KATHLEEN T. GRANT

Carbon Cycle & Ecosystems Group (329G)
Jet Propulsion Laboratory

email: kathleen.t.grant@jpl.nasa.gov
web: kdennist.github.io

EDUCATION

University of Southern California — Los Angeles, CA
Doctor of Philosophy, Geological Sciences — August 2025
University of Colorado at Boulder — Boulder, CO
Bachelor of Arts, Geological Sciences — May 2016

POSITIONS

2025 –	JPL Postdoctoral Fellow | NASA Jet Propulsion Laboratory
2023 – 2025	Research Affiliate | NASA Jet Propulsion Laboratory
2022 – 2023	Visiting Student Researchers Program | NASA Jet Propulsion Laboratory
2021 –	EMIT Science Team Affiliate | NASA Jet Propulsion Laboratory
2021	Year Round Internship Program | NASA Jet Propulsion Laboratory
2019 – 2025	Graduate Researcher | Department of Earth Sciences, University of Southern California
2018 – 2019	Life Sciences Research Professional | Department of Earth System Science, Stanford University
2017 – 2018	Instructor | The Bay School, a May Institute School for Autism and Developmental Disabilities
2016 – 2017	Laboratory Technician | Department of Global Ecology, Carnegie Institution for Science

AWARDED GRANTS

JPL Strategic University Research Partnership (SURP) Program (2022-2025). Title: Detecting toxic metal contamination through imaging spectroscopy. Co-PI: K. Dana Chadwick, Role: JPL Scientist. Co-Investigator: A. Joshua West, Role: USC Sr. Scientist, Co-Investigator: **Kathleen Grant**, Role: USC PhD Candidate, amount: $60,000 annually

AWARDS

NASA Group Achievement Award (2023). I received this NASA Honor Award as part of a team that achieved "outstanding group science accomplishment leading to the success of Earth Surface Mineral Dust Source Investigation (EMIT) mission using innovative imaging spectroscopy." NASA Honor Awards (2023).

PUBLICATIONS

Grant, K., et al., Remote detection of plant physiological responses to metal toxicity across a complex mountainous landscape. Remote Sensing of Environment. (in prep)

Grant, K., et al. Mapping global quartz and feldspar abundance and grain sizes using integrated VTIR data. AGU Advances. (in prep)

Chadwick, K. D., et al., (inc. **Grant, K**). Unlocking Ecological Insights from Subseasonal Visible-to-Shortwave Infrared Imaging Spectroscopy: The SHIFT Campaign. *Ecosphere*. 2025.

Thompson D. R, et al., (inc. **Grant, K**). On-orbit calibration and performance of the EMIT imaging spectrometer. Remote Sensing of Environment. 2024. https://doi.org/10.1016/j.rse.2023.113986

Green RO, Mahowald N, Thompson DR, Ung C, Brodrick P, Pollock R, Bennett M, Lundeen S, Joyce M, Olson-Duvall W, Oaida B., et al. (inc. **Grant, K**). Performance and early results from the Earth surface mineral dust source investigation (EMIT) imaging spectroscopy mission. *2023 IEEE Aerospace Conference*, 1–10. https://doi.org/10.1109/AERO55745.2023.10115851

Okin, G. S., Brodrick, P.G., Keebler, A., Ehlmann, B.L., Mahowald, N., Miller, R.L., (key team member **Grant, K.)**. Earth Surface Mineral dust source InvesTigation (EMIT): EMIT L3 Algorithm: Aggregated Mineral Spectral Abundance Theoretical Basis. https://lpdaac.usgs.gov/documents/1801/EMIT_L3_ATBD_V1.pdf

Chadwick, K. D., Brodrick, P. G., **Grant, K.,** Goulden, T., Henderson, A., Falco, N., Wainwright, H., Williams, K.H., Bill, M., Breckheimer, I., Brodie, E.L., et al. Integrating airborne remote sensing and field campaigns for ecology and Earth system science. Methods in Ecology and Evolution. 2020. https://doi.org/10.1111/2041-210X.13463

PUBLISHED DATASETS

Grant, K., Brodrick, P. G., Celestian, A. J., Rossman, G. R., & West, A. J. (2025). Caltech/NHM Mineral VTIR Spectral Library. Zenodo. https://doi.org/10.5281/zenodo.15305345

