# Yixin Mao

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## EDUCATION

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| 2018 | **University of Washington**, Seattle, WA | GPA: 3.89/4.0 |

**Ph.D. in Computational Hydrology**, Civil and Environmental Engineering
- Dissertation: Extracting hydrologic information from the Soil Moisture Active Passive (SMAP) satellite data for improved hydrologic modeling
- Supervisor: Bart Nijssen

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| 2013 | **Peking University**, Beijing, China | Rank: 1/29 |

**B.E. in Energy and Resources Engineering**, College of Engineering
- Thesis: Response of surface and subsurface water resources to human activities and climate change in the Luanhe Plain, China
- Supervisor: Yi Zheng

## EXPERIENCE

08/2020-present **Senior Data Scientist**
Salesforce, San Francisco, CA

02/2019-08/2020 **Data Scientist**
Salesforce, San Francisco, CA

09/2013-12/2018 **Research Assistant**
Computational Hydrology Group (formerly Land Surface Hydrology Group)
University of Washington, Seattle, WA

06/2017-09/2017 **Data Scientist Intern**
Salesforce, San Francisco, CA

03/2012-06/2013 **Research Assistant**
Center for Water Resources
Peking University, Beijing, China

06/2012-08/2012 **Research Intern**
Microbial Engineering Group
Chinese University of Hong Kong, Hong Kong

## RESEARCH INTERESTS

- Data science and machine learning applications
- Data assimilation
- Remote sensing satellite data
- Large-scale hydrologic modeling

## PROFESSIONAL SERVICE & MEMBERSHIPS

09/2014-08/2016   Board member, American Water Resources Association - University of Washington Chapter
12/2014-12/2018   Member, American Geophysical Union (AGU)

## AWARDS & GRANTS

2018   CUAHSI Pathfinder Fellowship
2016   Student Travel Grants, NASA/CUAHSI Remote Sensing Hydrology Workshop
2014   Student Travel Fund, 39th Annual Climate Diagnostics and Prediction Workshop

## PUBLICATIONS

**Mao Y.**, W. T. Crow, and B. Nijssen (2020), A unified data-driven method to derive hydrologic dynamics from global SMAP surface soil moisture and GPM precipitation data, *Water Resources Research*, 56(2), doi: 10.1029/2019WR024949.

**Mao Y.**, W. T. Crow, and B. Nijssen (2020), Dual state/rainfall correction via soil moisture assimilation for improved streamflow simulation: Evaluation of a large-scale implementation with SMAP satellite data, *Hydrology and Earth System Sciences*, 24, 615–631, doi: 10.5194/hess-24-615-2020.

**Mao, Y.**, W. T. Crow, and B. Nijssen (2019), A framework for diagnosing factors degrading the streamflow performance of a soil moisture data assimilation system, *Journal of Hydrometeorology*, 20(1), 79-97, doi:10.1175/JHM-D-18-0115.1.

Chegwidden, O. S., B. Nijssen, D. E. Rupp, J. R. Arnold, M. P. Clark, J. J. Hamman, S.-C. Kao, **Y. Mao**, N. Mizukami, P. W. Mote, M. Pan, E. Pytlak, M. Xiao (2019), How do modeling decisions affect the spread among hydrologic climate change projections? Exploring a large ensemble of simulations across a diversity of hydroclimates, *Earth's Future*, 7(6), 623-637, doi: doi.org/10.1029/2018EF001047.

Cao, Q., E. A. Clark, **Y. Mao**, and D. P. Lettenmaier (2019), Trends and interannual variability in terrestrial water storage over the eastern United States, 2003-2016, *Water Resources Research*, 55(3), 1928-1950, doi: 10.1029/2018WR023278.

Hamman, J. J., B. Nijssen, T. J. Bohn, D. R. Gergel, and **Y. Mao** (2018), The Variable Infiltration Capacity Model, Version 5 (VIC-5): Infrastructure improvements for new applications and reproducibility, *Geoscintific Model Development*, 11, 3481-3496, doi: 10.5194/gmd-11-3481-2018.

Niemeyer, R., Y. Cheng, **Y. Mao**, J. Yearsley, and B. Nijssen (2018), A thermally-stratified reservoir module for large-scale distributed stream temperature models with application in the Tennessee River Basin, *Water Resources Research*, 54, doi: 10.1029/2018WR022615.

Feng D., Y. Zheng, **Y. Mao**, A. Zhang, B. Wu, J. Li, Y. Tian, and X. Wu (2018), An integrated hydrological modeling approach for detection and attribution of climatic and human impacts on coastal water resources, *Journal of Hydrology*, 557, 305-320, doi:10.1016/j.jhydrol.2017.12.041.

