

Rafael Muñoz-Carpena, Ph.D., Distinguished Professor

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(a) Professional Preparation

Universidad Politécnica Madrid	Madrid, Spain	Agricultural Engineering	B.Sc./M.S. 1989
North Carolina St. University	Raleigh, NC, USA	Biological & Agricultural Engineer	Ph.D. 1993

(b) Appointments

2024- Distinguished Professor, Agricultural & Biological Engineering, University of Florida
2019-2020 (Sabbatical) Professor in Residence, Universidad Pública de Navarra, Pamplona, Spain
2018 Interim Chair, Agricultural & Biological Engineering, University of Florida
2011-2024 Full Professor, Agricultural & Biological Engineering, University of Florida
2010-2011 (Sabbatical) Professor in Residence, CEMAGREF (now INRAe), Lyon, France
2006-2011 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.

(c) Specialization

Complex natural human coupled systems analysis; environmental modeling system integration; global sensitivity and uncertainty of environmental models. Water quality and hydrological modeling; water conservation, surface contaminant transport through vegetation.

(d) Selected Publications (*Graduate student; **Postdoc mentored; & Corresponding author)

Impact (Google Scholar, <http://goo.gl/8OMS7s>) (see full list at <https://go.ufl.edu/v6vwx04>)

- Muñoz-Carpena, R., A. Carmona-Cabrero, Z. Yu, G.A. Fox, O. Batelaan. 2023. Convergence of mechanistic modeling and artificial intelligence in hydrologic science and engineering. *PLOS Water*. doi:10.1371/journal.pwat.0000059
- Morgan*, S., R. Huffaker, R. Giménez, M.A. Campo-Bescos, R. Muñoz-Carpena, and G. Govers. 2023. Experimental evidence that rill-bed morphology is governed by emergent nonlinear spatial dynamics. *Scientific Reports-Nature* 12:21500. doi:10.1038/s41598-022-26114-0.
- Reichenberger S.®, R. Sur, S. Sittig, S. Multsch, Á. Carmona-Cabrero, J.J. López and R. Muñoz-Carpena®. 2023. Dynamic prediction of effective runoff sediment particle size for improved assessment of erosion mitigation efficiency with vegetative filter strips. *Sci. Total Env.* 857(3):159572. doi:10.1016/j.scitotenv.2022.159572
- Muñoz-Carpena, R.®, C. Lauvernet, N. Carluer and G.A. Fox. 2021. Comment on “Modeling slope rainfall-infiltration-runoff process with shallow water table during complex rainfall patterns” by Wu et al. 2021. *J. Hydrology X* 13:100133. doi:10.1016/j.hydroa.2021.100113.
- Medina M.*, R. Huffaker, R. Muñoz-Carpena and G. Kiker. 2021. An empirical nonlinear dynamics approach to analyzing emergent behavior of agent-based models. *AIP Advances* 11:035133. doi:10.1063/5.0023116
- Nelson, N.G.*, R. Muñoz-Carpena®, and E. Philips. 2020. Parameter uncertainty drives important incongruities between simulated chlorophyll-a and phytoplankton functional group dynamics in a mechanistic management model. *Env. Modeling & Soft.* 129:104708. doi:10.1016/j.envsoft.2020.104708.
- Rodea-Palomares, I**, M. González-Pleiter, S. Gonzalo, R. Rosal, F. Leganés, M. Casellas, R. Muñoz-Carpena, F. Fernandez-Piñas. 2016. Hidden drivers of low-dose pharmaceutical pollutant mixtures revealed by the novel GSA-QHTS screening method. *Science Adv. (AAAS)* 2(9):e1601272. doi: 10.1126/sciadv.1601272.
- Shrivastava*, V., W.D. Graham, R. Muñoz-Carpena and R. Maxwell. 2014. Insights on geologic and vegetative controls over hydrologic behavior of a large complex basin - Global Sensitivity Analysis of an Integrated Parallel Hydrologic Model. *J. of Hydrology* 519(B):2238–2257.
- Chu-Agor**, M.L., J.A. Guzman, R. Muñoz-Carpena®, G.A. Kiker, I. Linkov. 2014. A simplified approach for simulating changes in beach habitat due to the combine effects of long-term sea level rise, storm erosion, and nourishment. *Env. Model. & Software* 52:111-120.

