Nathaniel J. Lindsey

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Education

Ph.D. in Earth and Planetary Sciences 2015 – 2019
University of California, Berkeley
National Science Foundation Graduate Research Fellow
Dissertation: "Fiber-optic Seismology in Theory and Practice"
Advised by Douglas Dreger, Michael Manga, Jonathan Ajo-Franklin (LBNL/Rice University)

M.Sc. in Geophysics 2012
University of Edinburgh, Scotland
US-UK Fulbright Scholar
Dissertation: "Ethiopian geothermal resources inferred from magnetotellurics & ambient noise"
Advised by Kathy Whaler, Andrew Curtis

B.S. in Alternative Energy & Sustainable Engineering (Interdepartmental) 2011
University of Rochester
Distinction; Minors: Environmental Geology; Optics
Advised by Cynthia Ebinger

Employment

Senior Research Associate 2012 – 2015
Lawrence Berkeley National Laboratory
3-D magnetotelluric inverse problems (5 publications); California induced seismicity impact assessment
Advised by Gregory Newman

Awards

George Thompson Postdoctoral Fellowship, Stanford University 2020 – 2022
Outstanding Student Presentation Award, AGU Fall Meeting 2019
Graduate Research Fellowship, National Science Foundation 2015 – 2018
Computational Science Graduate Fellowship (Honorable Mention), Department of Energy 2015
SPOT Award, Lawrence Berkeley National Lab 2015
Best Geophysics Presentation Award, Geothermal Resources Council 2014
Best Poster Award, Univ. of Edinburgh Graduate Conference 2012
Fulbright Scholarship, US-UK Fulbright Commission 2011 – 2012
Dean's Prize for Undergraduate Research, Univ. of Rochester 2011
Take Five Scholarship to study English Literature, Univ. of Rochester 2010 – 2011
Outstanding Commitment to Action Award, Clinton Global Initiative Univ. 2009

Journal Articles

[16] Lindsey, N., Rademacher, H., Ajo-Franklin, J.B. "On the broadband instrument response of fiber-optic DAS arrays". *Journal of Geophysical Research-Solid Earth*, accepted (preprint available upon request).

[15] Rodríguez Tribaldos, V., Ajo-Franklin, J.B., Dou, S., Lindsey, N., Monga, I., Tracy, C., Robertson, M., Ulrich, C., Freifeld, B., Daley, T., Li, X.S. (2019). "Surface wave imaging using Distributed Acoustic Sensing deployed on Dark Fiber: Moving beyond high frequency noise." *AGU Monograph on Distributed Acoustic Sensing,* accepted (preprint available: https://eartharxiv.org/jb2na/).

[14] Martin, E., Lindsey, N., Ajo-Franklin., J., Biondi, B., (2019). "Introduction to Interferometry of Fiber Optic Strain Measurements". *AGU Monograph on Distributed Acoustic Sensing,* accepted (preprint available: https://eartharxiv.org/s2tjd/).

[13] Lindsey, N., T. Craig Dawe, and Jonathan B. Ajo-Franklin. "Illuminating seafloor faults and ocean dynamics with dark fiber distributed acoustic sensing." *Science* 366.6469 (2019): 1103-1107.

[12] Yu, C., Zhan, Z., Lindsey, N., AJo-Franklin, J., Robertson, M., (2019). "The potential of distributed acoustic sensing (DAS) in teleseismic studies: insights from the Goldstone experiment." *Geophysical Research Lettters*, 46 (3), 1320-1328.

[11] Gaherty, J. B., Zheng, W., Shillington, D. J., Pritchard, M. E., Henderson, S. T., Chindandali, P. R. N., Mdala, H., Shuler, A., Lindsey, N., Oliva, S.J., Nooner, S., Scholz, C. A., Schaff, D. (2019). "Faulting processes during early-stage rifting: seismic and geodetic analysis of the 2009-2010 Northern Malawi earthquake sequence" *Geophysical Journal International*, 217.3 (2019): 1767-1782.

