Harriet C.P. Lau

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Positions	2019 – present	Assistant Professor Earth and Planetary Science, University of California, Berkeley, USA
	2017 – 2019	Junior Fellow Society of Fellows, Harvard University, USA
Education	2012 – 2017	Harvard University, USA Ph.D. in Earth and Planetary Sciences Thesis Advisor: Prof. Jerry X. Mitrovica
	2008 – 2012	Imperial College London, UK Master of Science in Geophysics (with First Class Honors) Thesis Advisors: Dr. Saskia Goes & Dr. Rhodri Davies
	2010 – 2011	Massachusetts Institute of Technology, USA Visiting student, Department of Earth Atmospheric & Planetary Sciences Academic Advisor: Prof. Daniel Rothman
Awards	2016	American Geophysical Union (AGU) *Study of the Deep Earth Interior Graduate Research Award*
	2016	Harvard Graduate School of Arts and Sciences *Merit Research Fellowship*
	2015	Geophysical Journal International's *Best Student Author Award* for "A normal mode treatment of semi-diurnal body tides on an aspherical, rotating and anelastic Earth"
	2015	Departmental *Shaler Teaching Award* for Introduction to Global Geophysics (Fall 2014)
	2013 – 2017	The Harvard Bok Center's *Certificate for Distinction in Teaching* (2013–2015, 2017)
	2013	The AGU *Outstanding Student Paper Award* for the oral presentation of "Constraining Deep Earth Structure Using Tidal Tomography"
	2012	Imperial College's *ESE Student Centenary Prize* for outstanding Masters Theses
	2008 – 2012	Imperial College's *Ash Music Scholarship* for piano studies at the Royal College of Music
Teaching	2021	Lecturer for "Geodynamics" (UC Berkeley)
	2019 – 2021	Lecturer for "The Planet Earth" (UC Berkeley)
	2020 – present	Founding member of *GeoContext*, an open source online resource for lecture material on the historical context of topics within Earth science.
	2013 – 2017	Teaching Fellow for undergraduate courses "Global Geophysics" and "A Brief History of Earth" (Harvard)
	2014	Volunteer Virtual Teaching: Remote lessons in natural disasters at Spring Hill Elementary School, Austin, TX
	2011 – 2012	Teaching Assistant for undergraduate course in Statistics/Computing (Imperial)
	2009 – 2010	Volunteer science teacher at elementary schools in disadvantaged areas in London (Pimlico Connection)

Memberships		
	2013 – present	European Geosciences Union
	2012 – present	American Geophysical Union
	2012 – present	Associate of the Royal School of Mines

Invited Conference Presentations

AGU (Dec 2021, session *Neither elastic nor harmonic: the Earth's transient behavior across time/length-scale*): tbd.

AGU (Dec 2021, session *A Multidisciplinary Understanding of the Lower-Mantle Evolution and Thermochemical Status*: tbd.

EGU (April 2021): "Frequency Dependent Mantle Viscoelasticity via the Complex Viscosity: cases from Antarctica and Western North America" (Abstract number: EGU21-1869)

AGU (Dec 2020): "Reconciling estimates of viscoelastic mantle structure using transient rheology–Glacial Isostatic Adjustment across North America and Antarctica" (Abstract number: T013-06)

AGU (Dec 2020): "How much and where? Exploring Excess Density within the LLSVPs by reconciling Stoneley Mode and Earth Tide Observations." (Abstract number: DI009-03)

Invited Talks/Seminars

Kiel University (virtual), Sept 2021, *4D Deep Dynamic Earth Science Meeting*

Univerität Bonn (virtual), Feb 2021, *Institut für Geodäsie und Geoinformation Seminar*

Australian National University (virtual), Feb 2021, *Earth Science Seminar*

University of Chicago (virtual), Jan 2021, *Departmental Seminar*

Stanford (virtual), Oct 2020, *Geophysics Seminar*

Caltech (Pasadena, CA), Mar 2020, *Caltech Seismo Lab Seminar*

UCLA (Los Angeles, CA), Jan 2020, *Earth, Planetary, and Space Science Colloquium*

