Rafael Muñoz-Carpena, Ph.D., 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,	Biological & Agricultural Engineer	Ph.D. 1993

(b) Appointments

2018 Interim Chair, Agricultural & Biological Engineering, University of Florida	
2011-pres. Full Professor, Agricultural & Biological Engineering, University of Florida	
2010-2011 (Sabbatical) Professor in Residence, CEMAGREF (now Irstea), 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 chair; **Postdoc mentored; & Corresponding author) *Impact* (Google Scholar, <u>http://goo.gl/80MS7s</u>): citations= 11400, h-index= 52, i10-index= 161

- 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. <u>doi:10.1038/s41598-022-26114-0</u>.
- 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. <u>doi:10.1016/j.scitotenv.2022.159572</u>
- Muñoz-Carpena, R. [&], C. Lauvernet, N. Carluer and G.A. Fox. 2021. Comment on "Modeling slope rainfallinfiltration-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. Phlips. 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.
- Huffaker, R., R. Muñoz-Carpena, M. Campo-Bescos and J. Southworth. 2016. Demonstrating correspondence between decision-support models and dynamics of real-world environmental systems . Env. Modeling & Soft. 83:74-87, doi:10.1016/j.envsoft.2016.04.024
- 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 UF/IFAS High-Impact Research Publication Award. PLOS Water, 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, Univ. of Florida (Campus wide); Ext. Advisory Board, 2015-2018, Inst. Earth Syst. Res. (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.