[10] Ajo-Franklin, J.B., Dou, S., **Lindsey, N**., Monga, I., Tracy, C., Robertson, M., Rodríguez Tribaldos, V., Ulrich, C., Freifeld, B., Daley, T., Li, X.S. (2018). "Distributed Acoustic Sensing Using Dark Fiber for Near-Surface Characterization and Broadband Seismic Event Detection." *Nature-Scientific Reports* 9.1 (2019): 1328.

[9] Wagner, A.M., **Lindsey, N.**, Dou, S., Gelvin, A., Saari, S., Williams, C., Ekblaw, I., Ulrich, C., Borglin, S., Morales, A. and Ajo-Franklin, J., 2018. Permafrost Degradation and Subsidence Observations during a Controlled Warming Experiment. *Nature-Scientific reports*, *8*(1), p.10908.

[8] **Lindsey, N.**, Martin, E.R., Dreger, D.S., Freifeld, B., Cole, S., James, S.R., Biondi, B.L. and Ajo-Franklin, J.B., 2017. Fiber-Optic Network Observations of Earthquake Wavefields. *Geophysical Research Letters*, *44*(23), pp.11-792.

[7] Dobson, P., Gasperikova, E., Spycher, N., **Lindsey, N.**, Guo, T., Chen, .W., Liu, C., Wang, C., Chen, S., and Fowler, A., (2018). "Conceptual model of the Tatun geothermal system, Taiwan." *Geothermics,* (74) 273-297.

[6] Dou, S., **Lindsey, N.**, Wagner, A.M., Daley, T.M., Freifeld, B., Robertson, M., Peterson, J., Ulrich, C., Martin, E.R. and Ajo-Franklin, J.B., (2017). "Distributed Acoustic Sensing for Seismic Monitoring of The Near Surface: A Traffic-Noise Interferometry Case Study." *Nature-Scientific Reports* 7 (1), 11620.

[5] **Lindsey, N.**, Kaven, J.O., Davatzes, N. and Newman, G.A., (2017). "Compart-mentalization of the Coso East Flank geothermal field imaged by 3-D full-tensor MT inversion." *Geophysical Journal International*, 208(2) p. 652–662.

[4] Gasperikova, E., Rosenkjaer, G. K., Newman, G. A., Arnason, K., and **Lindsey, N.** (2015). "3D MT inversion of Krafla and Hengill geothermal fields, Iceland (part 2): Resistivity characterization and interpretation." *Geothermics,* (57) 258-274.

[3] Rosenkjaer, G. K., Gasperikova, E., Newman, G. A., Arnason, K., and **Lindsey, N.** (2015). 3D MT inversion of Krafla and Hengill geothermal fields, Iceland (part 1): Comparison of inverse modeling techniques. *Geothermics,* (57) 258-274.

[2] Foxall, B., **Lindsey, N.**, Bachmann, C. (2015). "An Independent Review of Scientific and Technical Information on Advanced Well Stimulation Technologies in California, Volume II, Chapter 4: Potential Induced Seismicity Impacts." *Report to California Commission on Science and Technology as authorized by the California State Senate 2014, Bill 4.*

[1] **Lindsey, N.** and G. Newman (2015). "Improved Workflow for 3D Inverse Modeling of Magnetotelluric Data: Examples from Five Geothermal Systems." *Geothermics*, (53) 527-532.

Invited Talks

AGU Fall Meeting 2019, Seismology Session—Rotation & Strain in Seismology	10 Dec 2019
AGU Fall Meeting 2019, Oceanography Session—Advances in Seafloor Instrumentation	09 Dec 2019
SAGE/GAGE Workshop (IRIS/UNAVCO), New & Exotic Approaches (plenary session)	10 Oct 2019
SCEC Annual Meeting (plenary session)	10 Sep 2019
SSA Capitol Hill Briefing (Washington, D.C.), Breakfast Seminar	17 Jun 2019
Nat'l Academy of Sciences, Meeting of the Committee on Seismology & Geodynamics	09 May 2019
Bay Area Geophysical Society, Monthly Seminar	15 Apr 2019
UC Santa Cruz, Earth and Planetary Sciences Department Seminar	05 Mar 2019
Stanford University, Geophysics Department Seminar	21 Feb 2019
AGU Fall Meeting 2018, Near Surface Session—Cryospheric Geophysics	13 Dec 2018
Virginia Tech, Geophysics Department Seminar	09 Dec 2018
Monterey Bay Aquatic Research Institute, Seminar Series Lecture	04 Oct 2018
ETH Zurich (Switzerland), Geophysics Department Seminar	18 Jun 2018