Mizukami N., M. P. Clark, K. Sampson, B. Nijssen, **Y. Mao**, H. McMillan, R. J. Viger, S. L. Markstrom, L. E. Hay, R. Woods, J. R. Arnold and L. D. Brekke (2016), mizuRoute version 1: a river network routing tool for a continental domain water resources applications, *Geoscientific Model Development*, 9, 2223-2238, doi:10.5194/gmd-9-2223-2016.

**Mao Y.**, B. Nijssen and D. P. Lettenmaier (2015), Is climate change implicated in the 2013–2014 California drought? A hydrologic perspective, *Geophysical Research Letters*, 42(8), 2805-2813, doi:10.1002/2015GL063456.

Henn B., Q. Cao, D. P. Lettenmaier, C. S. Magirl, C. Mass, J. B. Bower, M. St Laurent, **Y. Mao** and S. Perica (2015), Hydroclimatic conditions preceding the March 2014 Oso landslide, *Journal of Hydrometeorology*, 16 (3), 1243-1249, doi:10.1175/JHM-D-15-0008.1.

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## SELECTED PRESENTATIONS

**Mao Y.** and Shay Strong (Mar 2019), Introduction to machine learning. Oral presentation, Waterhackweek, University of Washington eScience Institute, Seattle, WA.

**Mao Y.**, W. T. Crow and B. Nijssen (Dec 2018), Learning surface soil moisture behavior from global SMAP and GPM satellite data, 2018 AGU Fall Meeting, Washington, D.C.

**Mao Y.** (Feb 2018), Python as a tool to build large-scale geoscience systems - An example on a hydrologic data assimilation system. Oral presentation, Python in the Geosciences seminar series, University of Washington eScience Institute, Seattle, WA.

**Mao Y.**, W. T. Crow and B. Nijssen (Dec 2017), A 3-step framework for understanding the added value of surface soil moisture measurements for large-scale runoff prediction via data assimilation. Oral presentation, 2017 AGU Fall Meeting, New Orleans, LA.

**Mao Y.**, W. T. Crow and B. Nijssen (Dec 2016), Dual state/rainfall correction via soil moisture assimilation for improved hydrologic prediction - a synthetic study using the VIC Model in the Arkansas-Red River basin. Poster session, 2016 AGU Fall Meeting, San Francisco, CA.

Chegwidden O., B .Nijssen, **Y. Mao** and D. E. Rupp (Dec 2016), Hydrologic climate change impacts in the Columbia River Basin and their sensitivity to methodological choices. Oral presentation, 2016 AGU Fall Meeting, San Francisco, CA.

Niemeyer R. J., Y. Cheng, **Y. Mao**, J. R. Yearsley and B. Nijssen (Dec 2016), Incorporating a simple two-layer reservoir into a coupled land surface and river routing model to improve river temperature simulations in the Tennessee River Basin. Poster session, 2016 AGU Fall Meeting, San Francisco, CA.

Cheng Y., Niemeyer R. J., **Y. Mao**, J. R. Yearsley and B. Nijssen (Dec 2016), Climate change impacts on river temperature in the southeastern United States: a case study of the Tennessee River basin. Poster session, 2016 AGU Fall Meeting, San Francisco, CA.

**Mao Y.**, T. Zhou, J. R. Yearsley and B. Nijssen (Dec 2015), Future climate impacts on streamflow and stream temperature in the Tennessee River basin. Poster session, 2015 AGU Fall Meeting, San Francisco, CA.

**Mao Y.**, E. Clark, M. Xiao, B. Nijssen and D. P. Lettenmaier (Apr 2015), Did climate change cause the 2013-2014 California drought? Oral presentation, 2015 Hydrophiles Water Research Symposium, Corvallis, OR.

Mao Y., E. Clark, M. Xiao, B. Nijssen and D. P. Lettenmaier (Dec 2014), Did climate change cause the 2012-2014 California drought? Oral presentation, 2014 AGU Fall Meeting, San Francisco, CA.

**Mao Y.**, E. Clark, M. Xiao, B. Nijssen and D. P. Lettenmaier (Oct 2014), The 2014 California drought in an historical context. Oral presentation, the 39th Annual Climate Diagnostics and Prediction Workshop, St. Louis, MO.

**Mao Y.**, E. Clark, M. Xiao, B. Nijssen and D. P. Lettenmaier (May 2014), Analysis of the current drought in California, a historical context. Poster session, the 4th Annual Hydrophiles Water Symposium, Corvallis, OR.