
Steven A. Margulis, Ph.D.

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INTERESTS

Terrestrial hydrology, cold-land processes, hydrometeorology, hydroclimatology, environmental fluid dynamics, remote sensing, data assimilation, water-energy nexus

EDUCATION

Massachusetts Institute of Technology	Cambridge, MA
Doctor of Philosophy	June 2002
Department of Civil and Environmental Engineering	
Master of Science	June 1998
Department of Civil and Environmental Engineering	
University of Southern California	Los Angeles, CA
Bachelor of Science in Civil Engineering with Mathematics Minor	May 1996

ACADEMIC WORK EXPERIENCE

University of California at Los Angeles	
<i>Professor and Vice Chair</i>	July 2012-Present
<i>Director, UCLA-Hohai University (China) 3+1+1 Program</i>	September 2014-Present
<i>Affiliate, Institute of the Environment and Sustainability</i>	July 2012-Present
<i>Affiliate, Joint Institute for Regional Earth System Sci. and Eng. (JIFRESSE)</i>	July 2008-Present
<i>Associate Professor</i>	July 2008-July 2012
<i>Assistant Professor</i>	July 2002-July 2008
Massachusetts Institute of Technology	
<i>Post-doctoral Associate</i>	March 2002-July 2002
<i>Research Assistant</i>	September 1996-March 2002

SELECTED AWARDS AND HONORS

- UCLA Distinguished Teaching Award (2016)
- UCLA ASCE Professor of the Year Award (2006, 2015, 2016)
- UCLA Northrop Grumman Excellence in Teaching Award (2006)
- NASA New Investigator Award (2004)
- NSF Early Career Development (CAREER) Award (2004)
- NASA Earth System Science Fellowship (1999-2002)
- AGU Outstanding Student Paper--Spring Meeting (2001)
- MIT Dept. of Civil and Environ. Engineering Outstanding Teaching Assistant Award (2001)
- NSF Traineeship in the Hydrologic Sciences (1996-1997)
- ASCE Young Member Scholarship (1995)
- ASCE-Shimizu Corp. Essay Prize (1994)

Awards earned by student advisees:

- NASA Earth System Science Fellowship [Awarded to Laurie Huning] (2014-present)
- AGU Fall Meeting Outstanding Student Paper [Awarded to Gonzalo Cortes] (2013)
- Eastern Snow Conference Outstanding Student Paper Award [Awarded to Keith Musselman] (2011)
- NASA Earth System Science Fellowship [Awarded to Manuela Giroto] (2011-2014)
- Outstanding Ph.D. in School of Eng. And Applied Science at UCLA [Awarded to Bart Forman] (2010)
- AGU Spring Meeting Outstanding Student Paper [Awarded to Bart Forman] (2009)
- AGU Fall Meeting Outstanding Student Paper [Awarded to Bart Forman] (2008)
- NASA Earth System Science Fellowship [Awarded to Keith Musselman] (2008-2011)
- AGU Fall Meeting Outstanding Student Paper [Awarded to Hsin-Yuan Huang] (2007)
- AGU Fall Meeting Outstanding Student Paper [Awarded to Bart Forman] (2007)
- NASA Earth System Science Fellowship [Awarded to Bart Forman] (2007-2010)

- AGU Spring Meeting Outstanding Student Paper [Awarded to Michael Durand] (2006)
- NASA Earth System Science Fellowship [Awarded to Michael Durand] (2005-2007)
- AGU Fall Meeting Outstanding Student Paper [Awarded to Hsin-Yuan Huang] (2004)

TEACHING EXPERIENCE

University of California, Los Angeles

Courses taught:

- Applied Numerical Computing and Modeling
- Introduction to Hydrology
- Introduction to Water Resources Engineering
- Hydrologic Analysis Laboratory
- Surface Water Hydrology
- Hydrometeorology/Hydroclimatology
- Remote Sensing with Hydrologic Applications
- Hydrologic Data Assimilation
- Short-course on Hydrologic Data Assimilation
- Undergraduate Fiat Lux Seminar, Great Projects: The Building of America

ADVISING/MENTORING EXPERIENCE

Post-doctoral:

- Dr. Sayed Bateni, March 2011-July 2013 [now Assistant Prof. at U. Hawaii]
- Dr. Gonzalo Cortés, Summer 2016-present
- Dr. Barton Forman, January 2010-August 2010 [now Assistant Prof. at U. Maryland]
- Dr. Chunlin Huang, January 2008-December 2010 [now research scientist at Cold and Arid Regions Environmental and Engineering Research Institute, Chinese Academy of Sciences]
- Dr. Songweon Lee, Sept. 2004-Sept. 2005 [now at government position in Korea]
- Dr. James McPhee, Sept. 2005-Feb. 2007 [now Associate Prof. at U. Chile at Santiago]
- Dr. Noah Molotch, May 2006-May 2007 [now Associate Prof. at U. Colorado]
- Dr. Dayong Shen, March 2008-March 2009 [now research software developer at U. of Mississippi]

Ph.D. Students:

- Elisabeth Baldo, Ph.D., Summer 2013-present
- Gonzalo Cortés, Ph.D., Summer 2011-Spring 2016
- Michael Durand, Ph.D., Fall 2002-Sept. 2007 [now Associate Prof. at Ohio State]
- Bart Forman, Ph.D., Winter 2005-Winter 2010 [now Assistant Prof. at U. Maryland]
- Manuela Giroto, Ph.D., Fall 2008-Fall 2013 [now research scientist at NASA Goddard Space Flight Center]
- Laurie Huning, Ph.D., Summer 2011-present
- Hsin-Yuan Huang, Ph.D., Winter 2003-Winter 2008 [now research scientist at UCLA in atmospheric science department]
- Keith Musselman, Ph.D., Fall 2007-Summer 2012 [now postdoc at NCAR]
- Mahdi Navari, Ph.D., Fall 2010-present [now postdoc at NASA Goddard Space Flight Center]
- Brianna Pagán, Ph.D., Fall 2015-present
- Che-Chuan Wu, Ph.D., Fall 2005-Spring 2010 [now at government position in Taiwan]

M.S. Students:

- Typically advise 3-5 M.S. students per year

Undergraduate:

- Sarah Ahmed, Winter 2010-Spring 2011
- Daniel Brehm, Summer 2013
- Peter Ding, Winter 2010-Spring 2011
- Audrey Lee, Winter 2010-Spring 2011
- Yufei Liu, Spring 2016-present
- Jake McCarter, Fall 2006-Spring 2007
- Wesley Mercado, Summer 2013
- Connor Rutten, Spring 2015
- Davis Thomas, Summer 2013
- Sarah Tobin, Spring 2005
- Patrick Vandenberg, Fall 2010
- Kawsar Vazifdar, Winter 2010-Spring 2011
- Haowen Yue, Spring 2016

TEXTBOOKS

1. Margulis, S., 2015: *Introduction to Hydrology*, 414pp. (open-access multimedia electronic textbook with "MOD-WET" watershed modeling toolbox); 3rd edition; to date being used at over 30 universities worldwide;
http://aqua.seas.ucla.edu/margulis_intro_to_hydro_textbook.html

