

David A. Kaplan

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EDUCATION

Ph.D. in Agricultural and Biological Engineering

University of Florida Gainesville, FL May 2010

Dissertation: *Linking river, floodplain, and vadose zone hydrology in a coastal wetland impacted by saltwater intrusion: the Loxahatchee River (Florida, USA)*

- Certificates in wetland and hydrological sciences

B.S. in Agricultural and Biological Engineering

Cornell University Ithaca, NY May 2000

- Graduated *Cum Laude*

RESEARCH INTERESTS

- Feedbacks between biological, hydrological, and human systems; environmental and ecological thresholds to natural and anthropogenic drivers (climate change, population growth, watershed development/urbanization, nutrient loading); ecological restoration
- Development of hydrological and ecological models to support hypothesis testing and the conservation, management, and restoration of natural resources; uncertainty and sensitivity analysis of natural and human systems modeling
- Wetland hydrology; impacts of altered hydrology on structure and function of wetlands, lakes, and rivers; saltwater intrusion impacts on coastal wetlands and aquifers

RESEARCH AND PROFESSIONAL EXPERIENCE

Assistant Professor, Dept. of Environmental Engineering Sciences, University of Florida 2012 - Present

- Affiliated Faculty, UF Center for Wetlands
- Affiliated Faculty, UF Water Institute

Postdoctoral Research Associate, School of Forest Resources and Conservation, Ecohydrology Laboratory, University of Florida 2010 - 2012

Graduate/Postgraduate Research Assistant, Dept. of Agricultural and Biological Engineering, University of Florida 2005 - 2010

Natural Resources Project Manager, New York City Dept. of Parks and Recreation 2001 - 2005

National Science Foundation Fellow, Department of Biological Systems Engineering, Virginia Tech State University 1999

Research Assistant, Entomology Department, Cornell University 1998

PUBLICATIONS

Refereed Journal Articles

Kaplan, D., R. Paudel, M. Cohen, and J. Jawitz. In press. Orientation matters: Patch anisotropy controls discharge competence and hydroperiod in a patterned peatland. *Geophysical Research Letters* MS# 2012GL052754. [doi:10.1029/2012GL052754](https://doi.org/10.1029/2012GL052754).

- Kaplan, D.**, M. Bachelin, R. Muñoz-Carpena, and W. Rodríguez Chacón. 2011. Hydrological importance and water quality treatment potential of a small freshwater wetland in the humid tropics of Costa Rica. *Wetlands* 31(6):117-1130. [doi:10.1007/s13157-011-0222-3](https://doi.org/10.1007/s13157-011-0222-3).
- Kaplan, D.** and R. Muñoz-Carpena. 2011. Complementary effects of surface water and groundwater on soil moisture dynamics in a degraded coastal floodplain forest. *Journal of Hydrology* 398(3-4):221-234. [doi:10.1016/j.jhydrol.2010.12.019](https://doi.org/10.1016/j.jhydrol.2010.12.019).
- Mortl, A., R. Muñoz-Carpena, and **D. Kaplan**. 2011. Calibration of a combined dielectric probe for soil moisture and porewater salinity measurement in three southeastern (USA) coastal floodplain soils. *Geoderma* 161(1-2):50-62. [doi:10.1016/j.geoderma.2010.12.007](https://doi.org/10.1016/j.geoderma.2010.12.007).
- Kaplan, D.**, R. Muñoz-Carpena, and A. Ritter. 2010. Untangling complex shallow groundwater dynamics in the floodplain wetlands of a southeastern U.S. coastal river. *Water Resources Research* 46, W08528. [doi:10.1029/2009WR009038](https://doi.org/10.1029/2009WR009038).
- Kaplan, D.**, R. Muñoz-Carpena, Y. Wan, M. Hedgepeth, F. Zheng, R. Roberts, and R. Rossmanith. 2010. Linking river, floodplain, and vadose zone hydrology to improve restoration of a coastal river impacted by saltwater intrusion. *Journal of Environmental Quality* 39(5):1570-1584. [doi:10.2134/jeq2009.0375](https://doi.org/10.2134/jeq2009.0375).
- McLaughlin, D.L., **D. Kaplan**, and M.J. Cohen. In revision. Managing Forests for Increased Regional Water Yield. *Journal of the American Water Resources Association* MS# JAWRA-12-0103-P (submitted 30 Apr 2012).
- Kaplan, D.**, M. Bachelin, R. Muñoz-Carpena, T. Potter, and W. Rodríguez Chacón. In revision. A dual tracer study to describe the hydraulic heterogeneity of a small, natural wetland in the humid tropics of Costa Rica. *Wetlands* MS# WELA745 (submitted 2 Mar 2012).

