

JONATHAN MUÑOZ BARRETO

Associate Professor

Department of Civil Engineering and Surveying

University of Puerto Rico at Mayagüez

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EDUCATION

The City College of the City University of New York, New York, NY
Ph.D. Civil Engineering (Water Resources/Remote Sensing) Sept 2014
Advisor: Dr. Reza Khanbilvardi

The City College of the City University of New York, New York, NY
M.Phil. Civil Engineering (Water Resources/Remote Sensing) Feb 2014

University of Puerto Rico, Mayagüez, PR
B.Sc. Land Surveying and Topography June 2009

EXPERIENCE

University of Puerto Rico, Mayaguez, PR
Interim Dean of Students Jan 2019 – Present

- Oversee the strategic planning, budgeting and allocation of funds.
- Plan and direct university activities related to student services and campus life.
- Coordinate health services, financial aid, placement, exchange programs, social activities, university musical groups other university programs related to student services.
- Serve as a liaison between college administrators and student organizations, such as a student council.

Interim Associate Dean of Academic Affairs, Director of Graduate Studies Sept 2019 – Jan 2019

- Plans and directs university activities related to the office of graduate studies.
- Coordinate recruitment, admission and the graduate council.

University of Puerto Rico, Mayagüez, PR - Department of Civil Engineering and Surveying
Associate Professor July 2019 - Present

- Teach undergraduate and graduate courses in geomatics, water resources and remote sensing.
- Supervise undergraduate and graduate students.
- Develop and implement an extramurally funded research program.

Assistant Professor July 2014 - 2019

U.S. Army Corps of Engineers, New York District (USACE), NY
Project Planner – Watershed & Coastal/Plan Formulation Branch June 2013- Aug 2014

- Coordinated previously authorized coastal/fluvial storm damage reduction projects.
- Established if projects were economically justifiable, technically feasible and environmentally acceptable.

The City College of the City University of New York, New York, NY
Graduate Research Assistant (Mentor: Dr. Reza Khanbilvardi) Aug 2009 - June 2014

- Developed new techniques to estimate snow-pack properties using satellite microwave remote sensing.
- Participated in outreach activities (K-12).

University of Puerto Rico, Mayagüez, PR
Undergraduate Research Assistant 2007-2009

- Assisted faculty members of the Department of Agro-Environmental Sciences, during the collection and analysis of soil samples.

INSTITUTIONAL GRANTS – Submitted with collaboration of the Dean of Students Office

- 2018 Emergency Assistance to Institutions of Higher Education Program (Department of Education; **\$6.3M** UPRM/**\$830K** Department of Counseling and Psychological Services; 03/2019-02/2021)

CURRENT GRANTS

- Building Capacity: A Collaborative Undergraduate STEM Program in Resilient and Sustainable Infrastructure (Role: **Co-PI**; *NSF*; **\$1.1M**; 10/2019-09/2023)
- NOAA Center for Earth System Sciences & Remote Sensing Technologies (Role: **Co-PI**; *NOAA/EPP/CUNY*; **\$1.2M**; 09/2016-08/2021)

PAST GRANTS

- Cover Crops and Precision Agriculture Management Effects on Giant Key Lime Grown on Contrasting Soil (Role: **Co-PI**; *USDA/NIFA*; **\$50K**; (04/2017-03/2019)
- Supplemental Hurricane Maria: Coastal Erosion Assessment, (UAVs) for: A Case Study of Western Puerto Rico Coastal Region (Role: **PI**; *NOAA/Sea Grant*; **\$12K**; (11/2017-07/2018)
- Coastal Ecosystem Assessment, Development and Creation of a Policy Tool using Unmanned Aerial Vehicles (UAVs) for: A Case Study of Western Puerto Rico Coastal Region (Role: **PI**; *NOAA/Sea Grant*; **\$74K**; 08/2016-07/2018)
- Validation and Application of JPSS/GCOM-W Soil Moisture Data Product for operational flood monitoring in Puerto Rico (Role: **PI**; *NOAA/JPSS*; **\$75K**; 07/2015-06/2017)
- Mapping Field-Scale Soil Moisture Using Ground-Based L-Band Passive Microwave Observations in Western Puerto Rico: Phase 1 & 2 (Role: **PI**, *PRWRERI*, **\$40K**; 03/2015-02/2017)