REFEREED RESEARCH JOURNAL PUBLICATIONS**(PUBLISHED/IN PRESS)**

1. Margulis, S. and D. Entekhabi, 2001: Temporal disaggregation of satellite-derived monthly precipitation estimates and the resulting propagation of error in partitioning of water at the land surface, *Hydrology and Earth System Sciences*, 5(1) 27-37.
2. Margulis, S. and D. Entekhabi, 2001: A coupled land surface-boundary layer model and its adjoint, *Journal of Hydrometeorology*, 2(3) 274-296.
3. Margulis, S. and D. Entekhabi, 2001: Feedback between the surface energy balance and atmospheric boundary layer diagnosed through a model and its adjoint, *Journal of Hydrometeorology*, 2(6), 599-620.
4. Margulis, S., D. McLaughlin, D. Entekhabi, and S. Dunne, 2002: Land data assimilation and soil moisture estimation using measurements from the Southern Great Plains 1997 field experiment, *Water Resources Research*, 38(12), 1299, doi:10.1029/2001WR001114.
5. Margulis, S. and D. Entekhabi, 2003: Variational assimilation of radiometric surface temperature and reference-level micrometeorology into a model of the atmospheric boundary layer and land surface, *Monthly Weather Review*, 131(7), 1272-1288.
6. Margulis, S. and D. Entekhabi, 2004: Boundary layer entrainment estimation through assimilation of radiosonde and micrometeorology data into a mixed-layer model, *Boundary-Layer Meteorology*, 110, 405-433.
7. McPhee, J. and S. Margulis, 2005: Validation and Error Characterization of GPCP-1DD Precipitation Product over the Contiguous United States, *Journal of Hydrometeorology*, 6(4), 441-459.
8. Margulis, S., J. Kim, and T. Hogue, 2005: A Comparison Study of the Triangle Retrieval and Variational Data Assimilation Methods for Surface Turbulent Flux Estimation, *Journal of Hydrometeorology*, 6(6), 1063-1072.
9. Durand, M. and S. Margulis, 2006: Feasibility test of multi-frequency radiometric data assimilation to estimate snow water equivalent, *Journal of Hydrometeorology*, Vol. 7(3), 443-457.
10. Margulis, S., D. Entekhabi, and D. McLaughlin, 2006: Spatio-Temporal Disaggregation of Remotely Sensed Precipitation for Ensemble Hydrologic Modeling and Data Assimilation, *Journal of Hydrometeorology*, 7(3), 511-533.
11. Lee, S. and S. Margulis, 2007: High-resolution ensemble surface insolation estimates through assimilation of coarse-scale retrievals into a simple physical model: 1. Physical model development and accuracy tests, *Journal of Geophysical Research*, 112, D08212, doi:10.1029/2006JD007872.
12. Lee, S. and S. Margulis, 2007: High-resolution ensemble surface insolation estimates through assimilation of coarse-scale retrievals into a simple physical model: 2. Ensemble implementation and SRB data assimilation, *Journal of Geophysical Research*, 112, D10219, doi:10.1029/2006JD007873.
13. Durand, M. and S. Margulis, 2007: Correcting first-order errors in snow water equivalent estimation using a multi-frequency, multi-scale data assimilation scheme, *Journal of Geophysical Research*, 112, D13121, doi:10.1029/2006JD008067.
14. Molotch, N, P. Blanken, M. Williams, A. Turnipseed, R. Monson, and S. Margulis, 2007: Estimating sublimation of intercepted and sub-canopy snow using eddy covariance systems, *Hydrological Processes*, 21, 1567-1575, doi: 10.1002/hyp.6719.
15. Durand, M., N. Molotch, and S. Margulis, 2008: Merging complementary remote sensing datasets in the context of snow water equivalent reconstruction, *Remote Sensing of Environment*, 112, 1212-1225, doi: 10.1016/j.rse.2007.08.010.
16. Durand, M. and S. Margulis, 2008: Effects of uncertainty magnitude and accuracy on assimilation of multi-scale measurements for snowpack characterization, *Journal of Geophysical Research*, 113, D02105, doi:10.1029/2007JD008662.
17. Huang, H.-Y., Stevens, B., and S. Margulis, 2008: Application of dynamic subgrid-scale models for large-eddy simulation of the daytime convective boundary layer over heterogeneous surfaces, *Boundary-Layer Meteorology*, doi:10.1007/s10546-007-9239-9.
18. Durand, M., E. Kim, and S. Margulis, 2008: Modeling snow microwave radiance at the point-scale: characterizing uncertainty and sensitivity to melt-refreeze and stratigraphic

- effects, *IEEE Transactions on Geoscience and Remote Sensing*, 46(6), 1753-1767, doi: 10.1109/TGRS/2008.916221.
19. Molotch, N. and S. Margulis, 2008: Estimating the distribution of snow water equivalent using remotely sensed snow cover data and a spatially distributed snowmelt model: a multi-resolution, multi-sensor comparison, *Advances in Water Resources*, 31, 1503-1514.
 20. Durand, M., N. Molotch, and S. Margulis, 2008: A Bayesian approach to snow water equivalent reconstruction, *Journal of Geophysical Research* 113, D20117, doi:10.1029/2008JD009894.
 21. Forman, B., E. Vivoni, and S. Margulis, 2008: Evaluation of Ensemble-based Distributed Hydrologic Model Response with Disaggregated Precipitation Products, *Water Resources Research*, 44, W12409, doi:10.1029/2008WR006827.
 22. Durand, M., E. Kim, and S. Margulis, 2009: Radiance assimilation shows promise for snowpack characterization, *Geophysical Research Letters*, 36, L02503, doi:10.1029/2008GL035214.
 23. Huang, H.-Y. and S. Margulis, 2009: On the impact of surface heterogeneity on the diurnal evolution of the convective boundary layer, *Water Resources Research*, 45, W04425, doi:10.1029/2008WR007175.
 24. Forman, B. and S. Margulis, 2009: Satellite-based cloud-coupled estimation of downwelling surface shortwave and longwave radiation, *Hydrol. Earth Syst. Sci.*, 13, 969-986.
 25. Molotch, N., S. Margulis, S. Jepsen, 2010: Response to comment by A.G. Slater, M.P. Clark, and A.P. Barrett on 'Estimating the distribution of snow water equivalent using remotely sensed snow cover data and a spatially distributed snowmelt model: A multi-resolution, multi-sensor comparison', *Advances in Water Resources*, 33, 2, 231-239, doi: 10.1016/j.advwatres.2009.11.008.
 26. Huang, H.-Y. and S. Margulis, 2010: Evaluation of a fully-coupled LES-LSM model and its diagnosis of land-atmosphere feedbacks, *Water Resources Research*, 46, W06512, doi:10.1029/2009WR008232.
 27. Forman, B. and S. Margulis, 2010a: Assimilation of multiresolution radiation products into a downwelling surface radiation model I: Ensemble open-loop implementation, *Journal of Geophysical Research*, 115, D22115, doi:10.1029/2010JD013920.
 28. Forman, B. and S. Margulis, 2010b: Assimilation of multiresolution radiation products into a downwelling surface radiation model II: Ensemble Kalman Filter and Ensemble Kalman Smoother Results, *Journal of Geophysical Research*, 115, D22116, doi:10.1029/2010JD013950.
 29. Huang, H.-Y., S. Margulis, C. R. Chu, and H.-C. Tsai, 2010: Investigation of the impacts of vegetation distribution and evaporative cooling on urban daytime climate using a coupled LES-LSM model, *Hydrological Processes*, doi:10.1002/hyp.7919.
 30. He, K., T. Hogue, K. Franz, S. Margulis, and J. Vrugt, 2011: Characterizing parameter sensitivity and uncertainty for a snow model across hydroclimatic regimes, *Advances in Water Resources*, 34, 114-127, doi:10.1016/j.advwatres.2010.10.002.
 31. Wu, C.-C. and S. Margulis, 2011: Feasibility of Real-time Soil State and Flux Characterization for Wastewater Reuse Using an Embedded Sensor Network Data Assimilation Approach, *Journal of Hydrology*, doi:10.1016/j.jhydrol.2011.01.011.
 32. Durand, M., E. Kim, S. Margulis, and N. Molotch, 2011: A first-order characterization of errors from neglecting stratigraphy in forward and inverse passive microwave modeling of snow, *IEEE Geosci. Remote Sens. Letters*, 8(4), doi: 10.1109/LGRS.2011.2105243.
 33. Toure, A., K. Goita, A. Royer, E. Kim, M. Durand, S. Margulis, H. Lu, 2011: A case study of using a multi-layered thermo-dynamical snow model for radiance assimilation, *IEEE Transactions on Geoscience and Remote Sensing*, 49(8), doi: 10.1109/TGRS.2011.2118761.
 34. He, K., T. Hogue, K. Franz, S. Margulis, and J. Vrugt, 2011: Corruption of parameter behavior and regionalization by model and forcing data errors: A Bayesian example using the SNOW17 model, *Water Resources Research*, 47, W07546, doi:10.1029/2010WR009753.
 35. Huang, H.-Y. and S. Margulis, 2011: Investigating the impact of soil moisture and atmospheric stability on cloud development and distribution using a coupled large eddy simulation-land surface model, *Journal of Hydrometeorology*, 10.1175/2011JHM1315.1.
 36. Huang, C., S. Margulis, M. Durand, and K. Musselman, 2012: Assessment of grain-size, stratigraphy and model complexity impacts on snow radiance assimilation: Forward Modeling Evaluation, *IEEE Transactions on Geoscience and Remote Sensing*, 50 (11), doi:10.1109/TGRS.2012.2192480.