Publications in Preparation

- Kaplan, D.**, R. Paudel, M. Cohen, and J. Jawitz. In preparation. Defining landscape hydraulic geometry: how patch prevalence, topography, and anisotropy affect flow in a patterned wetland.
- Kaplan, D.**, R. Muñoz-Carpena, G. Kiker, Y. Wan. In preparation. An ecohydrological model to assess the potential for restoration success in a degraded bald cypress floodplain swamp.

Peer-Reviewed Proceedings

- Kaplan, D.**, R. Muñoz-Carpena, Y.C. Li, Y. Wan, M. Hedgepeth, R. Roberts. 2008. Altered Hydroperiod and Saltwater Intrusion in the Bald Cypress Swamps of the Loxahatchee River. In: *Proceedings of the 20th Salt Water Intrusion Meeting*, Naples, Florida, June 2008. pp. 109-112.
- Kaplan, D.**, R. Muñoz-Carpena, A. Mortl, Y.C. Li. 2007. Humedad y salinidad del suelo en un pantano de ciprés calvo (*Taxodium distichum*) impactado por intrusión de agua salina. In: J.V. Giráldez Cervera and F.J. Jiménez Hornero (eds.) *Estudios de la Zona No Saturada del Suelo Vol. VIII*, pp. 257-266. Cordoba (Spain). ISBN: 84-690-7893-8.
- Masters, A., K.A. Flahive, S. Mostaghimi, D.H. Vaughan, A. Mendez, M. Peterie, S. Radke, A. Davisson, M. Hunter, and **D. Kaplan**. 2000. A comparative investigation of the effectiveness of polyacrylamide (PAM) for erosion control in urban areas. In: *Proceedings of the 2000 ASAE Annual International Meeting*, Milwaukee, WI, July 2000. pp. 1-22.

Education and Outreach Publications

- Kaplan, D.** In press. "What is the structure of water?" and "Why do whales sing?" In M. Lamothe, J. Rothman, J. Volvovski (Eds.): *The Where, The Why and The How: 75 Artists Illustrate Wondrous Mysteries of the Universe*. Chronicle Books, San Francisco.
- Vardi, T. and **D. Kaplan**. 2005. Forever Wild: Nature in New York City. Website, brochure, map, and database of New York City natural areas. <http://www.nycgovparks.org/greening/nature-preserves>.

Selected Research Reports

- Cohen, M., D. Watts, **D. Kaplan**, Y. Jing, J. Heffernan, T. Osborne, M. Clark, and T. Oh. 2011. Mechanisms of Ridge-Slough Maintenance and Degradation across the Greater Everglades. Annual report to the Army Corps of Engineers. University of Florida, Gainesville.
- Kaplan, D.**, R. Paudel, J. Jawitz, and M. Cohen. 2011. Application of the Regional Simulation Model (RSM) to Test the Effects of Landscape Orientation on Flow through the Everglades Ridge-Slough Mosaic. Report to the South Florida Water Management District. University of Florida, Gainesville.
- Muñoz-Carpena, R., **D. Kaplan**, and F.J. Gonzalez. 2009. Advanced Data Analysis of Shallow Groundwater Dynamics in the Loxahatchee River Floodplain. Final Project Report to the South Florida Water Management District-Coastal Ecosystems Division. University of Florida, Gainesville.
- Jawitz, J., J. Bhadha, M. Brenner, G. Brown, A. Bunch, and **D. Kaplan**. 2009. A Sustainable Approach to Preserve the Choctawhatchee Coastal Dune Lakes of Florida. Final Report to the US Environmental Protection Agency. University of Florida, Gainesville.
- Muñoz-Carpena, R., **D. Kaplan** and F.J. Gonzalez. 2008. Groundwater Data Processing and Analysis for the Loxahatchee River Basin. Final Project Report to the South Florida Water Management District-Coastal Ecosystems Division. University of Florida, Gainesville.