Queally, N., F.W. Davis, K.D. Chadwick, et al. (inc. **Grant, K**). (2023). SHIFT: Vegetation Plot Characterization, Santa Barbara County, CA, 2022. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/2295

Queally, N., F.W. Davis, K.D. Chadwick, et al. (inc. **Grant, K**). (2024). SHIFT: Vegetation Plot Photos, Santa Barbara, CA, USA, 2022. ORNL DAAC, Oak Ridge, Tennessee, USA. https://doi.org/10.3334/ORNLDAAC/2334

Chadwick, K. D., **Grant, K.,** Henderson, A., Breckheimer, I., Williams, C. F., Falco, N., ... & McCormick, M. (2020). Locations, metadata, and species cover from field sampling survey associated with NEON AOP survey, East River, CO 2018. Environmental System Science Data Infrastructure for a Virtual Ecosystem; Watershed Function SFA. doi: 10.15485/1618130

Chadwick, K. D., **Grant, K.,** Henderson, A., Scott, A., McCormick, M., Pierce, S., ... & Maher, K. (2020). Leaf mass per area and leaf water content measurements from field survey in association with NEON AOP survey, East River, *CO 2018*. Environmental System Science Data Infrastructure for a Virtual Ecosystem; A Multiscale Approach to Modeling Carbon and Nitrogen Cycling within a High Elevation Watershed. doi: 10.15485/1618132

Chadwick, K. D., **Grant, K.,** Bill, M., Henderson, A., Scott, A., & Maher, K. (2020). Site-level Foliar C, N, delta13C data from samples collected during field survey associated with NEON AOP survey, East River, CO 2018. Environmental System Science Data Infrastructure for a Virtual Ecosystem; A Multiscale Approach to Modeling Carbon and Nitrogen Cycling within a High Elevation Watershed. doi:10.15485/1631278

Chadwick, K. D., Brodrick, P. G., **Grant, K.,** Goulden, T., Henderson, A., Bill, M., ... Maher,K. (2020): NEON AOP foliar trait maps, maps of model uncertainty estimates, and conifer map, East River, CO 2018. A Multiscale Approach to Modeling Carbon and Nitrogen Cycling within a High Elevation Watershed. doi:10.15485/1618133

INVITED PRESENTATIONS & SEMINARS

Grant, K., et al. 2024. Detecting toxic metal contamination through imaging spectroscopy. 2024 *NASA Jet Propulsion Laboratory Annual Poster Conference, Pasadena, California.*

Grant, K., et al. 2024. Remote sensing strategies for surface mineral and contaminant detection. University of Southern California, Guest Lecture for GEOL 165: Metals and Life on Earth, *Virtual.*

Grant, K., et al. 2024. Detecting toxic metal contamination through imaging spectroscopy. Santa Clara University, *Santa Clara, California.*

Grant, K., et al. 2024. Remote detection of plant physiological responses to metal toxicity. University of Southern California Paleo/Environmental Seminar, *Virtual.*

Grant, K., 2024. Panelist at University of Southern California's Society for Earth Science Students Career Event, *Virtual.*

Grant, K., 2024. Panelist at University of Southern California's PhD Academy Grant Writing Fundamentals Event, *Virtual.*

Grant, K., et al. 2023. Detecting toxic metal contamination through imaging spectroscopy. 2023 *NASA Jet Propulsion Laboratory Annual Poster Conference, Pasadena, California.*

Grant, K., et al. 2022. Quartz and Feldspar: Ready for Earth System Models. 2022 *EMIT Science Team Meeting, NASA Jet Propulsion Laboratory, Chicago, Illinois.*

Grant, K., et al. 2022. Quartz and Feldspar Handoff to Earth System Modelers. 2022 *EMIT Science Team Meeting, NASA Jet Propulsion Laboratory, Cape Canaveral, Florida.*

Grant, K., et al. 2022. Remotely Retrieving Quartz and Feldspar Distributions. Eat Learn Grow Series*, NASA Jet Propulsion Laboratory, Virtual.*

Grant, K., et al. 2022. Global Quartz and Feldspar Distributions. 2022 *EMIT Science Team Meeting, NASA Jet Propulsion Laboratory, Cape Canaveral, Florida.*

Grant, K., et al. 2022. Quenching the Quartz Quandary: Grain Size Edition. Eat Learn Grow Series*, NASA Jet Propulsion Laboratory, Virtual.*

