Fred L. Ogden , Ph.D., P.E.

6001 Loblolly Ln
Tuscaloosa, AL 35405
Mobile phone: 307-399-5132
fogden240@gmail.com

HIGHLIGHTS:

- Acting Senior Scientist, NOAA-Affiliate, U.S. National Water Center
- Intimately involved in DOC-APG in Flood Inundation Modeling
- Technical Director of Next Generation National Water Model planning/development
- Technical Director of Model Evaluations
- Extensive experience as a member of the leadership team of the NOAA-NWS Office of Water Prediction
- Internationally recognized developer of computational hydrologic/hydraulic models
- Academic background in theoretical and practical hydrologic/hydraulic model evaluations
- Experienced educator and mentor to junior technical staff over 28 years

EMPLOYMENT HISTORY & WORK EXPERIENCE (Position title in **Bold** typeface)

Current Position: **Acting Senior Scientist and Academic in Residence,** University Corporation for Atmospheric Research (UCAR), NOAA-Affiliate, U.S. National Water Center (NWC), Tuscaloosa, AL, May, 2017- present

- Acting in the role of Senior Scientist to the U.S. National Water Center. Advising leadership of NOAA National Weather Service, Office of Water Prediction (OWP) on improvements to the national water modeling and prediction capabilities.
- Technical Director of Next Generation National Water Model planning and development
- Technical Director of hydrologic model evaluation activity
- Advising DOC APG in Flood Inundation Mapping
- Liaison between OWP and other agencies, and the Consortium of Universities for the Advancement of Hydrology, Inc. (CUAHSI), and universities.
- Evaluating external contract work products, review of internal reports and external publications, negotiation of technical components of work plans with contractors.
- Co-organizer and theme lead in NOAA's annual Summer Innovator's Program, educating graduate students from around the nation.

Current Position: **Adjunct Professor**, Dept. of Civil and Architectural Engineering, University of Wyoming, Laramie, May 2019-present

Professor and Cline Distinguished Chair of Engineering, Environment, and Natural Resources, University of Wyoming, Laramie, January, 2006, - May, 2019 (on leave without pay May, 2017- May, 2019)

- Endowed faculty position with a joint appointments in the College of Engineering and Applied Sciences and the Haub School of Environment and Natural Resources.
- Assisted with Haub School strategic planning and financial development.
- Led cross-campus research and education initiatives including an examination of programmatic changes to increase vitality of Ph.D.-level graduate education in the broad water resources area.
- Organized a series of campus-wide meetings involving up to 60 self-selected water faculty resulting in a plan to increase the number of water-related Ph.D. level course offerings across campus by creating a common set of prerequisites that would ensure Ph.D.-level rigor in those courses.
- Produced proposal with assistance of a working group of about 10 faculty to create an interdisciplinary multidisciplinary Ph.D. program in Water Resources Environmental Science and Engineering (WRESE). This program was approved by the Board of Trustees in 2009.
- Secured $7M in extramural funding including $5.7M as P.I. from numerous sources. Notably, I led writing of two successful multidisciplinary research proposals, both to the NSF.
- Led proposal team that successfully obtained $1M funds to procure a supercomputer for the Univ. of Wyoming.
- Led development of the 3rd Generation ADHydro supercomputer-based hyper-resolution large watershed water resources simulation model.
- Assembled and led multidisciplinary research team in study of effectiveness of payments for ecosystem services schemes in the Panama Canal Watershed.

Associate Professor with Tenure, Department of Civil & Environmental Engineering, University of Connecticut, Storrs, Connecticut, 2000-2005.

- Led development of 2nd Generation U.S. Army Corps of Engineers, Gridded Surface-Subsurface Hydrologic Analysis (GSSHA) model that is widely used by USACE and is FEMA certified for flood insurance studies.
- Served as Chair of the Department Promotion and Tenure Committee.
- Served as Chair of the Faculty Advisory Committee for the Center for Environmental Sciences and Engineering.
- Established 17 ha hydrologic observatory with instrumentation in Panama with funding from the U.S. Army Research Office.

Assistant Professor, Department of Civil & Environmental Engineering, University of Connecticut, Storrs, Connecticut, 1994-2000.

- Wrote grant proposal that received Young Investigator Award from U.S. Army Research Office.
- Secured funding for hydrologic model development from U.S. Army Corps of Engineers, Waterways Experiment Station.
- Renovated university hydraulics laboratory with industry appropriate equipment including pumps, flumes, and flow meters.

Post-Doctoral Associate, Adjunct Assistant Professor and Research Engineer, Iowa Institute of Hydraulic Research, Department of Civil & Environmental Engineering, University of Iowa, Iowa City, Iowa, 1992-1994.

- Assisted with numerous computational hydrology/hydraulic and physical model studies.
- Taught undergraduate and graduate courses in water resources.
- Secured external funding for hydrologic model development from U.S. Army Corps of Engineers.

EDUCATION

Ph.D., Civil Engineering, 1992, Colorado State University. Dissertation: Two-Dimensional Runoff Modeling with Weather Radar Data. Advisor: P.Y. Julien

M.S., Civil Engineering, 1989, Colorado State University. Thesis: Axial Shear Strength Testing of Bentonite Water Well Annulus Seals. Advisor: J.F. Ruff

B.S., Civil Engineering, 1987, Colorado State University

PROFESSIONAL LICENSURE

Registered Professional Engineer: Colorado, Wyoming
Professional Hydrologist, American Inst. of Hydrology

OTHER APPOINTMENTS

- Research Associate, Smithsonian Tropical Research Institute, Panama City, Panama, 2008-present.
- Adjunct Professor, Department of Civil and Environmental Engineering, Utah State University, 2008-2014.

HONORS AND AWARDS

- **W.R. Boggess Award**, American Water Resources Association (AWRA) for the paper: Hendrickx, J.M.H., R.G. Allen, A. Brower, A.R. Byrd. S. Hong, F.L. Ogden, N.R. Pradhan, C.W. Robison, D. Toll, R. Trezza, T.G. Unstot, and J.L. Wilson, 2016. Benchmarking optical/thermal satellite imagery for estimating evapotranspiration and soil moisture in decision support tools. J.AWRA 52(1), 2016.

- **Coolest Paper Award**, International Association of Hydrogeologists, for the paper: Ogden, F.L, W.Lai, R.C. Steinke, J. Zhu, C.A. Talbot, and J.L. Wilson, 2015. A new general 1-D vadose zone flow solution method., *Water Resour. Res*., 51, 4282-4300, doi:10.1002/2015WR017126.
- **Arid Lands Hydraulic Engineering Award**, in recognition of noteworthy contributions to the advancement of hydraulic engineering in arid and semi-arid climates. American Society of Civil Engineers, May, 2015.
- **Elected Fellow**, Environment and Water Resources Institute, American Society of Civil Engineers, May, 2013.
- **Student Chapter Faculty Advisor Commendation**, American Society of Civil Engineers, Committee on Student Activities, 2005.
- C.R. Klewin Inc. Award for **Excellence in Teaching**, 2000-2001, Department of Civil and Environmental Engineering, University of Connecticut.
- **Collingwood Prize**, 1999, American Society of Civil Engineers for the paper: T. Nakato and F.L. Ogden, "Sediment Control at Water Intakes Along Sand-Bed Rivers", *J. of Hydraulic Engineering*, 124(6):589-596, 1998.
- **Best Reviewer Award**, 1999, ASCE Water Resources Engineering Division, *J. of Irrigation and Drainage Engineering*.
- U.S. Army Research Office **Young Investigator Award**, (1996-2001), Studies of Radar-Rainfall Error Propagation through Runoff Predictions, $191,000.
- **Outstanding Journal Paper Award**, 1992, ASCE Irrigation and Drainage Div. for the paper: Ogden, F.L., and J.F. Ruff, (1991),"Setting Time Effects on Bentonite Water Well Annulus Seals", *J. of Irrig. Drainage Engineering*, 117(4):534-545.

TEACHING

NOAA Summer Innovator's Program, National Water Center

Theme co-lead, Runoff generation in small catchments	Summer, 2019
Theme co-lead, Hyper-resolution models/complex topography	Summer, 2018
Theme co-lead, Hyper-resolution urban hydrologic simulation	Summer, 2017

Univ. of Wyoming (1000-4000 undergraduate, 5000 graduate)

CE 5885	Hydrometeorology	Fall 2016
CE 4900	CDE Water Resources Engineering	Spring 2015
CE 3300	Hydraulic Engineering	Spring 2014
CE 4900	CDE Water Resources Engineering	Spring 2014
CE 5885	Hydrometeorology	Fall 2014
CE 5700	Hydroinformatics*	Fall 2014
CE 5865	Deterministic Hydrologic Modeling	Fall 2013
CE 4900	CDE Water Resources Engineering	Spring 2013
CE 4900	CDE Water Resources Engineering	Spring 2012
CE 3300	Hydraulic Engineering	Fall 2011
CE 5865	Deterministic Hydrologic Modeling	Fall 2011

ENR 4890/5890-08	Western Water Issues	Spring 2011
CE 4900	CDE Water Resources Engineering	Spring 2011
ES 2300	Engineering Fluid Dynamics	Fall 2010
CE 5885	Hydrometeorology	Fall 2010
CE 4900	CDE Water Resources Engineering	Spring 2010
CE 5900	Deterministic Hydrologic Modeling	Fall 2009
CE 4900	Comprehensive Design Experience (CDE) in Water Resources Engineering	Spring 2009
CE 5885	Hydrometeorology	Fall 2008
ENR 4900/CE4900	Comprehensive Design Experience (CDE) combined section, EIS in the Tropics	Spring 2008
CE 5900	Deterministic Hydrologic Modeling	Fall 2007
CE 4800	Engineering Hydrology	Fall 2006
CE 5885	Hydrometeorology	Fall 2006

*(denotes service as instructor of record)

Univ. of Connecticut (100-200 undergraduate, 300-400 graduate)

CE383	Hydrometeorology	Fall 2005
CE381	River Mechanics	Spring 2005
CE266	Hydraulic Engineering Laboratory	Spring 2005
CE265	Hydraulic Engineering	Spring 2005
CE383	Hydrometeorology	Fall 2004
CE297	Fluid Mechanics	Fall 2004
ENVE110	Environmental Debate	Spring 2004
CE265	Hydraulic Engineering	Spring 2004
CE383	Hydrometeorology	Fall 2003
CE297	Fluid Mechanics	Fall 2003
CE266	Hydraulic Engineering Laboratory	Spring 2003
CE265	Hydraulic Engineering	Spring 2003
CE297	Fluid Mechanics	Fall 2002
CE383	Hydrometeorology	Fall 2002
CE291	Civil & Env. Engrg. Senior Design	Spring 2000
CE381	River Mechanics	Fall 2000
CE338	Open channel Hydraulics	Fall 1999
CE265	Hydraulic Engineering	Spring 1999
CE266	Hydraulic Engineering Laboratory	Spring 1999
CE297	Fluid Mechanics	Fall 1998
CE383	Hydrometeorology	Fall 1998
CE265	Hydraulic Engineering	Spring 1998

CE266	Hydraulic Engineering Laboratory	Spring 1998
CE 291	Civil & Env. Engr. Senior Design	Spring 1997
CE265	Hydraulic Engineering	Spring 1997
CE332	Advanced Fluid Mechanics	Fall 1997
CE297	Fluid Mechanics	Fall 1996
CE383	Hydrometeorology	Fall 1996
CE265	Hydraulic Engineering	Spring 1996
CE338	Open Channel Hydraulics	Fall 1995
CE383	Hydrometeorology	Spring 1995
CE297	Fluid Mechanics	Fall 1994

Sabbatical Leaves: UConn- 2001-2002. University of Wyoming, 2015-2016.

Professional and Honor Society Memberships

- Sigma Xi- The Scientific Research Society
- Chi-Epsilon- The National Civil Engineering Honor Society
- American Society of Civil Engineers (ASCE)
- American Geophysical Union (AGU)
- European Geophysical Union (EGU)
- Order of the Engineer

Editorial Experience

- Special Guest Editor, *J. Hydrology*, Special Issue on Tropical Hydrology, 2010-2012
- Associate Editor, Soil Sci. Soc. America, *Vadoze Zone Journal*, 2010-2012
- Associate Editor, AGU *Water Resources Research*, 2007-2009
- Associate Editor, ASCE *J. Hydrologic Engineering,* 2002-2006
- Associate Editor, ASCE *J. Irrigation and Drainage Engineering*, 1995-2000

Educational Training

- Environmental Engineering ABET/EAC Evaluator Training Workshop, October 3, 2004.
- ASEE Engineering 2000 Workshop, 1999.
- ASEE Workshop on Instructional Delivery and Learning Styles, 1998.

Significant State of Wyoming Service Activities

- Administrative Law Judge, Wyoming State Environmental Quality Council, 2008-2012.

National and International Service Activities

- Member, National Science and Technology Council, Committee on Environment and Natural Resources, Subcommittee on Surface Water Availability and Quality, Integrated Terrestrial Modeling Working Group, 2018-2019.
- Member, Technical Advisory Council, Geology in the Public Interest, 2017-present

- Hyper-resolution modeling theme lead, US National Weather Service, National Water Center Summer Innovators Program, 2017-2018.
- Co-organizer with Ellen Wohl, US Army Tropical Hydrology Symposium, Hawaii, 2011.
- Secretary, Vice-Chair, Chair, ASCE/EWRI Surface Water Hydrology Technical Committee, 2006-2012.
- Co-organizer, US Army Tropical Hydrology Symposium, Panama City, Panama, 2009, with Russell Harmon and Robert Stallard.
- Reviewer, Towards a New Advanced Hydrologic Prediction System, Water Science and Technology Board, National Research Council of the National Academies, 2006.
- Co-Chair, Symposium on Groundwater Issues, EWRI 2004 Conference, June 28-29, Salt Lake City, Utah.
- Member, International Organizing Committee, International Symposium on Flood Forecasting and Management with GIS and Remote Sensing, Guangzhou, China, 2004.
- Member, Board of Directors, Consortium of Universities for the Advancement of Hydrologic Science, Inc. (CUAHSI), 2002-2009.
- Member, CUAHSI Hydrologic Observatory Design Team, 2003-2004.
- Member, International Scientific Committee, 6th International Symposium on Hydrologic Applications of Weather Radar, Feb. 2-4, 2004, Melbourne, Australia.
- Chair, ASCE/EWRI Task Committee on Distributed Hydrologic Models, 2003-2004.
- Member, International Scientific Committee, 5th International Symposium on Hydrologic Applications of Weather Radar, Nov. 19-22, 2001, Kyoto, Japan.
- Journal Reviewer, *Advances in Water Resources, Water Resources Research* (AGU), *J. Hydrometeorology* (AMS), *J. of Hydrology*, *J. Hydraulic Engrg.* (ASCE), *J. Irrig. and Drainage Engrg.* (ASCE), *Vadose Zone J.* (SSSA).
- Member, ASCE Water Resources Division, Task Committee on GIS Modules and Distributed Models of the Watershed (1996-2000).
- Proposal Reviewer, U.S. National Science Foundation, U.S. Army Research Office, U.S. Environmental Protection Agency, U.S. Department of Agriculture, U.K. Natural Environment Research Council, International Science and Technology Center on behalf of the U.S. Department of State.
- Member, U.S. National Academy of Sciences, Advisory Committee on Water Information, Task Force Review Panel of the U.S. Geological Survey Federal-State Cooperative Water Program (1998-1999).
- Member, Connecticut Institute of Water Resources Technical Committee, 1995-2005.
- Member, Connecticut Dept. of Environmental Protection Hydrologic Modeling Committee, 1996-1998.

Significant University of Wyoming Service Activities

- Founding director, Center for Computational Hydrology and Hydrosciences, 2013-2017.
- Lead Organizer, REU in High Performance Computing, Summer 2013.
- Lead Instructor and Organizer, HBCU Short Course on Computational Hydrologic Modeling, Summer 2013.
- Member, Advance Research Computing Cluster Faculty Adv. Committee 2012-2017.