Selected Presentations and Posters

- Kaplan, D.**, D. McLaughlin, and M. Cohen. 2012. Managing Forests for Increased Water Yield in Florida. American Water Resources Association Annual Conference, November 2012, Jacksonville, FL.
- Kaplan, D.** 2012. Linking river, floodplain, and vadose zone hydrology to improve restoration of a coastal river impacted by saltwater intrusion. Invited talk at the 1st Annual Coastal Environmental Soil Science Conference, November 2012, St. Augustine, FL.
- Kaplan, D.** Flow Rating Curves in the Everglades ridge and slough mosaic: Exploring Landscape-Scale Hydraulic Geometry. 2012. Water, Wetlands, and Watersheds Seminar, Center for Wetlands, University of Florida, October 2012, Gainesville, FL.
- Kaplan D.**, D. Watts, J. Yuan, M. Cohen, and J. Heffernan. 2012. Hydrologic Processes in a Patterned Peatland. Invited talk at the 9th annual INTECOL Meeting, Wetlands in a Complex World, July 2009, Orlando, FL.
- Kaplan, D.**, M. Bachelin, R. Muñoz-Carpena, T. Potter, and W. Rodríguez Chacón. 2012. Multiple tracer study in a small, natural wetland in the humid tropics of Costa Rica. Poster presentation at the 9th annual INTECOL Meeting, Wetlands in a Complex World, July 2009, Orlando, FL.
- Kaplan, D.** 2011. Orientation matters: the role of landscape hydraulic geometry on coupled feedbacks between flow, depth, and ecological processes in the Everglades ridge-slough mosaic. Poster presentation at the American Geophysical Union Fall Meeting, December 2011, San Francisco, CA.
- Kaplan, D.** 2011. An ecohydrological model to assess the restoration potential of a degraded bald cypress (*Taxodium distichum* [L.] Rich.) floodplain swamp in south Florida. Water, Wetlands, and Watersheds Seminar, Center for Wetlands, University of Florida, January 2011, Gainesville, FL.
- Kaplan, D.**, R. Muñoz-Carpena, and A. Ritter. Linking the river and the floodplain: Modeling groundwater in a bald cypress swamp impacted by saltwater intrusion. American Society of Agricultural and Biological Engineers 21st Century Watershed Technology: Improving Water Quality and Environment, February 2010, Universidad EARTH, Costa Rica.
- Kaplan, D.**, R. Muñoz-Carpena, and A. Ritter. 2009. Dynamic factor modeling of floodplain hydrology in a south Florida bald cypress (*Taxodium distichum*) swamp. American Water Resources Association Conference on Managing Water Resources and Development in a Changing Climate, May 2009, Anchorage, AK.
- Kaplan, D.** 2008. Effects of restoration scenarios on the Northwest Fork of the Loxahatchee River. Poster presentation at the Greater Everglades Ecosystem Restoration Conference, July 2008, Naples, FL.

- Kaplan, D.** 2008. Soil moisture and salinity dynamics in the floodplain of the Northwest Fork of the Loxahatchee River. Fourth Biennial Loxahatchee River Science Symposium, May 2008, Jupiter, FL
- Kaplan, D.** 2004. Urban habitat restoration: the Bronx River cement plant project. Society for Conservation Biology Annual Meeting, July 2004, New York, NY.