37. He, M. T. Hogue, S. Margulis, K. Franz, 2012: An integrated uncertainty and ensemble-based data assimilation approach for improved operational streamflow prediction, *Hydrology and Earth System Science*, 16,815-831, doi:10.5194/hess-16-815-2012.
38. Musselman, K.N., N. Molotch, S. Margulis, P. Kirchner, R. Bales, 2012: Influence of canopy structure and direct beam solar irradiance on snowmelt rates in a mixed conifer forest, *Agricultural and Forest Meteorology*, 16,46-56, doi:10.1016/j.agrformet.2012.03.011.
39. Huang, H.-Y. and S. Margulis, 2012: Impact of soil moisture heterogeneity length scale and gradients on daytime coupled land-cloudy boundary layer interactions, *Hydrological Processes*, doi:10.1002/hyp.9351.
40. Forman, B. and S. Margulis, 2012: Impact of covariance localization on conditioned downwelling radiative fluxes, *Journal of Hydrometeorology*, DOI: 10.1175/JHM-D-11-073.1.
41. Li, D., M. Durand, and S. Margulis, 2012: Potential for hydrologic characterization of deep mountain snowpack via passive microwave remote sensing in the Kern River basin, Sierra Nevada, USA, *Remote Sensing Environment*, 125, 34-48, doi: 10.1016/j.rse.2012.06.027.
42. Musselman, K. N., N. P. Molotch, S. A. Margulis, M. Lehning, and D. Gustafsson, 2012: Improved snowmelt simulations with a canopy model forced with photo-derived direct beam canopy transmissivity, *Water Resources Research*, 48, W10509, doi:10.1029/2012WR012285.
43. Wu, C.-C. and S. Margulis, 2013: Real-Time Soil Moisture and Salinity Profile Estimation Using Assimilation of Embedded Sensor Datastreams, *Vadose Zone Journal*, v. 12, vzj2011.0176, doi: 10.2136/vzj2011.0176.
44. Bateni, S.M., C. Huang, S. Margulis, E. Podest, K. McDonald, 2013: Feasibility of monitoring freeze-thaw state of soil under snowpack using multi-frequency active/passive microwave measurements, *IEEE Transactions on Geoscience and Remote Sensing*, doi: 10.1109/TGRS.2012.2229466.
45. Giroto, M., S. Margulis, M. Durand, 2013: Probabilistic SWE reanalysis as a generalization of deterministic SWE reconstruction techniques, *Hydrological Processes*, doi: 10.1002/hyp.9887.
46. Vanderjagt, B., M. Durand, S. Margulis, N. Molotch, E. Kim, 2013: The effect of spatial variability on the sensitivity of passive microwave measurements to snow water equivalent, *Remote Sensing of Environment*, 136, 163-179, doi: 10.1016/j.rse.2013.05.002.
47. Musselman, K., S. Margulis, N. Molotch, 2013: Estimation of solar direct beam transmittance of conifer canopies from airborne LiDAR, *Remote Sensing of Environment*, 136, 402-415, doi:10.1016/j.rse.2013.05.021.
48. Cortés, G., M. Giroto, S. Margulis, 2014: Analysis of minimum glacier and snow extent over the Andes using historical Landsat imagery, *Remote Sensing of Environment*, doi: 10.1016/j.rse.2013.10.023.
49. Bateni, S.M., D. Entekhabi, S. Margulis, F. Castelli, L. Kergoat, 2014: Coupled estimation of surface heat fluxes and vegetation dynamics from remotely sensed land surface temperature and fraction of photosynthetically active radiation, *Water Resources Research*, 50, 8420-8440, doi:10.1002/2013WR014573.
50. Giroto, M., G. Cortés, S. Margulis, M. Durand, 2014: Examining the spatial and temporal variability in snow water equivalent using a 27-year reanalysis: Kern River Watershed, Sierra Nevada, *Water Resources Research*, 50, 6713-6734, doi:10.1002/2014WR015346.
51. Li, D., M. Durand, S. Margulis, 2014: Large-scale high-resolution modeling of microwave radiance of a deep maritime alpine snowpack, *IEEE Transactions on Geoscience and Remote Sensing*, doi: 10.1109/TGRS.2014.2358566.
52. Bateni, S.M., S. Margulis, E. Podest, K. McDonald, 2015: Characterizing Snowpack and the Freeze-Thaw State of Underlying Soil via Assimilation of Multifrequency Passive/Active Microwave Data: A Case Study (NASA CLPX 2003), *IEEE Transactions on Geoscience and Remote Sensing*, 53(1), 173-189, doi: 10.1109/TGRS.2014.2320264.
53. Vanderjagt, B., M. Durand, S. Margulis, E. Kim, N. Molotch, 2015: On the characterization of vegetation transmissivity using LAI for application in passive microwave remote sensing of snowpack, *Remote Sensing of Environment*, 156, 310-321, doi:10.1016/j.rse.2014.09.001.
54. Huning, L. and S. Margulis, 2015: Watershed modeling applications with a modular physically-based and spatially-distributed watershed educational toolbox, *Environmental Modelling & Software*, 68, 55-69, doi:10.1016/j.envsoft.2015.02.008.

55. Margulis, S., M. Girotto, G. Cortés, and M. Durand, 2015: A Particle Batch Smoother Approach to Snow Water Equivalent Estimation, *Journal of Hydrometeorology*, doi:10.1175/JHM-D-14-0177.1, 16, 1752-1772.
56. Li, D., M. Durand, S. Margulis, 2015: Quantifying spatiotemporal variability of controls on microwave emission from snow covered mountainous regions, *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, doi: 10.1109/JSTARS.2015.2440332.
57. Navari, M., Margulis, S. A., Bateni, S. M., Tedesco, M., Alexander, P., and Fettweis, X., 2016: Feasibility of improving a priori regional climate model estimates of Greenland ice sheet surface mass loss through assimilation of measured ice surface temperatures, *The Cryosphere*, 10, 103-120, doi:10.5194/tc-10-103-2016.
58. Margulis, S., G. Cortes, M. Girotto, and M. Durand, 2016: A Landsat-era Sierra Nevada (USA) Snow Reanalysis (1985-2015). *J. Hydrometeor.* doi:10.1175/JHM-D-15-0177.1, doi:10.1175/JHMD-15-0177.1, 17, 1203-1221.
59. Cortés, G., M. Girotto, and S. Margulis, 2016: Snow process estimation over the extratropical Andes using a data assimilation framework integrating MERRA data and Landsat imagery, *Water Resources Research*, 52, 2582–2600, doi:10.1002/2015WR018376.
60. Margulis, S., G. Cortés, M. Girotto, L. Huning, D. Li, and M. Durand, 2016: Characterizing the Extreme 2015 Snowpack Deficit in the Sierra Nevada (USA) and Implications for Recovery, *Geophysical Research Letters*, 43, doi:10.1002/2016GL068520.
61. Xu, T., S.M. Bateni, S. Margulis, L. Song, S. Liu, Z. Xu, 2015: Partitioning Evapotranspiration into Soil Evaporation and Canopy Transpiration via a Two-Source Variational Data Assimilation System, *Journal of Hydrometeorology*, in press.

