

LETTENMAIER, Dennis P.
Distinguished Professor of Geography
University of California, Los Angeles
Born December 7, 1948

EDUCATION

B.Sc. Summa cum laude, Mechanical Engineering, University of Washington, 1970.
M.S. Civil, Mechanical and Environmental Engineering, The George Washington University, 1972.
Ph.D. Civil Engineering, University of Washington, 1975.

POSITIONS HELD

1975-76 Research Engineer, Department of Civil Engineering, University of Washington.
1976-78 Research Associate, Department of Civil Engineering and College of Fisheries, University of Washington.
1978-81 Research Assistant Professor, Department of Civil Engineering, University of Washington.
1981-85 Research Associate Professor, Department of Civil Engineering, University of Washington.
1985-91 Research Professor, Department of Civil Engineering, University of Washington
1991-2014 Professor (WOT), Department of Civil Engineering, University of Washington
1997-98 Program Manager, Land Surface Hydrology Program, NASA Headquarters
2014- Distinguished Professor of Geography, University of California, Los Angeles

PROFESSIONAL REGISTRATION

Washington, License No. 19104

PROFESSIONAL MEMBERSHIPS

American Geophysical Union
American Meteorological Society
European Geosciences Union
American Society of Civil Engineers
American Water Resources Association
American Association for the Advancement of Science
American Association of Geographers

PROFESSIONAL ACTIVITIES

Program Chair, Hydrology Section, American Geophysical Union Fall Annual Meeting, 1982-84.
Member, American Geophysical Union Meetings Committee, 1984-88.
Chair, American Geophysical Union Surface Water Committee, 1988-91.
Associate Editor, *Water Resources Research*, 1989-93.
Co-convenor, American Geophysical Union Chapman Conference on Hydrologic Aspects of Global Climate Change, June, 1990.
Member, U.S. National Committee for International Union of Geodesy and Geophysics, 1991-95.
Chapman Conference Coordinator, American Geophysical Union, 1992-94.
U.S. National Research Council Committee on Protection and Management of Pacific Northwest Anadromous Salmonids, 1992-1994.
Deputy Editor, *Water Resources Research*, 1994-97.
NSF Hydrological Science Program Proposal Review Panel, 1994-1997.

Member, ACSYS Science Steering Group, 1997-99
Member, GEWEX/MAGS Science Advisory Panel, 1997-99
Member, NAS/NRC GEWEX Committee, 1998-99
Member, Fellows Committee, American Meteorological Society, 1998-99
Water Resources PRA Chair, GEWEX/GCIP, 1998-99
Paper Reviewer, Journals of the Water Resources Planning and Management; Journal of Hydraulic Engineering; Water Resources Bulletin; Water Resources Research; Environmental Management; Journal of Hydrology, Journal of Geophysical Research, Journal of Climate, and others.
Chair, GEWEX/MAGS Science Advisory Panel, 2000-2005.
Chief Editor, AMS *Journal of Hydrometeorology*, 1998-2004
Member, Independent Science Review Panel, Pacific Northwest Power Planning Council, 1999-2001
Member, U.S. Global Change Research Program Water Cycle Study Group, 1999-2000
Member, Independent Science Advisory Board, National Marine Fisheries Service and Pacific Northwest Power Planning Council, 2000-2002
Member, Science Steering Group, Study of Environmental Arctic Change (SEARCH), 2002-6
Member, Science Steering Group, Variability of the Americas Monsoon (VAMOS), 2002-6
Member, Science Steering Group, North American Monsoon Experiment (NAME), 2003-7
Member, Regional Reanalysis Advisory Panel (to NOAA/NCEP), 2001-4
Member, NAS/NRC Committee on Hydrological Science, 2002-9
Member, NAS/NRC Committee on National Ecological Observatory Network (NEON), 2003
Member, NAS/NRC Committee on Colorado River Water Management, 2005-6
Member, Executive Committee, Global Water Systems Project, 2003-2007
Member, NAS/NRC Committee for Decadal Review of Earth Science and Applications from Space (Chair, Global Water Cycle Panel) 2004-6
Member, California Institute for Telecommunications and Information Technology Advisory Committee, 2002-
Member, NOAA Climate Testbed Advisory Committee, 2006-9
Member, NOAA Climate Prediction Program for the Americas Advisory Committee, 2009-
Associate Editor, *Water Resources Research* 2005-10
Member, American Meteorological Society Atmospheric Awards Committee, 2007-
Member, Jet Propulsion Laboratory Visiting Committee, 2007
President, American Geophysical Union Hydrology Section, 2010-12
Member, AGU Bowie Medal Committee, 2013-2016
Chair, AGU Hydrology Section Nominations Committee, 2013-2014
Councilor, American Meteorological Society, 2014-2016

