#### **CURRICULUM VITAE**

#### JORGE E. GONZÁLEZ-CRUZ, Ph.D.

Presidential Professor The City College of New York New York, NY, 10031 Tel/Fax (212)650-5279/(212)650-8097 Mobile (516)984-9613

E-mail: jgonzalezcruz@ccny.cuny.edu

#### **EDUCATION**

Ph.D. in Mechanical Engineering, 1994Georgia Institute of Technology, Atlanta, GAM.S. in Mechanical Engineering, 1989University of Puerto Rico, Mayagüez, PRB.S. in Mechanical Engineering, 1987University of Puerto Rico, Mayagüez, PR

#### **RESEARCH INTERESTS**

Heat transfer applied to environmental flows; technologies for sustainable buildings and cities; urban and regional climate and weather.

#### **TEACHING INTERESTS**

Heat transfer; thermodynamics; HVAC; renewable energy; urban boundary layer flows; environmental modeling; urban energy processes.

#### **PROFESSIONAL EXPERIENCE**

- June 2022-Present, SUNY Empire Innovation Professor of Atmospheric Sciences, University of Albany, NY
- September 2019-Present, Presidential Professor of The City College of New York, NY
- March 2008-Present, NOAA-CREST Professor of Mechanical Engineering, City College of New York, NY
- May 2016-Present, Visiting Senior Scientist, Beijing Institute of Urban Meteorology
- August 2016-Present, Senior Scientist (Joint Appointment), Brookhaven National Lab, Brookhaven, NY
- September 2003-August 2008, Professor and David Packard Scholar, Department of Mechanical Engineering, Santa Clara University, Santa Clara, CA
- June 2000-August 2003, Chair, Department of Mechanical Engineering, UPR Mayagüez, PR
- July 2002 July 2005, Professor, Department of Mechanical Engineering, UPR Mayagüez, PR
- July 1997 June, 2002, Associate Professor, Department of Mechanical Engineering, UPR Mayagüez, PR
- January 94 June 1997, Assistant Professor, Department of Mechanical Engineering, UPR Mayagüez, PR
- Summer 2005-2006, NASA Summer Faculty Fellow, Ames Research Center, Mountain View, CA
- Summer 2004, NASA Summer Faculty Fellow, Marshall Space Flight Center, Huntsville, AL
- Summer 2000-2002, Summer Faculty Fellow, Army Research Laboratory, Adelphia, Maryland
- July-August 1996, Visiting Researcher, Los Alamos National Laboratory, Los Alamos, NM
- Summer 1995, Summer Faculty Fellow, Argonne National Laboratories, Chicago, IL
- Fall 1993, Visiting Researcher, Sandia National Laboratories, Albuquerque, NM
- Winter 90 Summer 1993, Research Assistant, Georgia Institute of Technology, Atlanta, GA
- Spring 92, Woodruff Teaching Fellow, Georgia Institute of Technology, Atlanta, GA
- January 88 August 89, Research Assistant, Center for Energy and Environmental Research, Mayagüez, PR
- January 87 May 87, Pneumatic Controls Engineer, Puerto Rico Electric Power Authority Cataño Plant, PR

## **PROFESSIONAL AFFILIATIONS**

- American Society of Mechanical Engineering (ASME), Fellow Member
- American Meteorological Society (AMS), Member and Co-Chair of the Board on Urban Environment
- International Association for Urban Climate, Member and Member of the Board of Directors
- Phi-Kappa-Phi National Honor Society

## ACADEMIC AND PROFESSIONAL AWARDS

- Presidential Professor of the City College of New York (2019-Present)
- Fellow Member Grade of ASME (2012)
- Distinguished Professor of the Mechanical Engineering Department for 1998-1999 Academic Year
- Georgia Tech Hispanic Engineer of the Year (1991-1992)
- Georgia Tech President's Fellowship (1989 1993)
- Patricia Robert Harris Fellowship (1989-1992)
- Puerto Rico Economic Development Administration Scholarship (1989-1993)
- National Hispanic Scholarship Fund Fellow (1988)

## ACADEMIC INSTITUTIONAL SERVICES

- Chair, College Wide Initiative on Diversity, Inclusion and Respect (2018-Present)
- Academic Senate, Member of Executive Committee, City College of New York (2014-2017)
- Various and Continuous Academic Hiring Search Committees for; *Faculty*; *Distinguished Faculty*, *Provost for Research*, *Dean of Arts and Humanities*, *Chief Librarian*, *President of City College of New York*.
- President Graduate Committee, Department and Engineering Faculty-UPRM (1998-2000)
- President Research Committee, Engineering Faculty-UPRM (1996-1998)
- Accreditation Bodies for ABET and Middle State Accreditation