(IN REVIEW/REVISION/PREP.)

62. Cai, S., D. Li, M. Durand, S. Margulis, 2015: Examination of the impacts of vegetation on the correlation between snow water equivalent and passive microwave brightness temperature, *Remote Sensing Environment*, in revision.
63. Abdolghafoorian, A., L. Farhadi, S.M. Bateni, S. Margulis, 2015: Characterizing the Effect of Vegetation Dynamics on the Bulk Heat Transfer Coefficient to Improve Variational Estimation of Surface Turbulent Fluxes, *Journal of Hydrometeorology*, in revision.
64. Li, D., M. Durand, S. Margulis, 2016: Estimating snow water equivalent in a Sierra Nevada watershed via spaceborne radiance data assimilation, *Water Resources Research*, in revision.
65. Wrzesien, M.L., M.T. Durand, T.M. Pavelsky, I.M. Howat, S. Margulis, L. Huning, Comparison of Methods to Accurately Determine Snow Water Equivalent at the Mountain Range Scale, *Journal of Hydrometeorology*, in review.
66. Huning, L. and S. Margulis, 2016a: Climatology of snowstorms and snowpack accumulation across the Sierra Nevada (USA), equivalent reanalysis, in prep. for submission to *Journal of Geophysical Research*.
67. Huning, L. and S. Margulis, 2016b: Investigating the spatiotemporal variability of high-elevation orographic enhancement and its drivers in California's Sierra Nevada: Results from a multi-decadal snow water equivalent reanalysis, in prep. for submission to *Water Resources Research*.
68. Cortés, G. and S. Margulis, 2016: A characterization of snow climatology over the extra-tropical Andes using a new Landsat-era snow reanalysis: latitudinal distribution, orographic influence and large-scale atmospheric drivers, in prep. for submission to *Water Resources Research*.
69. Baldo, E. and S. Margulis, 2016: Multi-resolution modeling of snow-dominated basins, in prep. for submission to *Water Resources Research*.

OTHER PUBLICATIONS

1. Durand, M. and S. Margulis, 2005: Large-scale SWE estimation: Optimal use of Remote Sensing and Snow Modeling, *Southwest Hydrology*, 4(2), 20-21, 32.
2. Gochis, D. et al., 2005: Future Scientific Directions: The Water Cycle Across Scales, *Bulletin of the American Meteorological Society*, 86(12), 1743-1746.
3. Margulis, S., E. Wood, and P. Troch, 2006: Introduction: The Terrestrial Water Cycle: Modeling and Data Assimilation Across Catchment Scales, *Journal of Hydrometeorology*, 7(3), 309-311.

4. Margulis, S., 2006: Book Review: Handbook of Micrometeorology: A Guide to Surface Flux Measurement and Analysis, Ed., X. Lee, W. Massman, B. Law, *Bulletin of the American Meteorological Society*, 87(7), 957-959.
5. Molotch, N., M. Durand, B. Guan, S. Margulis, R. Davis, 2014: Snow cover depletion curves and snow water equivalent reconstruction: Six decades of hydrologic remote sensing, Book Chapter in: "Remote Sensing of the Terrestrial Water Cycle", AGU Chapman Conference Monograph on Remote Sensing, doi: 10.1002/9781118872086.

CONFERENCE PAPERS AND INVITED TALKS

1. Margulis, S. and D. Entekhabi, May 1998: Methods for the temporal disaggregation of satellite-derived monthly precipitation estimates, *American Geophysical Union, Spring Annual Meeting*.
2. Margulis, S. and D. Entekhabi, May 2001: A coupled land surface boundary layer model and its adjoint: A general tool for sensitivity analysis and data assimilation, *American Geophysical Union, Spring Annual Meeting*.
3. Margulis, S. and D. Entekhabi, May 2001: The importance of feedback in the surface energy balance: Diagnosing sensitivity pathways using an adjoint model, *American Geophysical Union, Spring Annual Meeting* (Received Outstanding Student Paper Award).
4. Margulis, S. and D. Entekhabi, September 2001: Variational data assimilation using a coupled land surface-atmospheric boundary layer model, *Conference on distributed hydrologic modeling and data assimilation, Wageningen University, Wageningen, The Netherlands*.
5. Margulis, S. and D. Entekhabi, December 2001: Variational assimilation of standard near-surface micrometeorology into a coupled land surface-boundary layer model, *American Geophysical Union, Fall Annual Meeting*.
6. Margulis, S., D. McLaughlin, D. Entekhabi, and S. Dunne, December 2001: Land data assimilation and estimation of soil moisture using measurements from the Southern Great Plains 1997 field experiment, *American Geophysical Union, Fall Annual Meeting*.
7. Margulis, S., and D. Entekhabi, October 2002: Emergent Behaviors in Coupled Dynamical Systems: Why We Should Define New Control-Volume Boundaries for Land Surface and Atmospheric Boundary Layer, Princeton University-Consiglio Nazionale delle Ricerche Workshop on Frontiers in Hydrology, Princeton, New Jersey (Invited).
8. Margulis, S., December 2002: Assimilation of remotely sensed and micrometeorological observations into a coupled land surface-atmospheric boundary layer model, *American Geophysical Union, Fall Annual Meeting* (Invited).
9. Margulis, S., February 2003: Toward the real-time observation of hydrologic fluxes from space, *American Meteorological Society Annual Meeting*.
10. Margulis, S., March 2003: Remote Sensing and Data Assimilation in Hydrology, *University of Southern California Environmental Engineering Seminar Series* (Invited).
11. Margulis, S., December 2003: Spatio-Temporal Disaggregation of Remote Sensing Observations for Land Surface State and Flux Estimation Using an Ensemble Data Assimilation Framework, *American Geophysical Union, Fall Annual Meeting*.
12. Margulis, S., D. Entekhabi, and D. McLaughlin 2004: Ensemble Land Surface Modeling Using Satellite-Based Precipitation Forcing, *Catchment-scale Hydrological Modeling and Data Assimilation (CAHMDA)-II International Workshop on: The Terrestrial Water Cycle Modeling and Data Assimilation across Catchment Scales*, October 25-27, Princeton University, Princeton, NJ.
13. Margulis, S. December 2004: Ensemble Land Surface Modeling Using Coarse Satellite-Based Precipitation Forcing, *American Geophysical Union, Fall Annual Meeting*.
14. McPhee, J., and S. Margulis, December 2004: Validation and Error Characterization of GPCP-1DD Precipitation Product over the Contiguous United States, *American Geophysical Union, Fall Annual Meeting*.
15. Durand, M., and S. Margulis, December 2004: Feasibility of snow water equivalent estimation using the Ensemble Kalman Filter, *American Geophysical Union, Fall Annual Meeting*.
16. Kim, J, S. Margulis, and T. Hogue, December 2004: Comparison of Surface Turbulent Flux Estimation from Radiometric Surface Temperature Observations Using Retrieval- and Data Assimilation-Based Approaches, *American Geophysical Union, Fall Annual Meeting*.
17. Huang, H.-Y., and S. Margulis, December 2004: Estimation of Rootzone Soil Moisture and Land Surface Fluxes From Reference-Level Micrometeorology and Boundary Layer