HONORARY SOCIETIES

Tau Beta Pi
Sigma Xi

HONORS AND AWARDS

Exceptional Achievement Award, U.S. Geological Survey, 1986
Scientific and Technological Achievement Award, U.S. Environmental Protection Agency, 1989
(with J. Yearsley)
Huber Research Prize, American Society of Civil Engineers, 1990
Best research paper, Water Resources Planning and Management Division, ASCE, 1992
(with D. Sheer)
Fellow, American Geophysical Union, 1995
Fellow, American Meteorological Society, 1998
Hydrologic Sciences Award, American Geophysical Union, 2000
Elected Member, International Water Academy, 2002

Best practice-oriented paper, Journal of Water Resources Planning and Management, ASCE (with A. Hamlet and D. Huppert), 2003
Walter Orr Roberts Lecturer, American Meteorological Society, 2005
Best research paper, Journal of Water Resources Planning and Management, ASCE (with M. McGuire, A. Wood, and A. Hamlet), 2006
Fellow, American Society for the Advancement of Science, 2007
Robert E. Horton Lecturer, American Meteorological Society, 2008
Member, National Academy of Engineering, 2010
AGU Walter E. Langbein Lecturer, 2013

REFEREED PUBLICATIONS (last 10 years)

- Mote P.W., A.F. Hamlet, M.P. Clark, and D.P. Lettenmaier, 2005, Declining mountain snowpack in western North America, *Bulletin American Meteorological Society* 86, 39-49
- Wood A.W., A. Kumar, and D.P. Lettenmaier, 2005, A retrospective assessment of National Centers for Environmental Prediction climate model-based ensemble hydrologic forecasting in the western United States. *J. Geophys. Res.* 110, Art. No. D04105.
- Andreadis, K.M., E.A. Clark, A.W. Wood, A.F. Hamlet, and D.P. Lettenmaier, 2005, 20th Century Drought in the Conterminous United States, *J. Hydrometeor.*, 6(6): 985-1001.
- Barnett T.P., J.C. Adam, and D.P. Lettenmaier, 2005: Potential Impacts of a Warming Climate on Water Availability in Snow-Dominated Regions, *Nature*, 438: 303-309
- Hamlet A.F., Mote P.W., Clark M.P., Lettenmaier D.P., 2005: Effects of temperature and precipitation variability on snowpack trends in the western U.S., *J. of Climate*, 18 (21): 4545-4561
- Ziegler A.D., E.P. Maurer, J. Sheffield, B. Nijssen, E.F. Wood, D.P. Lettenmaier, 2005, Detection time for Plausible changes in annual precipitation, evapotranspiration, and streamflow in three Mississippi river sub-basin, *Clim. Change*, 72: 17-36.
- Zhu C.M., Lettenmaier D.P., Cavazos T., 2005, Role of antecedent land surface conditions on North American monsoon rainfall variability. *J. Clim.* 18(16), 3104-3121.
- Su, F., J.C. Adam, L.C. Bowling, and D.P. Lettenmaier, 2005, Streamflow Simulations of the Terrestrial Arctic Domain, *J. Geophys. Res.*, 110, D08112, doi:10.1029/2004JD005518
- Hamlet A.F., Lettenmaier D.P., 2005: Production of temporally consistent gridded precipitation and temperature fields for the continental U.S., *J. of Hydrometeorology*, 6 (3): 330-336
- Andreadis, K.M., and D.P. Lettenmaier, 2006: Assimilating Remotely Sensed Snow Observations into a Macroscale Hydrology Model, *Advances in Water Resources*, 29, 872-886, doi:10.1016/j.advwatres.2005.08.004 .
- Su, F., J. C. Adam, K. E. Trenberth, and D. P. Lettenmaier, 2006: Evaluation of surface water fluxes of the pan-Arctic land region with a land surface model and ERA-40 reanalysis, *J. Geophys. Res.*, 111, D05110, doi:10.1029/2005JD006387.
- McGuire M., Wood A.W., Hamlet A.F., Lettenmaier D.P., 2006: Use of satellite data for streamflow and reservoir storage forecasts in the Snake River Basin, ID, *J. Water Res. Planning and Mgt, ASCE*, 132, 97-110.
- Adam, J.C., E.A. Clark, D.P. Lettenmaier, and E.F. Wood, 2006: Correction of Global Precipitation Products for Orographic Effects, *J. Clim.*, 19, 15-38.
- Haddeland, I., T. Skaugen, and D.P. Lettenmaier, 2006, Anthropogenic impacts on continental surface water fluxes, *Geophysical Research Letters* 33, L08406, doi:10.1029/2006GL026047.
- Andreadis, K.M. and D.P. Lettenmaier, 2006, Trends in 20th century drought over the continental United States, *Geophysical Research Letters*. 33, L10403, doi:10.1029/2006GL025711
- Haddeland, I., D.P. Lettenmaier, and T. Skaugen, 2006, Reconciling simulated moisture fluxes resulting from alternate hydrologic model time steps and energy balance closure assumptions, *Journal of Hydrometeorology* 7(3), 355-370

