded project CATSCAN II.

2007, April, TAIGER workshop, Austin, TX, Geodynamics aspects of the NSF funded project TAIGER.

2006, September, CATSCAN II, Calabria Geodynamics workshop, Cosenza, Italy, September 9th to 14th, Field trip and Geodynamics aspects of the NSF Continental Dynamics funded project CATSCAN II.

2006, March, TAIGER workshop, Los Angeles, CA, March 28th to April 5th, Geodynamics aspects of the NSF funded project TAIGER.

2006, September, IODP (International Ocean Drilling Program) workshop, participant, September 15th to 18th, Pontresina, Switzerland, Investigating Continental Break-Up and Sedimentary Basin Formation.

2006, February, Earthscope GEOTRAVERSE, participant, February 3rd to 5th, St Louis, MO, Conveners: Ben van der Pluijm and Basil Tikoff, Defined GeoEarthScope Geochronology.

2005, March, Earthscope GEOTRAVERSE, participant, March 28, Santa Ana Pueblo, NM, Conveners: Ben van der Pluijm and Basil Tikoff, It is an attempt to define a geological oriented approach to Earthscope through the use of transects accross the US continent.

2005, October, TAIGER workshop, Taipei, October 28th to November 3rd, Continuous development of the NSF funded project TAIGER.

2005, September, CAT-SCANII workshop, Rome, September 24-27, NSF, EAR Continental Dynamics funded workshop to develop the next phase of the Geodynamics study of Calabria, proposal submitted in November 2005.

2004, January, Computational Infrastructure in Geodynamics (CIG), participant, January 16-17, Los Angeles, USA, Defining the structure and the goals of the CIG for the Geodynamics community in the US.

2004, February, Mid-Atlantic Ridge Workshop (RIDGE 2000), participant, February 29 – March 2, Providence, Rhodes Island, Defining the future focus areas off the mid Atlantic Ridge.

2004, July, InterMARGINS Workshop (IMEDL 2004), participant, July 11-16, Pontresina, Switzerland, Benchmarking of numerical models for modeling the evolution of continental rifting.

2003, January, Applied Geodynamic Laboratory (AGL) workshop, participant, Bureau of Economic Geology (BEG), Jackson School of Geosciences, University of Texas at Austin.

Professional Performance Reviews

Evaluation of research and teaching performance by assistant professors and research scholars.

Total: 10 letters (2011-present)

Professional Support Letter for Awards

Support letters for international awards

Total: 5 letters (2014-present)

Proposal Reviews

Reviewer of proposals to National Science Foundation (NSF) and Swiss National Foundation (SNF) and NERC (UK).

Total: ~100 reviews (2003-present)

Manuscript Reviews

Nature, Science, Geophysical Research Letters, Geology, Terra Nova, Journal of Geophysical Research, Earth and Planetary Science Letters, GSA Bulletin, Tectonics, G-cubed, Geophysical Journal International, Lithosphere**,** etc…

Total: ~200 reviews (2000-present)

Doctoral Thesis Evaluation Committees (Outside UT)

2021, February 5th, Bar Oryan, Long-term and short-term processes affecting inelastic deformation above subduction zone interfaces, LDEO Columbia University, New York.

2010, June 8th, Louise Watremez, Structure profonde et évolution du Nord du Golfe d'Aden oriental : sismique réfraction et modélisation thermomécanique, Université Paris VI- Jussieu, France.

2009, May 10th, Suzon Jammes, Processus d'amincissement crustal en contexte transtensif: L'exemple du golfe de Gascogne et des Pyrenees Basques. Université Louis Pasteur-Strasbourg, France.

2006, May 4th, Gwenn Péron-Pinvidic, Morphotectonique et architecture sédimentaire de la transition ocean-continent de la marge ibérique. Université Louis Pasteur- Strasbourg, France.

SOFTWARE DEVELOPMENT

2015-	Principal Investigator and co-developer of 2D and 3D meshless solver for solid and fluid deformation in a consistent abstracted solver with Georges Bourantas at the University of Western Australia.
2011-	Principal Investigator and lead developer of DynEarthSol 2D and 3D (Dynamic Earth Solver 2D and 3D). New flexible and fast finite element algorithm to model tectonic deformation within an unstructured and adaptive Lagrangian mesh (https://bitbucket.org/tan2/dynearthsol2).
2003- 2007	Lead developer of the software SNAC (StgermaiN Analysis of Continua) to model the tectonic deformation of the lithosphere in 3D (www.geoframework.org).
1999-	Active participant in the continuous development of PARAVOZ Software to model the tectonic deformation of the lithosphere in 2D, first developed by Yuri Podlatchikov (ETH, Zurich, Switzerland) and Alexei Poliakov (Center for National Research, Montpellier, France) and based on the FLAC (Fast Lagrangian Analysis of Continua) algorithm (Cundall, 1989, University of Minnesota, USA).

PUBLICATIONS

Papers (#papers published 73, h-index 36(Google), 31 (SCI); average citation 40 (SCI), total citations: 5361 (Google))

Journal Publications (peer reviewed) (* Student publication; **Postdoc Publication)

2022

75. Lavier, L. L. and A. S., Smye, (2022), The effect of inheritance on the Lithosphere Asthenosphere Boundary stability during rifting: consequences on depth dependent thinning, crustal reheating and melt production during continental rifting, in prep for Nature.
74. Montiel, N., Masini, E., Lavier, L. L., Müntener, O. (2022), Characterizing mantle deformation processes during the rift-to-drift transition at magma-poor margins, in prep for E.P.S.L.

2021

*73. Tagliaro, G., Fulthorpe, C. S., Watkins, D. K., De Vleeschouwer, D., Brumsack, H., Bogus, K., & Lavier, L. L. (2021). Late miocene-pliocene vigorous deepsea circulation in the Southeast Indian Ocean: Paleoceanographic and tectonic implications. Paleoceanography and Paleoclimatology, 37, e2021PA004303., https://doi.org/10.1029/2021PA004303

72. Arnulf, A., Biemiller, J., Lavier, L. L., D. Bassett, S. Henrys, I. Pecher, G. Crutchley, A. Plaza Faverola, (2021), Physical conditions and frictional properties in a slow slip event source region, accepted, *Nature Communications*.

*71. Bickert, M., Cannat, C., Tommasi, A., Jammes, S. and L. L., Lavier, (2021), Strain localization in the root of detachment faults at a melt-starved mid-ocean ridge: a microstructural study of abyssal peridotites from the Southwest Indian Ridge, accepted, , *Geochemistry, Geophysics, Geosystems.*

70. Lavier, L. L., Tong, X. and J., Biemiller, (2021), The Mechanics of Creep, Slow Slip Events and Earthquakes in Mixed Brittle-Ductile Fault Zones, Journal of Geophysical Research: Solid Earth, in press, **DOI:** 10.1029/2020JB020325

2020

*69. Biemiller, J., Taylor, F., Lavier, L. L., Yu, T.-L., Wallace, L. and Shen, C.-C. (2020), Emerged Coral Reefs Record Holocene Low-Angle Normal Fault Earthquakes. Geophys. Res. Lett., 47: e2020GL089301. https://doi.org/10.1029/2020GL089301

*68. Biemiller, J., Boulton, C., Wallace, L., Ellis, S., Little, T., Mizera, M., Niemeijer, A., Lavier, L. L. (2020). Mechanical implications of creep and partial coupling on the world's fastest slipping low-angle normal fault in southeastern Papua New Guinea. Journal of Geophysical Research: Solid Earth, 125, e2020JB020117. https://doi.org/10.1029/2020JB020117

*67. Bickert, M., L. L., Lavier, M. Cannat, A., Tommasi, S., Jammes, (2020), How do detachment faults form at ultraslow mid-ocean ridges in athick axial lithosphere?, Earth and Planetary Science Letters, Volume 5331 March 2020, Article 116048.