- Observations, *American Geophysical Union, Fall Annual Meeting* (Received Outstanding Student Paper Award).
18. Durand, M., and S. Margulis, January 2005: Feasibility of snowpack characterization using multi-frequency remote sensing and advanced data assimilation techniques, *American Meteorological Society Annual Meeting*.
 19. Margulis, S., April 2005: Hydrologic Data Assimilation: Merging Measurements and Models, *Center for Embedded Network Sensing (CENS) Technical Seminar Series, UCLA* (Invited).
 20. Entekhabi, D., S. Margulis and D. Flagg, September 2005: Data Assimilation in a Coupled Land-Boundary Layer System, at GLASS and GABLS Workshop on Local Land-Atmosphere Coupling, De Bilt, The Netherlands (Invited Keynote).
 21. Lee, S, and S. Margulis, December 2005: High-resolution ensemble solar radiation estimates through assimilation of coarse-scale retrievals into a simple physical insolation model, *American Geophysical Union, Fall Annual Meeting*.
 22. Durand, M., and S. Margulis, December 2005: Feasibility of distributed snowpack characterization during the Cold Land Processes Field Experiment (CLPX) using a multi-scale multi-frequency data assimilation approach, *American Geophysical Union, Fall Annual Meeting*.
 23. Durand, M., and S. Margulis, May 2006: Feasibility of distributed snowpack characterization using radiometric data assimilation: an example of a multi-scale, multi-frequency approach, *American Geophysical Union, Spring Annual Meeting*.
 24. Durand, M. and S. Margulis, December 2006: Sensitivity of snowpack characterization by multi-frequency radiometric data assimilation to input uncertainty and correlation structure, *American Geophysical Union, Fall Annual Meeting*.
 25. McPhee, J. and S. Margulis, December 2006: Implementation of a cloud-based microphysical precipitation model for data assimilation: model formulation and sensitivity analysis, *American Geophysical Union, Fall Annual Meeting*.
 26. Molotch, N. and S. Margulis, December 2006: Reconstructing Snow Water Equivalent in the Rio Grande Headwaters: a Multi-Resolution, Multi-Sensor Comparison, *American Geophysical Union, Fall Annual Meeting*.
 27. Forman, B., E. Vivoni, and S. Margulis, December 2006: Ensemble-Based Distributed Hydrologic Modeling with Disaggregated Satellite-Derived Precipitation, *American Geophysical Union, Fall Annual Meeting*.
 28. Huang, H.-Y. and S. Margulis, December 2006: Application of dynamic subgrid-scale models for large-eddy simulation of the daytime convective boundary layer, *American Geophysical Union, Fall Annual Meeting*.
 29. Lee, S., J. McPhee, B. Forman, and S. Margulis, 2007: Estimation of high-resolution ensemble surface forcing fields using a multi-scale remote sensing data assimilation approach, *Satellite Observations of the Global Water Cycle*, UC Irvine, 7-9 March 2007.
 30. Molotch, N., M. Durand, and S. Margulis, 2007: Merging complementary remote sensing datasets in the context of snow water equivalent reconstruction, *Satellite Observations of the Global Water Cycle*, UC Irvine, 7-9 March 2007.
 31. Durand, M. and S. Margulis, 2007: Issues of scale in evaluating the feasibility of snow water equivalent estimation via radiance assimilation, *Satellite Observations of the Global Water Cycle*, UC Irvine, 7-9 March 2007.
 32. Wu, C. and S. Margulis, May 2007: Real-time soil characterization with a stochastic data assimilation approach, *American Geophysical Union, Spring Annual Meeting*.
 33. Huang, H-Y. and S. Margulis, May 2007: On the impact of surface heterogeneity on the diurnal evolution of the convective boundary layer, *American Geophysical Union, Spring Annual Meeting*.
 34. Forman, B., E. Vivoni, and S. Margulis, May 2007: Toward improved calibration of distributed hydrologic models via uncertainty analysis, *American Geophysical Union, Spring Annual Meeting*.
 35. McPhee, J. and S. Margulis, May 2007: Incorporating remotely sensed cloud and atmospheric thermodynamic data into a microphysically based precipitation model, *American Geophysical Union, Spring Annual Meeting*.
 36. Durand, M., N. Molotch and S. Margulis, May 2007: A Bayesian approach to snow water equivalent reconstruction, *American Geophysical Union, Spring Annual Meeting*.
 37. Molotch, N., M. Durand, and S. Margulis, May 2007: The effect of model scale in reconstructing snow water equivalent over complex terrain, *American Geophysical Union, Spring Annual Meeting*.

38. Margulis, S., September 2007: Toward the characterization of snowpack from space-borne satellite measurements, *MIT Ralph M. Parsons Lab Hydrology Seminar Series* (Invited).
39. Margulis, S., September 2007: Toward the characterization of snowpack from space-borne satellite measurements, *Boston University Dept. of Geography Seminar Series* (Invited).
40. Margulis, S., September 2007: Toward the characterization of snowpack from space-borne satellite measurements, *Duke University Dept. of Civil and Environmental Engineering Seminar Series* (Invited).
41. Margulis, S., September 2007: Toward the characterization of snowpack from space-borne satellite measurements, *Princeton University Dept. of Civil and Environmental Engineering Seminar Series* (Invited).
42. Margulis, S., October 2007: Toward the characterization of snowpack from space-borne satellite measurements, *UC Berkeley Dept. of Civil and Environmental Engineering Seminar Series* (Invited).
43. Margulis, S., October 2007: Toward the characterization of snowpack from space-borne satellite measurements, *USC Dept. of Civil and Environmental Engineering Seminar Series* (Invited).
44. Huang, H-Y. and S. Margulis, December 2007: Influence of surface heterogeneity on a realistic convective boundary layer, *American Geophysical Union, Fall Annual Meeting*.
45. Wu, C-C. and S. Margulis, December 2007: Optimizing wastewater reuse in agricultural fields via merging of embedded network sensor data and flow and transport models using data assimilation, *American Geophysical Union, Fall Annual Meeting*.
46. Durand, M., N. Molotch, and S. Margulis, December 2007: Estimating snowfall patterns using timeseries of remote sensing images within a Bayesian framework, *American Geophysical Union, Fall Annual Meeting*.
47. Forman, B. and S. Margulis, December 2007: Estimates of total downwelling surface radiation using a high-resolution GOES-based cloud product along with MODIS and AIRS products, *American Geophysical Union, Fall Annual Meeting*.
48. Durand, M., N. Molotch, and S. Margulis, May 2008: Towards validation of an ensemble-based Bayesian snow water equivalent reconstruction, Eastern Snow Conference, *Annual Meeting*.
49. Kim, E.J., M. Durand, and S. Margulis, May 2008: Snow radiance assimilation requirements: A case study using CLPX-1, Eastern Snow Conference, *Annual Meeting*.
50. Kim, E.J., M. Durand, and S. Margulis, October 2008: Radiance assimilation shows promise for snowpack characterization, JPL Microwave Land Hydrology Workshop, Oxnard, CA.
51. Durand, M., E.J. Kim and S. Margulis, December 2008: Radiance assimilation shows promise for snowpack characterization: a 1-d case study, *American Geophysical Union, Fall Annual Meeting (Invited)*.
52. Margulis, S, December 2008: Development of satellite-based high-resolution ensemble forcing fields for hydrologic modeling using a data assimilation framework, *American Geophysical Union, Fall Annual Meeting (Invited)*.
53. Forman, B. and S. Margulis, December 2008: Assimilation of Shortwave Radiation Measurements into a Downwelling Surface Radiation Model Using an Ensemble Kalman Smoother, *American Geophysical Union, Fall Annual Meeting*.
54. Musselman, K., N. Molotch, and S. Margulis, December 2008: Spatial, Seasonal, and Interannual Variability of Snow Accumulation Control Mechanisms in two Neighboring Alpine and Sub-alpine Catchments in California's Seasonally Snow-covered Southern Sierra Nevada, *American Geophysical Union, Fall Annual Meeting*.
55. He, K., T. Hogue, K. Franz, and S. Margulis, December 2008: Assessing Forecasting Uncertainties for Improved Snow Model Predictions, *American Geophysical Union, Fall Annual Meeting*.
56. Molotch, N., S. Margulis, J. Dozier, T. Painter, D. Shen, and A. Kwok, December 2008: Interannual variability in snow cover depletion and snow water equivalent in the Sierra Nevada inferred from MODIS data, *American Geophysical Union, Fall Annual Meeting*.
57. Forman, B. and S. Margulis, May 2009: Assimilation of Multiscale Radiation Products Into a Downwelling Surface Radiation Model, *American Geophysical Union, Spring Annual Meeting*.
58. Durand, M.T., E. J. Kim, S. A. Margulis, and N. P. Molotch, December 2009: Examining the scale dependence of the statistical relationship between snow depth and microwave radiance, *American Geophysical Union, Fall Annual Meeting (Invited)*.