- Principal Investigator, NSF-EPSCoR Track II Cyberinfrastructure Cooperative Agreement OCI-1135354, Collaborative Research: CI-WATER, Cyberinfrastructure to Advance High Performance Water Resource Modeling, Collaborative with Brigham Young Univ., Utah State Univ., and University of Utah. Univ. of Wyoming budget: $2,564,000, Sept. 2011-Aug. 2015.
- Principal Investigator, NSF Water Sustainability and Climate Research Program, EAR-1360384, Collaborative Research: Planning And Land Management in a Tropical Ecosystem; Complexities of land-use and hydrology coupling in the Panama Canal Watershed. $2.8M total budget, Aug. 2014- July 2017.
- Haub School of Env. and Natural Resources Faculty Advisory Board 2006-2017.
- University of Wyoming representative to CUAHSI, 2006-2017.
- College of Engineering Promotion and Tenure Committee, 2013-2014.
- Vice-chair, Water Resources Environmental Science and Engineering Ph.D. Program, University of Wyoming, 2009-2017.
- Chair, Dept. of Civil & Architectural Engineering Hydrology/Water Resources Faculty search committee 2011-2012.
- Member, Dept. of Civil & Architectural Engineering, Facilities Committee, 2010-2011.
- Chair, Dept. of Civil & Architectural Engineering Graduate Education Committee 2007-2008.
- Chair, Dept. of Civil & Architectural Engineering Hydrology/Water Resources Faculty search committee 2007-2008.
- Member, Haub School Faculty Advisory Committee, 2006-2017.
- Professional Fundraising workshop for Deans, Department Chairs, and Aspiring Academic Leaders, Advancement Resources, New York City, NY, June, 2014.

Significant University of Connecticut Service Activities

- Member, Provost's Committee on Research and Graduate Education in Environmental Sciences, 2003-2004.
- ASCE Student Chapter Advisor, 2002-2005.
- Member, Center for Environmental Sciences and Engineering, Director Search Committee, 2004.
- Member, Dept. of Civil and Environmental Engineering, Promotion, Tenure, and Reappointment Committee, 2002-2005.
- Chair, Environmental Research Institute, Faculty Advisory Committee, 2003-2004.
- Chair, Dept. of Civil & Environmental Engineering., Promotion, Tenure & Reappointment Committee, 2000-2001.
- Chair, Dept. of Civil & Environmental Engineering., Faculty Search Committee, 1997.
- Member, Civil & Env. Engineering, Curriculum and Courses Comm. 1997-1999.

STUDENT ADVISING/GRADUATE SUPERVISION

Completed Graduate Students

Name	Degree	Year/Semester	University
Y. Cheng	PhD	2018/Spring	U. Wyoming
J. Regina	MS (A)	2017/Summer	U. Wyoming
G. Litt	PhD	2016/Fall	U. Wyoming
J. Briceno	MS (A)	2015/Fall	U. Wyoming
N. Frazier	MS (B)	2015/Spring	U. Wyoming
J. Creel	MS (A)	2013/Spring	U. Wyoming
T. Crouch	MS (A)	2012/Summer	U. Wyoming
K. Puckett	MS (A)	2008/Spring	U. Wyoming
A. Benout	MS (B)	2005/Spring	U. Connecticut
C. Talbot	PhD	2008/Spring	U. Connecticut
J. Niedzialek	PhD	2007/Fall	U. Connecticut
M. Anagnostou	PhD	2006/Spring	U. Connecticut
M. Rogalus	MS (A)	2005/Spring	U. Connecticut
R. Knox	MS (A)	2004/Fall	U. Connecticut
J. Zahner	MS (A)	2004/Spring	U. Connecticut
C. Downer	PhD	2002/Spring	U. Connecticut
J. Daraio	MS (A)	2002/Fall	U. Connecticut
J. Niedzialek	MS (A)	2002/Spring	U. Connecticut
H. Sharif	PhD	2001/Spring	U. Connecticut
S. Senarath	PhD	2000/Spring	U. Connecticut
N. Kesselring	MS (B)	1999/Spring	U. Connecticut
B. Watts	MS (A)	1998/Spring	U. Connecticut

Current Graduate Students

Name	Degree	Expected Completion
J. Regina	PhD	2019-2020, U.Wyoming

Graduate Theses/Dissertation as Major Advisor at University of Wyoming

Cheng, Y., 2018, Effects of preferential flow paths and land use on hydrological behaviors of tropical catchments. Ph.D. Dissertation, Dept. of Civil & Architectural Engineering, Univ. of Wyoming, Laramie, WY 82071, 206 pp.

Litt, G.F., 2016, Hydrometric, Hydochemical, and Hydrogeophysical Runoff Characterization Across Multiple Land Covers in the Agua Salud Project, Panama. Ph.D. Dissertation, Dept. of Civil & Architectural Engineering, Univ. of Wyoming, Laramie, WY 82071, 386 pp.

Briceno-Restrepo, J.-C., 2015, Evaluation of 2010 Flood of Record in the Panama Canal Watershed, M.S. Thesis, University of Wyoming, Laramie, WY, 87 pp.

Regina, J.A., 2015, A comparison of the effect of runoff efficiency and flows of a rain forest invasive grass monoculture, and a monoculture teak plantation in the Panama Canal Watershed. M.S. Thesis, Dept. of Civil & Architectural Engineering, Univ. of Wyoming. Dec., 52 pp.

Creel, J.N., 2013, Effects of Sedimentation on Flow Measurements from Short Crested Triangular Weirs, M.S. Thesis, University of Wyoming, Laramie, WY, 356 pp.

Crouch, T.D., 2012, Quantifying hydrological ecosystem services of various land covers within the Panama Canal Watershed, M.S. Thesis, University of Wyoming, Laramie, WY, 141 pp.

Puckett, K.A., 2008, Estimation of Groundwater Recharge Rates in the Powder River Basin of Wyoming with Uncertainty Estimates, M.S. Thesis, University of Wyoming, Laramie, WY, 203 pp.

Graduate Theses/Dissertation as Major Advisor at University of Connecticut

Cary A. Talbot, 2008, Finite Water-Content Solution of the Infiltration Problem, Ph.D. Dissertation, University of Connecticut, Storrs, CT, 94 pp.Jon A. Zahner, 2004, Influence of Storm Sewers, Drainage Density, and Soil Moisture on Runoff from an Urbanizing Catchment, M.S. thesis , University of Connecticut, Storrs, CT, 88 pp.

Niedzialek, J.M., 2007, Unusual hydrograph characteristics, Upper Rio Chagres, Pannama. Ph.D. dissertation, University of Connecticut, Storrs, CT, 261 pp.

Marios N. Anagnostou, 2006, Mobile High Resolution X-Band Polarimetric Weather Radar Measurements (XPOL): Evaluation and Application, Ph.D. dissertation, University of Connecticut, Storrs, CT, 120 pp.

Anthony T. Benoit, 2005, Simple Scaling in a Small Research Watershed: Effect of Record Length and Linearity of Higher Moments, M.S. Research Paper, University of Connecticut, Storrs, CT, 40 pp.

Michael Rogalus, III, 2005, Assessing the Applicability of Archival Radar-Rainfall Estimates for Hydrologic Modeling at Fine Spatial and Event Time Scales across the Mississippi Basin, M.S. thesis, University of Connecticut, Storrs, CT, 90 pp.

Charles W. Downer, 2002. Identification and modeling of important stream flow producing processes in Watersheds. Ph.D. dissertation, University of Connecticut, Storrs, CT; 253pp.

Joseph A. Daraio, 2002, Assessing the Effects of Rainfall Kinetic Energy on Channel Suspended Sediment Concentrations for Physicially-Based Distributed Modeling of Event-Scale Erosion, M.S. thesis, University of Connecticut, Storrs, CT, 123 pp.

Justin M. Niedzialek, 2002, A Numerical Study of Hysteresis as Observed at the Watershed Scale, M.S. thesis, University of Connecticut, Storrs, CT, 106 pp.

Hatim O. Sharif,, 2001, Propagation of radar-rainfall uncertainty in runoff predictions, Ph.D. Dissertation, University of Connecticut Storrs, CT, 111 pp.

Sharika U.S. Senarath, 2000, On Evaluating the Validity of Continuous, Distributed Hydrologic Model Predictions in Spatially Heterogeneous Hortonian Watersheds, Ph.D. dissertation, University of Connecticut, Storrs, CT, 202 pp.

Brent A. Watts, 1998, Formation of Saturated Areas on Hillslopes With Shallow Soils, M.S. thesis, University of Connecticut, Storrs, CT, 90 pp.

Undergraduate Theses as Major Advisor at University of Connecticut

Jason Lynn, 2004, Assessment of Hydrologic Stability of the Windham Atlantic White Cedar Wetland, Windham, Connecticut, B.S. Thesis, Environmental Engineering Program, Department of Civil and Environmental Engineering, University of Connecticut, Storrs, CT, 33 pp.

POSTDOCTORAL RESEARCH ASSOCIATES SUPERVISED

Dr. Edward Kempema, Academic Professional/Research, 2013-2018 (U. Wyo.)
Dr. Robert Steinke, Academic Professional/Research, 2012-2018 (U. Wyo.)
Dr. Wencong Lai, Post-Doctoral Associate, 2012-2015 (U. Wyo.)
Dr. Hernan A. Moreno, Post-Doctoral Associate, 2014-2015 (U. Wyo.)
Dr. Nawa Raj Pradhan, Post-Doctoral Associate, 2006-2010 (U. Wyo.)
Dr. Siqing Liu, Post-Doctoral Associate, 2002-2005 (Univ. of Connecticut)
Dr. Arik Heilig, Post-Doctoral Associate, 1999-2001 (Univ. of Connecticut)

PUBLISHED AND SUBMITTED WORKS

Book Chapters

Ogden, F.L., 2020. Computational Modeling in the Geosciences: Hydrological Modeling, Encyclopedia of Geology, 2nd Ed., Elsevier, in press.

Ogden, F.L., and G.S. Warner, 2016. Runoff Generation, Chapter 49 in Handbook of Hydrology 2nd Edition, Vijay Singh, ed., McGraw-Hill.

Downer, C.W., F.L. Ogden, W.D. Martin and R.S. Harmon, Opportunity-driven hydrological model development in the US Army research and development programs., Ch. 15 *in* Military Aspects of Hydrogeology, E.P.F. Rose and J.D. Mather eds., Special Publications, Geol. Soc. of London, Feb. 2012, 376 pp.

Downer, C.W., F.L. Ogden, J. M. Niedzialek, and S. Liu, 2006, Gridded Surface/Subsurface Hydrologic Analysis (GSSHA) Model: A Model for Simulating Diverse Streamflow Producing Processes, p. 131-159, *in* Watershed Models, V.P. Singh, and D. Frevert, eds., Taylor and Francis Group, CRC Press, 637 pp.

Niedzialek, J.M., and F.L. Ogden, 2005, Runoff Production in the Upper Rio Chagres Catchment, Panama, *in* The Rio Chagres: A Multidisciplinary Profile of a Tropical Watershed, R.S. Harmon, ed., Kluwer Academic Publishers, 354 pp.

Knox, R., F.L. Ogden, and T. Dinku, 2005, Using TRMM to Explore Rainfall Variability in the Upper Rio Chagres Catchment, Panama, *in* The Rio Chagres: A Multidisciplinary Profile of a Tropical Watershed, R.S. Harmon, ed., Kluwer Academic Publishers, 354 pp.

Calvo Gobbetti, L.E., F.L. Ogden, and J.M.H. Hendrickx, 2005, Infiltration in the Upper Rio Chagres Basin- The Soil Conservation Service Curve Numbers, *in* The Rio Chagres: A Multidisciplinary Profile of a Tropical Watershed, R.S. Harmon, ed., Kluwer Academic Publishers, 354 pp.

Ogden, F.L., and P.Y. Julien, 2002, Distributed model CASC2D, *in* Mathematical Models of Small Watershed Hydrology, Vol 2, V.P. Singh, R. Frevert, and D. Meyers eds., Water Resources Publications, ISBN 1-887201-35-1, 972 pp.

Ogden, F.L, and A. Heilig, 2001, Two-dimensional watershed scale erosion modeling with CASC2D, *in* Landscape Erosion and Evolution Modeling, R. Harmon, and W.W. Doe III, eds., Kluwer Academic Press, New York, ISBN 0-306-4618-6, 535 pp.

Books and Conference Proceedings Edited

Nakato, T., and F.L. Ogden, eds., 1997, Proceedings of the John F. Kennedy Student Paper Competition, XXVII Intl. Assoc. Hydraulic Research Congress, published by Am. Soc. Civil Engineers, Reston, VA, ISBN 0-7844-0275-2.

Peer Reviewed Journal Articles in Print

Litt, G.F., F.L. Ogden, A. Mojica, J.M.H. Hendrickx, E.W. Kempema, C.B. Gardner, M. Bretfeld, J.A. Regina, J.B. Harrison, Y. Cheng, and W.B. Lyons, 2020. Land cover effects on soil infiltration capacity measured using plot scale rainfall simulation in steep tropical lowlands of Central Panama, *Hydrol. Proc*. https://doi.org/10.1002/hyp.13605

Cheng, Y, F.L. Ogden, and J. Zhu, 2020. Characterization of sudden and sustained base flow jump hydrologic behavior in the humid seasonal tropics of the Panama Canal Watershed, *Hydrol. Proc*. https://doi.org/10.1002/hyp.13604.

Adamowicz, W., L. Calderon-Etter, A. Entem, E.P. Fenichel, J.S. Hall, P Lloyd-Smith, F.L. Ogden, J.A. Regina, M. Rouhi Rad, and R.F. Stallard, 2019. Assessing ecological infrastructure investments. *Proc. Nat. Acad. Sci.*, https://www.pnas.org/cgi/doi/10.1073/pnas.1802883116.

Cheng, Y., F. L. Ogden, and J. Zhu, 2018, Land use-dependent preferential flow paths affect hydrological response of steep tropical lowland catchments with saprolitic soils. *Water Resour. Res*., doi:10.1029/2017WR021875.

Moreno, H.A., L.V. Alvarez, and F.L. Ogden, 2018, Unstructured-mesh terrain analysis and incident solar radiation for continuous hydrologic modeling in mountain watersheds. *Water*. 10(4), 398. doi: 10.3390/w10040390.

Cheng, Y., F.L. Ogden, and J. Zhu, 2017. Earthworms and tree roots: A model study of the effect of preferential flow paths on runoff generation and groundwater recharge in steep, saprolitic, tropical lowlands catchments, *Water Resour. Res*. doi: 10.1002/2016WR020258.

Gardner, C.B., G.F. Litt, W. B. Lyons, and F.L. Ogden, 2017. Evidence for the activation of shallow preferential flow paths in tropical Panama watersheds using Germanium and Silicon. *Water Resour. Res*., doi:10.1002/2017WR020429

Farthing, M.W., and F.L. Ogden, 2017. The numerical solution of Richards' Equation: A review of advances and challenges. *J. Soil Sci. Soc. Am*., doi:10.2136/sssaj2017.02.0058.

Ogden, F.L., M.B. Allen, W. Lai, J., Zhu, M. Seo, C.C. Douglas, and C.A. Talbot, 2017. The soil moisture velocity equation. *Journal of Advances in Modeling Earth Systems*, *9*(2), pp.1473-1487, doi:10.1002/2017MS000931.

Ogden, F.L., J.N. Creel, E.W. Kempema, and T.D. Crouch, 2017. Sedimentation effects on triangular short-crested flow measurement weirs. *J. Hydrol. Engrg* https://doi.org/10.1061/(ASCE)HE.1943-5584.0001528.

Ogden, F.L., 2016. Evidence for equilibrium peak runoff rates in steep tropical terrain on the island of Dominica during tropical storm Erika, 2016. *J. Hydrol*. doi:10.1016/j.jhydrol.2016.08.041

Harmon, R.S., G. Wörner, S.T. Goldsmith, B.A. Harmon, C.B. Gardner, W. B. Lyons, F.L. Ogden, M.J. Pribil, D.T. Long., Z. Kern, and I. Fórizs, 2016. Linking silicate weathering to riverine geochemistry-- A case study from a mountainous tropical setting in west-central Panama. *Geol. Soc. Am. Bull*. doi:10.1030/B31388.1.