UNIVERSITY SERVICE

- University of Puerto Rico at Mayagüez Administrative Board
 - Member: Interim Dean of Students
- Academic Senate:
 - Ex-Officio Academic Senator
- Institutional Committees:
 - Institutional Research Committee (Sept 2019 – Jan 2019)
 - Institutional Review Board (Sept 2019 – Present)
 - Graduation (Jan 2019 – Present)
 - Law 250 (Jan 2019 – Present)
 - Students Affairs -Academic Senate (Jan 2019 – Present)
 - Special Admissions for athletes & students with special abilities (Jan 2019 – Present)
 - Administrative Board “Liga Atlética Interuniversitaria” (Jan 2019 – Present)
 - Steering Committee “Justas-LAI” (Jan 2019 – Present)
 - Executive Operational Emergency Committee (Jan 2019 – Present)
- Departmental Committees:
 - Library, Methods of Teaching and audiovisual aids (2014 – Present)
 - Awards and Medals (2016, 2017)
 - Graduate Studies (2017 – Present)

AWARDS/RECOGNITIONS

- USACE- ERDC Invited Subject Matter Expert/Technical Reviewer 2017 & 2018
- Distinguished Faculty Department of Civil Engineering and Surveying 2017-2018

AWARDS/RECOGNITIONS (Continue)

- Professional Excellence and outstanding voluntary service Award, *NOAA-CREST* 2013
- Science Fellowship, *City University of New York* 2010 – 2014
- Alfred P. Sloan Scholarship for minority PhD Students, *Sloan Foundation* 2010 – 2014
- NOAA CREST Fellowship, *City College of New York* 2009 – 2014

PUBLICATIONS

- Aponte, L., **Muñoz, J.**, & Villafañe, F. (2018). Huracán María: Sinopsis y Análisis Preliminar del Impacto en la Infraestructura de Puerto Rico. *Dimension -CIAPR*, Año 32, Volumen 1.
- Nuñez, J., **Muñoz, J.**, Tirado, R., Lakhankar, T., & Fisher A (2017). Comparison and Downscale of AMSR2 Soil Moisture Products with In Situ Measurements from the SCAN–NRCS Network over Puerto Rico. *Hydrology*. 2017; 4(4):46.
- Nilawar, A., Calderella, C., Lakhankar, T., Waikar, M., & **Muñoz, J.** (2017). Satellite Soil Moisture Validation Using Hydrological SWAT Model: A Case Study of Puerto Rico, USA. *Hydrology*, 4(4), 45.
- Pérez Díaz, C. L., Lakhankar, T., **Muñoz, J.**, Khanbilvardi, R., & Romanov, P. (2017). Evaluation of MODIS land surface temperature with in situ snow surface temperature. *International Journal of Remote Sensing*, 38 (16), 4722–4740.
- Pérez Díaz, C. L., **Muñoz, J.**, Lakhankar, T., Khanbilvardi, R., & Romanov, P. (2017). Proof of Concept: Development of Snow Liquid Water Content Profiler Using CS650 Reflectometers at Caribou, ME, USA. *Sensors*, 17(3), 647.
- Pérez Díaz, C. L., Lakhankar, T., Romanov, P., **Muñoz, J.**, Khanbilvardi, R., & Yu, Y. (2015). Near-surface air temperature and snow skin temperature comparison from CREST-SAFE station data with MODIS land surface temperature data. *Hydrology and Earth System Sciences Discussions*, 12, 7665-7687.
- Corona, J. A. I., **Muñoz, J.**, Lakhankar, T., Romanov, P., & Khanbilvardi, R. (2015). Evaluation of the Snow Thermal Model (SNTHERM) through Continuous in situ Observations of Snow's Physical Properties at the CREST-SAFE Field Experiment. *Geosciences*, 5(4), 310-333.
- **Muñoz, J.**, Infante, J., Lakhankar, T., Khanbilvardi, R., Romanov, P., Krakauer, N., & Powell, A. (2013). Synergistic Use of Remote Sensing for Snow Cover and Snow Water Equivalent Estimation. *British Journal of Environment and Climate Change*, 3(4), 612.
- Lakhankar, T. Y., **Munoz, J.**, Romanov, P., Powell, A. M., Krakauer, N. Y., Rossow, W. B., & Khanbilvardi, R. M. (2013). CREST-Snow Field Experiment: analysis of snowpack properties using multi-frequency microwave remote sensing data. *Hydrol. Earth Syst. Sci.*, 17, 783-793.