- Voisin, N., A. F. Hamlet, L. P. Graham, D. W. Pierce, T. P. Barnett, and D. P. Lettenmaier, 2006: The role of climate forecasts in western U.S. power planning, *Journal of Applied Meteorology* 45, 653-673.
- Doten, C.O., L.C. Bowling, E.P. Maurer, J.S. Lanini, and D.P. Lettenmaier, 2006, A spatially distributed model for the dynamic prediction of sediment erosion and transport in mountainous forested watersheds, *Water Resources Research* 42, W0441710.1029/2004WR003829
- Haddeland, I., Lettenmaier D.P., Skaugen, T., 2006, Effects of irrigation on the water and energy balances of the Colorado and Mekong river basins, *Journal of Hydrology* 324, 210-223
- Hossain, F., Lettenmaier, D.P., 2006, Flood forecasting in the future: recognizing hydrologic issues in anticipation of the global precipitation measurement mission, *Water Resources Research*, 42, doi:10.1029/2006WR005202.
- Lettenmaier, D.P. and J.S. Famiglietti, 2006, Water from on high, *Nature* 444, 562-563.
- Vera, C., R.W. Higgins T. Ambrizzi, R. Garreaud, D. Gochis, D. Gutzler, D.P. Lettenmaier, et al, 2006, A unified view of the North American Monsoon systems, *Journal of Climate* 19, 4977-5000.
- Wood, A.W. and D.P. Lettenmaier, 2006, A testbed for new seasonal hydrologic forecasting approaches in the western U.S., *Bulletin of the American Meteorological Society* 87, 1699-1712, doi:10.1175/BAMS-87-12-1699.
- Haddeland, I., T. Skaugen, and D.P. Lettenmaier, 2007: Hydrologic effects of land and water management in North America and Asia: 1700-1992, *Hydrol. Earth Sys. Sci.*, 11, 1035-1045
- Andreadis, K. M., E. A. Clark, D. P. Lettenmaier, and D. E. Alsdorf, 2007: Prospects for river discharge and depth estimation through assimilation of swath-altimetry into a raster-based hydrodynamics model, *Geophys. Res. Lett.*, 34, L10403, doi:10.1029/2007GL029721.
- Hamlet A.F., Mote P.W, Clark M.P., Lettenmaier D.P., 2007: 20th Century Trends in Runoff, Evapotranspiration, and Soil Moisture in the Western U.S., *J. Climate*, 20, 1468-1486
- Hamlet A.F., Lettenmaier D.P., 2007: Effects of 20th Century Warming and Climate Variability on Flood Risk in the Western U.S., *Water Resour. Res.*, 43, W06427, doi:10.1029/2006WR005099
- Zhu C.M. and D.P. Lettenmaier, 2007: Long-term climate and derived surface hydrology and energy flux data for Mexico, 1925-2004, *J. Climate*, 20, 1936-1946.
- Zhu C.M., Cavazos T. and Lettenmaier D.P., 2007: Role of Antecedent Land Surface Conditions in Warm Season Precipitation over Northwestern Mexico, *J. Climate*, 20, 1774-1791.
- Christensen N. and D.P. Lettenmaier, 2007: A multimodel ensemble approach to assessment of climate change impacts on the hydrology and water resources of the Colorado River basin, *Hydrology and Earth System Sciences* 11, 1417-1434.
- Adam, J.C., I. Haddeland, F. Su, and D.P. Lettenmaier, 2007: Simulation of reservoir influences on annual and seasonal streamflow changes for the Lena, Yenisei and Ob' Rivers, *J. Geophys. Res.* 112, D24114, doi:10.1029/2007JD008525
- Alsdorf D.E., Rodriguez E., and Lettenmaier D.P. 2007: Measuring surface water from space, *Rev. Geophys.* 45(2), RG2002, doi:10.1029/2006RG000197
- Bohn, T.J., D.P. Lettenmaier, K. Sathulur, L.C. Bowling, E. Podest, K.C. McDonald, and T. Friborg, 2007: Methane emissions from western Siberian wetlands: heterogeneity and sensitivity to climate change, *Environ. Res. Lett.*, 2, doi:10.1088/1748-9326/2/4/045015
- Christensen N. and D.P. Lettenmaier, 2007: A multimodel ensemble approach to assessment of climate change impacts on the hydrology and water resources of the Colorado River basin, *Hydrol. Earth System Sci.*, 11, 1417-1434.