59. Musselman, K.N., N. P. Molotch, S. A. Margulis, P. B. Kirchner, and R. C. Bales, December 2009: A mechanistic approach for estimating snowpack dynamics in a conifer forest, *American Geophysical Union, Fall Annual Meeting*.
60. He, K., T. S. Hogue, K. Franz, S. A. Margulis, J. A. Vrugt, December 2009: An Integrated Uncertainty Analysis and Ensemble-based Data Assimilation Framework for Operational Snow Predictions, *American Geophysical Union, Fall Annual Meeting*.
61. Kim, E.J., M. T. Durand, A. Toure, S. A. Margulis, K. Goita, A. Royer. H. Lu, December 2009: Snow Radiance Assimilation Studies, *American Geophysical Union, Fall Annual Meeting*.
62. Giroto, M., S. A. Margulis, M. T. Durand, N. P. Molotch, December 2009: Application of a Bayesian snow water equivalent reconstruction technique to a mountainous basin in the Sierra Nevada, *American Geophysical Union, Fall Annual Meeting*.
63. Huang, H.-Y., C. Chu, S. A. Margulis, December 2009: Investigation of the impacts of vegetation distribution and evaporative cooling on urban climate using a coupled LES-LSM model, *American Geophysical Union, Fall Annual Meeting*.
64. Margulis, S.A. and H.Y. Huang, December 2009: Investigating the impact of soil moisture and atmospheric stability on cloud development and distribution using a coupled large eddy simulation-land surface model, *American Geophysical Union, Fall Annual Meeting*.
65. Margulis, S.A., C. Huang, K. N. Musselman, M. T. Durand, December 2009: Examination of the implications of snow model complexity, stratigraphy and grain-size representation on SWE estimation via passive microwave radiance data assimilation, *American Geophysical Union, Fall Annual Meeting* (Invited).
66. Huang, H-Y., M-H. Lo, S.A. Margulis, June 2010: Boundary layer structure and cloud distribution over heterogeneous soil moisture surfaces, *American Geophysical Union, Western Pacific Geophysics Meeting*.
67. He M. et al., December 2010: An integrated uncertainty analysis and data assimilation approach for improved streamflow predictions, *American Geophysical Union, Fall Annual Meeting*.
68. Huang H-Y. and S. Margulis, December 2010: Investigating impacts of soil moisture and atmospheric stability on land-ABL interactions and cloud development (Invited), *American Geophysical Union, Fall Annual Meeting*.
69. Giroto, M. et al., December 2010: Validation of a Bayesian reconstruction approach to estimate snow water equivalent via assimilation of MODIS fractional SCA data, *American Geophysical Union, Fall Annual Meeting*.
70. Li, D. et al., December 2010: Potential for hydrologic monitoring of deep mountain snowpack via passive microwave remote sensing: Kern River basin, Sierra Nevada, USA, *American Geophysical Union, Fall Annual Meeting*.
71. Musselman, K.N. et al., December 2010: Simulating plot-scale variability of snowpack states in conifer forests using hemispherical photography and a process based one-dimensional snow model, *American Geophysical Union, Fall Annual Meeting*.
72. Durand, M. et al., December 2010: A comparison of field methods for grain size characterization in the context of passive microwave modeling of snow, *American Geophysical Union, Fall Annual Meeting*.
73. Lestak, L. et al., December 2010: Snowpack Estimates Improve Water Resources Climate-Change Adaptation Strategies, *American Geophysical Union, Fall Annual Meeting*.
74. S. Bateni, C. Huang, S. Margulis, E. Podest, K. McDonald, December 2011: Feasibility of Monitoring Freeze-Thaw State of Soil Underlying Snowpack Using Multifrequency Active/Passive Microwave Measurements, *American Geophysical Union, Fall Annual Meeting*.
75. Li, D., M. Durand, S. Margulis, December 2011: Potential for obtaining optimal snow states estimation by assimilating space-borne passive microwave measurements into surface snow modeling, *American Geophysical Union, Fall Annual Meeting*.
76. Vanderjagt, B., M. Durand, S. Margulis, E. Kim, N. Molotch, December 2011: Multi-scale characterization of sub-pixel effects for microwave remote sensing of snow, *American Geophysical Union, Fall Annual Meeting*.
77. Durand, M., N. Molotch, E. Kim, S. Margulis, Z. Courville, S. Bateni, December 2011: Measurements of snow microstructure using field and laboratory methods across an elevational gradient in Colorado, USA, *American Geophysical Union, Fall Annual Meeting*.
78. Musselman, K., N. Molotch, S. Margulis, P. Kirchner, R. Bales, December 2011: Inter-annual snow accumulation and melt patterns in a sub-alpine mixed conifer forest:

- results from a distributed physically based snow model, *American Geophysical Union, Fall Annual Meeting*.
79. Giroto, M., S. Margulis, K. Arthofer, M. Durand, December 2011: Spatial and temporal analysis of snow water equivalent estimates obtained from a multi-sensor and multi-resolution reconstruction approach, *American Geophysical Union, Fall Annual Meeting*.
 80. Cortes, G., M. Giroto, S. Margulis, D. Li, M. Durand, December 2012: Investigating the Feasibility of Incorporating Remote Sensing and Earth Science Datasets into Existing Frameworks for Improving Water Supply and Drought Forecast in California, *American Geophysical Union, Fall Annual Meeting*.
 81. Bateni, S., S. Margulis, E. Podest, K. McDonald, December 2012: As ensemble-based data assimilation framework for characterizing snowpack and the freeze-thaw state of underlying soil from multifrequency passive/active microwave data (Invited), *American Geophysical Union, Fall Annual Meeting*.
 82. Durand, M., S. Margulis, E. Kim, N. Molotch, D. Li, B. Vanderjagt, December 2012: Passive microwave remote sensing of snow: Several recent advances and the role of modeling (Invited), *American Geophysical Union, Fall Annual Meeting*.
 83. Li, D., M. Durand, S. Margulis, December 2012: Comparison among physical process based snow models in estimating SWE and upwelling microwave emission, *American Geophysical Union, Fall Annual Meeting*.
 84. Giroto, M., G. Cortés, S. Margulis, M. Durand, December 2012: Spatial and temporal variability of snow water equivalent in relations to the physiographic characteristics of the Kern watershed in the Sierra Nevada, CA, *American Geophysical Union, Fall Annual Meeting*.
 85. Alexander, P., M. Tedesco, X. Fettweis, S. Margulis, M. Navari, J. Box, C. Chen, December 2012: Assessment of modeled albedo and bare ice extent (2001-present) in the regional climate model MAR using satellite data, *American Geophysical Union, Fall Annual Meeting*.
 86. Navari, M., S. Bateni, S. Margulis, P. Alexander, M. Tedesco, December 2012: Characterizing Greenland ice sheet surface mass balance via assimilation of spaceborne surface temperature, albedo, and passive microwave data into a physically-based model, *American Geophysical Union, Fall Annual Meeting*.
 87. Vanderjagt, B. M. Durand, S. Margulis, N. Molotch, E. Kim, December 2012: Inversion of Airborne Passive Microwave Data for Snow Properties using the Metropolis Algorithm, *American Geophysical Union, Fall Annual Meeting*.
 88. Musselman, K., N. Molotch, S. Margulis, December 2012: Integration of airborne LiDAR data and voxel-based ray tracing to determine high-resolution solar radiation dynamics at the forest floor: implications for improving stand-scale distributed snowmelt models, *American Geophysical Union, Fall Annual Meeting*.
 89. Musselman, K., N. Molotch, S. Margulis, December 2012: Seasonal and inter-annual snowmelt patterns in the southern Sierra Nevada, California (Invited), *American Geophysical Union, Fall Annual Meeting*.
 90. Vanderjagt, B. M. Durand, N. Molotch, S. Margulis, E. Kim, December 2013: Characterizing vegetation transmissivity via spatial and temporal variations in multi-resolution passive microwave measurements at Ka band (Invited), *American Geophysical Union, Fall Annual Meeting*.
 91. Navari, M., S. Bateni, S. Margulis, P. Alexander, M. Tedesco, December 2013: Estimating Greenland Ice Sheet Surface Mass Balance Using a Novel Data Assimilation Framework: An Observing System Simulation Experiment, *American Geophysical Union, Fall Annual Meeting*.
 92. Huning, L. and S. Margulis, December 2013: Improving student comprehension of the interconnectivity of the hydrologic cycle with a novel "hydrology toolbox", integrated watershed model, and companion textbook, *American Geophysical Union, Fall Annual Meeting*.
 93. Cortés, G., M. Giroto, S. Margulis, December 2013: A snow water equivalent reanalysis case study over an Andean watershed, *American Geophysical Union, Fall Annual Meeting*.
 94. Li, D., M. Durand, S. Margulis, December 2013: The impact of major snow evolution processes on the strategic design of radiance data assimilation system for basin scale snow water equivalent estimates, *American Geophysical Union, Fall Annual Meeting*.
 95. Giroto, M., G. Cortés, S. Margulis, M. Durand, December 2014: Examining spatial and temporal variability in snow water equivalent using a 27 year reanalysis: Kern River watershed, Sierra Nevada (Invited), *American Geophysical Union, Fall Annual Meeting*.

