

## DR. DAVID C. GOODRICH

RESEARCH HYDRAULIC ENGINEER

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### Employment History

1988-present: Research Hydraulic Engineer, USDA-ARS SW Watershed Research Center, Tucson, AZ.  
1990-present: Adjunct Professor, U. Arizona, Dept. Hydrology & Atmospheric Sciences, Tucson, AZ.  
1981-1983: Scientist, Autometric, Inc. (Consulting Firm), Falls Church, VA.  
1980-1981: Civil Engineer, US Geological Survey, Water Resources Div., Anchorage, AK.  
1976-1980: Hydrologic Technician, USGS, Wisconsin and Alaska (part-time)

### Degrees

1990: Ph.D., Hydrology and Water Resources, University of Arizona  
1982: M.S., Civil and Environmental Engineering, University of Wisconsin-Madison  
1981: CPGS, Control Engineering, Cambridge University-Winston Churchill Scholar  
1980: B.S., Civil and Environmental Engineering, University of Wisconsin-Madison

### Narrative of Research Experience

Since my first job with the USGS in Madison WI and Anchorage Alaska while I was still an undergraduate, I have known that digging deep for answers to key environmental issues was my passion. This early work gave me extensive field and programming experience, giving me a solid start to my career in research. As a Research Hydraulic Engineer with the Southwest Watershed Research Center with the USDA-Agricultural Research Service in Tucson, AZ, I have conducted and often led a wide range of innovative project for more than 30 years, including extensive multi-disciplinary and multi-agency research projects like the Monsoon'90 campaign and the SALSA: Semi-Arid Land-Surface-Atmosphere Research Program. Areas of research focus include: scaling issues in watershed rainfall-runoff response, identification of dominant hydrologic processes over a range of basin scales, climatic change impacts on semiarid hydrologic response, incorporation of remotely sensed data into hydrologic models, the functioning of semiarid riparian systems, nonmarket valuation of ecosystem services, flash-flood forecasting, rapid post-fire watershed assessments, and connectivity of ephemeral and intermittent streams.

### Short List of Key Publications

(Author/co-author 370 Pub., 172 in peer-reviewed journals or book chapters, Google Scholar, h=68)

Goodrich, D. C., Heilman, P., Anderson, M., ... (2021). The USDA-ARS Experimental Watershed Network: Evolution, Lessons Learned, Societal Benefits, and Moving Forward. *Water Resources Research*, 57(2), e2019WR026473.

Demaria, E. M., Hazenberg, P., Scott, R. L., Meles, M. B., Nichols, M., & Goodrich, D. (2019). Intensification of the North American Monsoon rainfall as observed from a long-term high-density gauge network. *Geophysical Research Letters*, 46(12), 6839-6847.

Dozier, J., Barros, A. P., Ajami, N., Bolton, J. D., Entekabi, D., Fogg, G. E., Foufoula-Georgiou, E., Goodrich, D. C., Hogue, T. S., Kargel, J. S., Kummerow, C. D., Lakshmi, V., Welles, E, Wood, E. F., 2019. Chapter 6. Global Hydrological Cycles and Water Resources, In: *Thriving on Our Changing Planet: A Decadal Strategy for Earth Observation from Space*. National Academies Press. 2019.

Goodrich, D. C., Kepner, W. G., Levick, L. R., & Wigington Jr, P. J. (2018). Southwestern intermittent and ephemeral stream connectivity. *J. of the American Water Resources Association*, 54(2), 400-422.

Alexander, L. C., Autrey, B., DeMeester, J. Fritz, K. M., Goodrich, D. C., ... & Wigington, P.J. (2015). Connectivity of Streams and Wetlands to Downstream Waters: A Review and Synthesis of the Scientific Evidence. EPA/600-R-14/475F, 408 p.

Goodrich, D. C., Burns, I. S., Unkrich, ... & Levick, L. R. (2012). KINEROS2/AGWA: model use, calibration, and validation. *Transactions of the ASABE*, 55(4), 1561-1574.

Farid, A., Goodrich, D. C., Bryant, R., Sorooshian, S. (2008) Using airborne lidar to predict leaf area index in cottonwood trees and refine riparian water use estimates. *J. of Arid Environments*. 72:1-15.

