

Madeleine Pascolini-Campbell

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914.316.9726

Bio:

My research investigates variability and trends in the terrestrial water cycle using satellite data, *in situ* observations and land surface models. My research interests include quantifying how human activity (irrigation, agriculture, deforestation) influence regional water budgets – which has implications for managing water resources. In addition, I also am interested in applied sciences, and bridging the gap between science and policy, and I have worked on using hydrological indicators of plant stress from satellites to inform wildfire burn severity in California.

Appointments:

2021-present **Scientist II**, NASA Jet Propulsion Laboratory, Water and Ecosystems
2020 – 2021 **JPL postdoc**, NASA Jet Propulsion Laboratory, Terrestrial Hydrology
2018 – 2020 **NASA Postdoctoral Program Fellow**, NASA Jet Propulsion Laboratory, Terrestrial Hydrology
2013 – 2018 **Graduate Student Researcher**, Columbia University, Department of Earth and Environmental Sciences

Education:

2018 PhD Climate Science, Columbia University
2017 MPhil Climate Science, Columbia University
2015 MA Climate Science, Columbia University
2011 BA Geography, University of Cambridge

Fellowships and awards:

2020 **Jet Propulsion Laboratory Postdoc Research Day Award** – GRACE-ECOSTRESS synergies quantify human impacts on the water cycle
2018 **NASA Postdoctoral Program Fellowship** – Measuring human impacts on the global water and energy cycle using GRACE and SMAP
2015 **Graduate Research Fellowship, National Science Foundation** - Variability of Hydroclimate and in the North American Southwest

Publications:

Pascolini-Campbell, M. A. Soil and plants lose more water under drought. *Nature Climate Change* (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. A., 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. A., 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.A., 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. A., 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. A., 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. A., 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.

Media:

2022

USGS Eyes on Earth Podcast

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-Campbell, M. A 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. A Reager, J. T., Chandanpurkar, H. & M. Roddell. “A 10 per cent increase in global land evapotranspiration from 2003 to 2019”, American Geophysical Union Fall Meeting, *December 2021*, (Invited speaker)

Pascolini-Campbell, M. A, 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. A Reager, J. T., Chandanpurkar, H. & M. Roddell. “A 10 per cent increase in global land evapotranspiration from 2003 to 2019”, NASA Jet Propulsion Laboratory, Carbon Cycle Seminar, *June 2021*

Pascolini-Campbell, M. A., Reager, J. T., Chandanpurkar, H. & M. Roddell. “Recent increase in global land evapotranspiration from the mass-balance perspective”. AGU Fall Meeting, *December 2020* (*Oral Presentation*)

Pascolini-Campbell, M. A., 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. A., 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.A., 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)

Skills:

Programming: MATLAB, Linux programming, Python (Pandas, NumPy, SciPy), R, terminal

Software: QGIS, MS Office and Adobe products, Github

Analysis: Synthesis of complex geospatial datasets from different sources (netCDF, GRIB, TIFF), big data analysis, statistical analyses, uncertainty quantification

Teaching and mentoring:

- 2022** 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 - 2015** Dynamics of Climate Variability and Change, Columbia University – designed and delivered lectures to Masters program of 40 students
- 2015 - 2016** Regional Climate and Climate Impacts, Columbia University – designed homework assignments and mentored for Masters program of 40 students

Proposals (as PI, Science PI):

ECOSTRESS Science Team, Awarded 2022, PI
‘Fire Driven Changes in Landscape Water Use’

ROSES Ocean Salinity Science Team, Awarded 2022, Science PI
'Coastal salinity; a proxy for human and natural terrestrial hydrology changes'

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

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

Review Activities:

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

Other Experience and Field work:

2017 Summer Policy Colloquium -American Meteorological Society
Awarded National Science Foundation funding to participate in a workshop in Washington D.C. with politicians, scientists and business leaders to address bridging the gap between science and policy

2012 Geological Society of America Internship - National Park Service,
Assateague National Seashore - Created a framework for measuring tidal datum using GPS measurements obtained in the field

2011 Visiting Scientist - Max Planck Institute for Meteorology - Published a study which led to new understanding of how to classify El Nino events

2011 Research Experience Undergraduates - University of California Irvine,
Assisted with creating a numerical ice-sheet model for Thwaites Glacier