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- Slater, A.G., T.J. Bohn, J.L. McCreight, M.C. Serreze, and D.P. Lettenmaier, 2007: A Multi-Model Simulation of Pan-Arctic Hydrology, *J. Geophys. Res.*, 112(G4), G04S45, doi:10.1029/2006JG000303.
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- Alcamo, J.M., C.J. Vorosmarty, R.J. Naiman, D.P. Lettenmaier, and C. Pahl-Wostl, 2008: A grand challenge for freshwater research: Understanding the global water system, *Environ. Res. Lett* 3, doi:10.1088/1748-9326/3/1/010202
- Andreadis, K. M., D. Liang, L. Tsang, D. P. Lettenmaier, and E. G. Josberger, 2008: Characterization of errors in a coupled snow hydrology-microwave emission model, *J. Hydrometeorology*, 9, 149-164.
- Cuo, L, D.P. Lettenmaier, B. V. Mattheussen, P. Storck and M. Wiley, 2008: Hydrological prediction for urban watersheds with the Distributed Hydrology-Soil-Vegetation Model , *Hydrological Processes* DOI: 10.1002/hyp.7023.
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- Su, F., H. Yang, and D.P. Lettenmaier, 2008: Evaluation of TRMM Multi-satellite Precipitation Analysis (TMPA) and its utility in hydrologic prediction in La Plata Basin , *J. Hydrometeorology*, 9(4), 622-640.
- Voisin, N., A.W. Wood and D.P. Lettenmaier, 2008: Evaluation of precipitation products for global hydrological prediction. *J. Hydrometeorology*, 9 (3), 388-407.
- Wang, A., K. Y. Li, and D. P. Lettenmaier, 2008: Integration of the variable infiltration capacity model soil hydrology scheme into the community land model, *J. Geophys. Res.*, 113, D09111, doi:10.1029/2007JD009246.
- Lettenmaier, D.P., 2008. Have we dropped the ball on water resources research? *J. Water Resources Planning Management* 134, 491-492.
- Wood, A.W. and D.P. Lettenmaier 2008: An Ensemble Approach For Attribution of Hydrologic Prediction Uncertainty, *Geophys. Res. Lett.*, 35, L14401, doi:10.1029/2008GL034648.
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- Wojcik R., K.M. Andreadis, M. Tedesco, E.F. Wood, T. Troy, and D.P. Lettenmaier, 2008: Multi-model estimation of snow microwave emission during CLPX'03 using operational parameterization of micro-physical snow characteristics, *J. Hydrometeorology.*, 9, doi:10.1175/2008JHM909.1
- Shi, X., A.W. Wood and D.P. Lettenmaier, 2008: How essential is hydrologic model calibration to seasonal streamflow forecasting? , *J. Hydrometeorology* 9, 1350-1363.
- Cavazos, T., C. Turrent, and D.P. Lettenmaier, 2008: Extreme precipitation variability in the core of the North American monsoon, *Geophys. Res. Lett.* 21, Art. No. L21703.
- Tang, Q., A.W. Wood and D.P. Lettenmaier, 2008: Real-time precipitation estimation based on index station percentiles, *J. Hydrometeorology* 10, 266-277.
- Lanini, J.L., E.A. Clark, and D.P. Lettenmaier, 2009: Effects of climate and fire regime on post-fire sediment delivery in Pacific Northwest forests, *Geophysical Research Letters* 36, Art. No. L01402.
- Adam, J.C., A. F. Hamlet and D. P. Lettenmaier, 2009: Implications of global climate change for snowmelt hydrology in the 21st century, *Hydrological Processes*, 23(7), 962-972.
- Andreadis, K., P. Storck, and D. P. Lettenmaier, 2009: Modeling snow accumulation and ablation processes in forested environments, *Water Resources Research*, 45, W05429, doi:10.1029/2008WR007042.
- Beyene, T., D.P. Lettenmaier, and P. Kabat, 2009: Hydrologic impacts of climate change on the Nile River basin: Implications of the 2007 IPCC climate scenarios, *Climatic Change*, online first, doi:10.1007/s10584-009-9693-0.
- Breuer, L, J.A. Huisman, P. Willems, and many others (including D.P. Lettenmaier), 2009: Assessing the impact of land use change on hydrology by ensemble modeling (LUCHEM). I: Model intercomparison with current land use, *Adv. Water Resourc.* ,32, 129-146.