Grant, K., et al. 2022. Quenching the Quartz Quandary: Quartz and Feldspar Edition. 2022 *EMIT Science Team Meeting, NASA Jet Propulsion Laboratory, Virtual.*

Grant, K., et al. 2022. Quenching the Quartz Quandary Part (1/X). Weekly *EMIT Science Team Meeting, NASA Jet Propulsion Laboratory, Virtual.*

Grant, K., et al. 2021. NEON Hyperspectral Ground Campaign. ESS-DIVE *Community Data Workshop, Lawrence Berkeley National Lab, Virtual.*

SELECTED PRESENTATIONS

Grant, K., Chadwick, K.D., Brodrick, P.G., Maher, K, Lawrence, C., West, A.J., et al., 2021. Detecting metal toxicity through imaging spectroscopy: wavelength investigation. *American Geophysical Union Fall Meeting, Washing ton D.C.*

Grant, K., et al., 2024. Mapping global quartz and feldspar abundances and grain sizes using integrated VSWIR and TIR data. NASA CORE 2.0 Earth Surface and Interior Solid-Earth Team Meeting*, Washington D.C.*.

Grant, K., et al., 2024. Detecting toxic metal contamination through imaging spectroscopy. Surface Biology and Geology Technical Interchange Meeting, *NASA Headquarters, Washington D.C.*.

Grant, K., Chadwick, K.D., Brodrick, P.G., Maher, K., Lawrence, C., West, A.J., 2023. Linking remotely sensed foliar expressions of metal toxicity to various levels of chemical association with the soil matrix. *American Geophysical Union Fall Meeting, San Francisco, CA.*

Grant, K., Mahowald, N.M., Miller, R.L., Perez Garcia-Pando, C., Ageitos, M.G., Li, L., Thompson, D.R., Green, R.O., Kokaly, R.F., Hubbard, B.E., West, A.J., Brodrick, P.G., 2022. Remotely Sensed Retrievals for Fractional Abundance of Quartz and Feldspar to Assess the Influence on Radiative Forcing in Earth System Models. *American Geophysical Union Fall Meeting, Chicago, IL.*

Grant, K., Chadwick, K.D., Brodrick, P.G., West, A.J., Lawrence, C., Maher, K., 2021. Remote Sensing Surface Mineralogy and Foliar Metal Content to Discern Contaminant Sources Across Heterogeneous Landscapes. *American Geophysical Union Fall Meeting, New Orleans, LA.*

Grant, K., Chadwick, K.D., Brodrick, P.G., West, A.J., Falco, N., Lawrence, C., Maher, K., 2021. Mapping contaminate distributions across heterogenous landscapes through remotely sensed metal bioaccumulation. *Goldschmidt2021, Virtual.*

TEACHING & MENTORSHIP ACTIVITIES

University of Southern California Earth Sciences Undergraduate Apprenticeship Program (ESRAP) Mentor. University of Southern California, Summer 2023 and Spring 2023.

Teaching Assistant, GEOL 165: Metals and Life on Earth. University of Southern California, Fall 2019 and Fall 2020

Teach Assistant, GEOL 241: Energy Systems. University of Southern California, Spring 2021

UNDERGRADUATE & POSTGRADUATE MENTEES

Lauren Hechinger, University of Southern California

Angie Vasquez, University of Southern California

Eric Wilderman, University of Colorado at Boulder

ADDITIONAL INFORMATION

Applications:	ArcGIS, qGIS, Python, RStudio, Julia, e-Cognition, Idrisi, PHREEQC, MATLAB, Adobe Creative Suite
Hardware:	Elemental Analyzer and Picarro Isotope Analyzer, Inductively Coupled Plasma Mass Spectrometer, Inductively Coupled Plasma Optical Emission Spectrometer, MARS Microwave Digestion System, Metrohm Ion Chromatograph, HCl Evaporator, UV-Vis Spectrophotometer, 200/220 fiber analyzer, ASD FieldSpec 4 Hi-Res NG, Nicolet 860 Magna series FTIR, Thermo-Nicolet iS50 FTIR, Horiba XGT-7200 X-ray Fluorescence Microscope, Rigaku R-Axis II for X-ray diffraction
Certificates/Orgs:	NASA Transform to Open Science (TOPS) Digital Badge, PhD Academy Certificate in Communication, Leadership, and Management, USC Center for Excellence in Teaching (CET), USC's Earth Sciences Diversity, Equity and Inclusion Task Force