

PROFESSIONAL PREPARATION

Ph.D. University of California at Los Angeles, 2010, Civil Engineering
M.S. University of California at Berkeley, 1999, Civil and Environmental Engineering
B.S. University of Virginia, 1998, Civil Engineering

APPOINTMENTS

Associate Professor, 2018 – present Civil and Environmental Engineering, University of Maryland
Assistant Professor, 2012 – 2018 Civil and Environmental Engineering, University of Maryland
Postdoctoral Fellow, 2010 – 2011 NASA Goddard Space Flight Center
Research Assistant, 2005 – 2010 Civil Engineering, University of California at Los Angeles
Staff Engineer, 1999 – 2004 United Research Services (URS) Corporation

RESEARCH INTERESTS

Hydrology, hydrometeorology, snow and land surface modeling, satellite-based remote sensing, hydrologic data assimilation, artificial intelligence and machine learning applications

AWARDS

NASA GRACE – GRACE-FO Science Team Member, 2020; NASA High Mountain Asia (HiMAT2) Science Team Member, 2020; Fulbright-Nehru Scholar in India, 2019-2020; Engineers Without Borders (EWB) Outstanding Mentor, 2018; NASA High Mountain Asia Science Team (HiMAT), 2016; NASA GRACE-FO Science Team, 2016; Kent Teaching Award for Outstanding Junior Faculty, 2015; NASA New Investigator Program Award, 2014; NASA Postdoctoral Fellowship, 2010; UCLA Edward K. Rice Engineering Ph.D. Student of the Year, 2010; UCLA Outstanding Civil Engineering Ph.D. Student of the Year, 2010; American Geophysical Union Outstanding Student Paper Award, 2009, 2008, and 2007; NASA Earth System Science Graduate Fellowship, 2007;

FIVE RELEVANT PUBLICATIONS

1. Xue, Y.*, **B. A. Forman**, and R. H. Reichle (2018). Estimating snow mass in North America through assimilation of AMSR-E brightness temperature observations using the Catchment land surface model and support vector machines, *Water Resources Research*, 54, 1–22, doi: 10.1029/2017wr022219.
2. Loomis, B. D., A. S. Richey, A. A. Arendt, R. Appana, Y.-J.C. Deweese, **B. A. Forman**, S. V. Kumar, T. J. Sabaka, and D. E. Shean. “Water storage trends in High Mountain Asia”, *Frontiers in Earth Science*, doi: 10.3389/feart.2019.00235, 2019.
3. Kwon, Y.*, **B. A. Forman**, J. Ahmad*, S. V. Kumar, and Y. Yoon. “Exploring the utility of machine learning-based passive microwave brightness temperature assimilation over terrestrial snow in High Mountain Asia”, *Remote Sensing*, doi: 10.3390/rs11192265, 2019.
4. Yin, G.*, **B. A. Forman**, B. D. Loomis, and S. B. Luthcke. “Comparison of vertical surface deformation estimates derived from space-based gravimetry, ground-based GPS, and model-based hydrologic loading over snow-dominated watersheds in the United States”, *Journal of Geophysical Research - Solid Earth*, doi: 10.1029/2020JB019432, 2020.
5. Park, J.*, **B. A. Forman**, G. J. M. De Lannoy, R. H. Reichle, and S. B. Tarik*. “Evaluation of the NASA radiative transfer model for soil moisture estimation using Aquarius observations over North America”, *Remote Sensing*, doi:10.3390/rs12183098, 2020.

*Graduate Student or Postdoctoral Advisee

FIVE OTHER PUBLICATIONS OF INTEREST

1. **Forman, B. A.** and R. H. Reichle (2014), Using a support vector machine and a land surface model to estimate large-scale passive microwave brightness temperatures over snow-covered land in North America, *IEEE J. Selected Topics Applied Earth Obs. Remote Sens.*, doi:10.1109/JSTARS.2014.2325780.
2. Liu, L.* , M. Hejazi, G. Iyer, and **B. A. Forman**. “Implications of water constraints on electricity capacity expansion in the United States”, *Nature Sustainability*, doi:10.1038/s41893-019-0235-0, 2019.
3. Yoon, Y., S. V. Kumar, **B. A. Forman**, B. Zaitchik, Y. Kwon*, R. I. Rosenberg, Y. Qian, S. Rupper, V. Maggioni, P. Houser, D. Kirschbaum, A. Richey, and A. Arendt. “Evaluating the uncertainty of precipitation and terrestrial water budget components over High Mountain Asia”, *Frontiers in Earth Science*, doi:10.3389/feart.2019.00120, 2019.
4. Tao, J., R. H. Reichle, R. Koster, **B. A. Forman**, and Y. Xue* (2017). Evaluation and enhancement of permafrost modeling with the NASA Catchment Land Surface Model, *Journal of Advances in Modeling Earth Systems*, 10.1002/2017MS001019. doi:10.1002/2017MS001019.
5. Ahmad, J.* , **B. A. Forman**, and Y. Kwon. “Interpreting machine learning predictions of passive microwave brightness temperatures over snow-covered terrain”, *Frontiers in Earth Science*, 7:212, doi: 10.3389/feart.2019.00212, 2019.

SYNERGISTIC ACTIVITIES AND SERVICE

1. Chair, Remote Sensing Technical Committee, American Geophysical Union, 2019 – present
2. Session Convener, “Hydrologic Data Assimilation” for AGU Fall Conferences, 2012 – 2020
3. Member, NASA Applied Sciences – Water Resources Review Panel, 2013, 2014, 2016, 2018
4. Member, NASA Terrestrial Hydrology Review Panel, 2014
5. Member, NASA National Climate Assessment Indicators Review Panel, 2015
6. Faculty advisor for UMD chapter of Engineers Without Borders (EWB-UMD) Peru Drinking Water Disinfection Project
7. Faculty advisor for UMD chapter of Engineers Without Borders (EWB-UMD) Peru Gold River Bridge Project

COLLABORATORS AND OTHER AFFILIATIONS

Collaborators:

Bora Cetin (Michigan State), Leon Clarke (JGCRI), Gabrielle De Lannoy (Leuven University), Chris Derksen (Environment Canada), Stephan Durham (University of Georgia), Augusto Getirana (NASA GSFC), Ethan Gutmann (NCAR), Mohamad Hejazi (JGCRI), Paul Houser (George Mason), Edward Kim (NASA GSFC), Randy Koster (NASA GSFC), Sujay Kumar (NASA GSFC), Qing Liu (NASA GSFC), Jessica Lundquist (U. Washington), Fernando Miralles-Wilhelm (ESSIC), Viviana Maggioni (George Mason), Rolf Reichle (NASA GSFC), Matt Rodell (NASA GSFC), Charles Schwartz (UMD), Enrique Vivoni (Arizona State), Ben Zaitchik (Johns Hopkins)

Graduate and Postdoctoral Advisors:

Steven Margulis (graduate advisor at UCLA), Rolf Reichle (postdoctoral mentor at NASA GSFC)

Thesis and Postdoctoral Advisees:

Jawairia Ahmad (UMD), Dr. Yonghwan Kwon (UMD), Lu Liu (UMD), Colin McLaughlin (UMD), Alireza Moghadassi (UMD), Jongmin Park (UMD), Meghan Ryan (UMD), Dr. Jing Tao (ESSIC), Jing Wang (UMD), Lizhao Wang (UMD), Yuan Xue (UMD), Gaohong Yin (UMD)