- Casola, J.H., L. Cuo, B. Livneh, D.P. Lettenmaier, M. Stoelinga, P.W. Mote and J. M. Wallace, 2009: Assessing the Impacts of Global Warming on Snowpack in the Washington Cascades, *Journal of Climate*, 22(10), 2758-2772, doi:10.1175/2008JCLI2612.1
- Cuo, L., D.P. Lettenmaier D.P., M. Alberti, and J.E. Richey, 2009: Effects of a century of land cover and climate change on the hydrology of Puget Sound basin, *Hydrological Processes*, 23, 907-933.
- Groisman, P. Ya., E.A. Clark, V.M. Kattsov, D.P. Lettenmaier, I.N. Sokolik, V.B. Aizen, O. Cartus, J. Chen, S. Conard, J. Katzenberger, O. Krankina, J. Kukkonen, T. Machida, S. Maksyutov, D. Ojima, J. Qi, V.E. Romanovsky, M. Santoro, C.C. Schmullius, A.I. Shiklomanov, K. Shimoyama, H.H. Shugart, J.K. Shuman, M.A. Sofiev, A.I. Sukhinin, C. Vorosmarty, D. Walker, and E.F. Wood, 2009: The Northern Eurasia Earth Science Partnership: An example of science applied to societal needs, *BAMS*, 90(5), 671-688, doi:10.1175/2008BAMS2556.1.
- Huisman, J.A., L. Breuer, H. Bormann, and many others (including D.P. Lettenmaier), 2009: Assessing the impact of land use change on hydrology by ensemble modeling (LUCHEM). II: Scenario analysis, *Adv. Water Resour.*, 32, 159-170.
- Lanini, J.L., E.A. Clark, and D.P. Lettenmaier, 2009: Effects of fire-precipitation timing and regime on post-fire sediment delivery in Pacific Northwest forests, *Geophys. Res. Lett.*, 36, L01402, doi:10.1029/2008GL034588.
- Lettenmaier, D.P., and P.C.D. Milly, 2009: Land waters and sea level, *Nature Geoscience*, 2, 452-454, doi:10.1038/ngeo567.
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- Rutter, N., K. M. Andreadis, D. P. Lettenmaier et al., 2009: Evaluation of forest snow processes models (SnowMIP2), *J. Geophys. Res.*, 114, D06111, doi:10.1029/2008JD011063.
- Sheffield, J., K.M. Andreadis, E.F. Wood, and D.P. Lettenmaier, 2009: Global and continental drought in the second half of the 20th century : severity-area-duration analysis and temporal variability of large-scale events, *J. Climate*, 22(8), 1962-1981.
- Shi, X., M. Sturm, G.E. Liston, R.E. Jordan, and D.P. Lettenmaier, 2009: SnowSTAR2002 transect reconstruction using a multilayered energy and mass balance snow model, *J. of Hydrometeorology* 10(5), 1151-1167.
- Su, F., and D.P. Lettenmaier, 2009: Estimation of surface water budget of La Plata Basin, *J. of Hydrometeorology* 10(4), 981-998.