2019

66. Lavier, L. L. , P. J., Ball, G., Manatschal, M. J., Heumann, J., McDonald, V.J., Matt, C., Schneider, (2019). Controls on the thermomechanical evolution of hyper-extended lithosphere at magma-poor rifted margins: The example of Espirito Santo and the Kwanza basins, *Geochemistry, Geophysics, Geosystems*, 20. https://doi.org/10.1029/2019GC008580

65. Cannat, M., D., Sauter, L. L., Lavier, Manon Bickert; M., Ekeabino, (2019), On spreading modes and magma supply at slow and ultraslow mid-ocean ridges, *Earth and Planetary Science Letter*, 519, 223-233, https://doi.org/10.1016/j.epsl.2019.05.012.

64. Smye, A. S., L. L., Lavier, T. Zach, D., Stokli, (2019), Episodic heating of continental lower crust during extension, Earth and Planetary Science Letter, 521, 158-168, https://doi.org/10.1016/j.epsl.2019.06.015.

63. Chenin, P., S. Jammes, L. L., Lavier, G., Manatschal, S. Picazo, O. Muentener, O, G. D., Karner, P., Figueredo, C. Johnson, (2019) Impact of mafic underplating and mantle depletion on subsequent rifting: a numerical modeling study, in press, Tectonics, AGU.

*62. Biemiller, J., S., Ellis, M., Mizera, T., Little, L., Wallace, L.L., Lavier, (2019), Tectonic inheritance following failed continental subduction: a model for core complex formation in cold, strong lithosphere, in press, Tectonics, AGU.

61. Jammes, S. and L.L. Lavier, (2019) Effect of contrasting strength from inherited crustal fabrics on the development of rifting margins. *Geosphere* ; 15 (2): 407–422. doi: https://doi.org/10.1130/GES01686.1.

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*60. Tong, X. and L. L. Lavier, Simulation of slip transients and earthquakes in finite thickness shear zones with a plastic formulation, Nature Communications, volume 9, Article number: 3893, 2018.

*59. Tagliaro G., C.S. Fulthorpe, S.J. Gallagher, C.M. McHugh, M. Kominz and L..L Lavier, Neogene siliciclastic deposition and climate variability on a carbonate margin: Australian Northwest Shelf, Marine Geology, 403, 285-300, 2018.

58. Bourantas,G.C., K.A. Mountris, V.C. Loukopoulos, L. L. Lavier, G.R. Joldes, A. Wittek and K. Miller, Strong-form approach to elasticity: hybrid Finite Difference – Meshless Collocation Method (FDMCM), In Applied Mathematical Modelling, 57, 316-338, May 2018.

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***57.** Davis J. K. and L. L. Lavier, Influences on the development of volcanic and magma-poor morphologies during passive continental rifting. *Geosphere* ; 13 (5): 1524–1540, 2017, doi: https://doi.org/10.1130/GES01538.1, 2017.

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*54. Logan, L. C., Lavier, L. L., Choi, E., Tan, E., and G. A., Catania, Semi-brittle rheology and ice dynamics in DynEarthSol3D, The Cryosphere Discuss. 2017, doi:10.5194/tc-2016-88.

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2016

*52. Svartman Dias, A.E., Hayman, N.W. and Lavier, L.L., Thinning factor distributions viewed through numerical models of continental extension. Tectonics, 35, 3050–3069, 2016, doi:10.1002/2016TC004266.

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2015

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evolution of the Gagua Ridge and Huatung Basin, Geochem. Geophys. Geosyst., 16, 380–400, doi:10.1002/2014GC005548, 2015.

41. Manatschal G., L. L., Lavier, P. Chenin, The role of inheritance in structuring hyperextended rift systems: Some considerations based on observations and numerical modeling, Gondwana Research, Volume 27, Issue 1, January 2015, Pages 140-164, ISSN 1342-937X, http://dx.doi.org/10.1016/j.gr.2014.08.006.

2014

40. Van Avendonk, H. V. A., H. Kuo-Chen, K.D. McIntosh, L.L. Lavier, D.A. Okaya, F.T. Wu, C.Y. Wang, C.S. Lee, and C.S. Liu, Deep crustal structure of an arc-continent collision: Constraints from seismic travel times in central Taiwan and the Philippine Sea, in press, *Journal of Geophysical Research: Solid Earth*, 2014.doi:10.1002/2014JB011327.

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**38. Reber, J, E., Nicholas W. Hayman and Luc L. Lavier, Stick-slip and creep behavior in lubricated granular material: Insights into the brittle-ductile transition, Jacqueline E., Geophysical Research Letter, Volume 41, Issue 10, pages 3471–3477, 28 May 2014.

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35. Hayman N. and Lavier, L. L., The Geologic Record of Deep Transient Slip and Tremor, Geology 42 (3), 195-198, 2014.

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*32. Logan, S. L., G. Catania, L. L. Lavier and E. Choi, A novel method of basal crevasse height estimation, Journal of Glaciology 59, 216, pp. 750-758, 2013.

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**30. Choi, E., W. R. Buck, L. L Lavier and K. Petersen, Bounds on fault strength based on simulation of 'rider block' structures emerging from brittle lithosphere extension, *Geophysical Research Letter*, Accepted manuscript online: 14 JUL 2013 11:54PM EST | DOI: 10.1002/grl.50732, 2013.

29. Lavier, L. L., R. Bennett and R. Duddu, Creep Events at The Brittle Ductile Transition, *Geochem. Geophys. Geosyst,* DOI: 10.1002/ggge.20178, 2013.

28. McIntosh, K. D., H. V. A. van Avendonk, L. L. Lavier, R. Lester and D. Eakin, Arc-Continent Collision as a Multistage Process in Southern Taiwan, *Geology,* first published on June 6, 2013, doi:10.1130/G34402.1, 2013.

27. Savva, D., F. Meresse, M. Pubellier, N. Chamot-Rooke, L.L. Lavier, K. Wong Po, D. Franke, S. Steuer, F. Sapin, J. L. Auxietre and G. Lamy, Seismic evidence of hyper-stretched crust and mantle exhumation offshore Vietnam, Tectonophysics. http://dx.doi.org/10.1016/j.tecto.2013.07.010, 2013.

2012

**26. Tan, E., L. L. Lavier, H. J. A. Van Avendonk, and A. Heuret, The role of frictional strength on plate coupling at the subduction interface, *Geochem. Geophys. Geosyst.*, 13, Q10006, doi:10.1029/2012GC004214, 2012.

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**24. Duddu, R., L. L. Lavier, T. J. R. Hughes and V. M. Calo, A finite strain Eulerian formulation for compressible and nearly incompressible hyper-elasticity using high-order B-spline finite elements. International Journal for Numerical Methods in Engineering, 89(6):762-785,doi: 10.1002/nme.3262 , 2012

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22. Jammes, S., G. Manatschal, L. Lavier, Interaction between pre-rift salt and detachment faulting in hyper-extended rift systems: The example of the Parentis and Mauléon basins (Bay of Biscay-Western Pyrenees), AAPG Bulletin 94: 957-975, 2010.

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21. Cannat, M., Sauter, D. and J. Escartin, Lavier, L. L, Oceanic corrugated surfaces and the strength of the axial lithosphere at slow spreading ridges, Earth and Planetary Science Letters,Volume 288, Issues 1-2, 30, Pages 174-183, 2009.

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2008

***18. Choi, E; L. L. Lavier, and M. Gurnis,** Thermomechanics of Mid-Ocean Ridge Segmentation, Physics of the Earth and Planetary Sciences, v. 171, pp. 374-386, 2008.