Teaching Experience

Course Instructor and Course Developer

- Geophysics Field School, Ilia State University (Rep. of Georgia) Sep 2014
- Geothermal Energy, Ilia State University (Rep. of Georgia) Mar 2014

- Geothermal Energy, Kenya Geothermal Dev. Company — May 2013

Teaching Assistant / Graduate Student Instructor / Demonstrator

- Strong Motion Seismology, UC Berkeley, Instructor: D. Dreger — Spring 2019
- The Planet Earth, UC Berkeley, Instructor: M. Manga — Fall 2018
- Plate Tectonics, U. Edinburgh, Instructor: I. Main — Spring 2012
- Natural Hazards, U. Edinburgh, Instructor: T. Thordasson — Fall 2011
- Applied Geophysics, U. Rochester, Instructor: C. Ebinger — Fall 2010
- Introduction to Geosciences, U. Rochester, Instructor: C. Garzione — Fall 2010

Significant Fieldwork Experience

Fieldwork Lead

- Azerbaijan HotMud Seismic Campaign, Baku, Azerbaijan — Sep 2019
- MBARI/LBNL Submarine DAS II, Moss Landing, CA — Jul 2019
- MBARI/LBNL Submarine DAS Pilot Experiment, Moss Landing, CA — Mar 2018
- LBNL- CalTech/JPL Goldstone DAS Experiment, Fort Irwin, CA — Feb 2018
- LBNL Dark Fiber DAS Experiment, West Sacramento, CA — Jul 2017 – Feb 2018
- Permafrost Warming Experiment (Phase II), Fairbanks, AK — May – Oct 2016
- Cold Housing Foundation Temperature Monitoring, Fairbanks, AK — Jan 2016
- Permafrost Warming Experiment (Phase I), Fairbanks, AK — June – Aug 2015
- Richmond Field Station DAS Pilot Experiment, Richmond, CA — Dec – Feb 2015
- Northern California Seismic Noise Experiment, Geysers, CA — Aug – Dec 2012

Participant

- Yellowstone Nat'l Park I (GPR lead) — Oct 2016
- Yellowstone Nat'l Park II (GPR lead) — Apr 2017
- Raft River EGS Magnetotelluric Experiment, Raft River, ID — Fall 2014
- Galapagos SEGMENT Seismic Campaign — Jan 2011
- Summer of Applied Geophysical Experience, Santa Fe, NM — Summer 2010

Society Affiliations

American Geophys. Union (2010 –); Seismological Soc. of America (2015 –); Soc. of Exploration Geophyss. (2014 –); Permafrost Young Researchers Network (2015 –); Bay Area Geophys. Soc. (2016 –)

Service Activity

Steering Committee Member (Proposal Phase), DAS Research Coordinating Network — 2019 –
Chaired session on "Photonic and Non-Inertial Seismology", SSA Annual Meeting 2019 — 24 Apr 2019
Chaired session on "In Situ Permafrost Sensing & Monitoring", EUCOP (France) — 25 Jun 2018
Geosciences Congressional Visits Day (SSA student representative) — 12-13 Sep 2017
Earthquake Alarm Response Duty for Northern California (On-call responder), BSL — 2017 – 2019

Successful Grant Proposals

Stanford Geophysics Department, Thompson Postdoctoral Fellowship, $130K+$10K Research — 2019
National Science Foundation, Graduate Research Fellowship, $132K — 2015
USAID, "Development of East African geothermal energy curriculum", $50K — 2014
US-UK Fulbright Commission, Fulbright Scholarship, £30K — 2011
Clinton Global Initiative U., "Ugandan school energy system", $5Kfor equipment — 2009