

# Madeleine Pascolini-Campbell

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Research scientist with 10+ years experience in geospatial data (remote sensing, model output, in situ observations). Expert in remote sensing, including algorithm development from thermal infrared for higher level products (evapotranspiration and water stress). Expertise working with optical, thermal infrared, imaging spectroscopy, gravity-based remote sensing, LiDAR (MODIS, Landsat, ECOSTRESS, EMIT, GRACE/GRACE-FO, GEDI). Domain area expertise in hydrology and wildfire science including pre-fire fuel mapping and wildfire prediction using machine learning. Expert in scientific programming and coding tools (Python, Matlab, Terminal, Github).

## Appointments:

**2021 – present** Scientist, NASA Jet Propulsion Laboratory

**2020 – 2021** JPL postdoc, NASA Jet Propulsion Laboratory

**2018 – 2020** NASA Postdoctoral Program Fellow, NASA Jet Propulsion Laboratory

## Education:

**2018** PhD, Columbia University

**2011** BA, University of Cambridge

## Professional Experience:

2025 – present

### **Science Implementation & Imaging Spectroscopy Product Lead**

Google AI Wildfire Collaborative “FIRE-MAPS” (Fire Intelligence and Risk Evaluation – Maturing Algorithm Products from Space), *California Institute of Technology / NASA JPL*

2024 – present

**NASA Wildland Fires FireSense Implementation JPL Team Center Lead**, *NASA JPL*

2023 – present

**ECOSTRESS Mission Applications Lead**, *NASA JPL*

2024 – present

**Lead Evapotranspiration Algorithm Developer for NASA Airborne Thermal Infrared Missions (HyTES, MASTER)**, *NASA JPL*

2023 – 2025

**Surface Biology and Geology, Thermal Infrared Low Latency Algorithms Lead**, *NASA JPL*

## **Fellowships and awards:**

**2024** NASA Early Career Achievement Medal  
**2020** Jet Propulsion Laboratory Postdoc Research Day Award  
**2018** NASA Postdoctoral Program Fellowship  
**2015** Graduate Research Fellowship, National Science Foundation

## **Publications (in preparation):**

**Pascolini-Campbell, M.**, Bohn, N., Lou, Y., An, K., Rolla, J., Peacock, A., Chen, R., Miner, K., Frankenberg, C. and F. Seidel “Synergies between Imaging Spectroscopy and SAR for assessing pre- and post-fire fuel conditions” *Manuscript in preparation*

**Pascolini-Campbell, M.**, French, N., Wang, J. et al. Gaps, opportunities and future technology needs for wildfire science and applications for the next Decadal Survey, *Manuscript in preparation*

E Tajfar, **Pascolini-Campbell, M.**, Hakuba, M., Reager, J.T., David, C., and Landerer, F. Higher Terrestrial Water Storage Capacity Sustains Evapotranspiration and Latent Cooling During Drought in Mississippi River Sub-Basins, Under Review, *Water Resources Research*

## **Publications:**

Ward-Baranyay, M., Lee, C., **Pascolini-Campbell, M.**, Sousa, D., & Kinoshita, A. M. (2026). Pre-Fire Fuel Conditions Are Dominant Drivers of Burn Severity in 2025 LA County Fires. Accepted March 2026, AGU Advances, Preprint:  
<https://essopenarchive.org/doi/pdf/10.22541/essoar.176244866.66630790/v1>

**Pascolini-Campbell, M.**, Fisher, J. B., Hall, J. V., Rivera, M., Lee, C. M., Thompson, J. O., ... & Bajjnath-Rodino, J. (2026). Wildfires: TIR for Monitoring Active Fires, Pre-Fire Fuels, and Post-Fire Recovery. In *High Spatio-Temporal-Spectral Thermal Remote Sensing* (pp. 109-127). CRC Press. [Book available online.](#)

Dandapanthula, S., Johnson, M., **Pascolini-Campbell, M.**, Hulley, G., & Kuusela, M. (2026). Downscaling land surface temperature data using edge detection and block-diagonal Gaussian process regression. Submitted *Climate Informatics*. Preprint  
<https://doi.org/10.48550/arXiv.2602.02813>

Alamillo, A., Li, J., Farahmand, A., **Pascolini-Campbell, M.**, & Lee, C. (2025). Post-Fire Vegetation Recovery Response: A Case Study of the 2020 Bobcat Fire in Los Angeles, California. *Remote Sensing*, 17(24), 4023. <https://doi.org/10.3390/rs17244023>

Chadwick, K. D., Davis, F., Miner, K. R., Pavlick, R., Reynolds, M., Townsend, P. A., ... & Schimel, D. (2025). Unlocking ecological insights from sub-seasonal visible-to-shortwave infrared imaging spectroscopy: The SHIFT campaign. *Ecosphere*, 16(3), e70194. <https://doi.org/10.1002/ecs2.70194>

