

Meng Zhao

Department of Earth and Spatial Sciences
University of Idaho

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Education

University of California, Irvine	June 2021
Ph.D. in Earth System Science (Ecohydrology)	
Lehigh University	May 2013
M.S. in Earth and Environmental Science	
Wuhan University	June 2011
B.E. in Remote Sensing Science and Technology	

Professional Appointments

University of Idaho	
Assistant Professor	2023-present
Stanford University	
Postdoctoral Fellow	2021-2022
University of California, Irvine	
- Graduate Student Researcher	2016-2021
- Teaching Assistant	2014-2017
Lehigh University	
Graduate Research Assistant	2011-2013

Publications

12. **Zhao, M.**, G. A. J. Zhang, I. Velicogna, C. Liang, Z. Li, 2021: Ecological restoration impact on total terrestrial water storage. *Nature Sustainability*, 4, 56-62, doi: 10.1038/s41893-020-00600-7.
11. Du, J., J. Kimball, J. Sheffield, I. Velicogna, **M. Zhao**, M. Pan, C. Fisher, H. Beck, J. Watts, G. A., E. Wood, 2021: Synergistic satellite assessment of global vegetation health in relation to ENSO-induced droughts and pluvials. *Journal of Geophysical Research-Biogeosciences*, 126, e2020JG006006, doi: 10.1029/2020JG006006.
10. G. A., I. Velicogna, **M. Zhao**, A. Colliander, and J. Kimball, 2020: Satellite detection of varying seasonal water supply restrictions on grassland productivity in the Missouri basin, USA. *Remote Sensing of Environment*, 239, 111623, doi: 10.1016/j.rse.2019.111623.
9. Du, J., J. S. Kimball, I. Velicogna, **M. Zhao**, L.A. Jones, J.D. Watts, and Y. Kim, 2019: Multicomponent satellite assessment of drought severity in the Contiguous United States from 2002 to 2017 using AMSR-E and AMSR2. *Water Resources Research*, 55, 7, 5394-5412, doi: 10.1029/2018WR024633.

8. **Zhao, M.**, G. A, I. Velicogna, and J. Kimball, 2017: A global gridded dataset of GRACE drought severity index for 2002-2014: Comparison with PDSI and SPEI and a case study of the Australia Millennium drought. *Journal of Hydrometeorology*, 18, 2117-2129, doi:10.1175/JHM-D-16-0182.1.
7. **Zhao, M.**, G. A, I. Velicogna, and J. Kimball, 2017: Satellite observations of regional drought severity in the continental US using GRACE-based terrestrial water storage changes. *Journal of Climate*, 30, 6297-6308, doi:10.1175/JCLI-D-16-0458.1.
6. Shang, H., L. Chen, H. Letu, **M. Zhao**, S. Li, and S. Bao, 2017: Development of a daytime cloud and haze detection algorithm for Himawari-8 satellite measurements over central and eastern China. *Journal of Geophysical Research-Atmosphere*, 122, 3528–3543, doi:10.1002/2016JD025659.
5. **Zhao, M.**, J.M. Ramage, K. Semmens, and F. Obleitner, 2014: Recent ice cap snowmelt in Russian High Arctic and anti-correlation with late summer sea ice extent. *Environmental Research Letters*, 9, 045009, doi:10.1088/1748-9326/9/4/045009.
4. **Zhao, M.**, H. Shang, W. Huang, L. Zou, and Y. Zhang, 2011: Water area extraction from RGB aerophotograph based on chromatic and textural analysis. *Proceedings of the third international conference on advanced geographic information systems, applications, and services*, Gosier, Guadeloupe, France, pp.46-52.

Working manuscripts:

3. **Zhao, M.**, G. A, and I. Velicogna: Long-term effect of land water supply and atmospheric demand on natural vegetation productivity. In preparation.
2. G. A., **M. Zhao**, I. Velicogna, J. Kimball: Satellite observations constrain plant-accessible water storage influencing global grassland response to drought. In preparation.
1. **Zhao, M.**, Y. Liu, and A.G. Konings: Evapotranspiration frequently increases during droughts, especially mild ones. In revision at *Nature Climate Change*.