TEACHING AND MENTORSHIP

- Adjunct Lecturer, University of Florida Dept. of Agricultural and Biological Engineering, 2011
- Graduate, University of Florida College of Agricultural and Life Sciences Teacher's College, 2011
- Teaching Assistant and Lab Instructor, Land and Water Resources Engineering, 2007
- Instructor, Introduction to Engineering, 2006 – 2010
- Mentored undergraduate students from Brazil, Guatemala, and Costa Rica during four-month internships at the University of Florida; trained students in data collection and analysis techniques and guided their development of senior graduation projects, 2007-2010
- Led hands-on worker training programs and volunteer workshops on bioengineering techniques, salt marsh ecology and restoration, water quality monitoring, and invasive plant identification and management for the New York City Department of Parks & Recreation, 2001-2005

RESEARCH PROPOSALS

- Impacts of Climate Extremes on Land-Based Sources of Pollution to Coastal and Marine Ecosystems in Florida and Hawaii (PI). \$94,900, NOAA CSI-SARP (submitted).
- Water as an Integrator of Complex Socio-Ecological Systems: Responding to Disturbance, Change, and Uncertainty. University of Florida, Water Institute Graduate Fellows Program (submitted).
- Establishing ecological observatory networks in Southeastern barrier island forests (Co-PI). \$21,500, USDA McIntire Stennis Program (awarded).
- Quantifying water yield from upland habitat restoration and management: benefits to wetlands, watersheds, and aquifers (Co-PI). \$10,470, USDA, McIntire Stennis Program (awarded).
- Coastal sentinels: Barrier islands as observatories of climate change (Co-PI). \$96,705, University of Florida Seed Opportunity Grant Program (not awarded).
- Implications of upland land management on wetland hydrologic condition (Co-PI). \$402,939, US EPA Wetlands Program Development Grant (not awarded).

HONORS AND AWARDS

- 2010 Best Dissertation Award, UF Department of Agricultural and Biological Engineering
- Graduate Student Award of Merit, Gamma Sigma Delta (Agricultural Honor Society) (April 2010)
- Student Speaker Award, FL Section, Amer. Soc. of Agricultural and Biological Engineers (July 2009)
- McNair Bostick Scholarship for Research in Agricultural and Natural Resource Systems (Feb. 2009)
- University of Florida Alumni Fellowship (2005 – 2009)
- Travel Grants: University of Florida (UF) Office of Research, UF Institute of Food and Agricultural Sciences, UF Graduate Student Council (May 2009)

PROFESSIONAL AFFILIATIONS AND SERVICE

- External Reviewer (~6 per year): Journal of Hydrology, Ecological Engineering, Journal of Environmental Management, Journal of Sustainable Watershed Science and Management, Stochastic Environmental Research and Risk Assessment
- Reviewer, Pacific Islands Regional Climate Assessment (PIRCA), Pacific Islands Regional Climate Assessment (PIRCA)

- Member, American Society of Agricultural and Biological Engineers (ASABE); co-editor, special collection from 21st Century Watershed Technology Conference (Costa Rica) in: Trans. ASABE
- Member, American Geophysical Union
- Member, American Water Resources Association
- Member, North American Colleges and Teachers of Agriculture
- Board Member and Ecology Team Chair, Bronx River Alliance (2003-2005)

TECHNICAL SKILLS

Computer/Programming: Brodgar statistical software (Dynamic Factor Analysis, NMDS, etc.), SAS, Matlab, ArcGIS, Watershed Assessment Model (WAM), Hydrus 1D/2D, CHEMFLO, MODFLOW, MT3DMS, SEAWAT, RSM, SWIFT2D, STELLA, Python, GSLib, R, some C/C++ and FORTRAN

Field: Water quality and quantity instrumentation (Hach, YSI, Marsh-McBirney, SonTek ADV, In-Situ, etc.); well/piezometer installation; soil sampling and soil moisture/salinity instrumentation (ECH₂O, Stevens); automated data logging (CR-10/10x), GPS; topographic surveying; basic plant taxonomy and wetland plant ID; hydric soils ID; basic macroinvertebrate, fish, herpetofauna, and avian sampling and ID

Language: Conversational Spanish