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17. Hornbach, M.J., L. L. Lavier and C.D. Ruppel, Triggering Mechanism and Tsunamogenic Potential of the Cape Fear Slide Complex, U.S. Atlantic Margin, *Geochem. Geophys. Geosyst.*, 8 (12), Q12.

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19. Lavier, L. L. and G. Manatschal, A mechanism to thin the continental lithosphere at magma poor margins, Nature 440, pp.324-329, 2006.

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15. Buck, W. R., L. L. Lavier and A. N. B. Poliakov, Modes of Faulting at Mid-Ocean Ridges, Nature, v. 434, pp. 719-723, 2005.

2004

14. Gurnis, M., C. Hall and L. L. Lavier, Evolving force balance during incipient subduction, Gcubed, Geochemistry, Geophysics, Geosystems, 5, Q07001, doi:10.1029/2003GC000681, 31 pp., 2004.

2003

13. Hall, C. E., M. Gurnis, M. Sdrolias, L. L. Lavier, and R. D. Muller, Catastrophic initiation of subduction following forced convergence at transform boundaries, Earth Planet. Sci. Lett., 212, pp. 15-30, 2003.

12. Buck, W. R., L. L. Lavier, and A. A. Babeyko, Numerical model of lithospheric extension producing fault-bounded basins and ranges; International Geology Review, 45, 8, pp. 712-723, August, 2003.

2002

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10. Babeyko, A. Yu., S. V. Sobolev, R. B. Trumbull, O.Oncken and L. L. Lavier, Numerical models of crustal scale convection and partial melting beneath the Altiplano-Puna plateau, Earth Planet. Sci. Lett. 99, pp. 373-388, 2002.

2001

9. Buck, W. R. and L. L. Lavier, A Tale of Two Kinds of Normal Fault: The Importance of Strain Weakening in Fault Development, Non-volcanic rifting of continental margins: a comparison of evidence from land and sea, Geological Society Special Publications 187, pp. 340-355, 2001.

8. Lavier, L. L., M. S. Steckler and F. Brigaud, Climatic and Tectonic Control on the Cenozoic Evolution of the West African Margin, Marine Geology, 178, pp. 63-80, 2001.

2000

7. Lavier, L. L., W. R. Buck and A. B. N. Poliakov, Factors controlling normal fault offset in an ideal brittle layer, Journal of Geophysical Research 105, pp. 23,431-23,442, 2000.

6. Lavier, L. L., M.S. Steckler and F. Brigaud, An improved method for reconstruction of the stratigraphy and bathymetry of continental margins: Application to the Cenozoic tectonic and sedimentary history of the Congo margin, Amer. Assc. Petrol. Geol. 84, 7, pp. 923-939, 2000.

1999

5. Lavier, L. L., W. R. Buck and A. B. N. Poliakov, A self-consistent rolling-hinge model for the evolution of large-offset low-angle normal faults, Geology 27, pp. 1127-1130, 1999.

4. Lavier L. L., Modeling of Lithospheric Deformation: Application to the evolution of rifting and Passive Margins, Ph.D. Thesis, Columbia University, New York, 1999.

3. W. R. Buck, Lavier, L. L. and A. B. N. Poliakov, How to make a rift wide?, Philosophical transaction of the Royal Society 357, pp. 671-690, 1999.

1998

2. Steckler M. S., S. Feinstein, B. P. Khon, L. L. Lavier and M. Eyal, Pattern of mantle thinning from subsidence and heat flow measurements in the Gulf of Suez: Evidence for the rotation of Sinai and along-strike flow from the Red Sea, Tectonics 6, pp. 903-920, 1998.

1997

1. Lavier, L. L. and M. S. Steckler, The Effect of Sedimentary Cover on the Flexural Strength of Continental Lithosphere, Nature, vol. 389, pp. 476-479, 1997.

Professional Reports

9. Lavier, L. L., Subsidence and thermal evolution of hyperextended rifted margins, Petrobras, Rio de Janeiro, Brazil, 2015.

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Petrobras, Rio de Janeiro, Brazil, 2014.

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5. Lavier, L. L., The Subsidence History of Block H, Total SA, La defense, Paris, France, 2012.

4. Lavier, L. L., Modeling The Tectonic Subsidence and Thermal History at Magma Poor Margins: A Dynamical Approach, ExxonMobil Upstream Research Center, 2011.

3. Lavier, L. L., Modellierung der Evolution von Störungssystemen während Rifting-Prozessen, Zweijahrebericht 1998/1999, GeoForschungsZentrum Potsdam, p 296-299, 2001.

2. Lavier, L. L., M. S. Steckler & F. Brigaud, Thermo-Mechanical Evolution of the Congo-Angolan Margin: Parametrization of Flexural Rigidity of the Continental Margin from Rheologic Models, Internal report, Elf Exploration Production, Pau, France, 1997.

1. Lavier, L. L., F. Brigaud & M. S. Steckler, Tectonic and Thermal History of the West African Margin in Angola, Internal report, Elf Aquitaine Production, Pau, France, 1993.

Books

1. Lavier, L. L., and Bourantas G., Computational Tectonics, 2021. A Book describing the fundamentals of Geophysics, Geology and Computational Geosciences necessary to study the tectonic evolution of the Earth's Lithosphere. (Codes included), *in prep*.

SCHOLARLY PRESENTATIONS

Invited Lectures and keynote lectures at Universities, Companies, Workshops and Conferences. *(35-60 minutes each) + 1 tutorial with lectures*

2019 – September 19th, Deford Lecture, Department of Geological Sciences, University of Texas at Austin, Simulation of faulting and earthquakes in finite thickness fault zones in models of long term tectonic deformation.

- June 14th, Crustal Deformation Workshop, NSF Computational Infrastructure in Geodynamics, Simulation of earthquakes in finite thickness fault zones in models of long term tectonic deformation.
- March 28th, 30 years of PLATES, UTIG, Austin, TX, The Thermo-mechanical Evolution of Hyper-Extended Lithosphere.

- First place concours Professeur des Universités à Sorbonne Université, Paris, Modélisation de la déformation lithosphérique à plusieurs échelles de temps. April 18th.

2018 - SEAS (Sequences of Earthquakes and Aseismic Slip) SCEC workshop, Presentation: Benchmarking Earthquake Seimic Cycle Simulations in Models of Long Term Tectonic Deformation, at CalPoly in Pomona, CA November, 2018.

- NSF sponsored workshop, Modeling earthquake source processes: from tectonics to dynamic rupture, Presentation: Tectonics across length and time scales: Localizing versus delocalizing processes, CALTECH, October 2018.

-The Thermomechanical Evolution of Hyper-Extended Lithosphere: Inheritance, Depth-Dependent Thinning and Detachment Faults, NGU (Norges Geologiske Undersøkelse), Trondheim, Norway, April 2018.

- The Thermomechanical Evolution of Hyper-Extended Lithosphere: Inheritance, Depth-Dependent Thinning and Detachment Faults, Total S.A., Paris, France, April 2018.

- A Plastic Formulation of Rate and State Dependent Friction: Emergence of Slip Transients and Earthquakes, Department of Geological and Atmospheric Sciences, Iowa state University, Ames Iowa, March 2018.

2017 - Results of the NSF Geoprism Theoritical and Experimental Institute on Rift Initiation and Evolution, AGU New Orleans, December 2017.

- Coupling long-term modeling of lithospheric deformation with the seismic cycle, Earthquake research Institute, University of Tokyo, Japan, November 2017.

- Modeling the Rheological, Stratigraphic and Thermal Evolution of Magma-Poor Rifted Margin: The example of the South Atlantic margins. Total S.A. France

2016 -Transient slip events in the continental crust observations, experiments, models and application to normal faults seismicity. Seminar in Geodynamics, Lamont-Doherty Earth Observatory of Columbia University, October 2016.

