

RAFAEL MUÑOZ-CARPENA
DEPARTMENT OF AGRICULTURAL AND BIOLOGICAL ENGINEERING
UNIVERSITY OF FLORIDA, GAINESVILLE FLORIDA 32611-0570

Professional Preparation:

Universidad Politécnica de Madrid (European Union), Agricultural Engineering, B.S., M.S. P.E., 1989
North Carolina State University, Biological and Agricultural Engineering, Ph.D. 1993

Appointments:

2006-pres Associate Professor, Agricultural & Biological Engineering, University of Florida
2001-2006 Assistant Professor, Agricultural & Biological Engineering, University of Florida,
2000-2001 Tenured Researcher, Canary Islands Agricultural Research Institute, Spain.
1993-2000 Engineering Researcher, Canary Islands Agricultural Research Institute, Spain.
1994-2001 Adjunct Professor, University of La Laguna, Spain
1989-1993 Research Assistant, Biological and Agricultural Engineering, North Carolina State University,

Specialization:

Global Sensitivity and Uncertainty of Environmental models; surface, vadose zone and groundwater hydrology;
water quality and hydrological modeling; water conservation, surface contaminant transport through vegetation

Refereed Publications, 5 closely related and 5 significant (35 in last 5 years; 47 total, complete list at <http://carpena.ifas.ufl.edu/publications.htm>):

- Muñoz-Carpena, R., G.A. Fox and G.J. Sabbagh. 2009. Input Factor Importance and Uncertainty in Predicting Pesticide Surface Runoff Reduction with Vegetative Filter Strips. *J. Environ. Qual.* (in press).
- Nimmo, J.R., B.J. Andraski, and R. Muñoz-Carpena. 2009. UZIG/USGS research: advances through interdisciplinary interaction. *Vadose Zone J.* 8(2):411-413
- Ritter, A. C.M. Regalado and R. Muñoz-Carpena. 2008. Temporal common trends of topsoil water dynamics in a humid subtropical forest watershed. *Vadose Zone J.* 8(2):437-449
- Kiker, G.A., R. Muñoz-Carpena, P. Wolski, A. Cathey, A. Gaughan, J. Kim. 2008. Incorporating uncertainty into adaptive, transboundary water challenges: a conceptual design for the Okavango river basin. *Int. J. of Risk Assessment and Management* 10(3).
- Jawitz, J.W., Muñoz-Carpena, Rafael, Muller, Stuart, Grace, K.A., and James A.I., 2008, Development, Testing, and Sensitivity and Uncertainty Analyses of a Transport and Reaction Simulation Engine (TaRSE) for Spatially Distributed Modeling of Phosphorus in South Florida Peat Marsh Wetlands: *U.S. Geological Survey Scientific Investigations Report 2008-5029*, 109 p.
- Muñoz-Carpena, R., Z. Zajac and Yi-Ming Kuo. 2007. Evaluation of water quality models through global sensitivity and uncertainty analyses techniques: application to the vegetative filter strip model VFSSMOD-W. *Trans. of ASABE* 50(5):1719-1732.
- Ritter, A., R. Muñoz-Carpena, D.D. Bosch, B.Schaffer, T.L. Potter. 2007. Agricultural land use and hydrology affect variability of shallow groundwater nitrate concentration in South Florida. *Hydrological Processes* 21:2464-2473 (DOI: 10.1002/hyp.6483)
- Muñoz-Carpena, R., G. Vellidis, A. Shirmohammadi and W.W. Wallender. 2006. Evaluation of modeling tools for TMDL development and implementation. *Trans. of ASABE* 49(4):961-965
- Ritter, A. and R. Muñoz-Carpena. 2006. Dynamic factor modeling of ground and surface water levels in an agricultural area adjacent to Everglades National Park. *J. of Hydrology* 317(3-4):340-354. DOI: 10.1016/j.jhydrol.2005.05.025
- Regalado, C.M. and R. Muñoz-Carpena. 2004. Estimating the saturated hydraulic conductivity in a spatially variable soil with different permeameters: a stochastic Kozeny-Carman relation. *Soil & Tillage Research* 77(2):189-202.
- Ritter, A., F. Hupet, R. Muñoz-Carpena, S. Lambot and M. Vanclooster. 2003. Using inverse methods for estimating soil hydraulic properties from field data as an alternative to direct methods *Agric. Water*

Manage. 59(2):77-96.