- Tang, Q., E. A. Rosenberg, and D. P. Lettenmaier, 2009. Use of satellite data to assess the impacts of irrigation withdrawals on Upper Klamath Lake, Oregon. *Hydrology and Earth System Sciences*, 13, 617-627.
- Tang, Q., A.W. Wood and D.P. Lettenmaier, 2009: Real-time precipitation estimation based on index station percentiles, *J. Hydrometeorology*, 10, 266-277. DOI:10.1175/2008JHM1017.1
- Tang, Q., S. Peterson, R. H. Cuenca, Y. Hagimoto and D. P. Lettenmaier, 2009: Satellite-based near-real-time estimation of irrigated crop water consumption, *J. Geophys. Res.* 114, D05114, doi: 10.1029/2008JD010854.
- Tang, Q., H. Gao, H. Lu and D. P. Lettenmaier, 2009. Remote sensing: hydrology. *Progress in Physical Geography*, 33(4) 490-509. doi:10.1177/0309133309346650.
- Viney, N.R., H. Bormann, L. Breuer, and many others (including D.P. Lettenmaier), 2009: Assessing the impact of land use change on hydrology by ensemble modeling (LUCHEM). II: Ensemble combinations and predictions, *Adv. Water Resour.*, 32, 147-158.
- Wang A., T.J. Bohn, S.P. Mahanama, R.D. Koster, and D.P. Lettenmaier, 2009: Multimodel ensemble reconstruction of drought over the continental United States, *J. Climate*, 22, 2694-2712.
- Zhu, C.M., L.R. Leung, D. Gochis, Y. Qian and D.P. Lettenmaier 2009: Evaluating the influence of antecedent soil moisture on variability of the North American Monsoon precipitation in the coupled MM5/VIC modeling system, *The Journal of Advances in Modeling Earth Systems (JAMES)* Vol. 1, Art. #13, 22 pp., doi:10.3894/JAMES.2009.1.13.

- Xu, X., D. Liang, K.M. Andreadis, L. Tsang, E.G. Josberger, and D.P. Lettenmaier, 2009: Active remote sensing of snow using NMM3D/DMRT and comparison with CLPX II airborne data, *Journal of Selected Topics in Earth Observations and Remote Sensing* 3, 689-697.
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- Bohn, T.J., and D.P. Lettenmaier, 2010: Systematic biases in large-scale estimates of wetland methane emissions arising from water table formulations, *Geophys. Res. Lett.* 37, L22401, doi:10.1029/2010GL045450.
- Bowling, L.C. and D.P. Lettenmaier, 2010: Modeling the effects of lakes and wetlands on the water balance of Arctic Environments, *J. Hydromet.* 11, 276-295, doi: 10.1175/2009JHM1084.1.
- Cuo, L., T.K. Beyene, N. Voisin, F. Su, D.P. Lettenmaier, M. Alberti, and J.E. Richey, 2010: Effects of mid-twenty-first century climate and land cover change on the hydrology of the Puget Sound basin, Washington. *Hydrological Processes* 25, 1729–1753, doi: 10.1002/hyp.7932.
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