UCSC (Santa Cruz, CA), Jan 2020, *Whole Earth Seminar*

SAGE/GAGE Workshop (Portland, OR), Oct 2019, *Plenary Speaker on Earth Rheology and Structure: New Approaches, Applications, and Implications for Dynamics*

European Geosciences Union Meeting (Vienna, Austria), April 2019, *Seminar on Mantle Structure and Evolution*

Yale University, February 2019, *Departmental Colloquium*

Johns Hopkins University, November 2018, *Bromery Lecture*

University of British Columbia, September 2018, *Departmental Colloquium*

Study of the Earth's Deep Interior Conference (Edmonton, Canada), July 2018, *Zatman Lecture*

University of Michigan, Mar 2018, *Smith Lecture*

McGill University, Feb 2018, *Earth and Planetary Sciences Department GEOTOP Lecture*

Massachussetts Institute of Technology, May 2017, *Special Seminar*

University of California Berkeley, March 2017, *Berkeley Earth and Planetary Science Departmental Seminar*

Brown University, February 2017, *Lunch Bunch Seminar*

Princeton University (Geosciences Department), October 2016, *Brown Bag Seminar*

Columbia University (LDEO), April 2016, *Marine Geology and Geophysics/Seismology, Geodesy and Tectonics Seminar*

Proposals Awarded

2019 – 2022	NSF1923865: "Constraints from Multiple Low Frequency Data on the Long Wavelength Density Structure in the Deep Mantle".

Service

2018, 2020	AGU Session Convener
2017, 2020	NSF Proposal Reviewer
2020 – present	Louderback Committee member (UC Berkeley)
2020 – present	Member of the Global Seismic Network Standing Committee (Incorporated Research Institutions for Seismology)
2019 – present	Member of IAG (International Association of Geodesy)'s Joint Study Group
2019 – present	Ramsden Committee member (UC Berkeley)
2019 – present	Member of the EPS department's Diversity, Equity, Inclusion and Accessibility Committee (UC Berkeley)

Publications

(22) 2021* **Lau, H.C.P.** "Glacial Size as a Trigger for the Mid-Pleistocene Transition", *in review at Nature Communications.*

(19) 2021* Richards, F., Hoggard, M., Ghelichkhan, S., Koelemeijer, P., and **Lau, H.C.P.** "Geodynamic, geodetic, and seismic constraints favour deflated and dense-cored LLVPs", *submitted to Nature Geoscience*

(21) 2021 Daher, H., ..., **Lau, H.C.P.**, et al. "Long-term Earth-Moon evolution with high-level orbit and ocean tide models", *Journal of Geophysical Research: Planets*, doi: 10.1029/2021JE006875

(18) 2021 Robson, A., **Lau, H.C.P.**, Koelemeijer, P.K., and Romanowicz, B. "Determining LLSVP density: reconciling Stoneley Modes and Earth tides", *Geophysical Journal International*, ggab448, doi: 10.1093/gji/ggab448

(17) 2021 **Lau, H.C.P.**, Austermann, J., Holtzman, B.K., Book, C., Havlin, C., Hopper, E., and Lloyd, A. "Frequency Depdendent Mantle Viscoelasticity via the Complex Viscosity: Cases From Antarctica", *Journal of Geophysical Research: Solid Earth*, 126, e2021JB022622, doi: 10.1029/2021JB022622.

(16) 2021 **Lau, H.C.P.**, and Al-Attar, D. "Sensitivity kernels for body tides on laterally heterogeneous planets based on adjoint methods", *Geophysical Journal International*, ggab254.

(15) 2021 **Lau, H.C.P.**, and Romanowicz, B. "Constraining Jumps in Density and Elastic Properties at the 660 km discontinuity Using Normal Mode Data via the Backus-Gilbert Method", *Geophysical Research Letters*, 48(9), e2020GL092217.

(14) 2020 **Lau, H.C.P.**, Holtzman, B.K., and Havlin, C. "Towards a Self-consistent Characterization of Lithospheric Plates Using Full-spectrum Viscoelasticity", *AGU Advances*, 4(1): e2020AV000205.