- Deciphering the Rheological, Stratigraphic and Thermal Evolution of Magma-Poor Rifted Margin, Seminar ETH, Zurich, Zurich, Switzerland, April 2017.

- Possible transient creep events in a brittle-ductile continental crust: observations, experiments and potential models, EGU Vienna, Invited Talk, April 2016.

- Deciphering the Rheological, Stratigraphic and Thermal Evolution of Magma-Poor Rifted Margins: Coupling Thermo-Mechanical Models With Observations and Interpretations from Seismic Reflection Data, 22 March, RIFT III- Catching the Wave- The Geological Society, London.

- Crustal Reheating and Mantle Upwelling During Continental Break-Up Triggered By Lithospheric Instabilities, 22 March, RIFT III- Catching the Wave- The Geological Society, London.

2015 - Possible transient creep events in a brittle-ductile continental crust: observations, experiments and potential models, Seminar ETH, Zurich, Zurich, Switzerland, April 2015.

- Possible transient creep events in a brittle-ductile continental crust: observations,

experiments and potential models, University of Luxembourg, Luxembourg, April 2015.

2014 - The styles of deformation in hyperextended rifted margins (Seminar in the at Conoco-Phillips), November 19-21, 2014.

- The Nature of semibrittle deformation: Examples from the field, analogue and numerical experiments. (Seminar in the Tectonics group at the Institut de Physique du Globe de Paris), January 2014.

2013 - 2 days lectures (14 hours) on Computational Tectonics at Seoul National University, South Korea, August 11th to August 16th.

2013 - Tectonics of Taiwan: an International Conference (TITOC), Taipei, Taiwan, May 15th 2013, Numerical Models of Subduction to Arc-Continent Collision.

- Institut de Physique du Globe Paris (IPGP), Friday April 5th 2013. Structural evolution of arc-continent collisions: what can we learn from geology and numerical modeling?

- YOung Conjugate MArgin Laboratory (YOCMAL), French National Agency for Research (ANR), Biarritz, France, October 2012.

2012 - Department seminar at Southern Methodist University (SMU), Dallas, September 2012.

- Computational Infrastructure in Geodynamics (CIG, NSF), Mantle Convection and Lithospheric Dynamics Workshop, Davis, California, july 29, 2012 to August 02, 2012**,** University of California, Davis

2011 - South California Earthquake Center (SCEC) annual meeting, Palm Springs, September, SDOT Interdisciplinary Group - *What Is Needed To Make Progress On Understanding Stress Transfer From Plate Motion To Crustal Faults?*

- Petrobras, Rio de Janeiro, Brazil, November 2010, *Taking outcrop scale deformation processes into large-scale models of the thermal and mechanical evolution of rifts*.

- NSF Geoprism meeting November 2010, Santa Fe, NM, Keynote speaker, *A modeling perspective on rifting.*

- 35th Workshop of the International School of Geophysics Non-Steady-State Subduction: Changes in the Calabrian Arc and its Mediterranean Setting, Erice, Sicily, Italy, October 2010, Keynote speaker, *Roll-back stiff or soft?*

- NSF, CIG (Computational Infrastructure in Geodynamics), June 2010 Golden, CO, Crustal Deformation Modeling Workshop, Keynote speaker, *A model for ductile shear initiated by shear fracture: Application to short term and secular fault slip.*

- III Workshop de Riftes e Margens Continentais, Salvador, Brazil, January 2010, Invited speaker, *Progress and future challenges in understanding and modeling the processes controlling the evolution and the modeling of rifting*.

2009 - Caltech Seismo Lab Seminar April, 2009, Pasadena, CA, *Modeling of subduction*

to collision: The example of Taiwan.

- Yale University Seminar January, 2009, New Haven, CT, *A model for ductile shear initiated by shear fracture: Application to slow slip events.*

2008 - GeoMod 2008, Florence, Italy, Invited Lecture on *Continental Extension*.

- Seminar lecture on the Ocean-Continent Transition at the French National

2007 - Académie des Sciences, *Modeling the rheological evolution of rifting at the Ocean-Continent Transition*, September 2007, Paris, France.

2006 - Solid Earth Geophysics seminar at Princeton University, March 16th 2006.

- Department seminar at Texas A&M, October 2006.

- ISES summer school lecture, August 2006: *Numerical models of deformation: Implications of rheology*.

- Earth Science Revolution Workshop Lecture, Dr. Katherine Ellins and Dr. Hilary Olson, November 16th 2006, *How to Break a Continent*?

2005 - Department seminar at the University of Arizona, November 10th 2005.

- Department seminar at the University of South California, October 7th 2005.

- Department seminar at the IPGP Strasbourg, France, June 3rd 2005.

- Department seminar at Rice University, April 10th 2005.

Presentations: First-Authored Abstracts

Total: 15 presentations since 2005 (15-20 minutes each)

2019 Fall AGU 2019, San Francisco, T22B-03, *Effects of Mixing Brittle and Ductile Material on The Slip Behavior of Finite Thickness Fault Zone.*

2019 Spring EGU 2019, Vienna, EGU2019-18869, INVITED, *Modeling of Transient Slip Events in The Lithosphere Over Short and Secular Time Scales.*

2018 Spring EGU 2018, Vienna, EGU2018-10798, *A Plastic Formulation of Rate and State Dependent Friction: Emergence of Slip Transients and Earthquakes.*
Fall AGU 2018, Washington DC, T12B-03 *The Thermomechanical Evolution of Extended Lithosphere: Inheritance, Depth-Dependent Thinning and Detachment Faults.*

2017 Fall GSA 2017, Seattle, T234-116.1, INVITED, *Mechanical Constraints on Low Angle Normal Fault Strength: Long-Term and Secular Numerical Modeling.*

2016 Fall AGU 2016, San Francisco, T11E-06, *Mechanical Constraints on Normal Fault Strength and Evolution From Long-Term and Secular Numerical Modeling of Core Complexes.*

2016 Spring EGU 2016, Vienna, EGU 2016-17855 INVITED, *Possible transient creep events in a brittle-ductile continental crust: observations, experiments and potential models.*

2015 Spring EGU 2015, Vienna, EGU 2015-7864 INVITED, *The thermal and magmatic consequences of the transition from distributed stretching to localized thinning during rifting.*

2011 Fall AGU 2011, San Francisco, T15F INVITED, *Exhumation of Mantle-Derived Rocks at Divergent Plate Boundaries: Mechanisms and Consequences*.

2010 Fall AGU 2010, San Francisco, T51F INVITED, *A model for ductile shear initiated*

by shear fracture: Application to slow slip events.

2007 Fall AGU 2007, San Francisco, T14 INVITED, *Predictions From Numerical Models of Continental Extension Using Ductile Failure*.
Fall AGU 2007, San Francisco, T38 INVITED, *Numerical Models of Subduction to Collision in Taiwa*n.

2005 Fall AGU 2005, San Francisco, T52B-04 INVITED, *A Mechanism for Thinning the Continental Lithosphere at Magma-Poor Margins*.

Presentations with Published Abstracts
(Selected from American Geophysical Union: AGU and EGU From 2009 to 2021)

Shreedharan, S., K. Chung, L. Lavier, D. M. Saffer and L. Wallace, Effect of lithological heterogeneities on shallow slow slip events: An example from the northern Hikurangi margin, New Zealand, AGU Fall Meeting Abstracts, 2021.

Biemiller, J., A.-A. Gabriel, L. Wallace, S. M. Ellis, C. J. Boulton, L. Lavier, M. Mizera, T. A. Little, T. Ulrich and S. McKeever Webber, Characterizing the seismogenic potential of active faults in the Woodlark rift with integrated multi-timescale observations and models, AGU Fall Meeting Abstracts, 2021.