CONFERENCE PROCEEDINGS AND PRESENTATIONS

- Lopez, C., Cavallin, H., Suarez, O., Perdomo, J., **Muñoz, J.**, & Andrade, F. (2019). *Developing a Collaborative Undergraduate STEM Program in Resilient and Sustainable Infrastructure*. 2019 ASEE Annual Conference & Exposition: Tampa, Florida. (Conference Proceeding)
- **Muñoz, J.**, Valle, J., & Lakhankar, T. (2019). *Fully Coupled Atmospheric-Hydrological Modeling at Watershed Scale: A Case Study with WRF-Hydro for Western Puerto Rico*. AMS 33rd Conference on Hydrology, Phoenix, Arizona. (Poster)

CONFERENCE PROCEEDINGS AND PRESENTATIONS (Continue)

- Lopez, C., Cavallin, H., Suarez, O., Perdomo, J., **Muñoz, J.**, & Andrade, F. (2018). Resilient Infrastructure and Sustainability Education -Undergraduate Program, Accelerating the Impact of HIS STEM Education and Research on Innovation Ecosystems, Mayaguez, Puerto Rico. (Oral and Poster)
- Ramamurthy, P., **Muñoz, J.**, Hosannah, N., Tirado-Corbala, R., Marti, J. A., Rivera, J. A. (2018). The Impact of Hurricane Maria on Puerto Rico's Land Cover and Local Convective Processes. American Geophysical Union, Fall Meeting 2018, Washington D.C. (Poster)
- J. Nuñez, **J. Muñoz**, T. Lakhankar and R. Tirado-Corbala. (2017): Test and Validation of Different Methods for Soil Moisture Estimation in Puerto Rico Soils. Workshop at MOISST. May 23-25, 2017. Stillwater, Oklahoma. (Poster)
- **J. Muñoz**, & T. Lakhankar (2016): Evaluation of the JPSS GCOM-W Soil Moisture Product in the Caribbean region. Cooperative Institute for Climate and Satellites Science Conference, University of Maryland, Nov 29, 2016. College Park, MD. (Poster)
- **J. Muñoz**, T. Lakhankar, X. Zhan and R. Tirado-Corbala. (2016): Mapping Field-Scale Soil Moisture Using Ground-Based L-Band Passive Microwave Observations in Western Puerto Rico. Workshop at MOISST. May 17-18, 2016. Stillwater, Oklahoma. (Oral Presentation)
- **J. Muñoz**, & C. Neris (2016): Coastal Ecosystem Assessment using Unmanned Aerial Vehicles (UAVs) at Eastern Puerto Rico. NOAA in The Caribbean Partners Meeting. May 9-11, 2016. San Juan, Puerto Rico. (Poster)
- G Zeng, **Muñoz J.**, T. Lakhankar (2014): Inter-Annual Comparison of Satellite Passive Microwave Data with Ground based Radiometric Measurement, 94th American Meteorological Society Annual Meeting, Atlanta, GA, February 2, 2014. (Poster)
- **Muñoz J.**, T. Lakhankar, P. Romanov and R. Khanbilvardi (2013): Improvement of Microwave Emission Model using Long Term Field Observations, SHPE Annual Conference, Environmental Sustainability and Earth Systems Engineering Research Symposium (November 1-2, 2013), Indianapolis, IN. (Oral Presentation)
- Lakhankar T., **J. Muñoz**, P. Romanov, R. Khanbilvardi, and A. Powell (2013): CREST-Snow Analysis and Field Experiment (CREST-SAFE): Continuous In Situ Observations of Snow Physical Properties and Microwave Emission, 27th Conference on Hydrology, American Meteorological Society Annual Meeting, 6–10 January 2013 in Austin, TX. (Poster)
- Lakhankar T., **J. Muñoz**, P. Romanov, and D. R. Khanbilvardi (2012): NOAA-CREST Field Experiment: Remote Sensing of Snow Properties Using Microwave Radiometry, 26th Conference on Hydrology, 92nd American Meteorological Society Annual Meeting (January 22-26, 2012). (Poster)
- **Muñoz J.**, Lakhankar T., P. Romanov, A. Powell and R. Khanbilvardi (2012): CREST-Snow Analysis and Field Experiment (CREST-SAFE): Continuous In Situ Observations of Snow Physical Properties and Microwave Emission, presented at Microwave Remote Sensing of Snow II, American Geophysical Union, C21A-0560, San Francisco, CA, December 2012. (Poster)
- **Muñoz J.**, Lakhankar T., P. Romanov, and R. Khanbilvardi (2012): CREST-Snow Field Experiment: analysis of snowpack properties using multi-frequency microwave remote sensing data, 69th Annual Meeting of the Eastern Snow Conference Claryville, New York, June 5-7, 2012. (Oral Presentation)