Zhu, J., F.L. Ogden, W. Lai, X. Chen, and C.A. Talbot, 2016. An explicit approach to capture diffusive effects in finite water-content method for solving vadose zone flow. J. Hydrol. 535:270-281. doi:10.1016/j.jhydrol.

Fatichi, S., F. L. Ogden, et al. 2016. An overview of current applications, challenges, and future trends in process-based models in hydrology. *J. Hydrol.* 537, pp. 45-60, DOI:10.1016/j.jhydrol.2016.03.026.

Ogden, F.L., W. Lai, R.C. Steinke, J. Zhu, C.A. Talbot and J.L. Wilson, 2015. A new general 1-D vadose zone solution method. *Water Resour. Res*. 52, doi:10.1002/2015WR017126.

Hendrickx, J.M.H., R. Allen, A.R. Byrd, S. Hong. A. Brower, F.L. Ogden, R. Trezza, N.R. Pradhan, C.W. Robison, D. Toll, T. Umstot, and J.L. Wilson. 2015, Benchmarking optical/thermal satellite imagery for estimation of evapotranspiration and soil moisture in decision support tools. *J. Am. Wat. Resour. Assn*. (JAWRA) 1-31. DOI: 10.1111/1752-1688.12371.

Goldsmith, S.T., R.S. Harmon, W.B. Lyons, B.A. Harmon, F.L. Ogden, C.B. Gardner, 2015. Evaluation of controls on silicate weathering in tropical mountainous rivers: Insights from the isthmus of Panama. *Geology,* 43(7):563-566.

Ogden, F.L., W. Lai, R.C. Steinke, and J. Zhu, 2015, Validation of finite water-content vadose zone dynamics method using column experiment with a moving water table and applied surface flux. *Water Resour. Res*., 51, doi:10.1002/2014WR016454.

Litt, G., Gardner C.B., F.L. Ogden, and W.B. Lyons, 2015, Hydrologic tracers and thresholds: a comparison of geochemical techniques for event-based stream hydrograph separation across multiple land covers in the Panama Canal Watershed, *Appl. Geochem*., doi:10.1016/j.apgeochem.2015.04.003.

Lai, W., F.L. Ogden, R.C. Steinke, and C.A. Talbot, 2015. An efficient and guaranteed stable numerical method for continuous modeling of infiltration and redistribution with a shallow dynamic water table, *Water Resour. Res*., DOI:10.1002/2014WR016487.

Lai, W., and F.L. Ogden, 2015. A Mass-Conservative Finite Volume Predictor-Corrector Solution of the 1D Richards' Equation, *J. Hydrol.,* DOI: 10.1016/j.jhydrol.2015.01.053.

Sharif, H.O., and F.L. Ogden, 2014, Mass conserving remapping of radar data onto two-dimensional Cartesian cartesian coordinates for hydrologic applications, *J. Hydromet.*, DOI: 10.1175/JHM-D-14-0058.1.

Downer, C.W., N. Pradhan, F.L. Ogden, and A.R. Byrd, 2014, Testing the effects of detachment limits and transport capacity formulations on sediment runoff predictions using the US Army Corps of Engineers GSSHA model, *J. Hydrol. Engrg*, DOI:10.1061/(ASCE)HE.1943-5584.0001104, 04014082.

Gardner, C.B., W.B. Lyons, G.F. Litt, and F.L. Ogden 2014. Rock-derived micronutrient transport in the tropics: Molybdenum cycling in deeply-weathered Panama soils. *Procedia Earth and Planetary Sci*. 10, 266-270.

Ogden, F.L., T.D. Crouch, R.F. Stallard, and J.S. Hall, 2013. Effect of land cover and use on dry season river runoff and peak runoff in the seasonal tropics of central Panama, *Water Resour. Res*. 49(12):8443-8462, doi:10.1002/2013WR013956.

Wohl, E., and F.L. Ogden, 2013. Organic carbon export in the form of wood during an extreme tropical storm, Upper Rio Chagres, Panama. *Earth Surface Processes and Landforms, DOI:10.1002/esp.3389*.

Harmon, R.S., Z. Kern, I. Forizs, C. Gardner, B. Lyons, F.L. Ogden, 2013. Hydrometeorology and stable isotope geochemistry of Panama precipitation and rivers. *Central Eur. Geol.*, 56(2-3):270-273.

Mojica, A., I. Diaz, C.A. Ho, F. Ogden, R. Pinzon, J. Fabrega, D. Vega, and J. Hendrickx, 2013, Study of seasonal rainfall infiltration via time-lapse surface electrical resistivity tomography: Case study of Gamboa Area, Panama Canal Watershed, Air Soil and Water Research, 3013:6 131-139, doi:10.4137/ASWR.S12306.

Pinzon, R., J. Fabrega, D. Vega, E.N. Vallester, R. Aizprua, F.R. Lopez-Serrano, F.L. Ogden, and K. Espino, 2012. Estimates of Biomass and Fixed Carbon at a Rainforest in Panama. *Air, Soil and Water Research* 5: 79-89.

Wohl, E., A. Barros, N. Brunsell, N.A. Chappell, M. Coe, T. Giambelluca, S. Goldsmith, R. Harmon, J.M.H. Hendrickx, J. Juvik, J. McDonnell, F. Ogden, 2012, A research vision for hydrology of the humid tropics: Balancing water, energy, and land use, *Nature Climate Change*. DOI: 10.1038/NCLIMATE1556.

Yu, H., C.C. Douglas, and F.L. Ogden, 2012. A new application of dynamic data driven system in the Talbot-Ogden model for groundwater infiltration. *Procedia Computer Science,* 1073-1080.

Rogalus, M.R. III, and F.L. Ogden, 2012, Spatial assessment of five years of WSR-88D data over the Mississippi river basin and estimation of bias around gage sites, *J. Hydrologic Engineering*., doi:http://dx.doi.org/10.1061/(ASCE)HE,1943-5584.0000636.

Niedzialek, J.M., and F.L. Ogden, 2012, First-order catchment mass balance during the wet season in the Panama Canal watershed, *J. Hydrol*. doi: 10.1016/j.jhydrol.2010.07.044.

Ogden, F.L., N. R. Pradhan, Downer, C.W., and J.A. Zahner, 2011, Relative importance of impervious area, drainage density, width function, and subsurface storm drainage on flood runoff from an urbanized catchment, *Water Resour. Res.*, 47, W12503, doi:10.1029/2011WR010550.

Pradhan, N.R., F.L. Ogden, 2010, Development of a one-parameter variable source area runoff model for ungauged basins, *Adv. Water Resour*., 33(5):572-584, doi:10.1016/j.advwatres.2010.03.002.

Abebe, N.A., Ogden, F.L., and N.R. Pradhan, 2010, Sensitivity and uncertainty analysis of the conceptual HBV rainfall-runoff model: Implications for parameter estimation, *J. Hydrol*., 389(3-4):301-310, doi: 10.1016/jhydrol.2010.06.007.

Wohl, E., F.L. Ogden, and J. Goode, 2009, Episodic wood loading in a mountainous neotropical watershed, *Geomorpholog*y, doi:10.1016/j.geomorph.2009.04.013.

Bagtzoglou, A.C., J.M. Niedzialek, S.A. Baun, E.N. Anagnostou, and F.L. Ogden, 2009. A physically-based radar calibration method for improved rainfall estimation: application to the Fort-Collins flash flood of 1997. Inverse Probs. in Sci. and Engrg., 17 (1), 115-131.

Harmon, R.S., W. B. Lyons, D.T. Long, F.L. Ogden, H. Mitasova, C. B. Gardner, K. A. Welch, and R.A. Witherow, 2009, Geochemistry of four tropical montane watersheds, Central Panama, *Appl. Geochem.*, doi:10.1016/j.apgeochem.2008.12.014.

Pradhan, N.R., F.L. Ogden, Y. Tachikawa, and K. Takara, 2008, Scaling of Slope, Upslope Area, and Soil Water Deficit: Implications for Transferability and Regionalization in Topographic Index Modeling, *Water Resour. Res.*, 44, W12421, doi:10.1029/2007WR006667.

Talbot, C.A., and F.L. Ogden, 2008, A Method for Computing Infiltration and Redistribution in a Discretized Moisture Content Domain, *Water Resour. Res.*, doi:10.1029/2008WR006815.

Jacobson, R.A., G.S. Warner, P. Parasiewicz, A. C. Bagtzoglou, and F.L. Ogden, 2008, An Interdisciplinary Study on the Effects of Groundwater Extraction on Freshwater Fishes, *J. of Ecological Economics and Statistics*, Vol. 12, Number F08, Fall, 2008.

Rogalus, M.R. III, and F.L. Ogden, 2007, Comparison of GCIP and Stage III Weather Radar Rainfall Estimates over the Mississippi River Basin, *J. Hydrology*, 341, 177-185.

Nadim, F., A.C. Bagtzoglou, G.E. Hoag, F.L. Ogden, G.S. Warner, and D.M. Soballe, 2007, Application of a steady-state nutrient model and inferences for load reduction strategy in two public water supply reservoirs in eastern Connecticut, *Lake and Reservoir Management*, 23:264-278.

Anagnostou, M.N, E.N. Anagnostou, J. Vivekanandan, and F.L. Ogden, 2007, Comparison of Raindrop Size Distribution Estimates from X-Band and S-Band Polarimetric Observations, *IEEE Geosciences and Remote Sensing Letters*, DOI 10.1109/LGRS.2007.903061.

Nadim, F., G.E. Hoag, F.L. Ogden, G.S. Warner, and A.C. Bagtzoglou, 2007, "Water quality characteristics of two reservoir Lakes in eastern Connecticut, USA", *Lakes and Reservoirs: Research and Management,* 12(3):187-202.

Nadim, F., A.C. Bagtzoglou, S. Baun, G.S. Warner, F. Ogden, R.A. Jacobson, and P. Parasiewicz, 2007, Management of Adverse Effects of a Public Water Supply Well Field

on the Aquatic Habitat of a Stratified Drift Stream in Eastern Connecticut, *Water Environ. Res*., Vol. 79, 43, doi: 10.2175/106143006X136801.

Krajewski, W.F., A. Kruger, C. Caracciolo, P. Gole, L. Barthes, J.D. Creutin, J.Y. Delahaye, E.I. Nikolopoulous, F.L. Ogden, and J.P. Vinson, 2006, DEVEX-distrometer evaluation experiment: Basic results and implications for hydrologic studies, *Adv. Water Resour*., 29(2):311-325.

Niedzialek, J.M., and F.L. Ogden, 2004, Numerical Investigation of Saturated Source Area Behavior at the Small Catchment Scale, *Adv. Water Resour.*, 27:925-936.

Downer, C.W., and F.L. Ogden, 2004, Appropriate Vertical Discretization of Richard's Equation for Two-Dimensional Watershed-Scale Modelling, *Hydrological Processes*, 18:1-22.

Miriovsky, B.J., A.A. Bradley, W.N. Eichinger, W.F. Krajewski, A. Kruger, B.R. Nelson, J.-D. Creutin, J.-M. Lapettite, G. Lee, I. Zawadzki, and F.L. Ogden, 2004, An experimental study of small-scale variability of reflectivity, *J. Applied Meteorology*, 5(1):110-128.

Downer, C.W., and F.L. Ogden, 2004, GSSHA: A model for simulating diverse streamflow generating processes, *J. Hydrol. Engrg*., 9(3):161-174.

Downer, C.W., and F.L. Ogden, 2004, Appropriate Vertical Discretization of Richard's Equation for Two-Dimensional Watershed-Scale Modelling, *Hydrological Processes*, 18:1-22.

Downer, C.W., and F.L. Ogden, 2004, GSSHA: A model for simulating diverse streamflow generating processes, *J. Hydrol. Engrg*., 9(3):161-174.

Sharif, H.O., F.L. Ogden, W.F. Krajewski, and M. Xue, 2004, Statistical analysis of radar-rainfall error propagation, *J. Hydrometeorology*, 5(1):199-212.

Downer, C.W., and F.L. Ogden, 2004, Prediction of runoff and soil moistures at the watershed scale: Effects of model complexity and parameter assignment, *Water Resour. Res*., 39(3), 10.1029/2002WR001439.

Ogden, F.L., and D.R. Dawdy, 2003, Peak Discharge Scaling in Small Hortonian Watershed, *J. Hydrol. Engr*., 8(2):64-73.

Sharif, H.O., F.L. Ogden, W.F. Krajewski, and M. Xue, 2002, Numerical Simulations of Radar-Rainfall Error Propagation, *Water Resour. Res*., 38(8), 10.1029/2001WR000525.

Downer, C.W., F.L. Ogden, W. Martin, and R.S. Harmon, 2002, Theory, Development, and Applicability of the Surface Water Hydrologic Model CASC2D, *Hydrological Processes*, 16(2):255-275.

Garbrecht, J., F.L. Ogden, P.A. DeBarry, and D.R. Maidment, 2001, GIS and Distributed Watershed Models. I: Data Coverages and Sources, *J. Hydrologic Engineering*, 6(6):506-514.

Ogden, F.L., J. Garbrecht, P.A. DeBarry, and L.E. Johnson, 2001, GIS and Distributed Watershed Models. II: Modules, Interfaces, and Models, *J. Hydrologic Engineering*, 6(6):515-523.

Ogden, F.L., H.O. Sharif, S.U.S. Senarath, J.A. Smith, M.L. Baeck, and J.R. Richardson, 2000, Hydrologic Analysis of the Fort Collins, Colorado, Flash Flood of 1997, *J. Hydrology*, 228, pp. 82-100.

Senarath, S.U.S., F.L. Ogden, C.W. Downer, and H. O. Sharif, 2000, On the Calibration and Verification of Distributed, Physically-Based, Continouous, Hortonian Hydrologic Models, *Water Resour. Res*., 36(6):1495-1510.

Ogden, F.L., and B.A. Watts, 2000, Formation of Saturated Areas on Hillslopes with Shallow Soils, *Water Resour. Res.*, 36(7):1795-1804.
Landel, G., J.A. Smith, M.L. Baeck, M. Steiner, and F.L. Ogden, 1999, Radar Studies of Heavy Convective Rainfall in Mountainous Terrain, *J. Geophys. Research-Atmospheres*, 104(D24), pp. 31,451.
Nakato, T., and F.L. Ogden, 1998, Sediment Control at Water Intakes along Sand-Bed Rivers, *J. of Hydraulic Engineering*, 124(6):589-596
Ogden, F.L., and B. Saghafian, 1997, Green & Ampt Infiltration with Redistribution, *J. Irrigation and Drainage Engineering*, 123(5):386-393.
Saghafian, B., P.Y. Julien, and F.L. Ogden, 1995, Similarity in Catchment Response: 1: Stationary Rainstorms, *Water Resour. Res*., AGU, 31(6):1533-1541.
Ogden, F.L., J.R. Richardson, and P.Y. Julien, 1995, Similarity in Catchment Response: 2: Moving Rainstorms, *Water Resour. Res.*, AGU, 31(6):1543-1547.
Julien, P.Y., B. Saghafian, and F.L. Ogden, 1995, Raster-Based Hydrologic Modeling of Spatially-Varied Surface Runoff, *Water Resources Bulletin*, AWRA, 31(3):523-536.
Ogden, F.L., and P.Y. Julien, 1994, Runoff Model Sensitivity to Radar Rainfall Resolution, *J. Hydrology*, 158:1-18.
Ogden, F.L., and P.Y. Julien, 1993, Runoff Sensitivity to Temporal and Spatial Rainfall Variability at Runoff Plane and Small Basin Scales, *Water Resour. Res*., AGU, 29(8):2589-2597.
Ogden, F.L., and J.F. Ruff, 1993, Strength of Bentonite Water-Well Annulus Seals in Confined Aquifers, *J. Irrigation and Drainage Engineering*, ASCE, 119(2):242-250.
Ogden, F.L., and J.F. Ruff, 1991, Setting Time Effects on Bentonite Water Well Annulus Seals , *J. Irrigation and Drainage Engineering*, 117(4):534-545.