- Goodrich, D. C., Williams, D. G., Unkrich, ... & Scanlon, B. R. (2004). Comparison of methods to estimate ephemeral channel recharge, Walnut Gulch, San Pedro River basin, Arizona. In: *Groundwater Recharge in a Desert Environment: The Southwestern United States*. AGU Water Science and Applications Monograph 9, pp.77-99.
- Smith, R. E., and Goodrich, D. C. (2000) Model for rainfall excess patterns on randomly heterogeneous areas. *J. Hydrologic Engr.*, 5(4):355-362.
- Goodrich, D. C., Chehbouni, A., Goff, B., et al., (2000). Preface paper to the Semi-Arid Land-Surface-Atmosphere (SALSA) program special issue. *J. Agricultural and Forest Meteorology*, 105(1-3):3-20.
- Goodrich, D. C., Scott, R., Qi, J., Goff, B., Unkrich, C. L., et al. (2000). Seasonal estimates of riparian evapotranspiration using remote and in situ measurements. *J. Ag. and For. Meteorol.* 105(1-3):281-309.
- Goodrich, D. C., Lane, L. J., Shillito, R. A., Miller, S. N., Syed, K. H., and Woolhiser, D.A. (1997). Linearity of basin response as a function of scale in a semi-arid watershed, *Water Resources Research* 33(12):2951-2965.
- Goodrich, D. C., Faurès, J. M., Woolhiser, D. A., Lane, L. J., and Sorooshian, S. (1995) Measurement and analysis of small-scale convective storm rainfall variability. *J. Hydrology* 173:283-308
- Faurès, J. M., Goodrich, D. C., Woolhiser, D. A., and Sorooshian, S. (1995) Impact of small-scale spatial rainfall variability on runoff simulation. *J. Hydrology* 173:309-326. 1995.
- Kustas, W. P., and Goodrich, D. C. (1994). Preface [to special section on the Monsoon'90 Multidisciplinary Experiment]. *Water Resources Research*, 30(5), 1211-1225.
- Goodrich, D. C., Schmugge, T. J., Jackson, T. J., Unkrich, C. L., Keefer, T. O., Parry, R., Bach, L. B., and Amer, S. A. (1994). Runoff simulation sensitivity to remotely sensed initial soil water content. *Water Resources Research* 30(5):1393-1405.
- Goodrich, D. C., and Woolhiser, D. A. Catchment Hydrology (1991). U.S. report on hydrology to the International Union of Geodesy and Geophysics 1987-1990, *Reviews of Geophysics*, pp. 202-209
- Goodrich, D. C., Woolhiser, D. A., and Keefer, T. O. (1991) Kinematic routing using finite elements on a Triangular Irregular Network (TIN). *Water Resources Research* 27(6):995-1003.

### Honors

Over 49 university, state, national, and international honors. The most significant are listed below.

- The Winston Churchill Foundation Scholarship to attend graduate school at the Univ. of Cambridge (1980)
- National Science Foundation Graduate Fellowship (1981)
- American Geophysical Union (AGU) Horton Research Grant (1986)
- AGU Editors Citation of Excellence in Refereeing - *Water Resources Research* (1990)
- Univ. Council on Water Resources (UCOWR) best dissertation award in Engineering & Physical Sciences (1991)
- Federal Laboratory Consortium Technology Transfer Award for KINEROS rainfall-runoff and erosion modeling technology (1998)
- USDA Sec. of Agriculture Honor Award - Semi-Arid Land-Surface-Atmosphere (SALSA) Team Leader (2001)
- University of Arizona Alumni Achievement Award (2003)
- Arid Lands Hydraulic Engineering Award - American Society of Civil Engineers (2007)
- OECD Cooperative Research Fellowship to New Zealand (2008)
- USDA-ARS Senior Scientist of the Year for the Pacific West Area – one of 360 scientists across a broad range of disciplines (2012)
- American Geophysical Union Fellow (2013)
- Federal Laboratory Consortium Interagency Technology Transfer Award – “AGWA Streamlines Burn Area Emergency Response (BAER) Efforts” (2018)

### Professional Society Memberships

American Geophysical Union, American Society of Civil Engineers

Honorary Society Memberships: Chi Epsilon, Phi Kappa Phi, Tau Beta Pi, Sigma Xi

Registered Professional Engineer (#27569) in the state of Wisconsin