INVITED SPEAKER

- **Muñoz J.**, (2017): *Coastal Ecosystem Assessment, Development and Creation of a Policy Tool using Unmanned Aerial Vehicles (UAVs)* Presented at NOAA Emerging Technologies Workshop, College Park, Maryland, Aug 22, 2017.
- **Muñoz J.**, (2015): *Satellite Data for Hydrological Variables*, Presented at National academy of sciences Committee on Radio Frequencies, Arecibo, PR, October 15, 2015 (Oral Presentation)
- **Muñoz J.**, (2014): *Microwave Radiometry for snowpack properties*, Presented at the NASA Goddard Space Flight Center-Cryosphere Group, Greenbelt, MD, February 11, 2014. (Oral Presentation)
- **Muñoz J.**, (2012): *Remote Sensing for Snow Studies*, Presented at University of Maine, Presque Isle, ME, March 22, 2012. (Oral Presentation)

VISITING SCIENTIST

- Early Scientist Career Exchange Program, Cooperative Institute for Research in the Atmosphere (CIRA), Colorado State University, Fort Collins, CO, August 2010

TEACHING

University of Puerto Rico, Mayaguez, PR

- INCI 4001 Geomatics I
- INCI 4081 Photogrammetry
- INCI 4088 Cartography
- INCI 4135 Elements of Optics and Remote Sensing in Geospatial Science
- INCI 4998 Undergraduate Research - Geospatial Mapping using UAV's
- INCI 5995/6997 Remote Sensing for Water Resources
- INCI 6065 Engineering Project

RESEARCH ADVISOR / POSTGRADUATE-SCHOLAR MENTOR

University of Puerto Rico, Mayaguez, PR

- Jonathan Nuñez (M.Sc. – June 2017)
- Glorimar Torres (M.Sc. – June 2018)
- Grace M. Diaz (M.Sc. – June 2019)
- Victor Berrios (M.Sc. – June 2019)
- Jean P. Valle (M.Sc. – June 2019)

TECHNICAL SKILLS

- RUMAD and NEXT
- Programing Languages: MatLab and Python.
Web Design: WordPress and Dreamweaver
- Design Software: Arc Map, QGIS, PIX4D, DataMapper, HEC-RAS, HEC-HMS, HEC-FIA and ENVI.

PROFESSIONAL MEMBERSHIPS

- American Geophysical Union (AGU)
- American Society Photogrammetry and Remote Sensing (ASPRS)

EDITORIAL ACTIVITIES

- Reviewer: Remote Sensing Journal, Sensors Water, International Journal of Geo-Information, Journal of Natural Disasters, Accidents and Civil Infrastructure and IEEE – JSTARS.