Biemiller, J., FW Taylor, L Lavier, TL Yu, L Wallace, CC Shen, SM Ellis, Unraveling the Slip Behavior and Evolution of the Mai'iu-Goodenough Detachment Fault System by Integrating Multi-timescale Datasets with Novel Coral Paleoseismological Evidence, AGU Fall Meeting Abstracts, 2020.

Bickert, M., M. Cannat, A. Tommasi, S. Jammes, L. Lavier, Strain localization processes at a magma-starved ridge: from micro-scale to macro-scale, EGU General Assembly Conference Abstracts, 2020.

Bickert, M., M. Cannat, A. Tommasi, S. Jammes, L. Lavier, Strain localization in abyssal peridotites from a magma-starved mid-ocean ridge: a microstructural study, EGU General Assembly Conference Abstracts, 2020.

Biemiller, J., L. Wallace, S. M. Ellis, T. A. Little, A. J. Haines, C. J. Boulton, M. Mizera, L. Lavier, Mixed-Mode Seismic Slip and Aseismic Creep on a Highly Active Low-Angle Normal Fault System in Papua New Guinea, AGU Fall Meeting Abstracts, 2019.

Lavier, L. L., X. Tong, J. Biemiller, Effects of Mixing Brittle and Ductile Material on The Slip Behavior of Finite Thickness Fault Zone, AGU Fall Meeting Abstracts, 2019.

Bickert, M., M. Cannat, S. Jammes, A. Tommasi, L. Lavier How do detachment faults root into the deep lithosphere at magma-starved mid-ocean ridges?, AGU Fall Meeting Abstracts, 2019.

Bickert, M., L.L. Lavier, M. Cannat, How to form detachment faults at melt-starved mid-ocean ridges in a thick axial lithosphere? AGU Fall Meeting Abstracts, 2019.

Montiel, N., L Lavier, NW Hayman, PJ Ball, Estimating Carbon Flux During Continental Rifting In The Mesozoic And Cenozoic, AGU Fall Meeting Abstracts, 2019.

Jammes, S., J Medina, J., AF Arnulf, A.F., L Lavier, L. L., Effect of contrasting strength from inherited crustal fabric on the development of the Northeastern Canadian margin, AGU Fall Meeting Abstracts, 2019.

Lavier, L. & Tong, X., A Plastic Formulation of Rate and State Dependent Friction: Emergence of Slip Transients and Earthquakes. EGU General Assembly Conference Abstracts, 2018.

Biemiller, J. et al., The influence of tectonic inheritance on crustal extension style following failed subduction of continental crust: applications to metamorphic core complexes in Papua New Guinea. AGU Fall Meeting Abstracts, 2017.

Kotowski, A.J. et al., Length Scales and Types of Heterogeneities Along the Deep Subduction Interface: Insights From an Exhumed Subduction Complex on Syros Island, Greece. AGU Fall Meeting Abstracts, 2017.

Linneman, D. et al., Modeling Thermal Transport and Surface Deformation on Europa using Realistic Rheologies. AGU Fall Meeting Abstracts, 2017.

Persaud, P. et al., A bottom-driven mechanism for distributed faulting: Insights from the Gulf of California Rift. AGU Fall Meeting Abstracts, 2017.

Tong, X. & Lavier, L., The Effect of Semi-Brittle Rheology on the Seismicity at the Subduction Interface: Coseismic and Aseismic Events. AGU Fall Meeting Abstracts, 2017.

Tagliaro, G. et al., Climate Variability and Siliciclastic Deposition on a Carbonate Margin-Neogene of the Northwest Shelf of Australia. AGU Fall Meeting Abstracts, 2017.

Ellins, K.K. et al., Geoscience Through the Lens of Art: a collaborative course of science and art for undergraduates of various disciplines. AGU Fall Meeting Abstracts, 2017.

Biemiller, J., Lavier, L.L. & Wallace, L., Earthquake Clustering on Normal Faults: Insight from Rate-and-State Friction Models. AGU Fall Meeting Abstracts, 2016.

Tong, X. & Lavier, L.L., Connecting the Seismic Cycle to the Long-Term Topographic Evolution at Convergent Margins. AGU Fall Meeting Abstracts, 2016.

Dalziel, I. et al., Translation and rotation of small crustal blocks in the southernmost Atlantic-Weddell Sea regionprior to seafloor spreading: in search of a mechanism. AGU Fall Meeting Abstracts, 2016.

Davis, J.K. & Lavier, L., Cold rocks make more melt: Numerical models of melt generation during continentalextension. AGU Fall Meeting Abstracts, 2016.

Lavier, L., Possible transient creep events in a brittle-ductile continental crust: observations, experiments and potential models., EGU General Assembly Conference Abstracts, 2016.

Lavier, L.L. et al., Mechanical Constraints on Normal Fault Strength and Evolution From Long-Term and Secular Numerical Modeling of Core Complexes. AGU Fall Meeting Abstracts, 2016.

Logan, L.C. et al., Calving Geometry of Thwaites Glacier Linked to Semi-brittle Ice Dynamics. AGU Fall Meeting Abstracts, 2016.

Tagliaro, G. et al., Middle-late Miocene siliciclastic influx on the Australian Northwest Shelf: origins and potential links to global events. AGU Fall Meeting Abstracts, 2016.

Taylor, F.W. et al., Coral Microatolls on the Western Solomons Forearc Reveal Multiple Cycles of Small Amounts of Vertical Elastic Strain Accumulation and Aseismic Release Culminating in Coseismic Rupture and a Large Uplift on 1 April 2007. AGU Fall Meeting Abstracts, 2016.

Bourantas, G. et al., Hybrid mesh/particle meshless method for modeling geological flows with discontinuous transport properties. EGU General Assembly Conference Abstracts, 2015.

Buck, W.R., Lavier, L.L. & Choi, E., Magma explains low estimates of lithospheric strength based on flexure of ocean island loads. EGU General Assembly Conference Abstracts, 2015.

Buck, W.R., Lavier, L.L. & Petersen, K.D., Extensional Failure of" Pre-Stressed" Lithosphere Above a Subduction Zone May Have Contributed to the Size of the Tohoku-Oki Earthquake and Tsunami. AGU Fall Meeting Abstracts, 2015.

Chenin, P., Lavier, L.L. & Manatschal, G., Impact of Mafic Underplating and Mantle Depletion on Subsequent Extension: a Numerical Modeling Approach. AGU Fall Meeting Abstracts, 2015.

Hayman, N.W., Svartman Dias, A.E. & Lavier, L., Stretching and thinning factors viewed through numerical models of continental extension and rifting. AGU Fall Meeting Abstracts, 2015.

Hopper, J.R., Voss, P.H. & Lavier, L.L., Asymmetric active seismicity along the ultra-slow spreading Gakkel Ridge. EGU General Assembly Conference Abstracts, 2015.

Lima, R.D. et al., Extension of the Mid-to Lower Crust with Orogenic Inheritance: Examples from the Death Valley Region (Western US), and the Mauleon Basin (Southwestern France). AGU Fall Meeting Abstracts, 2015.

Smye, A. et al., Tracing the thermal evolution of continental lithosphere through depth-dependent extension. AGU Fall Meeting Abstracts, 2015.

Chenin, P., Manatschal, G. & Lavier, L., Unravelling the impact of inheritance within the Wilson Cycle: a combined mapping and numerical modelling approach. EGU General Assembly Conference Abstracts, 2015.

Chenin, P., Manatschal, G. & Lavier, L., Unravelling the influence of orogenic inheritance on the architecture andtectonic evolution of hyper-extended rift systems. EGU General Assembly Conference Abstracts, 2014.