Ritter, A. and R. Muñoz-Carpena[&]. 2013. Predictive ability of hydrological models: objective assessment of goodness-of-fit with statistical significance. *J. of Hydrology* 480(1):33-45.

(e) Awards and Honors

2024 Distinguished Professor (reserved to top 1-2% of University Faculty)
2024 UF/IFAS High-Impact Research Publication Award, doi: 10.1371/journal.pwat.0000059
2024 UF/IFAS Culture of Nomination Award
2022 John Deere Gold Medal, ASABE (American Society of Agricultural and Biological Engineers)
2021 North Carolina State University CALS Outstanding Alumnus Award
2020 Fellow of AAAS (American Association for the Advancement of Science)
2018 UF/IFAS Graduate Research Excellence Award: Best Dissertation Advisor
2018 ASABE Standards Development Award, EP621 Jun2017
2017 UF Term Professorship (2017-2020)
2017 UF/IFAS High Impact Research Publication Award. *Science Adv.* doi: 10.1126/sciadv.1601272
2016 UF Postdoc Mentoring Award, UF Office of Postdoctoral Affairs
2016 FL-ASABE Distinguished Achievement Award (Amer. Soc. of Agric. & Biological Engineers)
2015 Royal Academy of Engineers of Spain, Corresponding Member (<http://raing.es>)
2015 Fellow of the ASABE (American Society of Agricultural and Biological Engineers)
2015 ASABE ADS/Hancor Soil Water Engineering National Award.
2013 UF Water Institute Faculty Fellow (<http://waterinstitute.ufl.edu/people/facultyfellows.html>)
2013 National Postdoctoral Association (NPA) Mentoring Award, <https://goo.gl/PVBh1y>
2013 EWRI-ASCE Best Paper Award, *J. Irr. and Drain. Eng.*
2011 UF Research Foundation Professor
2010 Junior Faculty Award of Merit Gamma Sigma Delta, Honor Society of Agriculture
2009 FL-ASABE Special Recognition Award (American Society of Agric. & Biological Engineers)
2008 UF/IFAS LEAD Diploma
2008 UF/IFAS International Achievement Award
2008 Teacher's College Diploma, College of Agriculture and Life Sciences (CALS)
2003 Certificate of Appreciation, USDA-Foreign Agricultural Service
1999 Paper of ASAE Award, Hydrology Mini-Symposium.

(f) Other Synergistic Activities:

1. *Journal and Book Editor*: Editor-in-Chief (current), Elsevier's *Journal of Hydrology Regional Studies*; Associate Editor, 2004-2010 *Transactions of ASABE and Applied Engineering in Agriculture*; 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 CRC/Lewis book with 53 international contributors.
2. *Research Advisory Board Membership*: 2021- Organization for Tropical Studies, Board of Directors (OTS); 2009-2012, UF Water Institute (campus wide); 2002- , Spanish Unsaturated Studies group ZNS, Spain; 2012-2014, UF/IFAS Dean of Research; UF/IFAS International Programs; 2008-, High Performance Computing Center, University of Florida (Campus wide); Ext. Advisory Board, 2015-2018, Inst. for Earth System Research (IISTA), Spain.
3. *NSF Funded Student development*: NSF GRF doctoral advisor, Ms. N. Nelson (started Fall 2012); NSF-REU Program, Summer 2012, faculty mentor for Wen Yang; Advisory Board 2009-2012, NSF-Innov. through Institutional Integration (I3); 2007-2011 NSF IGERT doctoral advisor, A.C. Linhoss
4. *Scientific and Professional Societies*: American Association for the Advancement of Science (AAAS), Fellow 2020, Member 2012-; American Society of Agricultural and Biological Engineers (ASABE), Fellow ASABE, 2015-, Member Engineer, 1993-, Chair Natural Resources and Environmental Systems Division NRES-02, NRES-21 Hydrology Chair, 2008-2009, Member, SW-5, Publications Review Committee, 2004-; Member, American Geophysical Union (AGU), 1993-.
5. *Federal Projects Panelist*: NSF, USDA/ARS, USDA/NRI, EPA, NAS.