**Pascolini-Campbell, M.**, Fisher, J. B., Cawse-Nicholson, K., Lee, C. M., & Stavros, N. (2025). Assessment of spatial autocorrelation and scalability in fine-scale wildfire random forest prediction models. *Scientific Reports*, 15(1), 21504. <https://doi.org/10.1038/s41598-025-06814-z>

Joshi, R., Jensen, A., **Pascolini-Campbell, M.** and J. B. Fisher Coupling between evapotranspiration, water use efficiency, and evaporative stress index strengthens after wildfires in New Mexico, USA, (2024) *International Journal of Applied Earth Observation and Geoinformation*, 135, 104238. <https://doi.org/10.1016/j.jag.2024.104238>

Jarugula, S., Fournier, S., Reager, J. T., & **Pascolini-Campbell, M.** (2025). Intercomparison of in situ and satellite sea surface salinity products for global coastal ocean studies. *Journal of Atmospheric and Oceanic Technology*, 42(1), 3-16. <https://doi.org/10.1175/JTECH-D-23-0168.1>

Pierrat, Z. A., Purdy, A. J., Halverson, G., Fisher, J. B., Mallick, K., **Pascolini-Campbell, M.**, ... & Cawse-Nicholson, K. (2025). Evaluation of ECOSTRESS Collection 2 evapotranspiration products: Strengths and uncertainties for evapotranspiration modeling. *Water Resources Research*, 61(6), e2024WR039404. <https://doi.org/10.1029/2024WR039404>

**M. Pascolini-Campbell**, Hook, S., Mallick, K., Langsdale, M., Hulley, G., Cawse-Nicholson, K., Hu, T., Halverson, G., Freepartner, R., Rivera, G., Genesio, L. and Rabuffi, F. (2024) “A First Assessment of Airborne HyTES-based Land Surface. Temperature and Evapotranspiration”, *Remote Sensing Applications Society and Environment*, 36, 101344. <https://doi.org/10.1016/j.rsase.2024.101344>

Byrne, B., Liu, J., Bowman, K., **Pascolini-Campbell, M.**, Chatterjee, A., Pandey, S., Miyazaki, K., van der Werf, G., Wunch, D., Wennberg, P., Roehl, C. and S. Sinha, Carbon emissions from the 2023 Canadian wildfires, *Nature* (2024). <https://doi.org/10.1038/s41586-024-07878-z>

Parazoo, N. C., Osman, M., **Pascolini-Campbell, M.**, & Byrne, B. (2024). Antecedent Conditions Mitigate Carbon Loss During Flash Drought Events. *Geophysical Research Letters*, 51(8), e2024GL108310. <https://doi.org/10.1029/2024GL108310>

Boser, A., Caylor, K., Larsen, A., **Pascolini-Campbell, M.**, Reager, J. T., Carleton, T. Field-scale crop water consumption estimates reveal potential water savings in California agriculture, 2024, *Nature Communications*, 15(1), 2366. <https://doi.org/10.1038/s41467-024-46031-2>

Simafranca, N., Willoughby, B., O’Neil, E. Farr, S., Reich, B. J., Giertych, N., Johnson, M., **Pascolini-Campbell, M.** (2024), Modelling wildland fire burn severity in California using a

spatial super learner approach, 2024, Environmental and Ecological Statistics, <https://doi.org/10.48550/arXiv.2311.16187>

Fournier, S., Reager, J. T., Chandanpurkar, H., **Pascolini-Campbell, M. A.**, S. Jarugula, The salinity of coastal waters as a bellwether for global water cycle changes, 2023, Geophysical Research Letters, *Geophysical Research Letters*, 50(24), e2023GL106684 <https://doi.org/10.1029/2023GL106684>

**M. Pascolini-Campbell** and J. T. Reager, An Investigation of the spatial and temporal characteristics of dry and wet extreme events across NLDAS-2 models, 2023, *Journal of Hydrometeorology*, <https://doi.org/10.1175/JHM-D-23-0038.1>

Tian Hu, Kaniska Mallick, Patrik Hitzelberger, Yoanne Didry, Gilles Boulet, Zoltan Szantoi, Benjamin Koetz, Itziar Alonso, **M. Pascolini-Campbell**, Gregory H Halverson, Kerry Cawse-Nicholson, Glynn Hulley, Simon J. Hook, Nishan Bhattarai, Albert Olioso, Jean-Louis Roujean, Philippe Gamet, Z. Bob Su, Evaluating European ECOSTRESS Hub Evapotranspiration Products Across a Range of Soil-Atmospheric Aridity and Biomes over Europe. *Water Resources Research*, e2022WR034132. <https://doi.org/10.1029/2022WR034132>