Active Grants:

- South Florida Water Management District/ Florida Water Resources Center, Cooperative Research Assistantship Program, 04/2006 - 05/2010, \$280,000 , PI
- U.S. Department of Agriculture, CSREES, Improving water quality at the watershed level by targeting high-return stakeholders, 07/2005 - 08/2008, \$233,143 , Co-PI
- SERDP-US Dept. of Defense, Use of Multi-Scale Models, Data and Scenario Projections to Reduce Risk of Climate Change Effects and Human Disturbances on the Distribution of Nesting Snowy Plovers and Wintering Piping Plovers on Florida Military Installations, 09/2009-09/2011, \$1,484,948 , Co-PI
- US Dept. of Education/FIPSE, Water resources and watershed management in the U.S. and Brazil , 10/2008-10/2012, \$218,090 , Co-PI
- Gatorade Foundation, Collaborative International Undergraduate/Graduate Research in the Tropical Region, 10/2008-10/2012, \$81,000 , PI

Other Synergistic Activities:

- Advisory Board, UF NSF-Innovation through Institutional Integration (I3) <http://i3.institutes.ufl.edu/> (Campus wide), 2009-2012
- Advisory Board, UF Water Institute <http://waterinstitute.ufl.edu> (campus wide).
- Advisory Team (IPAT), IFAS International Programs, University of Florida.
- Advisory and Scientific Board, Spanish Unsaturated Studies group, Spain.
- Advisory Board, High Performance Computing Center, University of Florida (Campus wide)
- Associate Editor, *Transactions of ASABE* and *Applied Engineering in Agriculture* (2004-)
- Associate editor for 3 special issues of peer-reviewed journals (*Vadose Zone Journal*, *Trans. of ASABE*, *Physics and Chemistry of the Earth, Part B*)
- Co-editor of book (CRC/Lewis) with 53 international contributors from 3 continents
- American Society of Agricultural and Biological Engineers (ASABE), Member Engineer, 1993-, SW-21 Hydrology Committee Chair, 2008-2009, Member, SW-5, Publications Review Committee, 2004-
- Member, American Geophysical Union (AGU), 1993-
- USDA/NRI Panel Member FY 2003, Watershed Processes & Water Resources Program. Washington D.C.,
- USDA/ARS/ANRI Review Panel Member for the Environmental Quality Laboratory, Beltsville,. 2004.
- NSF IGERT in Okavango Delta in Africa

Collaborators & Other Affiliations:

- Collaborators in last five years: Axel Ritter, University of La Laguna (Spain); Carlos Regalado, ICIA (Spain); Julio Tejada, P. Bidegaray and Daniel Sherrard, EARTH University (Costa Rica); Marnik Vancloster, U. Louvain (Belgium); Andrea Rinaldo, EPF Lausanne (Switzerland); Claire Lavernet and Nadia Carlier, CEMAGREF (France); Juan Vicente Giraldez, U. Cordoba (Spain); Karl Vanderlinden, CIFA (Spain); Alvarez Benedi, Commission of Universities (Spain); Marlon Breve, Minister of Education (Honduras); John Nimmo, Brian Andraski, Chris Langevin and Eric Swain USGS; Adel Shirmohammadi, University of Maryland; George Vellidis, University of Georgia; David Bosch and Tom Potter, USDA-ARS; Cass T. Miler, U. of North Carolina; Bruce Schaffer, Yuncong Li; Michael Dukes, Greg Kiker, Dorota Haman, Michael Annable, Matthew Cohen, Joseph Delfino, Kirk Hatfield; Jim Jones, Jasmeet Judge, Jonathan Martin, Jim Jawitz, Ramesh Reddy, Sanjay Shukla, Wendy Graham.
- Post-Doctoral Associates sponsored in last 5 years (total=3) : Axel Ritter, Karl Vanderlinden, Andrew James, Leonor Rodriguez.
- Graduate Students Advised in last 5 years (total=15): Congrong Yu, Anna Cathey, Luis Barquin, Gareth Lagerwall, Jason Ierman, Stuart J. Muller, Yi-Ming Kuo, Leslie Gowdich, Amanda Mortl, Zuzanna Zajac, David Kaplan, Oscar Perez-Ovilla, Martin Morawietz, Axel Ritter, Jonathan Schroder