Refereed Short Journal Articles in Print

Ogden, F.L., R. Hawkins, M. Todd Walter, and D.C. Goodrich, 2017. Comment on "Beyond the SCS-CN method: A theoretical framework for spatially lumped rainfall-runoff response" by M.S. Bartlett, A.J. Parolari, J.J. McDonnell, and A. Porporato, *Water Resour. Res.*, doi: 10.1002/2016WR020176.
Ogden, F.L., and R.F. Stallard, 2013. Land use effects on ecosystem service provisioning in tropical watersheds remains an important unsolved problem. *Proc. Nat'l. Acad. Sci. Letters*, www.pnas.org/cgi/doi/10.1073/pnas.1314747111.
Stallard, R.F., F.L. Ogden, H. Elsenbeer, and J. Hall, 2010, Panama Canal Watershed Experiment: Agua Salud Project, *AWRA Impact*, 12(4):17-20.
Meselhe, E.A., F.L. Ogden, and F.M. Holly Jr., 2004, Comment on " Modelling of supercritical flow conditions revisited; NewC Scheme", by V. Kutija and C.J. Hewett, *J. Hydraulic Research*, Vol. 42(6).
Talbot, C.A., F.L. Ogden, and D. Or, 2004, Comment on "Layer averaged Richards' equation with lateral flow" by P. Kumar., *Adv. Water Resour*., 2004Adwr.27.1041T.
Ogden, F.L., J.R. Richardson, J.A. Smith, and M.E. Smith, 1999, Fort Collins Flood Dataset Created, EOS, *Trans. Amer. Geophys. Union*, 80(23):257-258.

Ogden, F.L., S.U.S. Senarath, C.W. Downer, and H.O. Sharif, 2001, Reply, *Water Resour. Res.*, 37(12):3397-3401.

Published Editorials

Ogden, F.L, and R.S. Harmon, 2012, Editorial: Special Issue on Tropical Hydrology, *J. Hydrology,* Vol 462, pp. 1-3.

Theses and Dissertations

Ogden, F.L., 1992, Two-Dimensional Runoff Modeling with Weather Radar Data, Ph.D. Dissertation, Dept. of Civil Engineering, Colorado State University, Fort Collins, Colorado, 80523, USA, 211 pp.

Ogden, F.L., 1989, Axial Shear Strength Testing of Bentonite Water Well Annulus Seals, M.S. Thesis, Department of Civil Engineering, Colorado State University, Fort Collins, Colorado, 80523, USA, 98 pp.

Peer Reviewed Technical Reports

Smith, M., N. Patrick, N. Frazier, J. Kim, T. Flowers, and F. Ogden, 2020. Hyper Resolution Modeling of Urban Flood Inundation, NOAA Tech. Report NWS 56, U.S. Dept. of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, doi: https://doi.org/10.25923/9t55-tn77 .

Byrd, A.R., F.L. Ogden, and J.M. Niedzialek, 2012, Storm Drain Effects on Urban Flooding, SWWRP Technical Notes Collection, ERDC TN-SWWRP-12-1, US Army Engineer Research and Development Center, Vicksburg, MS, https://swwrp.usace.army.mil

Diaz, I., A. Mojica Abrego, C.A. Ho, R. Pinzon, J. Fabrega, E. Vallester, D. Vega, F.L. Ogden, J.M.H. Hendrickx, 2012. Characterization of shallow groundwater in Eocene sediments of Panama Canal Watershed using electrical techniques. RIDTEC, Vol. 8, No. 1, July, Technological University of Panama, Panama City, Panama.

Downer, C. W., F.L. Ogden, N. R. Pradhan, S. Liu, A. R. Byrd, 2010, Improved soil erosion and sediment transport in GSSHA, *SWWRP Technical Notes Collection*, ERDC TN-SWWRP-10-3, U.S. Army Engineer Research and Development Center, Vicksburg, MS, https://swwrp.usace.army.mil/

Downer, C. W., F. L. Ogden, J. Niedzialek, and A. A. Byrd, 2008, Non-orthogonal channel and reservoir routing in GSSHA. SWWRP Technical Notes Collection (ERDC TN-SWWRP-08-05). Vicksburg, MS: U.S. Army Engineer Research and Development Center. https://swwrp.usace.army.mil/

Downer, C.W., and F.L. Ogden, 2006, Gridded Surface Subsurface Hydrologic Analysis (GSSHA) User's Manual, Version 1.43 for Watershed Modeling System 6.1, System Wide Water Resources Program, Coastal and Hydraulics Laboratory, U.S. Army Corps of Engineers, Engineer Research and Development Center, ERDC/CHL SR-06-1, 207 pp. Available on-line at: http://gsshawiki.com/gssha/GSSHA_User%27s_Manual

Warner, G.S., F.L. Ogden, A.C. Bagtzoglou, and P. Parasiewicz, 2006, "Long-Term Analysis of the University of Connecticut's Fenton River Water Supply Wells on the Habitat of the

Fenton River", University of Connecticut, Final Project Report to the State of Connecticut, Office of Policy and Management, 211 pp.

DeBarry, P.A., J. Garbrecht, L. Garcia, L.E. Johnson, J. Jorgeson, V. Krysanova, G. Leavesley, D.R. Maidment, E.J. Nelson, F.L. Ogden, F. Olivera, R.G. Quimpo, T.A. Seybert, W.T Sloan, D. Burrows, E.T. Engman, 1999, GIS Modules and Distributed Models of the Watershed, ASCE Water Resources Division, Surface Water Hydrology Committee, Task Committee Report, American Society of Civil Engineers, ISBN 0-7844-0443-7, 120 pp.

USGS, 1999, External Task Force Review of the U.S. Geological Survey Federal-State Cooperative Water Program, August 1999, Compiled by Stephen F. Blanchard, Authors: F.L. Ogden et al., ***Circular 1192***, U.S. Geological Survey, Denver, CO, 80225, 22 pp.

Published Book Review

Watersheds: Processes, Assessment, and Management, (by Paul A. DeBarry, John Wiley and Sons, ISBN 0-471-26423-7, 700 pp., 2005) *Bulletin of the American Institute of Hydrology*, Vol. 23, Issue 2, 2005, pp. 3-4.

Refereed Conference Articles in Print

Ogden, F.L., W. Lai, R.C. Steinke, 2015. ADHydro: Quasi-3D high performance hydrological model. Proc. 5th Joint Federal Interagency Conference on Hydrologic Modeling, April 19-23, Reno, Nevada. Article online at: http://www.sedhyd.org/2015/openconf/modules/request.php?module=oc_proceedings&action=summary.php&a=Accept&id=282

Pradhan, N.R., A.R. Byrd, F.L. Ogden, and J.M.H Hendrickx, 2012, SEBAL evapotranspiration estimates for the improvement of distributed hydrological model runoff and soil moisture predictions, Proceedings of a symposium organized by the International commission on remote sensing of IAHS, held at Jackson Hole, Wyoming, USA 27-30 September, 2010, Nomograph published by IAHS, 2012, Volume 352, pp:435-439.

Ogden, F.L., N. R. Pradhan, E.J. Nelson, and C.W. Downer, 2011, Predicting Hydrologic Effects of Land-Use Change: Problems with the Curve Number Approach, Proc. 2011 EWRI World Environmental & Water Resources Congress, Paper No. 230.

Rogalus, M.R. III, and F.L. Ogden, 2011, Assessment of Estimation Bias around Rainfall Gage Sites for 5-Years of WSR-88D Data over the Mississippi River Basin, Proc. 2011 EWRI World Environmental & Water Resources Congress, Paper No. 361.

Ogden, F.L., T.D. Crouch, N.R. Pradhan, and E. Kempema, 2011, Laboratory Study on the Effect of Sedimentation on the Performance of V-notch Weirs, Proc. 2011 EWRI World Environmental & Water Resources Congress, Palm Springs, CA, Paper No. 229.

Ogden, F.L., R.F. Stallard, H. Elsenbeer, and J. Hall, 2010, Panama Canal Watershed Experiment: Agua Salud Projects, Proc., Am. Water Resour. Assn. Intl. Conf. and 8th Caribbean Islands Water Resour. Congress on Tropical Hydrology and Sustainable Water Resources in a Changing Climate, San Juan, Puerto Rico, Aug. 30- Sept. 1.

Ogden, F.L., and C.A. Talbot, 2008, Discrete Water Content Solution of the Infiltration Problem, Proc. World Environmental and Water Resources Congress, R.W. Babcock and R. Walton, eds., ASCE/EWRI, Honolulu, Hawaii, May 12-16.

Sharif, H.O., E. Brandes and F.L. Ogden, 2008, Effect of Areal Averaging on Gauge-Radar Comparison, Proc. World Environmental and Water Resources Congress, R.W. Babcock and R. Walton, eds., ASCE/EWRI, Honolulu, Hawaii, May 12-16.

Ogden, F.L., and M. J. Rogalus III, 2008, Analysis of Five Years of WSR-88D Data over the Mississippi River Basin, Proc. World Environmental and Water Resources Congress, R.W. Babcock and R. Walton, eds., ASCE/EWRI, Honolulu, Hawaii, May 12-16.

Ogden, F.L., A. Byrd, B.E. Johnson, and C.W. Downer, 2008, TMDL Watershed Analysis with the Physics-Based Hydrologic, Sediment Transport, and Contaminant Transport Model GSSHA, Proc. World Environmental and Water Resources Congress, R.W. Babcock and R. Walton, eds., ASCE/EWRI, Honolulu, Hawaii, May 12-16.

Hendrickx, J.M.H., J. Kleissl, J.D. Gomez Velez, S. Hong, J.R. Fabrega Duque, D. Vega, H.A. Moreno Ramirez, and F.L. Ogden, 2007, Scintillometer Networks for Calibration and Validation of Energy Balance and Soil Moisture Remote Sensing Algorithms, Proc., SPIE Defense & Security Symposium, 9-13 April, 2007.

N.R. Pradhan, F.L. Ogden, Y. Tachikawa, K. Takaram 2006, Developing a Method to Reduce the Uncertainty in TOPMODEL Prediction of Saturation Condition for an Ungauged Basin, in Proceedings of the HydroEco 2006 International Conference on Hydrology and Ecology: The Groundwater/Ecology Connection, J. Bruthans, ed., Charles University, Prague, Czech Republic, September.

Talbot, C.A., F.L. Ogden, and S. E. Howington, 2006, A Moisture Content-Discretized Infiltration Method, in Proc. of the XVI International Conference on Computational Methods in Water Resources, edited by Philip J. Binning Peter K. Engesgaard, Helge K. Dahle, George F. Pinder and William G. Gray. Copenhagen, Denmark, June, 2006.

Ogden, F.L., and D. Or, 2005. Erosional features on Mars surface due to dry mass flows. Presented at: Flows workshop on granular materials in Lunar and Martian Exploration, John F. Kennedy Space Center, Orlando, FL, Feb. 2-3, 2005. NASA LASEP-CONF-2007-056.

Hunter, S., B. Vieux, F. Ogden, J. Niedzialek, C. Downer, J. Addeigo, J. Daraio, 2003, A Test of Two Distributed Hydrologic Models with WSR-88D Radar Precipitation Data Input in Arizona, Proc. 31st International Conf. on Radar Meteorology, Am. Met. Soc., 6-12 Aug., Seattle, Washington.

Ogden, F.L. and D.R. Dawdy, 2003, Hydrologic Scaling of Peak Flows: Implications of Runoff Production Mechanism and Rainfall on the Ungaged Basin Problem, Proc. EWRI World Water and Environ.l Resources Congress, Paper no. 712, June 22-26, Philadelphia, PA.

Ogden, F.L., C.W. Downer, and E.A. Meselhe, 2003, U.S. Army Corps of Engineers GSSHA Model: Distributed-Parameter, Physically-Based Watershed Simulations, Proc. EWRI World Water and Environmental Resources Congress, Paper No. 709, June 22-26, Philadelphia, PA.

Jourdan, M.R., and F.L. Ogden, 2003, Hybrid Hydrologic Modeling: Conceptual Groundwater Modeling Coupled With Distributed Hydrologic Model, Proc. EWRI World Water and Environmental Resources Congress, Paper No. 818, June 22-26, Philadelphia, PA.

Niedzialek, J.M., and F.L. Ogden, 2003, Physics-Based Distributed Rainfall-Runoff Modelling of Urbanized Watersheds with GSSHA, Proc. EWRI World Water and Environmental Resources Congress, Paper No. 785, June 22-26, Philadelphia, PA.

Ogden, F.L., J.M. Niedzialek, B. Smith, E.A. Meselhe, and G. S. Warner, 2001, Physics-Based Distributed Rainfall-Runoff Modeling of Urbanized Areas with CASC2D, Proc. (CD-ROM) ASCE Urban Drainage Modeling Symposium, Orlando, FL, May 2000.

Downer, C.W., B. E. Johnson, F.L. Ogden and E. Meselhe, 2000, Advances in Physically Based Hydrologic Modeling with CASC2D, Proc. (CD-ROM) ASCE Watershed Management Conference, Fort Collins, Colorado, June 2000.

Ogden, F.L., and H.O. Sharif, 2000, Rainfall Input for Distributed Hydrologic Modeling- The Case for Radar, Proc., (CD-ROM) ASCE Watershed Management Conference, Fort Collins, Colorado, June.

Ogden, F.L, 1998, "GIS-Hydrologic Model Integration", Proc. 1998 ASCE Hydraulics Speciality Conference, S.R. Abt, J. Young-Pezeshk, and C.C. Watson, eds., Aug. 4-9, Memphis, TN., pp. 780-785.

Ogden, F.L., and S.U.S. Senarath, 1997, "Continuous, Distributed-Parameter Hydrologic Modeling with CASC2D", Proc. 27th Congress of the International Association of Hydraulic Research, San Francisco, CA, August 10-15, Theme A, pp.864-869.

Ogden, F.L., 1996, "Experimental Errors and Measurement Uncertainty in Hydraulic Engineering", Proc. North American Water and Environment Congress, ASCE, C.T. Bathala, Ed., Anaheim, CA, CD-ROM.

Ogden, F.L., and B. Saghafian, 1995, "Distributed Hydrologic Modeling within the GRASS GIS: r.hydro.CASC2D", Proc. 1995 ASCE Hydraulic Engineering Division Specialty Conf., San Antonio, Texas, 31 July-4 August, W.H. Espey and P.H. Combs, eds., Vol. 1, pp. 892-896.

Ogden, F.L., 1994, "de St-Venant Channel Routing in Distributed Hydrologic Modeling", Proc., ASCE Hydraulics Division Specialty Conf., August 1-5, Buffalo, N.Y., pp. 492-496.

Ogden, F.L., B. Saghafian, and W.F. Krajewski, 1994, "GIS-Based Channel Extraction and Smoothing Algorithm for Distributed Hydrologic Modeling", Proc. ASCE Hydraulics Division Specialty Conference, August 1-5, Buffalo, N.Y., pp. 237-241.

Soileau, C.W., R.W. Rentschler, F.L. Ogden, and C.F. Nordin, 1993, "Bed Sediments Size Changes, Atchafalaya River", Proc. Hydraulic Engineering '93. Vol. 1, ASCE Hydraulics Specialty Conference, San Francisco, pp. 869-874.

Ogden, F.L., and F.J. Turk, 1991, "The Applicability of Weather Radar to Hydrologic Modeling: Radar Resolution Requirements and Comparison with Dense Rain Gauge Network Data", Proc. 11th Annual AGU Hydrology Days, Colorado State University, April 2-4, 1991, Colorado State University, Fort Collins, Colorado, pp. 11-22.

PRESENTED PAPERS/SYMPOSIA/INVITED LECTURES/PROFESSIONAL MEETINGS/WORKSHOPS

Invited Presentations

Ogden, F.L., 2019, National Water Model Improvements: Focus on Community Development. Seminar presentation to USDA-ARS Long-Term Agroeconomics Network, Nov. 18.