96. Huning, L. and S. Margulis, December 2014: Watershed Modeling Applications with the Open-Access Modular Distributed Watershed Educational Toolbox (MOD-WET) and Introductory Hydrology Textbook, *American Geophysical Union, Fall Annual Meeting*.
97. Li, D., M. Durand, S. Margulis, December 2014: Towards the Improved Estimates of Mountain Snow Water Equivalent Using Space-borne Passive Microwave Measurements: an Ensemble Kalman Batch Reanalysis over the Upper Kern Basin, Sierra Nevada, USA, *American Geophysical Union, Fall Annual Meeting*.
98. Cortés, G., M. Girotto, S. Margulis, December 2014: Snow Water Equivalent Reanalysis Over a Scarce Data Region Via Assimilation of Snow Covered Area from Landsat 5, 7 and 8, *American Geophysical Union, Fall Annual Meeting*.
99. Cornwell, E., G. Cortés, J. McPhee, S. Margulis, December 2014: Snow Cover Quantification in the Central Andes Derived from Multi-Sensor Data, *American Geophysical Union, Fall Annual Meeting*.
100. Musselman, K., N. Molotch, S. Margulis, December 2014: Seasonal and inter-annual snowmelt patterns in the southern Sierra Nevada, California, *American Geophysical Union, Fall Annual Meeting*.
101. Margulis, S. and L. Huning, 2015: A coupled e-textbook and modular watershed model for hydrology education, *CUASHI Virtual Workshop on Data-Driven Hydrology Education* (Invited).
102. Margulis, S., Cortés, G., M. Girotto, M. Durand, December 2015: A Novel Reanalysis Dataset for Improving Seasonal Snowpack Characterization: Application to the Sierra Nevada (USA) Over the Landsat 5 Record (1985-2011), *American Geophysical Union, Fall Annual Meeting*.
103. Wrzesien, M., M. Durand, I. Howat, S. Margulis, December 2015: Comparison of Interpolation Techniques and Model Simulations of Snow Water Equivalent in the Sierra Nevada, *American Geophysical Union, Fall Annual Meeting*.
104. Huning, L., S. Margulis, Cortés, G., M. Girotto, M. Durand, December 2015: Spatiotemporal Variability of Orographic Enhancement in the Sierra Nevada (USA): Results from a Multi-decadal Snow Water Equivalent Reanalysis, *American Geophysical Union, Fall Annual Meeting*.
105. Musselman, K., N. Molotch, S. Margulis, December 2015: Snowpack response to warmer temperatures: a southern Sierra Nevada case study, *American Geophysical Union, Fall Annual Meeting* (Invited).

SPONSORED RESEARCH PROJECTS

(PRIOR)

1. NSF, Water Cycle Research Program: "Incorporation of Model Bias and Uncertainty in Land Surface Hydrologic Flux Prediction Using a Data Assimilation Framework" (*PI: Margulis, 3 years, \$213K*)
2. UC Water Resources Center: "Feasibility of Snowpack Characterization Using Remote Sensing and Advanced Data Assimilation Techniques" (*PI: Margulis, 2 years, \$52K*)
3. NSF, Early CAREER Award: "Investigation of Regional Land-Atmosphere Interactions Using a Hierarchical Modeling and Data Assimilation Approach" (*PI: Margulis, 5 years, \$451K*)
4. NASA, New Investigator Program Award: "Estimation of Distributed Snowpack Characteristics With Passive Microwave Observations and Physically-Based Snow Models Using an Ensemble Data Assimilation Approach" (*PI: Margulis, 3 years, \$247K*)
5. Calleguas Municipal Water District: "Water Balance Studies in Calleguas Creek Watershed Using a Combined Modeling, Remote Sensing, and Data Assimilation Approach" (*PI: Margulis, 2 years, \$106K*)
6. NASA, Earth System Science Research: "Global Estimates of Evaporation from Variational Assimilation of Multi-Platform Land Surface Temperature into a Dynamic Model of the Surface Energy Balance" (*PI: Dara Entekhabi (MIT), Co-PIs: Margulis and Rolf Reichle (NASA-Goddard), 3 years, \$550K; UCLA (Margulis) subcontract: \$200K*)
7. NASA, Earth System Science Fellowship: "Characterization of snowpack using a multi-frequency multi-scale radiometric data assimilation scheme" (*PI: Margulis, Student Fellow: Michael Durand, 3 years, \$72K*)
8. UC Water Resources Center: "Toward Improved Irrigation Efficiency Through Real-time Assimilation of Multi-spectral Satellite Remote Sensing Data Into Crop Models" (*PI: Margulis, 2 years, \$60K*)