Chenin, P., Manatschal, G., Lavier, L.L., et al., Assessing the Influence of Orogenic Inheritance on the Architecture, Time Evolution and Magmatic Budget of Hyper-extended Rift Systems: a Combined Mapping and Numerical Modelling Approach. AGU Fall Meeting Abstracts, 2014.

Jammes, S., Lavier, L.L. & Reber, J.E., Delocalization of Deformation in a Polymineralic Material. AGU Fall Meeting Abstracts, 2014.

Taylor, F.W. et al., Vertical forearc tectonic displacements offer insights into underlying interplate thrust zone processes: 104-105 yr uplift/subsidence cycles in Southwest Pacific arcs may represent recoverable plastic deformation that is often falsely attributed to other causes. AGU Fall Meeting Abstracts, 2015.

Thirumalai, K. et al., Dispatches from the Trench: Insights into the Complex Relationship Between the Short-Term Elastic Earthquake Cycle and Longer-Term Permanent Tectonic Deformation from the Coral Record at Ranongga, Western Solomons. AGU Fall Meeting Abstracts, 2015.

Lavier, L., The thermal and magmatic consequences of the transition from distributed stretching to localized thinning during rifting. EGU General Assembly Conference Abstracts. 2015.

Manatschal, G., Lavier, L. & Chenin, P., The role of inheritance in structuring hyperextended rift systems. EGU General Assembly Conference Abstracts, 2015.

Tong, X., Lavier, L.L. & Tan, E., 2015. Coseismic topography deformation at Sumatra. AGU Fall Meeting Abstracts, 2015.

Wu, G. & Lavier, L.L., Extension of a double-wedged orogen potentially leads to the current South China Sea. AGU Fall Meeting Abstracts, 2015.

Logan, E. et al., DynEarthSol3D: numerical studies of basal crevasses and calving blocks. AGU Fall Meeting Abstracts, 2014.

McIntosh, K.D. et al., Is There Exhumed Continental Mantle in the Northeast South China Sea? AGU Fall Meeting Abstracts, 2014.

Reber, J.E. et al., Creep Events and Shear Localization in a Polyphase Material: Insight into the Brittle-Ductile Transition. AGU Fall Meeting Abstracts, 2014.

Svartman Dias, A.E., Lavier, L.L. & Hayman, N.W., Force Required to Breakup a Continent: Implications on Rifting Localization and Migration. AGU Fall Meeting Abstracts, 2014.

Taylor, F.W. et al., The Western Solomons Forearc: Independent Inner and Outer Forearc Paleo-Uplift Histories and Relationship to Megathrust Rupture. AGU Fall Meeting Abstracts, 2014.

Wu, G., Lavier, L.L. & Choi, E., Modes of continental extension in a lithospheric wedge. AGU Fall Meeting Abstracts, 2014.

Jammes, S., L .L. Lavier, J. E. Reber, Effect of polymineralic crustal composition on deformation processes, In AGU Fall Meeting Abstracts, 2013.

McIntosh, K .D., H.Kuochen, H. .J. Van Avendonk, LL Lavier, FT Wu, DA Okaya, Two-dimensional seismic velocity models of southern Taiwan from TAIGER transects, In AGU Fall Meeting Abstracts, 2013.

Tan, E., E. Choi, L. L. Lavier, V. M. Calo, DynEarthSol3D: An Efficient and Flexible Unstructured Finite Element Method to Study Long-Term Tectonic Deformation, In AGU Fall Meeting Abstracts, 2013.

Eakin, D. H., L. L. Lavier, K. D. McIntosh, H. J. Van Avendonk, Origins and evolution of the Gagua Ridge bathymetric feature: A Possible example of failed subduction competition with the Manila trench, In AGU Fall Meeting Abstracts, 2013.

Taylor, F. W., K. Thirumalai, L. L. Lavier, C. Frohlich, C. Shen, C. Wu, H. Sun, A. K. Papabatu, Coral Paleo-Uplift History Overlying a Very Shallow AD 2007 Megathrust Rupture of the Western Solomons Forearc: Deficit of Interseismic Subsidence Results in Net Long-Term Uplift, In AGU Fall Meeting Abstracts, 2013.

Wu, G., L. L. Lavier, Origin of metamorphic core complexes and detachment faults, In AGU Fall Meeting Abstracts, 2013.

N. W. Hayman, L. L. Lavier, Granular and semi-brittle descriptions of slip and creep, In AGU Fall Meeting Abstracts, 2013.

Svartman Dias, A, LL Lavier, NW Hayman, Rifted margins width and subsidence history: the effect of crustal thickness and lithospheric rheology, In AGU Fall Meeting Abstracts, 2013.

Van Avendonk, HJ, H Kuo-Chen, KD McIntosh, LL Lavier, FT Wu, DA Okaya, Seismic velocity structure of the Taiwan mountain belt along TAIGER transect T5, In AGU Fall Meeting Abstracts, 2013.

Wu, F. T., H. Kuochen.. K. D. McIntosh, Okaya D. A., Lavier L. L., A Comprehensive View Of Taiwan Orogeny From TAIGER Perspective, In AGU Fall Meeting Abstracts, 2012.

Van Avendonk H. J., McIntosh K. D., Lavier L. L., Wu F. T., Okaya D. A. and H. Kuochen, A lithospheric seismic profile across northern Taiwan, from arc-continental collision to extension, In AGU Fall Meeting Abstracts, 2012.

Choi E., Buck W R., Lavier L. L., Petersen K. D., Bounds on fault strength based on simulation of "rider block" structures emerging from brittle lithosphere extension, In AGU Fall Meeting Abstracts, 2012.

Taylor F. W., Lavier L. L., Bevis M. G.; Thirumalai K., Frohlich C. A., Relationships between plate convergence, the earthquake cycle, and long-term accumulation of net tectonic deformation at island arcs; not so simple as it seems, In AGU Fall Meeting Abstracts, 2012.

Taylor F. W, Thirumalai K., Shen C-C, Wu; C-C., Papabatu A., Lavier; L. L. Bevis M. G., Coral record of paleoseismic uplifts at Ranongga Island, Western Solomon Islands megathrust: Was the 2007 Mw 8.1 event smaller than usual? In AGU Fall Meeting Abstracts, 2012.

Lester R.; McIntosh K. D., Lavier L. L., Van Avendonk H. J., Rift Structure and Distribution of Magmatic Activity of the Southern Chinese Continental Margin Offshore Southern Taiwan from Reflection Imaging, Travel-time Tomography and 1D Thermal Modeling, In AGU Fall Meeting Abstracts, 2012.

Eakin D. H., McIntosh K. D., Van Avendonk H. J.; Lavier L. L., Milestones in arc-continent collision evolution: The transition from intra-oceanic subduction to incipient collision, In AGU Fall Meeting Abstracts, 2012.

Wu G., Lavier L. L., Choi E., Two styles of faulting associated with metamorphic core complexes: Importance of initial crustal configuration and mid-crustal flow, In AGU Fall Meeting Abstracts, 2012.

Kirk D. McIntosh; Harm J. Van Avendonk; Luc L. Lavier; Ryan Lester; Daniel H. Eakin; Francis T. Wu (Invited), Inversion of a hyper-extended rifted margin in the southern Central Range of Taiwan, In AGU Fall Meeting Abstracts, 2012.

Svartman Dias A. E., Lavier L. L.; Hayman N. W., Manatschal G., Pinto V. H., Subsidence and uplift history of hyperextended margins and a self-consistent mechanism of depth-dependent thinning of the lithosphere, In AGU Fall Meeting Abstracts, 2012.