Ogden, F.L., 2019, The Soil Moisture Velocity Equation: The Best Bits of Richards' Equation. Invited Seminar to Unsaturated Zone Interest Group, USGS, Sep. 7.

Ogden, F.L., 2018, Discovery of the Soil Moisture Velocity Equation. Dawdy Lecture, San Francisco State University, March 6.

Ogden, F.L., 2017, Continental Scale Hydrological Predictability: Advances and Fundamental Limits, Utah State University Dept. of Civil and Environmental Engineering Water/Environmental seminar. Logan Utah, Sept. 28.

Ogden, F.L., 2016, A new general 1-D vadose zone flow solution method. Award acceptance presentation lecture, 2015 "Coolest Paper Award", Int'l. Assoc. Hydrogeologists, Montpellier, France, 26 Sept. 2016.

Ogden, F.L., 2016, Extreme Runoff Generation on the Caribbean Island of Dominica during Tropical Storm Erika, August 27, 2015. IFFSTAR, Nantes, France, 24 June.

Ogden, F.L., R.F. Stallard, H. Barnard., E. Fenichel, J.S. Hall, B.E. Ewers, E.W. Kempema, M. Bretfeld, J. Zhu, Y. Cheng, and J.A. Regina, 2016. Manifestations of land use effects on hydrology of the Panama Canal Watershed: Evaluation of the effectiveness and value of payments for hydrological ecosytem services. 53rd Conference of the Association for Tropical Biology and Conservation, Montpellier, France, 21 June.

Ogden, F.L. 2016, Keynote Address: Land use effects in tropical watersheds: Ecosystem services affected by preferential flow paths. ASCE 8th International Perspectives on Water Resources and the Environment, Colombo, Sri Lanka, January 4-6.

Ogden F.L. and H.A. Moreno, 2015. DEM Based Modeling: Grid or TIN? The Answer Depends. AGU Fall Meeting, 14-18 December, Abstract H54A-02 (Invited), San Francisco, CA.

Ogden, F.L., 2015, ADHydro Design and Formulation. National Hydrology Program Managers Meeting, NOAA/National Water Center, Tuscaloosa, AL, 12 May.

Ogden, F.L., 2014, ADHydro model development update. NOAA/OHD WRF-Hydro project summit, NCAR, Boulder, CO, 20 Nov.

Ogden, F.L., 2014, CI-WATER Project: High-resolution physics-based water management and hydrological modeling of the Upper Colorado River Basin. Inaugural Ceremony U.S. National Water Center, Tuscaloosa, Alabama, 13 May.

Ogden, F.L., 2014, Observations of hydrological behaviors in catchments with different land uses and covers, implications for modeling and predictability, 3rd International Symposium on Tropical Hydrology, Danum Valley Field Centre, Malaysian Borneo, Feb 9-14.

Ogden, F.L., 2014, Model Developments to Predict Land Use and Climate Change Impacts in the Tropics, Inter-American Development Bank, Washington, D.C., Feb. 4.

Ogden, F.L., J.N. Creel, G.F. Litt, 2012 Using geochemistry and tracers to diagnose runoff generation in the mountainous seasonal tropics, Paper 212-1, Geol. Soc. Am., Annual Meeting & Exposition, 4-7 November, Charlotte, NC, USA. *Geological Society of America Abstracts with Programs*. Vol. 44. No. 7.

Ogden, F.L., C.C. Douglas, S.N. Miller, Y. Zhang, 2012, Petascale Hydrologic Modeling: Needs

and Challenges, CUAHSI Biennial Meeting, Boulder, Colorado, July 16.

Ogden, F.L., C.C. Douglas, and S.N. Miller, 2012, Petascale Hydrologic Modeling: Needs and Challenges, Utah State University Spring Runoff Conference, Logan Utah, April 3-4.

Ogden, F.L., R.F. Stallard, H. Elsenbeer, and J. Hall, 2011, Panama Canal Watershed Experiment: Agua Salud Project, Proc., U.N. HELP Symposium, Panama City, Panama, Nov. 22-24, 2011.

Ogden, F.L., 2011, Challenges and Opportunities in Tropical Hydrology, U.S. Army Research Office Workshop on Tropical Hydrology, March 21-22, Hilo, Hawaii.

Pradhan, N.R., F.L. Ogden, and J.M.H. Hendrickx, 2010, Estimating Soil Moisture by Remote Sensing of Evapotranspiration, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, 3rd Interagency Land Surface Dynamics Coordination Meeting, Hanover, New Hampshire, 11-12 February.

Ogden, F.L., and J. M. Niedzialek, 2007, Hydrologic Investigations in the Seasonal Tropics, Cerro Pelado and Upper Rio Chagres, Panama. Presented to U.S. Army Research Office P.I. meeting, ERDC, Vicksburg, MS, Sept. 25.

Talbot, C.A., and F.L. Ogden, 2007, Finite Water-Content Solution of the Infiltration Problem, Presented to U.S. Army Research Office P.I. meeting, ERDC, Vicksburg, MS, Sept. 25.

Ogden, F.L., and J. M. Niedzialek, 2007, New Theories of Runoff Production in the Upper Rio Chagres, Panama. Presented to Hydrology and Meteorology Section, Panama Canal Authority, Panama City, Panama, Sept. 4.

Ogden, F.L., and J. M. Niedzialek, 2007, Peculiar Runoff Generation in the Seasonal Tropics of Panama. Presented at Colorado State University, Warner College of Natural Resources, Feb. 19, Fort Collins, Colorado.

Ogden, F.L., and J. M. Niedzialek, 2007, Peculiar Runoff Generation in the Seasonal Tropics of Panama. Presented at Utah State University Water Initiative Seminar Series, Feb. 12, Logan, Utah.

Ogden, F.L., and J. M. Niedzialek, 2007, Runoff Generation in the Seasonal Tropics of Panama: Collaborative Opportunities. Presented at Universidad Tecnologica de Panama, Centro de Investigacions Hidraulicas y Hydrotecnicas, January 22-23, Panama City, Panama.

Ogden, F.L., 2005, Validation of Tile Drains in the Gridded Surface/Subsurface Hydrologic Analysis (GSSHA) Model, Research Workshop, U.S. Army Corps of Engineers, Engineering Research and Development Center, Vicksburg, Mississippi, May, 2005.

Ogden, F.L., 2004, Physics-based Hydrologic Modeling: Influence of Event Magnitude on Model Performance, U.S. Army Research Office Principal Investigators Meeting, U.S. Army Engineer Research and Development Center, Vicksburg, Mississippi, 22-23 November.

Ogden, F.L., 2004, Physics-based Hydrologic Modeling: Fundamental Limits on Predictability, Proc. International Symp. on Flood Forecasting and Management with GIS and Remote Sensing (FM2S), 7-13 November, Guangzhou, China.

Ogden, F.L., 2004, Implications of Runoff Generation Mechanism on Hydrologic Predictability, Scaling, and Parameter Estimation, NATO Advanced Study Workshop on Physically-Based Hydrologic Modelling and Predictions in Ungauged Basins, Moscow, Russia, Sept. 5-12, 2004.

Genereux, D., C., Duffy, J. Helly, R. Hooper, W. Krajewski, D. McKnight, F. Ogden, K. Reckhow, B. Scanlon, and L. Shabman, 2003, Surface Water, Groundwater, and Social Science Measurements in a Prototype Hydrologic Observatory, Eos Trans. AGU, 84(64), Fall Meet. Suppl, Abstract H121-03.

Ogden, F.L., 2003, Hydrologic Modeling in the Northeast: Issues and Challenges, Water Resources in the Northeast: Science and Policy Conference, Univ. of Massachusetts, Amherst, Massachusetts, 5 December.

Ogden, F.L., and H.O. Sharif, 2001, Radar Range Effects on Distributed Hydrologic Modeling, U.S. National Weather Service, Office of Hydrology, Silver Spring, Md., 27 April.

Ogden, F.L., and S.U.S. Senarath, 2000, Issues Affecting Calibration of Two-Dimensional Hortonian Hydrologic Models, Proc., American Geophysical Union, Fall Meeting, San Francisco, CA.

Ogden, F.L., 1998, Hydrologic Predictions in the Seasonal Tropics, Field Research and Collaborative Opportunities, U.S. Panama Canal Commission in Panama City, Panama, March 23.

Ogden, F.L., 1998, Hydrologic Modeling of Desert and Tropical Regions, U.S. Army Yuma Proving Ground, Yuma, Arizona.

Ogden, F.L., 1997, Distributed Hydrologic Modeling of the Extreme Flood on the Rapidan, June 1995, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi, July 21.

Ogden, F.L., 1996, Long-term Evapotranspiration Estimation Within a Distributed Hydrologic Modeling Framework, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi, July 22.

Ogden, F.L., 1995, Distributed Hydrologic Modeling of Large Watersheds, Princeton University, Department of Civil Engineering and Operations Research, October 13.

Ogden, F.L., 1995, Distributed Hydrologic Modeling of Large Watersheds in the United States. Civil Engineering Research Institute, Ministry of Construction, Sapporo, Hokkaido, Japan, July 14.

Ogden, F.L., 1995, Similarity in Hortonian runoff production at runoff plane and small basin scales, Disaster Prevention Research Institute, Kyoto University, Kyoto, Japan, July 24.

Ogden, F.L., 1995, Hydrologic Applications of Weather Radar Rainfall Estimates, Northeast River Forecast Center, U.S. National Weather Service, Taunton, MA, January 26.

Ogden, F.L., 1995, Distributed Hydrologic Modeling of Large Watersheds, U.S. Army Center for Excellence in Geosciences, Colorado State University, Fort Collins, Colorado, January 19.

Ogden, F.L., 1994, Satellite Remote Sensing of Soil Moisture, MIT Dept. of Civil and Environmental Engineering, Boston, Massachusetts, Nov. 4.

Conference Presentations, Abstract Refereed

Ogden, F.L., D.L. Blodgett, and N.J. Frazier, 2019. A proposed hydrological model taxonomy as a means to improve hydrologic model comparison, evaluation, and reproducibility. Abstract H53B-01, AGU Fall Meeting Abstracts, San Francisco, CA.

Dollan, I.J, F. Antolini, S. Baron, B.L. Barreto, and F.L. Ogden, 2019. A study on parsimonious models in catchments generating saturation excesss runoff. Abstract H530-2010. AGU Fall Meeting Abstracts, San Francisco, CA.

Kim, D.-H., A. Naliaka, Z. Zhu, H.K. McMillan, and F.L. Ogden, 2019. Experimental loose one-way coupling of TOPMODEL with NWM to substitute runoff processes in a headwater catchment. Abstract H43I-2112, AGU Fall Meeting Abstracts, San Francisco, CA.

Johnson, D.W., N. J. Frazier, F.L. Ogden, S. Cui, D.L. Blodgett, J.D. Hughes, P.A. Norton, and R. Cabell, 2019. Next Generation National Water Model Architecture: Organizing principles to support evolving capabilities. Abstract H43L-2145, AGU Fall Meeting Abstracts, San Francisco, CA.

Regina, J.A., and F.L. Ogden, 2019. Using digital recursive filters to estimate subsurface stormflow parameters at the catchment scale across different land covers. Abstract H43I-2132, AGU Fall Meeting Abstracts, San Francisco, CA.

Maestre, A., J.A. Regina, F.L. Ogden, N.J. Frazier, R. Wolford, J. Kim, and T.F. Flowers, 2019. Runoff identification and delimitation in discharge series using forward and backward moving averages. Abstract H43I-2143, AGU Fall Meeting Abstracts, San Francisco, CA.

Ogden, F.L., J.S. Hall, R.F. Stallard, and M. C. Larsen, 2019. Agua Salud tropical experimental catchments, Panama. Abstract PA13B-1024, AGU Fall Meeting Abstracts, San Francisco, CA.

Frazier, N.J., F.L. Ogden, T. Flowers, et al. 2018, National Water Model community collaboration and engagement: A software development approach. Abstract H34G-05, AGU Fall Meeting Abstracts, Washington, D.C.

Perez, F., T. Rouf, D. Gurung, F.L. Ogden, S.J. Praskeivicz, and J. Benavides, 2018. Effects of spatial resolution on a distributed hydrologic model through dynamical forcings: flood extent and depth in low gradient watersheds. Abstract H41P-2346, AGU Fall Meeting Abstracts, Washington, D.C.

Ogden, F.L., Evaluation of the Noah-MP infiltration module reveals opportunities for community involvement in improvements with benefits for the National Water Model. Abstract H34G-07, AGU Fall Meeting Abstracts, Washington, D.C.

Patrick, N., M.B. Smith, F.L. Ogden, T. Flowers, J. Kim, and N.J. Frazier, 2018. Hyper-resolution flood inundation modeling: use of surveyed high water marks in the evaluation of hyper-resolution hydrologic models. Abstract H41P-2351. AGU Fall Meeting Abstracts, Washington, D.C.

Johnson, D.W., N.J. Frazier, F.L. Ogden, and J.L. McCreight, 2018. Interfacing National Water Model Physics with Abstract Software Modules. Abstract H41P-2332. AGU Fall Meeting Abstracts, Washington, D.C.

Rezaeianzadeh, M., N.J. Frazier, T.Flowers, D. Mattern, F.L. Ogden, and G.R. Aggett, 2018. Representing anthropogenic process in the National Water Model: A machine learning approach to reservoir operations. Abstract H41P-2326, AGU Fall Meeting Abstracts, Washington, D.C.

Grimley, L.E., F.L. Ogden., et al., 2017. Grid vs Mesh: the case of hyper resolution modeling in urban landscapes. Abstract H53F-1541, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Regina, J.A., F.L. Ogden, R.C. Steinke, N. Frazier, Y. Cheng, J. Zhu, 2017. Land use management in the Panama Canal Watershed to maximize hydrologic ecosystem services benefits: explicit simulation of preferential flow paths in a HPC environment. Abstract H53F-1539, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Ogden, F.L., 2017. Hyper-resolution hydrological modeling: Completeness of formulation, appropriateness of discretization and physical limits of predictability. Abstract H51Q-03, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Cheng, Y., F.L. Ogden, and J. Zhu, 2017. The role of land use/land cover dependent preferential flow path in hydrologic response of steep and seasonal tropcial catchments. Abstract H13C-1402, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Bretfeld, M., B.E. Ewers, J.S. Hall, F.L. Ogden, D. Beverly, H.N. Speckman 2017. Root hydraulics and root sap flow in a Panamanian lowland tropical forest. Abstract H23H-1772, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Garousi Nejad, S. He, Q. Tan, F.L. Ogden, R.C. Steinke, N. Frazier, D.G. Tarboton, N. Ohara, and H. Lin, 2017. A study on the effects of spatial scale on snow process in hyper-resolution hydrological modeling over mountainous areas. Abstract H53F-1532, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Frazier, N., F.L. Ogden, J.A. Regina, and Y. Cheng, 2017. Valildating the use of deep learning neural networks for correction of large hydrometric datasets. Abstract H33C-1697, AGU Fall Meeting Abstracts, New Orleans, Louisiana.

Bretfeld, M., B.E. Ewers, J.S. Hall, and F. L. Ogden, 2016. Effects of the 2015/16 ENSO event on tropical trees in regrowing secondary forests in Central Panama. Poster B31G-0554. AGU Fall Meeting, 12-16 December, 2016, San Francisco, CA.

Bretfeld, M., A. Entem, V. Adamowicz, E. Fenichel, B.E,, Ewers, J.S.Hall, and F.L. Ogden, 2016. Payments for ecosystem services in the Panama Canal Watershed: Can hydrological benefits of forests and timber plantations outweigh their costs? Western Forest Economist Meeting, Ft. Collins, CO.

Zhu, J., F.L. Ogden, W. Lai, X. Chen, C.A. Talbot, 2016. An improved finite water content method for solving vadose zone flow. Poster H21C-1416., AGU Fall Meeting, 12-16 December, 2016, San Francisco, CA.