**Pascolini-Campbell, M.** Soil and plants lose more water under drought. *Nature Climate Change – News and Views* (2022). <https://doi.org/10.1038/s41558-022-01510-6>

**Pascolini-Campbell, M.**, Lee, C., Stavros, N. & Fisher, J. B. (2022). ECOSTRESS reveals pre-fire vegetation controls on burn severity for Southern California wildfires of 2020. *Global Ecology and Biogeography*, 31, 1976– 1989. <https://doi.org/10.1111/geb.13526>

Raymond, C., Suarez-Gutierrez, L., Kornhuber, K., **Pascolini-Campbell, M.**, Sillmann, J. and D. E. Waliser “Increasing spatiotemporal proximity of heat and precipitation extremes in a warming world quantified by a large model ensemble”, 2022, *Environmental Research Letters*, 17(3), 035005. DOI: [10.1088/1748-9326/ac5712](https://doi.org/10.1088/1748-9326/ac5712)

**Pascolini-Campbell, M.**, Fisher, J. B. & J. T. Reager “GRACE-ECOSTRESS synergies constrain fine-scale impacts on large-scale water balance”, 2021, *Geophysical Research Letters*, 48(15), e2021GL093984. DOI: [10.1029/2021GL093984](https://doi.org/10.1029/2021GL093984)

**Pascolini-Campbell, M.**, Reager, J. T., & Fisher, J. B. “GRACE-based mass conservation as a validation target for basin-scale evapotranspiration in the contiguous United States”. *Water Resources Research* (2020), 56, e2019WR026594. <https://doi.org/10.1029/2019WR026594> DOI: [10.1029/2019WR026594](https://doi.org/10.1029/2019WR026594)

**Pascolini-Campbell, M.**, Seager, R., Cook, B.I. and P. Williams “Dynamics and variability of the spring dry season in the United States Southwest as observed in AmeriFlux and NLDAS-2 data”, *J. Hydrometeorology* (2019): **20**, 1081–1102

**Pascolini-Campbell, M.**, Seager, R. Cook, B. I and Pinson, A. “Covariability of

climate and streamflow in the Upper Rio Grande from interannual to decadal timescales”, *Journal of Hydrology: Regional Studies* 13 (2017): 58-71.

**Pascolini-Campbell, M.**, Seager, R., Cook, B.I., Griffin, D. and D. Gutzler "Causes of interannual to decadal variability of Gila River streamflow over the past century." *Journal of Hydrology: Regional Studies* 3 (2015): 494-508.

**Pascolini-Campbell, M.**, Zanchettin, D., Bothe, O., Timmreck, C., Matei, D., Jungclaus, J. H., & Graf, H. F. (2015). Toward a record of Central Pacific El Niño events since 1880. *Theoretical and Applied Climatology*, 119(1-2), 379-389.

### **Technical Documents:**

**Pascolini-Campbell, M.** MODIS/ASTER (MASTER) L-3 Data Product User Guide, Jet Propulsion Laboratory, D-111669  
[https://masterprojects.jpl.nasa.gov/downloads/docs/MASTER\\_L3\\_ET\\_UserGuide\\_20251023.pdf](https://masterprojects.jpl.nasa.gov/downloads/docs/MASTER_L3_ET_UserGuide_20251023.pdf)

**Pascolini-Campbell, M.** MODIS/ASTER (MASTER) L-3 Data Evapotranspiration L3 (ET) Algorithm Theoretical Basis Document, Jet Propulsion Laboratory, D-111714  
[https://masterprojects.jpl.nasa.gov/downloads/docs/MASTER\\_L3-ET\\_ATBD\\_V1.pdf](https://masterprojects.jpl.nasa.gov/downloads/docs/MASTER_L3-ET_ATBD_V1.pdf)

### **Proposals (as PI and Science-PI):**

**NASA FireSense Harmonics of stress and structure from ECOSTRESS and GEDI to support pre-fire mapping and the management of fire trajectories.** Awarded 2025, PI (2025 – 2028)

**NASA MOSAICS CONNECT-SBG: Collaborative Nexus for Networking, Education, and Career Training in Surface Biology and Geology,** Awarded 2024, JPL-PI (2024 – 2026)

**NASA ECOSTRESS Science Team ‘Fire Driven Changes in Landscape Water Use’** Awarded 2022 PI (2022 – 2025)

**NASA Wildland Fires Program ‘Predicting Wildfires and Active Fire Tracking’** Awarded 2022, PI (2022 – 2024)

**ROSES Ocean Salinity Science Team ‘Coastal salinity; a proxy for human and natural terrestrial hydrology changes’** Awarded 2022, Science PI (Severine Fournier, PI) (2022 – 2026)

**NASA Postdoctoral Program Fellowship,** Awarded 2018,  
“Measuring human impacts on the global water and energy cycle using GRACE and SMAP”

***Step 1 Proposals Selected***

**NASA Commercial Satellite Data Acquisition Step 1**, *invited to Step 2*, PI  
*'High Resolution Wildfire Modeling in the Wildland-Urban-Interface'* 2025  
Step 2 not selected.