Grants, Fellowships & Awards

Stanford Earth Mentoring Certificate	2022
NASA Earth and Space Science Fellowship (NESSF), \$120,000	2016-2019
Chinese American Oceanic Atmospheric Association Fall Workshop Best Poster Award	2016
University of California Associated Graduate Students Travel Award	2016
University of California, Irvine, Earth System Science Fellowship, \$30,000	2013-2014

Presentations

- *Evapotranspiration frequently increases during droughts.* EGU2022, Online, 05/2022

- *Ecological engineering and water sustainability*. GeoInsider, an online forum hosted by colleagues focusing on cutting-edge geoscience research in San Francisco, CA, 10/2020.
- *Impact of ecological restoration in mainland China on the terrestrial water budget using GRACE/GRACE-FO and other data*. GRACE/GRACE-FO Science Team Meeting, 10/2020.
- *Using satellite remote sensing data for eco-hydrological process understanding and evaluating Earth system models*. Geophysical Fluid Dynamics Laboratory, Princeton, 04/2019.
- *Characterizing ecosystem response to water supply changes inferred from GRACE drought severity index and surface soil moisture anomalies from ESA CCI and SMAP*. AGU Fall Meeting, 12/2018.
- *A global gridded dataset of GRACE drought severity index*. GRACE Science Meeting, 10/2017.
- *Understanding the time-lag effect of terrestrial ecosystem response to drought: a regional case study of the 2000s Millennium Drought in Australia*. AGU Fall Meeting, 12/2016
- *Evolution and characterization of drought events from GRACE and other satellite and observations*. AGU Fall Meeting, 12/2016.
- *Understanding regional variations in TWS in Eurasia using GRACE time variable gravity data and CLM 4.5 output products*. AGU Fall Meeting, 12/2014
- *Recent glacier surface snowpack melt in the Novaya Zemlya and Severnaya Zemlya derived from active and passive microwave remote sensing data*. Midwest Glaciology Meeting, Penn State Univ, 03/2013

Teaching

Graduate Teaching Assistantships, Dept. of Earth System Science, UC Irvine

Geographic Information System in Environmental Sciences Winter 2016

Taught one lab (~60 students) to use Geographic Information Systems (GIS) to solve hydrology and ecology questions. Covered fundamentals of cartography, creating/editing GIS data, linking spatial and tabular data, georeferencing, map projections, geospatial analysis, spatial statistics, and the development of GIS models. Held office hours and graded assignments.

Data Analysis for Earth Sciences Fall 2015

Taught two labs (~45 students each) to analyze and interpret of geophysical data. Instructed students on programming in MATLAB and covered functional fitting, probability density functions, and multidimensional time-series methods. Held office hours and graded assignments.

Air Pollution and Global Environments Fall 2017

Led two discussion sessions (~45 students each) introducing air pollution sources and physical, chemical, and meteorological sciences behind air pollution. Led discussions about the consequences of air pollution to our society. Held office hours. Designed class project. Graded assignments.

On Thin Ice Fall 2014, Spring 2015, Winter 2015

Taught two discussion sessions (~45 students each) per quarter covering some of the significant

economic, sociological, and political consequences of the recent melting of the cryosphere driven by anthropogenic climate change. Held office hours and graded assignments.

Modeling the Earth

Fall 2015

Taught two discussion sessions (~45 students each) about the origin and evolution of the Earth, its atmosphere, and oceans, from the perspective of biogeochemical cycles, energy use, and human impacts on the Earth system. Held office hours and graded assignments.

Student Mentorship

Stanford Summer Undergraduate Research in Geoscience and Engineering Program 2022

- Mckenzie Swindle

Project: Comparing vegetation water content from optical and microwave remote sensors.

Graduate Program at the Department of Earth System Science, Stanford 2021

- Trent Robinett

Project: Intermediate complexity schemes for modelling the diversity of vegetation drought response.

Stanford Summer Undergraduate Research in Geoscience and Engineering Program 2021

- Paula Rueda Villamil

Project: Understanding satellite measurements of vegetation water content for improved wildfire prediction and monitoring of vegetation health.

Graduate Program at the Department of Earth System Science, UC Irvine 2016-2021

- Zhuoya He

Project: Multi-decadal Contemporary Sea Level Changes from Land Ice derived using Satellite Observations and Climate Models Output Products.

Professional Services

- Reviewer for academic journals including *Nature Climate Change, Nature Food, Remote Sensing of Environment, Geophysical Research Letters, Environmental Research Letters, Journal of Hydrology, Journal of Climate, Journal of Hydrometeorology, Water Resources Research, Journal of Arid Environment, Climate of the Past, Remote Sensing, Agricultural and Forest Meteorology.*

- Co-organizer of the “Preparing for an Academic Career” workshop in the 2021 Earth Educators’ Rendezvous, sponsored by the National Association of Geoscience Teachers (NAGT).

Outreach

- Organized and wrote exams for the 2017 Orange County Regional Science Olympiad.

- Organized a field trip to Borrego Palm Canyon and guided students in measuring streamflow during the 2016 American Indian Summer Institute in Earth System Science.

- Designed “drought and wildfire” topic in the open online course programs for Orange County high school students, led by the Climate, Literacy, Empowerment, And iNquiry (CLEAN) organization at the University of California, Irvine, 2021.