Lavier, L. L., and O. Muntener. "Modeling Mantle Shear Zones, Melt Focusing and Stagnation-Are Non Volcanic Margins Really Magma Poor?." In AGU Fall Meeting Abstracts, 2011.

Okaya, D. A., H. Sato, L. L. Lavier, E. Tan, F. T. Wu, and N. Hirata. "The Pacific and Philippine Sea slabs in contact beneath Tokyo, central Japan: their roles in defining hazardous interaction earthquakes and in limiting the southern extent of Tohoku-oki aftershocks." In AGU Fall Meeting Abstracts, 2011.

Tan, E., L. Lavier, and H. van Avendonk. "Friction and stress coupling on the subduction interfaces." In AGU Fall Meeting Abstracts, 2011.

Fitz, G. G., P. Mann, and L. L. Lavier. "Regional tectonic context, timing, and intrusion mechanism of gneiss domes, eastern Papua New Guinea, from offshore seismic reflection and well data." In AGU Fall Meeting Abstracts, 2011.

Wu, F. T., H. Kuo-Chen, S. W. Roecker, L. Lavier, and Taiwan Taiger Teams. "TAIGER Results and Tectonics of Taiwan." In AGU Fall Meeting Abstracts, 2011.

Wu, F. T., H. Kuo-Chen, S. W. Roecker, L. Lavier, and Taiwan Taiger Teams. "TAIGER Results and Tectonics of Taiwan." In AGU Fall Meeting Abstracts2011.

Logan, L.; Catania, G.; Lavier, L. L., Observations and Modeling of Grounding Line Basal Crevasses: Connections between Surface Speed, Topography and Crevasse Morphology. In AGU Fall Meeting Abstracts, 2011.

Lester, W. R.; Lavier, L. L.; McIntosh, K. D., Active Extension in Taiwan's Pre-collision Zone: A New Model of Plate-Bending in Continental Crust. In AGU Fall Meeting Abstracts, 2011.

McIntosh, K. D., H. J. Van Avendonk, L. L. Lavier, W. R. Lester, and D. H. Eakin. "Tomographic Models of Southern Taiwan Demonstrate Likely Evolution of the Arc-Continent Collision." In AGU Fall Meeting Abstracts, 2011.

Logan, L., L. L. Lavier, and R. A. Bennett. Models of Slow Slip Events Using a Strain Wave Formulation in a Lithosphere Perturbed by Fluid Filled Shear Fractures. In AGU Fall Meeting Abstracts, 2010.

Lavier, L L ; Bennett, R A. A model for ductile shear initiated by shear fracture: Application to slow slip events and secular transients. (Invited). In AGU Fall Meeting Abstracts, 2010.

Taylor, F W ; Lavier, L L; Bevis, M G; Frohlich, C A ; Grand, S; Papabatu, A K. Subduction of very rugged seafloor topography imposes stronger interplate coupling and elevated mean stress levels at the Western Solomon Islands forearc. In AGU Fall Meeting Abstracts, 2010.

Logan, L; Lavier, L L ; Bennett, R A. Models of Slow Slip Events Using a Strain Wave Formulation in a Lithosphere Perturbed by Fluid Filled Shear Fractures. In AGU Fall Meeting Abstracts, 2010.

Lavier, L L ; Bennett, R A. A model for ductile shear initiated by shear fracture: Application to slow slip events and secular transients. (Invited). In AGU Fall Meeting Abstracts, 2010.

Wu, F T; Kuo-Chen, H; Lavier, L L; Unsworth, M J; Bertrand, E A. Toward A Tectonic Synthesis Of Taiwan With TAIGER Data. In AGU Fall Meeting Abstracts, 2009.

Kuo-Chen, H; Wu, F T; Roecker, S W; Lavier, L L. The transition zone from subduction to collision beneath the Taiwan orogen: joint inversion of explosion, local and teleseismic events from TAIGER experiment . In AGU Fall Meeting Abstracts, 2009.

Jammes, S; Manatschal, G; Lavier, L L. How is crust thinned in an oblique environment: the example of Bay of Biscay-Western Pyrenees? In AGU Fall Meeting Abstracts, 2009.

Logan, E S; Lavier, L L ; Wu, F T ; Okaya, D A ; McIntosh, K D; Kuo-Chen, H; Van Avendonk, H J. Numerical Models of Subduction to Arc-Continent Collision: The case of Taiwan. In AGU Fall Meeting Abstracts, 2009.

Downey, N J; Lavier, L L. Dynamic models of a Taiwan-like orogeny. In AGU Fall Meeting Abstracts, 2009.

Lavier, L L ; Bennett, R A. Slow Earthquakes Controlled by Semi-Brittle Instabilities. In AGU Fall Meeting Abstracts, 2009.

Trahan, C J ; Lavier, L L ; Bennett, R A. Models of Slow Slip Event Using a 3D Membrane Lithosphere Perturbed by Shear Fractures. In AGU Fall Meeting Abstracts, 2009.

Duddu, R; Calo, V M; Lavier, L L. An arbitrary Lagrangian-Eulerian formulation for modeling large strain deformations in accretionary wedges in three dimensions . In AGU Fall Meeting Abstracts, 2009.

RESEARCH GRANTS AND CONTRACTS (funded+pending)

27. NSF., Co P.I (20%): Lavier, 2021-2026, Collaborative Research: Toward an integrated modeling framework for physics-based estimates ofmegathrust rupture potential, **UT budget:** $1,866,458.

26. NASA., Co P.I (50%): Lavier, 2021-2023, A Spaceborne Observatory Spanning Highly Active Subduction Zones in the Solomon Islands and PapuaNew Guinea, **UT budget:** $197,635.

25. NASA., Main P.I: Lavier, 2021-2023, A new framework for decoding the structure and history of debris-covered glaciers on Mars, **UT budget:** $42,222.

24. Petrobras S.A., Main P.I: Lavier, 2021-2024, Dynamic Models of Rifted Margins in 2D and 3D: applications to South Atlantic Basin Analysis, **UT budget:** $818,409.

23. National Science Foundation EAR/Tectonics, Main P.I: Lavier, Workshop on coupling of tectonic and surface processes across spatio-temporal scales, 2017, **UT budget:** $95,152.

22. National Science Foundation-EAR/GeoPRISMs, Main P.I: Jammes, 2018-2020, Collaborative Research: Effect of Contrasting Structural and Compositional Inheritances on the Development of Rifting Margins, **UT budget:** $40,987.

21. NASA, Main P.I: Lavier, 2017-2018, How do low-angle normal faults slip? Insight from multi-timescale geophysical, geological, and geodynamic analyses of deformation of the Mai'iu Fault Zone, SE Papua New Guinea, **UT budget:** $30,000.

20. National Science Foundation (EAR/Geophysics, EAR-1524729), Main P.I: Becker, 2017-2020, Collaborative Research: Multi-scale models of subduction zone earthquake cycle observations, **UT budget:** $233,467.00

19. National Science Foundation (EAR/Tectonics, EAR-1547532), Main P.I: Reber, 2016-2019, Collaborative Research: Experimental analysis of strain transients in a heterogeneous semi-brittle system: Implications for tectonics, **UT budget:** $66,648

18. National Science Foundation (EAR/Tectonics, EAR-1524729), Lavier P.I.,P.I: L. Wallace, 2015-2018, Using the World's Fastest Slipping Normal Fault to Understand the Mechanics of Low-angle Normal Faults, **UT budget:** $592,018.

