Yuan-Kai Liu
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Education

2019 –	Ph.D. candidate, Geophysics, California Institute of Technology (minor in Computational Science and Engineering)
2016 – 2018	M.S., Earth Science & Engineering, King Abdullah University of Science and Technology, Saudi Arabia Thesis: Ground deformation related to caldera collapse and ring-fault activity Advisor: Sigurjón Jónsson
2010 – 2015	B.S., Geosciences, Civil Engineering, National Taiwan University, Taiwan

Research Interests

Deformation in seismic cycles, geodetic observations of tectonic/volcanic systems, interferometric synthetic aperture radar, time-series analysis, inverse theory, repeating earthquakes, earthquake statistics

Academic Positions

2019 –	Graduate Research, Caltech Seismological Laboratory, Caltech
2016 – 2018	Graduate Research, Crustal Deformation and InSAR Group, KAUST
2014 – 2015	Research Assistant, Institute of Earth Sciences, Academia Sinica
2014	Visiting Research, Department of Earth Sciences, Tohoku University
2013	Project Intern, Carbon Capture and Storage Project, Taiwan Power Company
2012	Project Intern, Institute of Earth Sciences, Academia Sinica

Publications and Presentations

† equal contribution, * corresponding author

[5] **Liu, Y.-K.***, Yunjun, Z., Simons, M. (in prep). On inferring plate rotations from InSAR decadal velocities. *To be submitted to Geophysical Research Letters*.

[4] Stephenson, O. L.†, **Liu, Y.-K.**†*, Yunjun, Z., Simons, M., Rosen, P., & Xu, X. (2022). The impact of plate motions on long-wavelength InSAR-derived velocity fields. *Geophysical Research Letters*, 49, e2022GL099835. https://doi.org/10.1029/2022GL099835

[3] **Liu, Y.-K.***, Ross, Z. E., Cochran, E. S., & Lapusta, N. (2022). A unified perspective of seismicity and fault coupling along the San Andreas Fault. *Sci. Adv.**8**, eabk1167(2022).* *https://doi.org/10.1126/sciadv.abk1167*

[2] Aldaajani, T., Simons, M., Yunjun, Z., Bekaert, D., Almalki, K.A., **Liu, Y.-K**. Using InSAR Time Series to Monitor Surface Fractures and Fissures in the Al-Yutamah Valley, Western Arabia. *Remote Sens.* **2022**, *14*, 1769. https://doi.org/10.3390/rs14081769

[1] **Liu, Y.-K.**, Ruch, J., Vasyura-Bathke, H., & Jónsson, S. (2019). Influence of ring faulting in localizing surface deformation at subsiding calderas. *Earth and Planetary Science Letters, 526, 115784. https://doi.org/10.1016/j.epsl.2019.115784*

Invited Talks:

A unified perspective of seismicity and fault coupling along the San Andreas Fault
Liu, Y.-K., Ross, Z. E., Cochran, E. S., Lapusta, N.
USGS Southern California Earthquake Hazards Assessment project, Pasadena, CA.

Conference Abstracts

High-Resolution Interseismic Deformation of the Southern Dead Sea Transform Fault
Liu, Y.-K., Yunjun, Z., Zheng, Y., Liang, C., Alotaibi, T., Simons, M.
American Geophysical Union (AGU), 2023 Fall Meeting, San Francisco, CA.

Imaging Deformation Processes along the Southern Dead Sea Transform using 8 years of InSAR
Liu, Y.-K., Stephenson, O. L., Yunjun, Z., Simons, M.
GAGE/SAGE 2023 Community Science Workshop, Pasadena, CA.

The Impact of Plate Motions on Long-Wavelength InSAR-Derived Velocity Fields
Liu, Y.-K., Stephenson, O. L., Yunjun, Z., Simons, M., Rosen, P., & Xu, X.
American Geophysical Union (AGU), 2022 Fall Meeting, Chicago, IL.

High-Resolution Interseismic Deformation of the Southern Dead Sea Transform Fault
Liu, Y.-K., Stephenson, O. L., Yunjun, Z., Simons, M.
American Geophysical Union (AGU), 2022 Fall Meeting, Chicago, IL.

A unified perspective of seismicity and fault coupling along the San Andreas Fault
Liu, Y.-K., Ross, Z. E., Cochran, E. S., Lapusta, N.
American Geophysical Union (AGU), 2021 Fall Meeting, New Orleans, LA.

A unified perspective of seismicity and fault coupling along the San Andreas Fault
Liu, Y.-K., Ross, Z. E., Cochran, E. S., Lapusta, N.
Poster #089, SCEC Contribution #11496. 2021 SCEC Annual Meeting, Palm Springs, CA.

The problem of ghost magma chambers under calderas
Liu, Y.-K., Ruch, J., Vasyura-Bathke, H., Jonsson, S.
Cities on Volcanoes 10 Meeting (2018), Naples, Italy.

Ring-fault activity at subsiding calderas studied from analogue experiments and numerical modeling
Liu, Y.-K., Ruch, J., Vasyura-Bathke, H., Jonsson, S.
American Geophysical Union (AGU), 2017 Fall Meeting, New Orleans, LA.

Contemporaneous ring fault activity and surface deformation at subsiding calderas studied using analogue experiments
Liu, Y.-K., Ruch, J., Vasyura-Bathke, H., Jonsson, S.
European Geosciences Union (EGU), General Assembly 2017, Vienna, Austria.

Numerical simulation study of Changhua and Chelungpu faults earthquake scenarios,
Lin, C.-H., T.-C. Lin, Y.-R. Chang, **Y.-K. Liu,** S.-J. Lee, Twin of Chi-Chi earthquake?
2012 Undergraduate summer project, Academia Sinica, Taiwan.

Fellowships and Awards

2022	J. Yang Scholarship, Caltech
2019 – 2020	Caltech C Scholarship, Caltech
2019 – 2020	Division of Geological and Planetary Sciences Fellowship, Caltech
2017	Outstanding Student Poster Award (OSPP), European Geosciences Union
2016 – 2018	Graduate Program Fellowship in Earth Science and Engineering, KAUST
2014	National Taiwan University Dean's Award
2012	National Taiwan University Undergraduate Scholarship
2012	National Taiwan University Presidential Award

Professional Activities

2021 – 2022	Organizing Committee, Caltech Seismological Laboratory Seminar
2022 –	Journal Reviewer: JGR Solid Earth, EPSL
2021	Student Poster Judge, Southern California Earthquake Center Meeting

Teaching and Outreach

2023	Mentor of Caltech Seismolab Earthquake Fellows: High school summer program
2022	Mentor of Caltech WAVE Fellows: Undergraduate research program
2021	Mentor of Caltech SURF Fellows: Undergraduate research program
2021 – 2022	TA at Caltech: Ge 271 – Dynamics of Seismicity (Zachary Ross) Ge 193 – Imaging Radar and Applications (Howard Zebker)
2014 –	Science communication in geophysics, Archilife Research Foundation, Taiwan
2012 – 2014	Middle School Science and Math tutor

Software Contributions

[4] Python Plate Motion Model (PyPMM). *Liu et al.*, in prep.
[3] Python-based Atmospheric Phase Screen estimation (PyAPS). *Jolivet et al.,* 2011
[2] Miami InSAR Time-series software in Python (MintPy). *Yunjun et. al.,* 2019
[1] Interferometric synthetic aperture radar Scientific Computing Environment (ISCE). *Rosen et. al.,* 2012