Ewers, B.E., M. Bretfeld, D. Millar, J.S. Hall, D. Beverly, J. S. Hall, F.L. Ogden, and D.S. Mackay, 2016. Confronting process-based model of temperate tree transpiration with data from forests in Central Panama exposed to drought. Poster H21D-1440. AGU Fall Meeting, 12-16 December, 2016, San Francisco, CA.

Cheng, Y., F.L. Ogden, and J. Zhu, 2016. Significance of bioturbated layer and deep groundwater storage on runoff in steep saprolitic tropical lowlands catchment. Poster H23H-1683. AGU Fall Meeting, 12-16 December, 2016, San Francisco, CA.

Ogden, F.L., R.C. Steinke, and N. Frazier, 2016. Hyper-resolution hydrological predictions in large nested domains within continental scale models. Presentation H42B-10. AGU Fall Meeting, 12-16 December, 2016, San Francisco, CA.

Moreno, H.A., F.L. Ogden, and L.V. Alvarez, 2016. Irregular-mesh terrain analysis and incident solar radiation for conitinous hydrologic modeling in mountain watersheds. Poster H53H-1819. AGU Fall Meeting, 12-16 December, 2016, San Francisco, CA.

Ogden, F.L., Y. Cheng, and J. Zhu, 2016. Manifestations of Land Use Effects on Hydrology in the Panama Canal Watershed, ATBC 2016 Conference, Association of Tropical Conservation Biologists, Montpellier, France, June 19-23.

Ogden, F.L., 2016. Biological Controls on Hydrological Response in Tropical Catchments. AGU Chapman Conference on Emerging Issues in Tropical Ecohydrology. Cuenca, Ecuador, June 5-9.

Cheng, Y., F.L. Ogden, J. Zhu, and R.C. Steinke, 2015. Effects of Macropores on Infiltration and Runoff Generation in Tropical Saprolitic Soils at the Small Catchment Scale. AGU Fall Meeting, 14-18 December, Abstract H21A-1345, San Francisco, CA.

Ogden, F.L., W. Lai, and J. Zhu, 2015. You Don't Need Richards'... A New General 1-D Vadose Zone Solution Method that is Reliable. AGU Fall Meeting, 14-18 December, Abstract H31C-1424, San Francisco, CA.

Litt, G.F., C. Gardner, F.L. Ogden, and W.B. Lyons, 2015. Comparing Event-Based Storage Across Tropical Land-Cover Gradients in the Panama Canal Watershed. AGU Fall Meeting, 14-18 December, Abstract H43B-1492, San Francisco, CA.

Bretfeld, M., B.E. Ewers, J.S. Hall, and F.L. Ogden, 2015. Sap flow based transpiration estimates in species-rich secondary forests of different ages in central Panama during a wet-season drought. AGU Fall Meeting, 14-18 December, Abstract H43B-1494, San Francisco, CA.

Kempema, E.W., A. Mojica, G. F. Litt, A.M. Carey, F.L. Ogden, 2015. Effect of Forest Age on Rainwater Infiltration in the Lowland Humid Tropics. AGU Fall Meeting, 14-18 December, Abstract H43B-1500, San Francisco, CA.

Hendrickx, J.M.H., R.G. Allen, S. W. Myint, and F.L. Ogden 2015. Lessons Learned From Large-Scale Evapotranspiration and Root Zone Soil Moisture Mapping Using Ground Measurements (meteorological, LAS, EC) and Remote Sensing (METRIC). AGU Fall Meeting, 14-18 December, Abstract H53M-02, San Francisco, CA.

F.L. Ogden and H.A. Moreno, 2015. DEM Based Modeling: Grid or TIN? The Answer Depends. AGU Fall Meeting, 14-18 December, Abstract H54A-02 (Invited), San Francisco, CA.

Moreno, H.A., F.L. Ogden, R.C. Steinke, and L. V. Alvarez, 2015. Vectorial Model to Compute Terrain Parameters, Local and Remote Sheltering, Scattering and Albedo using TIN Domains for Hydrologic Modeling. AGU Fall Meeting, 14-18 December, Abstract H54A-05, San Francisco, CA.

Sharif, H.O., and F.L. Ogden, 2014. Errors of Remapping of Radar Estimates onto Cartesian Coordinates, AGU Fall Meeting, 15-19 December, H53G-0929, San Francisco, CA.

Zhu, J., F.L. Ogden, and W. Lai, 2014. An improved method of calculating infiltration into unsaturated soil by discretizied moisture domain. AGU Fall Meeting, 15-19 December, H43M-1154, San Francisco, CA.

Moreno, H., L. G. Pureza, L., F.L. Ogden, and R.C. Steinke, 2014. Coupling of Noah-MP and the High Resolution CI-WATER ADHydro Hydrological Model. AGU Fall Meeting, 15-19 December, H33G-0924, San Francisco, CA.

Litt, G.F., Gardner, C.B., F.L. Ogden, and W. B. Lyons, Event-based runoff across changing land covers in the Panama Canal watershed: a synthesis of hydrophysical measurements and hydrochemical tracers using hydrograph separation. AGU Fall Meeting, 15-19 December, H21F-0793, San Francisco, CA.

W. Lai, F.L. Ogden, R.C. Steinke, J. Zhu, C.A. Talbot, 2014. Experimental and numerical study of soil moisture dynamics above a moving water table. AGU Fall Meeting, 15-19 December, H51C-0629, San Francisco, CA.

Regina, J., and F.L. Ogden, 2014. Effect of wildfire on hydrological processes in a monoculture invasive grass catchment with the Panama Canal watershed. AGU Fall Meeting, 15-19 December, H51I-0734, San Francisco, CA.

Ogden, F.L., A. Mojica, E.W. Kempema, J.C. Briceno, J. Regina, 2014. Diagnosing hydrologic flow paths in forest and pasture land uses within the Panama Canal Watershed using simulated rainfall and electrical resistivity tomography. AGU Fall Meeting, 15-19 December, H21F-0795, San Francisco, CA.

Steinke, R.C., F.L. Ogden, W. Lai, H. Moreno, L. Pureza, 2014. ADHydro: A parallel implementation of a large-scale high-resolution multi-physics distributed water resources model using the Charm++ run time system. AGU Fall Meeting, 15-19 December, Abstract H33G-0927, San Francisco, CA.

Litt, G.F., J.C. Briceno, C.B. Gardner, F.L. Ogden, and W.B. Lyons, 2013, An event-based geochemical assessment of the tropical dry to wet season transition under forest and mixed land uses in the Panama Canal watershed. Geol. Soc. of America, Fall Meeting, Abstracts with Programs, 45(7), Denver, CO.

Steinke, R.C., F.L. Ogden, and W. Lai, 2013, Evaluating TauDEM delineated stream networks against the National Hydrography data set. AGU Fall Meeting, Dec. 9-13, Abstract H23-1310, San Francisco, CA.

Lai, W., R.C. Steinke, and F.L. Ogden, 2013, ADHydro: A large-scale high resolution multi-physics distributed water resources model for water simulations in a parallel environment. AGU Fall Meeting, Dec. 9-13, Abstract H23-1313, San Francisco, CA.

Ogden, F.L., W. Lai, C.C. Douglas, S.N. Miller, Y. Zhang, 2012. CI-WATER HPC Model: Cyberinfrastructure to advance high performance water resources modeling in the intermountain Western U.S., AGU Fall Meeting, Dec. 3-7, Abstract H21A-1158, San Francisco, CA.

Creel, J.N., and F.L. Ogden, 2012. Effects of land use change on tropical hydrology, AGU Fall Meeting, Dec. 3-7, Abstract H51C-1363, San Francisco, CA.

Litt, G.F., J.C. Briceno, T.D. Crouch, and F.L. Ogden, 2012. The hydrologic response of forestry plantation and secondary succession in comparison to tropical mature forest and pasture in the Panama Canal watershed. AGU Fall Meeting, Dec. 3-7, Abstract H51C-1361, San Francisco, CA.

Goldsmith, S.T., R.S. Harmon, W.B. Lyons, and F.L. Ogden, 2012. Evaluation of weather flux calculation methodologies for tropical mountainous rivers using a multi-year dataset from

Panama. Paper No. 212-2, Geol. Soc. Am., Annual Meeting & Exposition, 4-7 November, Charlotte, NC, USA. *Geological Society of America Abstracts with Programs*. Vol. 44. No. 7.

Ogden, F.L., J.N. Creel, and G.F. Litt, Using geochemistry and tracers to diagnose runoff generation in the mountainous seasonal tropics. Paper No. 212-1, Geol. Soc. Am., Annual Meeting & Exposition, 4-7 November, Charlotte, NC, USA. *Geological Society of America Abstracts with Programs*. Vol. 44. No. 7.

Wohl, E., and F.L. Ogden, 2012, Wood and carbon export via landslides and floods in the upper Rio Chagres, Panama, Paper No. 212-4, Geol. Soc. Am., Annual Meeting & Exposition, 4-7 November, Charlotte, NC, USA. *Geological Society of America Abstracts with Programs*. Vol. 44. No. 7.

Jones, N., F.L. Ogden, and J. Nelson, 2012. High-performance cyberinfrastructure for water resources planning and management (invited). AGU Fall Meeting, Dec. 3-7, Abstract IN53D-02, San Francisco, CA.

Tarboton, D.G., F.L. Ogden, N. Jones, and J.S. Horsburgh, 2012, Advancing cyberinfrastructure to support high resolution water resources modeling (invited). AGU Fall Meeting, Dec. 3-7, Abstract IN11B-1463, San Francisco, CA.

Downer, C.W., and F.L. Ogden, 2011, Representing watersheds with physics based distributed hydrologic models, AGU Fall Meeting, Dec. 5-9, Abstract H42G-06, San Francisco, CA.

Pradhan, N.R., C.W. Downer, and F.L. Ogden, Applicability of laboratory scale sediment transport model to watershed scale, AGU Fall Meeting, Dec. 5-9, Abstract EP41C-0628, San Francisco, CA.

Hassler, S.K., F.L. Ogden, H. Elsenbeer, and T.D. Crouch, Exploring the link between soil permeability, overland flow generation, and land use and its effect on water flow paths in the humid tropics, AGU Fall Meeting, Dec. 5-9, Abstract H43G-1302, San Francisco, CA.

Crouch, T.D., and F.L. Ogden, 2011, Quantifying hydrological ecosystem services of various land covers and uses on small experimental catchments within the Panama Canal watershed: The Agua Salud Project, AGU Fall Meeting, Dec. 5-9, Abstract H51D-1233, San Francisco, CA.

Ogden, F.L, A. Mojica, and N.A. Abebe, 2010, Ecohydrologic investigations of shallow lateral subsurface flow in tropical soils using time-lapse surface electrical resistivity tomography, Abstract H51J-07, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

Crouch, T. D, F.L. Ogden, and R.F. Stallard, 2010, An eco-hydrologic assessment of small experimental catchments with various land uses within the Panama Canal Watershed: Agua Salud Project, Abstract H51A-0873, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

Abebe, N.A., and F.L. Ogden, 2010, A physically-based distributed hydrologic model for tropical catchments, Abstract H41F-1124, presented at 2010 Fall Meeting, AGU, San Francisco, Calif., 13-17 Dec.

Pradhan, N.R., A.R. Byrd, F.L. Ogden, and J. M.H. Hendrickx, 2010, SEBAL evapotranspiration estimates for the improvement of hydrologic model predictions of runoff and soil moisture, Remote Sensing and Hydrology, Jackson Hole, Wyoming, Sept. 8-10.

Ogden, F.L, N.R. Pradhan, C.W. Downer, 2009, Uncertainty in tile drain locations: Implications for hydrologic modeling of agricultural watersheds, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H41F-0964.

Hendrickx, J.M.H., F.L. Ogden, N.R. Pradhan, and A.R. Byrd, 2009, Predictions in ungauged basins: Potential challenges and development of a one parameter model, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H21F-0917.

Pradhan, N.R., C.W. Downer, F.L. Ogden, and A.R. Byrd, 2009, Effect of subsurface storm drainage network on flood frequency in urbanized catchments, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H41F-0965.

Talbot, C.A., F.L. Ogden, and D. Or, 2009, A non-Richards general solution to the infiltration problem including non-Darcian flow, *Eos Trans. AGU*, 90(52), Fall Meet. Suppl., Abstract H43F-1077.

Hendrickx, J.M.H., N.R. Pradhan, S.-h. Hong, F.L. Ogden, A.R. Byrd, and D. Toll. 2009. Improvement of hydrologic model soil moisture predictions using SEBAL evapotranspiration estimates. Proc. International Society for Optical Engineering, SPIE 7303:730311. DOI: 10.1117/12.819780

Pradhan, N.R., and F.L. Ogden, 2008, Development of a Single-Parameter Variable-Source-Area Model of Stream Flow Generation in Ungauged Basins, *Eos Trans. AGU,* 89(53), Fall Meet. Suppl. Abstract H23C-0980.

Abebe, N.A., and F.L. Ogden, 2008, Peak Sediment Flow Scaling in a Small Hortonian Watershed, *Eos Trans. AGU,* 89(53), Fall Meet. Suppl. Abstract H53B-1057.

Talbot, C.A., and F.L. Ogden, 2008, A new approximate solution to the general infiltration problem for layered soils, *Eos Trans. AGU,* 89(53), Fall Meet. Suppl. Abstract H51I-0986.

Downer, C.W., F.L. Ogden, and A.R. Byrd, 2008, Application of physics based distributed hydrologic models to assess anthropogenic land disturbance in watersheds, *Eos Trans. AGU,* 89(53), Fall Meet. Suppl. Abstract H13C-0942.

Pradhan, N.R., F. L. Ogden, 2008, Development of a variable-source-area model of stream flow generation for ungauged basins, Community Models for Hydrologic and Environmental Research, CUAHSI Biennial Colloquium on Hydrologic Science and Engineering, July 14-16, 2008, UCAR, Boulder, Colorado.

Stallard, R.F., H. Elsenbeer, F.L. Ogden, and J.S. Hall, 2007, The Agua Salud Project, Central Panama, Eos Trans. AGU 88(52), Fall meet. Suppl. Abstract H21L-01

Sharif, H., and F.L. Ogden, 2007, On the Remapping of Radar Estimates onto Cartesian Coordinates, Eos Trans. AGU 88(52), Fall meet. Suppl. Abstract H21E-0807

Talbot, C.A., and F.L. Ogden, 2007, A Method for Computing Infiltration and Redistribution in a Discretized Moisture Content Domain, Eos Trans. AGU 88(52), Fall meet. Suppl. Abstract H51C-0642.

Hendrickx, J.M.H., J. Kleissl, J.D. Gómez-Vélez, S.-h. Hong, J.R. Fábrega-Duque, D. Vega, H.A. Moreno-Ramírez, and F.L. Ogden. 2007. Scintillometer networks for calibration

and validation of energy balance and soil moisture remote sensing algorithms. Proc. International Society for Optical Engineering, SPIE 6565:65650W.

Ogden, F.L., and K. Puckett, 2006, Uncertainty Quantification in Predicting Deep Aquifer Recharge Rates, with Applicability in the Powder River Basin, Wyoming, *Eos Trans. AGU 87*(52), Fall Met. Suppl., Abstract H41B-0403.

Pradhan, N.R., F.L. Ogden and Y. Tachikawa, 2006, Developing Consistency in Rainfall Runoff Transformation at Scales of Interest, *Eos Trans. AGU 87*(52), Fall Met. Suppl., Abstract H31E-1476.

Downer, C.W., and F.L. Ogden, 2006, Distributed Hydrologic Models: Can We Reduce Complexity and Simulate Multiple Processes in a Watershed?, *Eos Trans. AGU 87*(52), Fall Met. Suppl., Abstract H41F-0459.

Niedzialek, J.M., and F.L. Ogden, 2006, Detailed First-Order Catchment Investigation of Runoff Production Mechanisms in the Seasonal Tropics of Panama, 2006 Annual Meeting and Exposition, Geological Society of America, Oct. 22-25, Philadelphia, Pennsylvania.

Byrd, A., F.L. Ogden, R. Jenkins, J.M. Niedzialek, and E.J. Nelson, 2006, Modeling Wetlands in a Multi-Dimensional Hydrologic Model, 3rd Federal Interagency Hydrologic Modeling Conference, April 2-6, Reno, Nevada.