## NATIONAL AND INTERNATIONAL PROFESSIONAL SERVICES

- Member Department of Homeland Security Task Force on Sustainability (2012-present)
- Member Advisory Board of US Department of Energy for Buildings of the Future (2014-present)
- Member of the International Association of Urban Climate, Executive Committee (2018-present)
- Member of New York City Panel on Climate Change (2015-2020)
- Lead Organizer for the 10<sup>th</sup> International Conference of Urban Climate (August 2018, New York City)
- Member of the Scientific Board for the Climate Change Program for the Intra-Americas (IASCLIP)
- Vice-Chair American Meteorological Society Board on Urban (2010-2020)
- Chair of ASME Research Committee on Sustainable Buildings (2011-present)
- Member Executive Committee ASME Solar Energy Division (2006-2011)
- General Chair 2009 ASME Energy Sustainability Conference
- General Technical Track Leader for ASME Energy Sustainability Conference 2008
- Program Leader Santa Clara University Team for the Solar Decathlon Event (2006-2007)
- Chairman of the Heating and Cooling Division of the ASME Solar Energy Division (2000-2010)
- Program Leader of the University of Puerto Rico Team for the Solar Decathlon Event (2001-2002)
- President of the Latin American Congress for Heat and Mass Transfer (2001-2002)
- Chairman for the 1999 Caribbean Solar Energy Society Conference, San Juan, PR
- Member of Board for the PR Economic Development Scholarship (1996-2002)
- Chairman of the Third Annual Alliance for Hispanic Engineering Advancement Conference, Mayagüez, PR, 1995

## **COURSES TAUGHT AND DEVELOPED**

#### Undergraduate Courses

• Thermodynamics I; Thermodynamics II; Thermal Design (Developed); Heat Transfer; Thermal Sciences Laboratory; HVAC; Hydrometeorology (Developed); Environmental Sustainability and Social Justice (Developed).

#### Graduate Courses

• Two-Phase Flows (Developed); Intermediate Fluid Mechanics (Developed); Conduction Heat Transfer; Radiation Heat Transfer; Solar Thermal Energy; Gas Dynamics; Energy Conversion; Turbulent Flows; Environmental Modeling (Developed); Sustainable Energy Conversion Systems (Developed).

#### Special Courses

- Solar Thermal Energy, Short Course for ASME Professional Chapters
- Thermal Management in Electronic Packaging
- Thermally Efficient Buildings for the Caribbean-A short course- Havana, Cuba, April 20-22, 2000
- Gas Droplet Flows, A short course as part of the course "Modern Trends in Heat Transfer" a Panamerican Studies Institute NSF Project, San Luis Potosi, Mexico, July 10-21, 2000.
- A Short Course in Hydrometeorology. Instituto Tecnológico de Santo Domingo. January 2011.

## **EDITORIAL BOARDS & PEER-REVIEW SERVICE**

- Founding Editor, ASME J. of Sustainable Buildings and Cities (2019-Present)
- Associate Technical Editor for Buildings, ASME J of Solar Energy Engineering (2015-2020)
- Editorial Board, Journal of Urban Climate (Elsevier; 2018-Present)
- Editorial Board, Advances in Meteorology (2015-Present)
- Guest Editor, ASME J of Solar Energy Engineering, Special Issue on Sustainable Buildings (2013)
- Technical Reviewer for Bulleting of the American Meteorological Society (2017-present)
- Technical Reviewer for the National Science Foundation (1998-Present)
- Technical Reviewer for the US Department of Energy Building Technology Office (2010-Present)
- Technical Reviewer for the US Environmental Protection Agency, P3 Program (2014-Present)
- Technical Reviewer for the Journal of Heat Transfer (1999-Present)
- Technical Reviewer of AMS Journal of Applied Meteorology (2006-Present)
- Technical Reviewer of J. of Atmospheric Environment (2005-Present)
- Technical Reviewer for J. of Geophysical Research (2012-present)

## PATENTS (7)

- Compact Solar Air Conditioning System, J.E. González, G. Beauchamp. US Patent No. 6539738. 2003.
- Automation and Control of Solar Air Conditioning Systems, J.E. González, G. Beauchamp, and L. Meléndez. US Patent 6536677. 2003.
- Bioaerosol Fluorescence Detection Device, US Patent No. 7,152,469. 2009.
- Optical sensor for the instantaneous detection and identification of bioaerosols, US Patent No. 8013984, 2011.
- Method for forecasting energy demands that incorporates urban heat island. JE González et al. U. S. Patent Pending No.: 14/530,099, 2014.
- Method to forecast building energy loads balance from renewable resource and electrical grid. Application no. 62398099 (2016).
- Solar powered water purification device with cylindrical structure US Patent Pending at 10,150,050 B2. A. Sadegh, J.E. González, J. D'Alba, G. St. Pierre. 2018.