(13) 2020 Austermann, J., Chen, C.Y., **Lau, H.C.P.**, Maloof, A.C., and Latychev, K. " Constraints on mantle viscosity and Laurentide ice sheet evolution from pluvial paleolake shorelines in the western United States", *Earth and Planetary Science Letters*, 532: 116006.

(12) 2019 **Lau, H.C.P.** and Holtzman, B.K. " 'Measures of dissipation in viscoelastic media' extended: Towards continuous characterization across very broad geophysical time scales", *Geophysical Research Letters*, 46(16): 9544-9553.

(11) 2019 **Lau, H.C.P.** and Faul, U. "Anelasticity from Seismic to Tidal Timescales: Theory and Observations", *Earth and Planetary Science Letters*, 508: 18-29.

(10) 2018 **Lau, H.C.P.**, Austermann, J., Mitrovica, J.X., Crawford, O., Al-Attar, D., and Latychev, K. "Inferences of Mantle Viscosity based on Ice Age Datasets: The Bias in Radial Viscosity Profiles due to the Neglect of Laterally Heterogeneous Viscosity Structure", *Journal of Geophysics: Solid Earth*, 123: 7237-7252

(9) 2018 Crawford, O., Al-Attar, D., Tromp, J., Mitrovica J.X., Austermann, J., and **Lau, H.C.P.** "Quantifying the sensitivity of post-glacial sea level change to laterally varying viscosity", *Geophysical Journal International*, 214(2): 1324-1363.

(8) 2017 **Lau, H.C.P.**, Davis, J.L., Mitrovica J.X., Tromp, J., Al-Attar, D., Latychev, K., and Yang, H.-Y. "Using Tidal Tomography to Constrain Deep Mantle Buoyancy", *Nature*, 551:321-326.

(7) 2017 Wilmes, S.-B., Mattias Green, J.A., Gomez, N., Rippeth, T.P., and **Lau, H.C.P.** "Global tidal impacts of large-scale ice-sheet collapses", *Journal of Geophysical Research: Oceans*, 122.

(6) 2017 **Lau, H.C.P.**, Faul, U., Mitrovica, J.X., Al-Attar, D., Tromp, J., and Garapic, G. "Anelasticity across Seismic and Tidal Timescales: a Self-Consistent Approach", *Geophysical Journal International*, 208(1): 368-384.

(5) 2016 Hay, C.C., **Lau, H.C.P.**, Gomez, N., Austermann, J., Powell, E., Mitrovica, J.X., Latychev, K., and Wiens, D. "Sea-level fingerprints in a region of complex Earth structure: The case of WAIS", *Journal of Climate*, 30(6): 1881-1892.

(4) 2016 **Lau, H.C.P.**, Mitrovica, J.X., Austermann, J., Crawford, O., Al-Attar, D., and Latychev, K. "Inferences of Mantle Viscosity Based on Ice Age Datasets: I. Radial Structure", *Journal of Geophysical Research: Solid Earth*, 121: 6991-7012.

(3) 2016 Goldberg, S., **Lau, H.C.P.**, Mitrovica, J.X., and Latychev, K. "The Timing of the Black Sea Flood Event: Insights from Modeling of Glacial Isostatic Adjustment", *Earth and Planetary Science Letters* 452: 178-184.

(2) 2015 **Lau, H.C.P.**, Yang, H.-Y., Tromp, J., Mitrovica, J.X., Latychev, K., and Al-Attar, D., "A normal mode treatment of semi-diurnal body tides on an aspherical, rotating and anelastic Earth", *Geophysical Journal International* 202(2): 1392-1406.

(1) 2015 Davies, D.R., Goes S., **Lau, H.C.P.** "Thermally Dominated Deep Mantle LLSVPs: A Review" in "The Earth's Heterogeneous Mantle: A Geophysical, Geodynamical, and Geochemical Perspective". Khan, A., Deschamps, F. (Eds). Springer International Publishing.

* *yet to be published*