9. UCLA Office of Instructional Development: "Development of a portable instrumented 'hydrology sandbox' for real-time demonstration and hands-on experimentation" (PI: Margulis, 1 year, \$7K equipment grant)
10. NOAA, National Weather Service: "Data assimilation in operational watershed models for short and long-term hydrologic forecasting" (PI: Terri Hogue (UCLA), Co-PIs: Margulis and Kristie Franz (Iowa State Univ.), 3 years, \$280K)
11. NSF, Hydrologic Sciences: "Quantifying controls on snow distribution in the Sierra Nevada using ground-based and remotely sensed observations within an ensemble Kalman smoother" (PI: Noah Molotch, Co-PI: Margulis, 3 years, \$300K)
12. NASA, Earth System Science Research Using Data and Products from the Terra, Aqua, and Acrimsat Satellites: "Assimilation of MODIS snow cover products into operational hydrologic forecast models" (PI: Noah Molotch (UCLA), Co-PIs: T. Hogue, Margulis, and Kristie Franz (Iowa State Univ.), 3 years, \$350K)
13. NASA, Earth System Science Fellowship: "Development of a multi-scale remote sensing data assimilation tool for ensemble-based estimates of surface forcing fields for use in distributed land surface models" (PI: Margulis, Student Fellow: Bart Forman, 3 years, \$84K)
14. NASA, JPL Strategic University Research Partnership (SURP): "Characterizing snowpack accumulation and melt and the resulting spring streamflow in Sierra basins using a novel data assimilation and modeling approach" (JPL PI: Eni Njoku, UCLA PI: Margulis, Co-PIs: Terri Hogue, N. Molotch, 1 year, UCLA Budget: \$47K)
15. USGS, National Institutes for Water Resources: "A Bayesian approach to snow water equivalent reconstruction" (PI: Noah Molotch, Co-PI: Margulis, 2 years: \$61K)
16. NASA, Earth System Science Fellowship: "Remote Sensing and Ground Data Assimilation using a Basin-scale Snow Water Equivalent Reconstruction Method" (PI: Margulis, Student Fellow: Keith Musselman, 3 years, \$90K)
17. NASA, Terrestrial Hydrology Program, "Relating in situ snow cover properties to multi-scale, multi-frequency remote sensing data utilizing the CLPX dataset" (PI: Margulis, 3 years, UCLA Budget: \$180K)
18. NASA, JPL Strategic University Research Partnership (SURP): "Characterizing freeze-thaw under seasonal snowpacks" (JPL PI: Kyle McDonald, UCLA PI: Margulis, 1 year, UCLA Budget: \$60K)
19. NSF, Arctic Natural Sciences, Office of Polar Programs, "Improving surface mass balance estimation of the Greenland ice sheet through assimilation of multi-sensor satellite products and ground measurements into a regional climate model" (PI: M. Tedesco (CCNY), Co-PI: Margulis, 3 years, Total Budget: \$580,130, UCLA Budget: \$311,063)
20. NASA, Applied Sciences Program: "Investigating the Feasibility of Incorporating Remote Sensing and Earth Science Datasets into Existing Frameworks for Improving Water Supply and Drought Forecasts in California" (PI: Margulis, Co-PI: M. Durand (OSU); Stage 1 Feasibility, 1 year, \$178K).
21. NSF, Hydrologic Sciences, "Collaborative Research: Reducing Uncertainty of Climatic Trends in the Sierra Nevada: An Ensemble-Based Reanalysis via the Merger of Disparate Measurements" (Co-PIs: Michael Durand (OSU) and Margulis, 2 years, Total Budget: \$400K, UCLA Budget: \$200K)
22. NASA, Earth System Science Fellowship: "Spatial and temporal analysis of Sierra Nevada snowpack using a fractional snow covered area data assimilation approach" (PI: Margulis, Student Fellow: Manuela Giroto, 3 years, \$90K)
- (ACTIVE)**
23. NSF, Hydrologic Sciences, "Investigation of diurnal land-atmosphere interactions in snow-dominated mountainous terrain" (PI: Margulis, 3 years, Total Budget: \$330K)
24. Chilean National Science and Technology Commission (CONICYT), "Advancing drought and avalanche preparedness through multiscale snow measurements and modeling" (PI: J. McPhee (U. Chile), Co-PIs: Margulis and N. Molotch, 3 years, Total Budget: \$291K)
25. NASA, NEWS Program, "Characterizing variability and uncertainty in mid-latitude montane water and energy cycle climatology for improving NEWS products" (PI: Margulis, Co-PI: M. Durand, 3 years, Budget: \$380K)
26. NASA, Earth System Science Fellowship: "Evaluating and improving NASA's MERRA reanalysis in snow-dominated mountainous terrain" (PI: Margulis, Student Fellow: Laurie Huning, 3 years, \$90K)
27. DOE, "U.S.-China Clean Energy Research Center for Water and Energy Technologies (CERC-WET)", (PI: A. Gadgil (UC Berkeley), 5 years, Total Budget: \$12.5M (with

- additional \$12.5 million in U.S. matching and \$25M matching by Chinese government), UCLA Budget: 5 years, \$1M [currently being finalized] with additional matching funds)
28. UCLA Grand Challenge Sustainable LA Grants Program, "An Integrated Water Balance Modeling and Management Approach for Assessing 100% Sustainable Local Water Use in Los Angeles County" (PI: Margulis, 2 years, \$100K)

(PENDING)

29. NSF, REU Program, "REU Site: Water Resources in Sub-Saharan Africa" (PI: M. Gebremichael (UCLA), Co-PI: Margulis, 3 years, Total Budget: \$635K)
30. NSF, PIRE Program, "PIRE: Analyzing the Interactions of Hydro-Climatic, Ecologic and Socio-Economic Systems for Sustainable River Basin Management in the Nile Basin" (PI: M. Gebremichael (UCLA), 5 years, Total Budget: \$1M)
31. NSF, "CRISP Type 2: Risk-based framework for guiding transition to interdependent water and power infrastructure that is resilient to earthquake and climate change events" (PI: Stewart (UCLA); Co-PI: Margulis, 5 years, Total Budget: \$1.5M)
32. NASA, Understanding Changes in High Mountain Asia, "Understanding and forecasting changes in High Mountain Asia snow hydrology via a novel Bayesian reanalysis and modeling approach" (PI: Margulis, Co-PI: M. Tedesco (CUNY), 3 years, Budget: \$860K)
33. NSF, Hydrologic Sciences, "Gaining insight into Andean snowpack climatology and change using a snow reanalysis approach applied over the Landsat satellite record" (PI: Margulis; 3 years, Total Budget: \$337K)
34. NASA, Terrestrial Hydrology Program, "Using a Bayesian Reanalysis Approach to Aid in the Experimental Design, Implementation, and Analysis of the Next Generation Cold Land Processes Experiment" (PI: Margulis, 3 years, Budget: \$424K)

PROFESSIONAL AFFILIATIONS AND SERVICE ACTIVITIES

- Editorships: Editor, *Journal of Hydrometeorology* (2013-present); Associate Editor, *Journal of Hydrometeorology* (2012-2013); Associate Editor, *Water Resources Research* (2004-2009); Guest Editor, Special Issue on Distributed Hydrologic Modeling and Data Assimilation, *Journal of Hydrometeorology* (2005-2006).
- Committee Chair: AGU Technical Committee on Large Scale Field Experimentation (2010-2012)
- Review Team Member: NASA SMAP Algorithms Review (Sept. 2012); University of Utah, Dept. of Civil and Environmental Engineering External Review (2012-2013), NASA Science Advisory Committee on the Snow and Cold Land Processes (SCLP) Mission Study, (May-July, 2007), NSF IGERT Panel (2009); NSF Hydrologic Sciences Panel (2013); LMU Department of Civil and Environmental Engineering External Advisory Board (2009-2011)
- Conference Session Organizer/Convener: AGU Fall Meeting (2006, 2007, 2010, 2011), AGU Spring Meeting (2007)
- Dept./University Service: C&EE Vice Chair for Graduate Studies (2012-Present), Member of UCLA Sustainability Grand Challenge Water Committee (2014-present); Intermittent/ongoing service on: C&EE Department Planning Committee; C&EE Department Space Committee, C&EE Faculty Search Committee (2012-2013, Chair), SEAS Faculty Executive Committee, C&EE Department Merit Increase Committee (2008-2009, Chair); School of Eng. and Applied Science (SEAS) Alumni Awards Committee; SEAS Honors and Awards Committee; SEASNet Advisory Board
- Advisory Roles: Faculty Advisor, UCLA Chi Epsilon Honor Society Chapter (2004-2009); Faculty Co-Advisor, UCLA ASCE Chapter (2004-2005)
- Reviewer: Manuscripts: *Water Resources Research*, *J. of Hydrometeorology*, *Geophysical Research Letters*, *Advances in Water Resources*, *J. of Geophysical Research*, and several others, ongoing; Proposals: NSF, NASA, NOAA, ongoing, NRC (GAPP Science and Implementation Plan), May 2005
- Society Member: American Meteorological Society, American Geophysical Union, American Society of Civil Engineers, Tau Beta Pi Engineering Honor Society, Chi Epsilon Engineering Honor Society