**NASA SERVIR Step 1**, *invited to Step 2*, PI  
*'Fire Risk from Plant Water Stress in Amazonia'* 2022  
Step 2 not selected.

### **Proposals (Co-I):**

**NASA GRACE Science Team** Water cycle events in the global mass budget, 2024 (JT Reager, PI) 2024 – 2027

**NASA Earth Science to Action** Supporting Resilience Design work in Regenerative Agriculture, 2024 (Carmen Blackwood, PI) 2024 - 2027

### **Media:**

2022 USGS Eyes on Earth Podcast:

<https://www.usgs.gov/centers/eros/science/eyes-earth-episode-83-ecostress-and-burn-severity>

2022 Wildfire prediction with ECOSTRESS:

<https://www.nasa.gov/feature/jpl/nasa-data-on-plant-sweating-could-help-predict-wildfire-severity/>

<https://gizmodo.com/plant-sweat-predict-wildfires-1849446727>

### **Selected Presentations:**

**Pascolini, M.**, Lee, C., Fisher, J. B. ECOSTRESS Applications: Wildfire, Geology and Coastal Water Quality, *Guest Lecture, Chapman University, October 2023*

**Pascolini, M.,** Lee, C., Fisher, J. B., Stavros, N., Thermal Infrared Remote Sensing Applications for Wildfire Science, *Invited Talk, Ameriflux Year of Remote Sensing, April 2023*

**Pascolini, M.,** Parazoo, N., and C. Lee Potential Applications of OCO-2 data: drought, wildfires, forest management and carbon budgets, *OCO Science Team Meeting, Pasadena, April 2023*

**Pascolini, M.,** Raymond, C., Lee, C., and N. Parazoo, Landscape-Driven Changes in Vegetation and Water Use due to California Wildfires, *ECOSTRESS Science Team Meeting, November 2022*

**Pascolini-Campbell, M.** Reager, J. T., Chandanpurkar, H., Roddell, M., Fisher, J.B.F. “A recent increase in global land evapotranspiration, and human impacts on the water cycle”, American Geophysical Union Fall Meeting, *December 2021, (Invited speaker)*

**Pascolini-Campbell, M.,** Lee, C. Stavros, N. & Fisher, J.B.F. “ECOSTRESS reveals pre-fire burn conditions for 2020 California Wildfires”, American Geophysical Union Fall Meeting, *December 2021, (Oral Presentation)*

**Pascolini-Campbell, M.,** Lee, C., Fisher, J. B. & Stavros, N. “The use of remote sensing-based ET and evaporative stress index to assess pre and post fire vegetation status” Tactical Fire Remote Sensing Advisory Committee, U.S. Forest Service and NASA, November 2020

**Pascolini-Campbell, M.,** Reager, J. T., & Fisher, J. B. “GRACE-based mass conservation as a validation target for basin-scale evapotranspiration in the contiguous United States”. AGU Fall Meeting, *December 2019 (Oral Presentation)*

**Pascolini-Campbell, M.,** Seager, R., Cook, B.I. and P. Williams “Dynamics and Variability of the Spring Dry Season in the United States Southwest”, AGU Fall Meeting, December 2017 (Oral Presentation)

### **Teaching and mentoring:**

**2025 – present** Mentoring 5 NASA MOSAICS funded interns from Chapman University to use thermal infrared and visible-shortwave infrared imaging spectroscopy, including development of mentorship plans

**2025 – present** Mentoring NASA Develop program on prescribed burn monitoring using remote sensing

**2022 – pres.** Postdoc co-mentor on water and energy balance using GRACE, CERES satellite observations.

- 2022 – pres.** Mentor for 3 ECOSTRESS interns on wildfire recovery, Amazon wildfire prediction and New Mexico fire prediction
- 2022** 2 Terms: Co-mentor for team of 5 interns in NASA Develop (Applied Science program) for a joint project with Tennessee-based non-profit ‘Protect our Aquifer’
- 2021** Co-mentoring JPL summer intern June – August 2021 on using ECOSTRESS satellite data to monitor irrigation in California
- 2014 - 2016** Teaching Assistant, Columbia University

### **Review Activities:**

- Ongoing** Journal reviewer for *AGU Advances*, *Nature Geoscience*, *Water Resources Research*, *Journal of Remote Sensing*, *Geophysical Research Letters*, *Journal of Geophysical Research – Atmosphere*
- 2026** Proposal panelist, NASA ROSES Review Panel
- 2021** Proposal panelist, NASA ROSES Review Panel
- 2020** Proposal panelist, NASA FINESST Review Panel