Byrd, A., J.M. Niedzialek, and F.L. Ogden, 2006, Modeling Storm and Tile Drains in a Multi-Dimensional Hydrologic Model, 3rd Federal Interagency Hydrologic Modeling Conference, April 2-6, Reno, Nevada.

Talbot, C.A., F.L. Ogden, "A Moisture Content-Discretized Infiltration Method", Presented at the International Association of Hydraulic and Hydrologic Research Groundwater Symposium on Groundwater Hydraulics in Complex Environments, Toulouse, France, 12-14 June 2006.

Nadim, F., A.C. Bagtzoglou, F.L. Ogden, and G.S. Warner, 2005, "Sustainable Pumping Strategy for the University of Connecticut Well Field During Drought Periods", *Abstract Proceedings of Science for Sustainable Water Resources Conference*, University of Massachusetts Water Resources Center.

Nadim, F., A.C. Bagtzoglou, F.L. Ogden, and G.S. Warner, 2005, "Management of the University of Connecticut Well Field During Drought Periods", *Proceedings of AWRA 2005 Annual Water Resources Conference*, Steward, C. (Editor), American Water Resources Association, Middleburg, Virginia, TPS-05-3, CD-ROM.

Talbot, C.A., and F.L. Ogden, and D. Or, 2005, A Toolbox of Models for Evaluating Appropriate of Infiltration Predictions in Coupled Surface and Subsurface Flow Applications, Eos Trans. AGU, 2005.

Niedzialek, J.M., F.L. Ogden, and A.C. Bagtzoglou, 2004, "Implementation of Particle Tracking to a Physically Based Hydrologic Model and Implications for Calibration", *EOS: Transactions of the AGU*, 85(47), p. F706.

Ogden, F.L., 2004, Hydrologic Model Applicability: Limitations Imposed by Runoff Generation Mechanism, Eos Trans. AGU, 85(17), Jt. Assem. Suppl., Abstract H41C-03.

Rogalus, M.J. III, and F.L. Ogden, 2004, Assessing the Applicability of Archival Radar-Rainfall Data for Hydrologic Modeling on a Fine Spatial and Temporal Scale Across the Mississippi Basin, Eos Trans. AGU, 85(17), Jt. Assem. Suppl., Abstract H31A-12.

Talbot, C.A., and F.L. Ogden, 2004, Predicting Non-ideal Infiltration Behavior in Soils, Eos Trans. AGU, 85(17), Jt. Assem. Suppl., Abstract H21B-05.
Zahner, J.A., and F.L. Ogden, 2004, Increasing Urban Flood Magnitudes: Is it the Drainage Network?, Eos Trans. AGU, 85(17), Jt. Assem. Suppl., Abstract H53B-06.
Steinberg, S.L., S.B. Jones, D. Or, N.E. Daidzic, M. Tuller, and F. Ogden, 2003, Tensiometer Measurements under Variable Gravity Conditions, Soil Sci. Soc. Am. Ann. Meet. Abstracts, Nov. 2-6, Denver, Colorado.
Niedzialek, J.M., and F.L. Ogden, 2003, Runoff Production in the Upper Rio Chagres Catchment, Panama, Eos Trans. AGU , 84(46) Fall Meet. Suppl., Abstract H51A-03.
Kenney, E.D., F.L. Ogden, M.R. Rogalus III, and T.M. Over, 2003, Examining Runoff Production Using Radar-Rainfall and Physiographic Databases, Eos Trans. AGU, 84(46), Fall Meet. Suppl., Abstract H12B-0993.
Band, L., K. Reckhow, J. Famiglietti, D. Genereux, J. Helly, R. Hooper, W. Krajewski, D. McKnight, F. Ogden, B. Scanlong, L. Shabman, and C. Duffy, 2003, Implementing a Network of Hydrologic Observatories, Eos Trans. AGU, 84(46), Fall Meet. Suppl., Abstract H121-06 (Invited).
Knox, R.G., and F.L. Ogden, 2003, TRMM Observations to Develop Precipitation-Elevation Relations for the Rio Chagres Catchment, Panama, proc. Intl. Scientific Symp., The Rio Chagres: A Multidisciplinary Profile of a Tropical Watershed, Abstract Volume, 24-26 Feb., Gamboa, Panama.
Niedzialek, J.M., and F.L. Ogden, 2003, Runoff Production in the Rio Chagres Catchment, Panama, proc. Intl. Scientific Symp., The Rio Chagres: A Multidisciplinary Profile of a Tropical Watershed, Abstract Volume, 24-26 Feb., Gamboa, Panama.
Niedzialek, J.M, and F.L.Ogden, 2002, A Numerical Study of Hysteresis as Observed at the Watershed Scale, Eos Trans. AGU, 84(47), Fall Meet. Suppl., Abstract H11E-0896.
Ogden, F.L., and D. R. Dawdy, 2002, Simple Scaling of Flood Quantiles and Individual Flood Peaks: Analysis of Data from a Small Hortonian Research Catchment Eos Trans. AGU, 83(47), Fall Meet. Suppl., Abstract H51B-0805.
Miriovski, B.J., A.A. Bradley, J. Creutin, W. Eichinger, W.F. Krajewski, A. Kruger, J. Lapettite, G. Lee, B.R. Nelson, F.L. Ogden, and I. Zawadzki, An Experimental Study of Small-Scale Drop Size Distribution Variability, Eos Trans. AGU 2002AGUSM.H22A.08M
Sharif, H.O., D. Yates, F.L. Ogden, and E. Brandes, 2002, Two-Dimensional Modeling of Flood Events in Denver, Colorado, Eos Trans. AGU, 83(47), Fall Meet. Suppl., Abstract H51B-0799.
Ogden, F.L., and J. M. Hendrickx, 2002, Runoff Production in the Rio Chagres Catchment, Panama, Annual Meeting and Exposition, Geological Society of America, October 27-30, Denver, Colorado.
Daraio, J.A., and F.L. Ogden, 2001, A Conceptual Investigation of Baseflow Separation Using a Distributed Hydrologic Model, Proc., American Geophys. Union, Spring Meeting, Boston, MA.
Niedzialek, J.M., C.W., Downer and F.L. Ogden, 2001, Surface-water/Groundwater Interactions: A Difficult Distributed Model Calibration Problem, Proc., American Geophys. Union, Spring Meeting, Boston, MA.

Heilig, A., and F.L. Ogden, 2001, Watershed-Scale Calibration and Verification of the Erosion Component of CASC2D, Proc., Am. Geophys. Union, Spring Meeting, Boston, MA.
Sharif, H.O., F.L. Ogden, W.F. Krajewski, E.N. Anagnostou, and M. Xue, 2000, Numerical Studies of Radar-rainfall Error Propagation, Proceedings, American Geophysical Union Spring Meeting, Washington, D.C., May 30-June 3, 2000.
Downer, C.W., J.M. Niedzialek, S.E. Howington, and F.L. Ogden, 2000, Scale Effects in the Application of Richard's Equation to Calculate Recharge at the Watershed Scale, Proc., American Geophysical Union, Fall Meeting, San Francisco, CA.
Ogden, F.L. and C.W. Downer, 2000, The Role of Rainfall in Physics-Based Hydrologic Model Performance , COST Symposium on the Future of Distributed Hydrologic Modelling, Leuven, Belgium, April 10-14, 2000.
Sharif, H.O., F.L. Ogden, M.I. Grecu, and W.F. Krajewski, 1999, "Radar Rainfall Estimation Error Propagation Through Hortonian Runoff Predictions", Poster presentation, AGU Spring Meeting, Boston, MA, June 3, 1999.
Senarath, S.U.S., and F.L. Ogden, 1999, "Distributed Hortonian Hydrologic Model Calibration Uniqueness", Poster presentation, AGU Spring Meeting, Boston, MA, June 4, 1999.
Boulanger, B., H.O. Sharif, N.P. Nikolaidis, and F.L. Ogden, 1999, "Modeling Runoff in Urban Storm Water Systems", Poster presentation, AGU Spring Meeting, Boston, Mass., June 4, 1999.
Sharif, H.O., F.L. Ogden, W.F. Krajewski, E.N. Anagnostou, and M. Xue, 1999, Evaluation of Range-Dependent Radar-Rainfall Error Propagation Through Runoff Predictions, Proc., AGU Fall Meeting, Dec 1999, San Francisco, California.
Ogden, F.L., S.U.S. Senarath, and H.O. Sharif, 1998, "Multi-Parameter Rainfall Estimation Coupled with Distributed Hydrologic Modeling of the Fort Collins Flash Flood of 28-29, July 1997-- Part II: Hydrologic Modeling to Identify Uncertainty", Poster session, 4th Intl. Symp. On Hydrologic Appl. of Weather Radar, 5-9 April, San Diego, CA.
Senarath, S.U.S., and F.L. Ogden, 1998, "Calibration Uniqueness and Physically-Based Hydrologic Models", Proc., AGU Spring Meeting, Boston, MA, 26-29 May, 1998.
Sharif, H.O., and F.L. Ogden, 1998, "Two-Dimensional Modeling of extreme Events in Urban Watersheds", Proc. AGU Spring Meeting, Boston, MA, 26-29 May, 1998.
Downer, C.W., and F.L. Ogden, 1998, "Effect of Soil Layering on Infiltration at the Watershed Scale", Poster session, AGU Spring Meeting, Boston, Mass, 26-29 May, 1998.
Smith, J.A., F.L. Ogden, Y. Zhang, and M.L. Baeck, 1998, "A Modeling Study of Extreme Flood Response in the Shenandoah River Basin", AGU Spring Meeting, Boston, Mass, 26-29 May, 1998.
Doe, W.W. III, P.Y. Julien, and F.L. Ogden, 1997, "Maneuversheds and Watersheds: Modeling the Hydrologic Effects of Mechanized Training on Military Lands", Proc., American Water Resources Association/ Universities Council on Water Resources, 1997 Annual Symposium.
Bradley, A.A., J.K. Holman, and F.L. Ogden, 1997, "Effect of Spatial and Temporal Sampling of Precipitation on Hydrologic Model Calibration", 1997 Spring Meeting, American Geophysical Union, Baltimore, MD, April 18, 1997.

Anagnostou, E.N., W.F. Krajewski, and F.L. Ogden, 1995, "Simulation of Radar Remote Sensing of Rainfall as a Framework for Runoff Studies", 3rd International Symposium on Hydrological Applications of Weather Radar, Sao Paulo, Brazil, August 20-24, 1995.

Ogden, F.L., 1995,"Similarity in Hortonian Runoff Production with Spatio-Temporal Rainfall Variability", Spring 1995 Meeting, American Geophysical Union, Baltimore, May 30-June 2, 1995.

Workshop and Symposium Presentations

Ogden, F.L., 2019. Water prediction tools for climate adaption strategies: Focus on Community Development, Upper Colorado River Basis Water Forum, Colorado Mesa University, Grand Junction, Colorado, November 13-14.

Ogden, F.L., C.C. Douglas, S.N. Miller, Y. Zhang, L. Deng, and W. Lai, 2012, High resolution physics-based hydrologic modeling of the Upper Colorado River basin: the CI-WATER High-Performance Computing Model, Second Annual Front Range High Performance Computing Symposium, Fort Collins, CO, August 13-14.

Ogden, F.L., T. Crouch, E. Kempema, and A.A. Sanchez, 2010, Hydrologic data collection and analysis, Panama Canal Watershed, Agua Salud Project, HSBC Climate Partnership Symposium, Smithsonian Tropical Research Institute, Panama City, Panama, 15-19 March.

Ogden, F.L., and J.M. Niedzialek, 2009, Runoff Generation in the Upper Rio Chagres Watershed Panama, Presented at Workshop on Tropical Hydrology, Smithsonian Tropical Research Institute, Panama City, Panama, 16-20 March.

Downer, C.W., J. Jorgeson, F.L. Ogden, P.Y. Julien, W.D. Martin, E. Edris, R.S. Harmon, E. Meselhe, and J. Nelson, 2003, The Case for Physically-Based Distributed Hydrologic Modeling Approaches for the U.S. Army Corps of Engineers, Civil Works Projects, Proc., U.S. Army Corps of Engineers Hydraulics and Hydrology Conference, Portland, OR, 12-15 May.

Ogden, F.L., 2002, CUAHSI- Consortium of Universities for the Advancement of Hydrologic Science, Invited Presentation, American Institute of Biological Sciences, IBRCS Working Group Meeting, Washington, D.C., November 15.

Sharif, H.O., F.L. Ogden, W.F. Krajewski, and M. Xue, 2001, Using Radar-Rainfall Estimates at Ground Level: Beam, Storm, and Watershed Geometric Interactions. Fifth International Symposium on Hydrological Applications of Weather Radar - Radar Hydrology, Proc., November 19-22, Heian-Kaikan, Kyoto, Japan, pp. 79-84.

Sharif, H.O., F.L. Ogden, W.F. Krajewski, and M. Xue, 2001, Impact of Radar-Rainfall Estimation Errors on Distributed Hydrologic Model Predictions: A Simulation Framework. Fifth International Symposium on Hydrological Applications of Weather Radar - Radar Hydrology, Proc., November 19-22, Heian-Kaikan, Kyoto, Japan, pp. 469-474.

Ogden, F.L., and C.W. Downer, 2000, The Role of Rainfall in Physics-Based Hydrologic Model Performance , COST Symposium on the Future of Distributed Hydrologic Modelling, Leuven, Belgium, April 10-14.

Ogden, F.L., S.U.S. Senarath, and H.O. Sharif, 1998, Multi-Parameter Rainfall Estimation Coupled with Distributed Hydrologic Modeling of the Fort Collins Flash Flood of 28-29 July 1997-- Part II: Hydrologic Modeling to Identify Uncertainty, Poster session, 4th Intl. Symp. On Hydrologic Appl. of Weather Radar, 5-9 April, San Diego, CA.

Ogden, F.L., and W.F. Krajewski, 1993, Estimation of Climatological Scale Precipitation in Mountainous Terrain, International Symposium on Precipitation and Evaporation, Bratislava, Slovakia, September 20-24.

Hartley, D.M., J. Hanson, and F.L. Ogden, 1992, Analysis of Thunderstorm Variability using Weather Radar, 28th Annual AWRA Conf. on Managing Water Resources During Global Change, Reno, Nevada, Nov. 1-5.

Project Reports

Ogden, F.L., Frazier, N.J., A. Maestre, R. Wolford, and J.A. Regina, 2019. Warm season single event evaluation of NWM V1.2 and V2.0 retrospective with NLDAS-2 Forcing. Delivered to NOAA/NWS/Office of Water Prediction, August 12, Tuscaloosa, Alabama.

Ogden, F.L., 2019. NWM Code Evaluation. Delivered to NOAA/NWS/Office of Water Prediction leadership, May 20, Tuscaloosa, Alabama.

Ogden, F.L., et al. 2018. WSC-Category 2 Collaborative Research: Planning and Land Management in a Tropical Ecosystem; Complexities of land-use and hydrology coupling in the Panama Canal Watershed. Final Report. EAR-1360384.

Ogden, F.L., et al. 2017. WSC-Category 2 Collaborative Research: Planning and Land Management in a Tropical Ecosystem; Complexities of land-use and hydrologoy coupling in the Panama Canal Watershed. Annual Report. EAR-1360384.

Ogden, F.L., et al. 2016, WSC-Category 2 Collaborative Research: Planning and Land Management in a Tropical Ecosystem; Complexities of land-use and hydrologoy coupling in the Panama Canal Watershed. Annual Report. EAR-1360384.

Ogden, F.L., et al. 2015, WSC-Category 2 Collaborative Research: Planning and Land Management in a Tropical Ecosystem; Complexities of land-use and hydrologoy coupling in the Panama Canal Watershed. Annual Report. EAR-1360384.

Ogden, F.L., N.L. Jones, D. A. Tarboton, S. Burian, March, 2015, CI-WATER cooperative agreement interim report submitted to the U.S. National Science Foundation, EPSCoR Program, 15 pp.