#### MASTERS THESIS SUPERVISED

1. Studies of Steady-State High-Heat-Fluxes in Spray Cooling by Lester R. Ortiz, May 1997.

- 2. Analysis and Simulation of Solar-Assisted Air Conditioning and Dehumidification Systems for Applications in Puerto Rico by Horvin R. Hernández Ramos, November 1997.
- 3. Study of the Thermal Behavior of a Printed Circuit Board During the Reflow Process Inside a Surface Mount Technology Oven by Heriberto Pérez Soto, May 1998.
- 4. Experimental Investigation of Solar Air Conditioning Systems for Tropical Applications, by José. I. Meza Pereira, May 1998.
- 5. Measurements of Temperature of Falling Droplets for Spray Cooling Applications by Sergio Escobar, December 1999.
- 6. Mathematical Modeling of an Actual PCB in Reflow Ovens by Angel Marrero, December 1999
- 7. Development of a Heat Flux Correlation for Spray Cooling by Eduardo Cabrera, May 2000
- 8. Characterization of the Deposition Process of Spray Forming in Linear Atomizers by Pedro A. Pérez, December 2000
- 9. Characterization of In-Flight Droplets Generated by Thermal Ink-Jet Print Heads by Manuel Parrado, December 2000
- 10. Mathematical Modeling of Actual PCB's in Reflow Ovens Including Solder Paste Effects by Antonio Tavárez, April 2001.
- 11. Atmospheric Modeling of the Caribbean Region: Precipitation and Wind Analysis in Puerto Rico for April 1998 by Daniel Comarazamy, December 2001.
- 12. Experimental Investigation of Saturated Turbulent Buoyant Jets by Horacio Altagracia, December 2001.
- 13. Urban Heat Island Study for the City of San Juan, Puerto Rico by Alexander Velázquez, June 2002.
- 14. Solar Air Conditioning Systems with PCM Solar Collectors by Luis H. Alva-Solaris, July 2002.
- 15. Measurement of temperatures on in-flight water droplets by laser induced fluorescence thermometry by Victor Salazar, January 2003.
- 16. Fluid Flow Modeling of Ink-Jet Storage Devices by Gerardo Carbajal, May 2003.
- 17. Dynamic reduced electrothermal model for integrated power electronics modules (IPEM) by Madelaine Hernández, May 2004.
- 18. An assessment of future Caribbean climate change using "business as usual" scenario by coupling global circulation and regional atmospheric models by Moisés Angeles, July 2005.
- 19. Impacts of low land use on a tropical montane cloud forest under a changing coastal climate by Isaac Torres-Díaz, December 2007.
- 20. PCM storage systems for solar A/C by Rabindra Pokhrel, December 2008.
- 21. Forecasting energy demands in dense urban environments. Yehisson Tibana. May 2015.
- 22. Impacts of climate change in the water resources of Dominican Republic. Ambar Mesa. December 2018.
- 23. An under-ground parameterization for urban climate models. Harold Gamarro. May 2020.
- 24. Heat Index Climatology for the CONUS and Meso-America. Qurat Faiz, May 2021.

## PHD THESES SUPERVISED

- 1. Daniel Comarazamy. Impacts of land use in a tropical coastal environment. 2010; Santa Clara University.
- 2. Bereket Lebassi. Changes of California coastal environment due to global warming and land use. 2010; Santa Clara University.
- 3. Sergio Escobar. On-limits of spot cooling for high heat flux removal. March 2012; Santa Clara University.
- 4. Nathan Hosannah, Cloud aerosol interaction in coastal urban environments. December 2013. The City College of New York.
- 5. Estatio Gutierrez, A high resolution mesoscale model for complex urban environments. June 2015. The City College of New York.
- 6. Pedro Sequera, Energy-climate nexus for Coastal California in a changing climate. May 2015. The City College of New York.
- 7. Luis Ortiz, Extreme heat events and impacts on energy infrastructure in the Northeast Corridor. 2018. The City College of New York.
- 8. Rabindra Pokhrel, Climate-energy nexus in tropical coastal environments. 2020. The City College of New York.

