

Matthew Lees

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Email: mlees@stanford.edu Nationality: British

EDUCATION

- 2018-Present **Stanford University, California**
PhD Candidate – Geophysics
Dissertation title: “Exploring Hydrologic Controls on Surface Deformation: An InSAR Transect from California’s San Joaquin Valley to the Sierra Nevada”
- 2013-17 **University of Cambridge, England. Girton College.**
2016-17 **MSci Natural Sciences (Earth Sciences specialisation)**
Included geophysics research project modelling dynamic topography; modules in climate, geophysics, atmospheric chemistry and renewable energy. Project ranked top of cohort.
- 2013-16 **BA Natural Sciences**

PROFESSIONAL EXPERIENCE

- 2018-Present **Professional Activities During PhD (Stanford University)**
Stanford Earth DEI Advisory Council Member (2021-present)
School of Earth Peer Wellness Liaison (2020-present)
Student representative on American Geophysical Union Hydrology Remote Sensing Technical Committee (2021-2022)
Department of Geophysics Seminar Coordinator for 4 invited student seminars (2019-20)
Teaching Assistant for “The Water Course” under Prof. Rosemary Knight (2020, 2022)
Field assistant, Cambridge-Moquegua Institute of Environmental Physics (C-MIEP), Peru for a 2-week research visit with presentations to local partners (2019)
- 2018 **Geophysics Research Assistant, Department of Earth Sciences, University of Cambridge** (4 months)
Performing numerical simulations of convection in order to investigate the mantle’s circulation.
Geologist, Cambridge-Moquegua Institute of Environmental Physics (C-MIEP), Peru (2 weeks)
Field expedition making basic geological observations to lay groundwork for hydrogeological investigations.
- 2017 **Hydrogeologist Internship, ICIMOD, Kathmandu** (2.5 months)

Worked within the Water and Air theme at ICIMOD, implementing and reviewing spring revival experiments. Major tasks were improving data collection protocol, drafting an impact assessment on a past experiment and performing a literature review into methods of geochemical analysis.

Summer Project, British Antarctic Survey (4 weeks)

Joined the ice flow modelling group for 4 weeks, running a Matlab code simulating formation and stability of ice tongues.

2016

Friends of the Sedgwick Museum Student Prizewinners Internship (4 weeks)

2015

Summer Project, Department of Applied Maths and Theoretical Physics, University of Cambridge (2 weeks)

2014

Condor Gold, Nicaragua: general geologic work experience including leading a soil sampling programme (1 month)

Experienced various activities in the mining camp including hydrological monitoring. Main task was to lead a team of local workers in taking 301 soil samples.

PRIZES AND FELLOWSHIPS

2022

Best Poster Award at Stanford School of Earth, Energy and Environmental Sciences Research Review.

Nominee for *Stanford Earth Excellence in DEI award*

(<https://earth.stanford.edu/dei/awards>)

Centennial Teaching Assistant Award for service in providing excellent classroom instruction in Stanford Dept of Geophysics

(<https://ctl.stanford.edu/centennial-teaching-assistant-awards>)

2021

Outstanding Student Presentation Award for presentation at AGU Fall Meeting 2020.

2018-2021

Stanford Graduate Fellowship (SGF) recipient

2017

Therese Montefiore Prize for outstanding academic achievement and contribution to Girton College life.

British Geophysical Association Prize for undergraduate geophysics project.

2015-17

Henry Tomkinson Scholarship for Physical Sciences

Ide Freund Prize for Physical Sciences.

PUBLICATIONS

Lees, M., Knight, R., Smith, R. (2022). Development and Application of a 1D Compaction Model to Understand 65 Years of Subsidence in the San Joaquin Valley. *Water Resources Research*. e2021WR031390. <https://doi.org/10.1029/2021WR031390>

Lees, M., Rudge, J. F., & McKenzie, D. (2020). Gravity, topography, and melt generation rates from simple 3-D models of mantle convection. *Geochemistry, Geophysics, Geosystems*, 21, e2019GC008809. <https://doi.org/10.1029/2019GC008809>

CONFERENCE ABSTRACTS

Lees, M., Knight, R., Smith, R. (2021): Land Subsidence in California's San Joaquin Valley Set to Continue for Decades. American Geophysical Union Fall Meeting, December 13-17, 2021, abstract #NS41A-03.

Lees, M., Knight, R., Smith, R. (2021): Linking Subsidence to Changes in Stored Water in California's San Joaquin Valley. Association of Environmental & Engineering Geologists 65th Annual Meeting, September 20-26 2021.

Lees, M. and Knight, R. (2021): Understanding Land Subsidence: Insights from a Hydromechanical Model of Head-Driven Compaction and Expansion within a Multi-Layer Aquifer System. GRA Annual Groundwater Congress 2021, September 13-15, 2021.

Lees, M., Knight, R. J., Smith, R. (2020). Understanding the Link Between Changing Head Levels and Land Subsidence: A Field Experiment in California's San Joaquin Valley. American Geophysical Union Fall Meeting, December 1-17, 2020, abstract #674984.

Knight, R. J., Smith, R., **Lees, M.**, Lauknes, T., Goebel, M., Abraham, J. D., Asch, T., Cannia, J. (2019). Advancing the Use of InSAR Data through Integration with Geophysical Data. American Geophysical Union Fall Meeting, December 9-13, 2019, abstract #624725a.

Rudge, J.F., McKenzie, D.P., **Lees, M.** (2019). Surface expressions of spoke pattern convection in the Earth's mantle. American Geophysical Union Fall Meeting, December 9-13, 2019, abstract #496155.

Lauknes, T.R., **Lees, M.**, Knight, R.J. (2019). The Use of Ground Motion Data from InSAR to Explore and Manage the Groundwater Systems in California's Central Valley. GRA Annual Groundwater Congress, September 17-19.
<https://www.grac.org/media/files/files/8e6c3174/17-2-1-c-tom-lauknes.pdf>

CONFERENCE SESSIONS

Convener for "NS35C - Near-Surface Geophysics General Contributions I Poster". American Geophysical Union Fall Meeting, December 13-17, 2021.

SELECTED MEDIA APPEARANCES

ABC7 NEWS. *June 2022*. "Stanford study measures solution for sinking California, finds it may take more to reverse damage". <https://abc7news.com/sinking-california-stanford-study-ca-water-levels-subsidence/11923675/>

LA Times. *June 2022*. "Will California's Central Valley Stop Sinking". <https://www.latimes.com/california/story/2022-06-04/will-californias-central-valley-stop-sinking>

San Joaquin Valley Water. *June 2022*. "Stanford study: Shutting down pumps alone won't halt San Joaquin Valley sinking". <https://sjvwater.org/stanford-study-shutting-down-pumps-alone-wont-halt-san-joaquin-valley-sinking/>

SKILLS

Scientific Computing	Python, Matlab, BASH, LaTeX, qGIS, GMT.
Operating Systems	Windows, Linux, Mac.
Image Editing	Inkscape, GIMP.
Fieldwork	Over 17 weeks geological field experience
Leadership	Teaching Liaison Committee Representative 2016-17; BlueBird News Editor 2016-17; Captain of Cambridge University Squash Rackets Club (CUSRC) 2015-16.