Jones, N.L, and Ogden, F.L., August, 2014, CI-WATER cooperative agreement interim project report submitted to the U.S. National Science Foundation, EPSCoR Program, 52 pp. EPS-1135354.

Jones, N.L, and Ogden, F.L., August, 2013, CI-WATER cooperative agreement interim project report submitted to the U.S. National Science Foundation, EPSCoR Program, 66 pp. EPS-1135354.

Jones, N.L, and Ogden, F.L., August, 2012, CI-WATER cooperative agreement interim project report submitted to the U.S. National Science Foundation, EPSCoR Program, 54 pp. EPS-1135354.

Jones, N.L, and Ogden, F.L., August, 2011, CI-WATER cooperative agreement interim project report submitted to the U.S. National Science Foundation, EPSCoR Program, 43 pp. EPS-1135354.

Ogden, F.L., and N. Pradhan, 2010, Energy Balance Measurements of Evapotranspiration, U.S. Army Research Office Final Report, October.

Ogden, F.L., and N. Pradhan, 2010, Second Phase ET Mapping for Consumptive Use Estimation in the Green River Basin of Wyoming, Final report submitted to Wyoming State Engineer's Office, Interstate Streams Division.

Ogden, F.L, and M. Harm-Benson, 2010, Integrated Management of Groundwater and Surface Water Resources: Investigation of Different Management Strategies and Testing in a Modeling Framework, Final Report, Wyoming State Engineer's Office.

Ogden, F.L., and K.A. Puckett, 2008, A Methodology for Estimating Deep Groundwater Recharge Rates in Semi-Arid Regions Applied to the Powder River Basin in Wyoming, submitted to the U.S. Department of Energy, National Energy Technology Laboratory under Award Number DE-FC26-06NT15568.

Ogden, F.L., R.G. Knox, and J.A. Zahner, 2004, Testing of the VB95 Land Surface Scheme under Australian Conditions, submitted to Cooperative Research Centre in Catchment Hydrology, University of Melbourne, Australia, March.

Miller, D.R., G.S. Warner, F.L. Ogden, and A.T. DeGaetano, 2003, Precipitation in Connecticut, Conn. Inst. Water Resour., Univ. of Conn., Report No. 38, 66 pp.

Ogden, F.L., 2003, Rating Curve Development for the Rio Piedras Stream Gaging Station Upstream from the Rio Chagres in the Panama Canal Watershed, Submitted to U.S. Army Research Office and Panama Canal Authority, January, 2003.

Ogden, F.L., 2002, Graduate Education in Distributed Hydrologic Modeling, Final Report, Submitted to U.S. Army Research Office, Grant DAAG55-98-1-0182.

Ogden, F.L., 2001, Propagation of Radar Rainfall Estimation Errors Through Runoff Predictions, Final Report, Submitted to U.S. Army Research Office, Grant DAAH-04-96-01-0026.

Warner, G.S., F.L. Ogden and C. Tamayo, 1999, "Review of the NRCS Runoff Curve Number (CN) and its Application to Connecticut Conditions", Technical Report to Bureau of Water Management, Connecticut Department of Environmental Protection, April 29, 1999, 23 pp.

Warner, G.S., D.R. Hodgson, and F.L. Ogden, 1999,"Review and Application of Base Flow Separation Methods for Runoff Determination for Small Connecticut Streams", Technical Report to Bureau of Water Management, Connecticut Department of Environmental Protection, May 28, 1999, 28 pp.

Tamayo, C., G.S. Warner and F.L. Ogden, 1999, "Investigation and Application of Spatial Rainfall Interpolation for Runoff Studies in Connecticut", Technical Report to Bureau of Water Management, Connecticut Department of Environmental Protection, May 28, 1999, 33 pp.

Ogden, F.L., 1999, Calibration of the Sacramento Soil Moisture Accounting Model on the Watershed above the DRG Rio Cuncumen Antes de Bocatoma de Canales Stream Gaging Station, Final Project Report to SRK Consultores, Ingenieria y Geosciencias, Santiago, Chile, 44 pp.

Ogden, F.L., 1999, Symposium on Hydrologic Modeling of Diverse Regions with Sparse and Uncertain Data, Final Report Submitted to US Army Research Office, Grant DAAD19-99-0353, 19 pp.
Ogden, F.L., 1998, Intensity-Frequency Analysis of 15 Minute Precipitation Records in Connecticut, Final Report to Precipitation Subcommittee of the Connecticut Hydrologic Modeling Committee, Connecticut Department of Environmental Protection, 9 pp.
Ogden, F.L., 1998, CASC2D Version 1.18 Reference Manual, Final report submitted to U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS, final deliverable on Contract DACA39-97-M-1194.
Ogden, F.L., 1998, Annual Progress Report, Grant DAAH04-96-1-0026, submitted to U.S. Army Research Office, December.
Ogden, F.L., 1997, CASC2D Version 1.17 Reference Manual, Project final report submitted to U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, M.S., final deliverable on Contract DACA39-96-K-0012.
Ogden, F.L., 1997, Annual Progress Report, Grant DAAH04-96-1-0026, submitted to U.S. Army Research Office, December.
Ogden, F.L., 1996, Hydrologic modeling of Yakima Training Center using r.hydro.CASC2D, Final report submitted to U.S. Military Academy, West Point, N.Y.
Ogden, F.L., and S.U.S. Senarath, 1996, Enhancement of Long-Term Soil Moisture Storage Accounting Capabilities in CASC2D, Final report submitted to U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, MS.
Ogden, F.L., 1996, Annual Progress Report, Grant DAAH04-96-1-0026, submitted to U.S. Army Research Office, December.
Nordin, C.F., R.E. Rentschler, and F.L. Ogden, 1995, Particle Size Distribution of Bed Sediments Along the Thalweg of the Atchafalaya River, Old River to the Gulf, November 1995, U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi.
Ogden, F.L., 1994, Extent of Reservoir-Induced Flooding Upstream from Coralville Reservoir in Iowa, prepared for U.S. Dept. of Justice, Environment and Natural Resources Division, 68 pp.
Ogden, F.L., 1994, Comparison of Hourly Air Temperature and Wind Speed data between O'Hare International Airport and Joliet Station #29 near Joliet, Illinois, 1 July through 31 August 1993, Final report submitted to Commonwealth Edison, Chicago, Illinois.
Ogden, F.L., and T. Nakato, 1994, Iowa City Treatment Plant Intake, site selection report prepared for Howard Green Company, Cedar Rapids, Iowa.
Nakato, T., M. Weinberger, and F.L. Ogden, 1994, Hydraulic Model Study of Korea Electric Power Corporation's Ulchin Nuclear Units 3 and 4 Circulating-Water and Essential-Service-Water Intake Structures, IIHR Report No. 370, Iowa Inst. of Hydr. Res., Iowa City, Iowa.
Ogden, F.L., and T. Nakato, 1993, A hydraulic model study: Design of sediment-control devices at the George Neal Unit 4 circulating water pump-intake on the Missouri River River., IIHR Limited Dist. Report. No. 214., Iowa Inst. of Hydr. Res., Iowa City, IA.

CONTRACTS & GRANTS, FRED L. OGDEN as P.I. or co-P.I.

Funded Projects

Contract or Grant Title	Sponsor	Start/End	Budget	Percentage Credit
University of Wyoming				
ADHydro model development.	NOAA/NWS OWP	Sep. 2015/ Aug. 2017	$659,500	100% (single P.I.)
EAR 1360384 Collaborative Research: Planning And Land Management in Tropical Ecosystem: Complexities of land-use and hydrology coupling in the Panama Canal Watershed	U.S. Nat'l Science Fnd Total Budget: collaborators: Smithsonian Inst., Yale U., U. Colorado, and Univ. of Alberta	Aug 2014-July 2017	$977,000 (UWyo funds) $3.1M	100% (Project P.I.)
Defense-University Research Instrumentation Program (DURIP)	U.S. Dept of Defense	July 2012-June 2013	$69,000	100%
EPSCoR Track II Cyberinfrastructure Cooperative Agreement, EPS 1135483 Collaborative Research: CI-WATER Cyberinfrastructure to Advance High Performance Water Resource Modeling	U.S. Nat'l Science Fnd	Apr. 2011-Mar. 2015	$2,564,000 (U. Wyo funds)	50% (Wyoming P.I. joint with Utah EPSCoR)
EAR 1045166, Collaborative Research: Hydrogeochemical Investigation of Seasonal Transition and Land Use Change Effects on Tropical Hydrology	U.S. Nat'l Science Fnd	May 2011-Apr 2014	$192,700	100% (U. Wyo P.I. w/ W. Berry Lyons Ohio State U.)
EAR 1123468, RAPID Collaborative Research:	U.S. Nat'l Science Fnd	Feb 2011-Jan 2012	$13,430	50%

Collection of Precipitation, Landslide, Woody Debris, and Hydrologic Data, Upper Rio Chagres, Panama				
Engineering Research and Development Center, Testing and Verification of Sediment and Nutrient Transport Routines/Temporal Parallelization in GSSHA	U.S. Army Corps of Engineers	Jun 2006-Jun 2011	$278,430	100%
Symposium on Tropical Hydrology	U.S. Army Research Office	Jan 2009-Dec 2009	$25,000	100%
Field Observations of Consumptive Use in the Green River Basin of Wyoming	Wyo State Engineer's Office	Jan 2008-Mar 2010	$115,000	100%
Energy Balance Estimation of Evapotranspiration	U.S Dept. of Defense, DURIP	Jun 2009-May 2010	$67,979	100%
GK-12 Program, "The Energy-Water Resources Interface: A Model for Complex Systems Analysis in Rural Wyoming Middle Schools	U.S. Nat'l Science Fnd	May 2009-Apr 2014	$1,160,000	5%
Agua Salud Project	Smithsonian Tropical Research Inst./HSBC	June 2007-May 2012	$453,552	100%
DEPSCoR Program, Identification of Hydrologic Similarity in Military Operating Environments	U.S. Army Research Office	Jun 2007-Jun 2011	$407,914	100%
Calibration of a	Secretaria	Jan 2007-	$100,000	5%

Hydrologic Model to Estimate the Flow of Water in a Tropical Forest: Panama Canal Watershed	Nacional Ciencia, Tecnologia y Innovacion, Panama	Jun 2008		
Modeling and Legal Analysis for Management of Conjoined Surface and Ground Waters in Wyoming	UW, Office of Water Programs	Mar 2007-Feb 2010	$171,000	90%
Estimation of Groundwater Recharge in the Powder River Basin of Wyoming with Uncertainty Bounds	U.S. Dept of Energy	Jun 2006-Sept 2008	$209,052	80%
Integrated Landscape-Scale Assessment of CBNG Water Management in the Powder River Basin	U.S. Dept of Energy	Jun 2006-May 2008	$183,915	10%
University of Connecticut				
Addition of Storm Drainage Capability to the U.S. Army Corps of Engineers GSSHA Model	U.S. Army Research Office	Sept 2003-Aug 2005	$111,220	100%
Sub-Grid Erosion Features in a Distributed Hydrologic Model	U.S. Army Corps of Engineers	Sept 2003-Aug 2005	$303,100	100%
DURIP Studies of Evapotranspiration Throughfall and Soil Moisture Dynamics in Panama	U.S. Dept of Defense	May 2004-Apr 2005	$95,000	100%
Effect of Fenton River Well Field on In-Stream	University of Connecticut	Jan 2003-May 2005	$524,000	33%

Habitat	Dept. of Architecture and Engineering Services			
Distributed Hydrologic Modeling of Low Gradient Watersheds	University of Louisiana	Jun 2002-Dec 2002	$5,804	100%
Physically-based Hydrologic Model Research, Development And Testing	U.S. Army Corps of Engineers	Aug 2002-Jan 2003	$56,036	100%
Water Quality Dynamics of Stormwater Retention/ Detention Ponds	U.S. Nat'l Science Fnd	Apr 2001-Mar 2004	$244,000	30%
Watershed-Scale Monitoring and Model Development for Simulating Watersheds with Diverse Runoff Production Mechanisms	U.S Army Research Office	May 2001-Apr 2005	$183,000	100%
Studies of Nutrient Loading to the Mansfield Hollow Reservoir	Willimantic, Connecticut, Water Commission	Dec 2001-Nov 2002	$80,000	10%
Addition of Lakes, Wetlands and Detention Basins to CASC2D	U.S. Army Corps of Engineers	Aug 1998-Sep 2002	$221,000	100%
Workshop on Global Military Hydrology	U.S. Army Research Office	Jun 1999-May 2000	$14,000	100%
Measurements of the Spatio-Temporal Variability of Rainfall	U.S. Dept of Defense, DURIP	Mar 1998-Dec 1999	$59,800	100%
Addition of Channel Sediment Routing to	U.S. Army Corps of	Jun 1997-Mar 1998	$9,943	100%

CASC2D	Engineers			
Two-Dimensional Modeling of Large Watersheds with Uncertain Input	U.S. Army Corps of Engineers	Mar 1998-Mar 2001	$224,111	100%
Assessment of the Applicability of Engineering Hydrologic Models in Connecticut Conditions	Connecticut Dept of Environmental Protection	Jan 1997-Mar 2000	$112,000	100%
AASERT, Graduate Education in Distributed Hydrologic Modeling	U.S. Army Research Office	Apr 1998-Mar 2001	$90,000	100%
Hydrometeorological Investigation of the Fort Collins Flash Flood of July 28, 1997	U.S. Nat'l Science Fnd	Dec 1997-Nov 1998	$14,768	100%
Young Investigator Program, Radar-Rainfall Error Propagation Through Runoff Predictions	U.S. Army Research Office	Apr 1996-Mar 1999	$150,000	100%
CASC2D Enhancements for Long Term Simulations with NEXRAD Data	U.S Army Corps of Engineers	Feb 1996-Sept 1997	$73,594	100%

OTHER ACTIVITIES/ACCOMPLISHMENTS

Registrations/Certifications

1981-present Licensed Private Pilot, Single Engine Land, Instrument Rated, FAA
2002-2012 Licenced Private Pilot, Aeroplane, Civil Aviation Safety Authority, Australia
2003-2006 High-Altitude Physiological Training, NASA

Consultancies and International Experience

Post-Event Analysis and Flood Reconstructions, Tropical Storm Erika, Commonwealth of Dominica, Disaster Vulnerability Reduction Project, 28 Sept. 2015-March 19, 2016.
Hydrometeorological Field Data Collection and Capacity Analysis, Commonwealth of Dominica, Dec 22, 2014-March 31, 2015.
Utility of the Existing Hydrometeorological Network in Jamaica for Downscaling of Climate Change Scenarios, Pilot Programme for Climate Resilience. Report submitted to the Planning Institute of Jamaica, August-October, 2013.
Recommended improvements to national hydrologic, hydrometeorological, and water quality sampling networks infrastructure in the Dominican Republic, 2010, World Bank.
Field Investigations of Cold Regions Gully Formation, Wright and Taylor Valleys, Antarctica, United States Antarctic Program, January-February, 2010.
Tropical Hydrology Field Investigations, Rio Chagres Watershed, Panama, 2001-2009.
Historical Evaluation of Hydropower, Lake Pocotopaug, East Hampton, Connecticut, 2004
Hydraulic Design of a Tightly-Constrained Stormwater Detention Basin, Rye Grass Subdivision, CES Engineering, Andover, CT, 2004.
Hydrologic Modeling of Rio Cuncumen Watershed, Chile, S.R.K. Mining Engineers, Santiago, Chile, 1999.
Analysis of flooding behind Coralville Dam, Iowa, U.S. Department of Justice, 1995-1997.
Invited Participant, 1995 “Parker’s Mission” exchange program for young hydroscientists and engineers, funded by Hokkaido Development Bureau, Hokkaido, Honshu, and Fukuoka, Japan, June 29-July 30.

Hobbies

Playing bass violin and bass guitar in bluegrass, country, folk, or classic rock genres.
Construction/home improvement and woodworking. Rebuilding 1940’s Willys Jeeps. Aircraft maintenance.