17. ExxonMobil Upstream Research Company (URC), Main P.I: Luc Lavier 2013-2016, Center for Excellence in Basin Analysis (CEIBA), **UT budget:** $300,000

16. National Science Foundation (EAR/Tectonics), Lavier co-P.I., Main P.I: Frederick Taylor (UTIG) 2011-2013, The earthquake cycle and its role in permanent vertical deformation in the Western Solomons arc from coral paleogeodesy of the past few centuries, **UT budget:** $420,198

15. King Abdullah University of Science and Technology (KAUST) Lavier main P.I., 2011-2014, in collaboration with Victor Calo (Assistant Professor at KAUST), Numerical Modeling of the Tectonic and Thermal Evolution of Continental Rifting, **UT budget:** $890,861.91

14. Petrobras, Brazil, 2011-2017, Lavier main P.I., co- PI: Nick Hayman Rift Research

Group at the University of Texas at Austin. **UT budget:** $960,000

13. National Science Foundation, EAR, Continental Dynamics Program, Lavier co-P.I., Main P.I.: Francis Wu, Binghamton University, co-P.Is at UT: Kirk McIntosh, Harm van Avendonk, co P.Is: David Okaya (University of Southern California) 2009-2011, Collaborative Research: Taiwan Integrated Geodynamics Research II. **UT budget:** $814,928

12. National Science Foundation, CDI-Type II, co-P.I., 2009-2013, Lavier co-investigator, Main P.I. at UT (Omar Ghattas), co P.Is at UT: Don Blankenship, Ginny Catania, Marc Hesse, Charles Jackson: Dynamics of Ice Sheets: Advanced Simulation Models, Large-Scale Data Inversion, and Quantification of Uncertainty in Sea Level Rise Projections. **UT budget:** $1,261,307

11. King Abdullah University of Science and Technology (KAUST), Lavier Main P.I., 2008-2009, in collaboration with Victor Calo (Assistant Professor at KAUST), Modeling and High-Performance Simulation of Earth Materials in Large Deformation. **UT budget:** $580,444

10. Exxon-Mobil, Upstream Research Center, 2009-2010, Lavier Main P.I., Modeling the Tectonic Subsidence and Thermal History at Magma-poor Margins: A Dynamical Approach. **UT budget:** $100,000

9 .Total exploration, France, 2009-2010, Main P.I., The effects of magma transfer and sedimentation on rifting. **UT budget:** $30,000.

8. National Science Foundation, EAR, Continental Dynamics Program, 2006-2010, Lavier co-P.I., Main P.I: Michael Steckler (Columbia University (LDEO)), co P.Is ,Columbia Univeristy (LDEO): Joerg Schaefer, Alberto Malinverno, Colin Stark, Nano Seeber, Berkeley Lab: R. C. Finkel, Univerty of Arizona, Stuart Thompson, Uplift and faulting at the transition from subduction to collision – a field and modeling study of the Calabrian Arc. **UT budget:** $400,000.

7. National Science Foundation, OCE, ODP Program, 2006-2009, Lavier co-P.I., Main PI at UT: Craig Fulthrop, Jamie Austin, The North West Shelf, Australia: The Next Step in a Global Approach to Understanding the Role of Eustasy in the Generation and Preservation of Stratigraphy. **UT budget:** $464,278.

6. National Science Foundation, EAR, Tectonics Program, 2005-2007, Lavier Main P.I., University of Arizona P.I.: Richard Bennett, Collaborative Research: Constraining Fault Displacement Histories and Lithospheric Dynamics using Geology and Geophysics. **UT budget:** $80,832.

5. National Science Foundation, EAR, Continental Dynamics Program, 2004-2008, Lavier co-P.I., Main P.I.: Francis Wu, Binghamton University, co-P.Is at UT: Kirk McIntosh, Harm van Avendonk, co P.Is: David Okaya (University of Southern California) , Nikolas Christensen (University of Wisconsin), Larry Brown (Cornell University), Steve Roecker (Rensselaer Polytechnic Institute), Martyn Unsworth (University of Alberta), Collaborative Research: Taiwan

Integrated Geodynamics Research. **UT budget:** $814,928.

4. Exxon Mobil Upstream Research Company, 2004-2007, Lavier main P.I., Rheological implications and thermal consequences of extremes extension in the ultra-deepwater continental margins of the south Atlantic basins. **UT budget:** $18,730.

3. Jackson School of Geosciences, 2005-2006, co-investigator, From Slab to Surface: Imaging Magma Rise and Storage beneath Active Volcanoes.

2. GXT company, Houston, 2005-2006, co-investigator, Ocean-bottom seismic refraction data offshore Nigeria or Angola.

1. National Science Foundation, EAR, Geophysics, 2000-2002, co-investigator, Faulting during rifting.

TEACHING

Courses Taught, UT Department of Geological Sciences (GEO) (4 credits each)

Spring 2022, GEO3665P, 383M, Potential Fields.
Fall 2021, GEO66M, 380J Mathematical Methods in Geophysics.
Spring 2021, GEO3665P, 383M, Potential Fields.
Fall 2020, GEO66M, 380J Mathematical Methods in Geophysics.
Spring 2020, GEO3665P, 383M, Potential Fields.
Fall 2019, GEO66M, 380J Mathematical Methods in Geophysics.
Spring 2019, GEO3665P, 383M, Potential Fields.
Fall 2018, GEO66M, 380J Mathematical Methods in Geophysics.
Fall 2017, GEO66M, 380J Mathematical Methods in Geophysics.
Spring 2016, GEO325J, 391 Introduction to Computational Geosciences/Matlab-Fortran Programming.
Fall 2016, GEO66M, 380J Mathematical Methods in Geophysics.
Spring 2015, GEO325J, 391 Introduction to Computational Geosciences/Matlab-Fortran Programming.
Fall 2015, GEO327 K Geoscience through the lens of art. (co-teaching with Katy Ellins)
Spring 2014, GEO325J, 391 Introduction to Computational Geosciences/Matlab-Fortran Programming.
Fall 2014, GEO327 K Geoscience through the lens of art.
Spring 2013, GEO325J, 391 Introduction to Computational Geosciences/Matlab-Fortran Programming.
Spring 2012, GEO325J, 391 Introduction to Computational Geosciences/Matlab-Fortran Programming.
Spring 2011, GEO325J, 391 Introduction to Computational Geosciences/Matlab-Fortran Programming.
Spring 2011, GEO354 Physics of the Earth.
Fall 2010 GEO 391 Continuum Mechanics (New Class).
Spring 2010, GEO325J Introduction to Computational Geosciences/Matlab-Fortran

Programming.
Spring 2010, GEO 354 Global Geophysics/Physics of the Earth.
Spring 2010 GEO 338T Marine Tectonics.
Spring 2009 GEO325J Introduction to Computational Geosciences/Matlab-Fortran Programming (New Class)
Fall 2008 GEO 391 Earth Dynamics.
Fall 2007 GEO 391 Earth Dynamics.
Fall 2006 GEO 391 Earth Dynamics (New Class).

Courses Taught outside of UT

2005, Faculty (August 5-12 2005 at Colorado College): A Summer School in Integrated Solid Earth Sciences (ISES) in Rheology of Earth Materials, teaching of Numerical models of deformation: Implications of rheology.

2000, GeoForschungsZentrum Potsdam, Fall semester, Lectures on modeling of lithospheric deformation and the formation shear zones during a short course for the Frei Universität Berlin (in English).

1997, Columbia University, Fall semester, Teaching Assistant for Planet Earth (undergraduate class) taught by Professor Roger Anderson.

1995, Columbia University, Individual tutoring of a summer intern for a research project: Reconstruction of the tectonic and sedimentary history of the Congo continental margin.

RESEARCH KEYWORDS

Geophysics, Tectonophysics, Geodynamics, Rheology, Physics of the Earth, Computational Geophysics, Lithospheric Dynamics, Rifting, Mountain Building, Subduction, Stratigraphy, Past climates, Passive margins, Fluids and Deformation, Localization of deformation, Continuum mechanics, Computational Mechanics, Plate tectonic, field geology.