- 9. David Melecio-Velázquez, On the convective urban boundary layer. 2021. Expected. The City College of New York.
- 10. Equisha Glenn, Water budgets variability in the Meso-Americas. 2021. Expected. The City College of New York.
- 11. Salvador Del Coss, Modeling and analysis of extreme weather processes in tropical coastal environments. 2022. Expected. The City College of New York.
- 12. Juan Pablo Montoya, Modeling impacts of extreme weather processes on the power infrastructure. 2023. Expected. The City College of New York.
- 13. Harold Gamarro, An new urbanized scheme for air quality forecasts. 2024.

## POST-DOCTORAL FELLOWS SUPERVISED AND SPONSORED

- Daniel Comarazamy, 2011-2014.
- Nathan Hosannah, 2014-2017.
- Moises Angeles-Malaspina-2015-2017.

#### SPONSORED VISITING SCHOLARS

- Prof. Alvaro Lentz, 2015-2016 Visiting Faculty. Autonomous University of the City of Mexico, Energy Program.
- Dr. Miao Yu, Beijing Institute of Urban Meteorology. Summer 2016.

#### **COLLABORATORS**

- CUNY-CCNY–Mark Arend, Fred Moshary, Barry Gross, Reza Khanbilvardi, Michael Bobker, Christian Volkmann, Nicholas Madamopoulos, Ali Sadegh, Kyle McDonald, Charlie Vorosmarty
- U. of Colorado-Moncef Krarti
- Arizona State University-Agami Reddy
- U. of Puerto Rico-Mayagüez, Ramón Vásquez, Eric Harmsen, Hamed Parsiani, Rafael Rodríguez-Solis
- U. of Texas-El Paso, Miguel Vélez-Reyes
- Santa Clara U.-Edwin Maurer, Tim Hight, Drazen Fabris
- San José State University, Robert Bornstein
- University of Texas-Austin, Dev Niyogi
- Beijing Institute of Meteorology Dr. S. Miao
- EPA Ed Linky
- USDOE-Wei Wu (BNL), Pat Phelan (BTO), Martin Schoonen (BNL), Mike Jensen (BNL)
- NOAA-Thomas Smith (NESDIS), Daniel Comarazamy (NESDIS), Bob Yue (NESDIS), Peng Yu (NESDIS), Brian McDonald (ESRL)
- NASA Jeff Luvall, Rema Nemani, Cristina Milesi, Douglas Rickman
- New York University-Masoud Ghandehari
- Arecibo Observatory Craig Tepley, Shikha Raizada
- Dominican Republic- Yolanda León (INTEC), Solhanlle Bonilla (INTEC)
- Spain-CIEMAT, Alberto Martilli
- México, Eduardo Rincón (UACM), Alvaro Lentz (UACM)

#### **GRADUATE ADVISORS**

- PhD Advisor William Z. Black Geo
- MS Advisor Luis Perez-Alegría
- Georgia Tech University of Puerto Rico Mayaguez

## EXTERNAL FUNDED RESEARCH (more than \$30,000,000 as PI, More than \$60,000,000 as Co-PI)

Selection of Pending (PI)

• NSF- CoPe Hub for Resilient, Equitable, and Sustainable Coastal/Urban Environments (RESCUE)). Principal Investigator, \$15,000,000 (in partnership with University of Puerto Rico-Mayagüez, Princeton University, University of Texas-Austin, University of South Carolina). 2021-2026.

## Past and Current

- "Study of Spray Cooling Prior to Impact on a Hot Surface: A National Science Foundation Minority Research Initiation Planning Grant," Principal Investigator (PI). Sponsor: National Science Foundation (NSF). Total Amount: \$17,000, 1994.
- "Study of Droplet Sprays Prior to Impact a Heated Horizontal Surface," **PI.** Sponsor: Department of Defense. Total Amount: **\$5,000,** 1994.
- "Development of an Hybrid Solar-Assisted Air Conditioning System for the Tropics," **PI**. Sponsor: Sandia National Labs. Total Amount: **\$10,000**, 1994-1995.
- "A Solar-Assisted Air Conditioning and Dehumidification System for Applications in Puerto Rico," **PI.** Sponsor: US Department of Energy, Puerto Rico Administration of Energy Affairs. Total Amount: **\$37,000**, 1995-1996.
- "A Solar-Assisted Air Conditioning and Dehumidification System for Applications in Puerto Rico," **PI.** Sponsors: US Department of Energy; Puerto Rico Administration of Energy Affairs; University of Puerto Rico,. **\$80,000**, 1996-1997.
- "Development of Computational Code to Simulate the Propagation of Gases from Industries in Puerto Rico," PI. Sponsor: INDUNIV. Total Amount: **\$22,000**, 1995-1996.
- "NSF-CAREER: Characterization of Sprays Impacting Heated Surfaces: Emphasis on the Pre-Impact Behavior," PI. Sponsor: National Science Foundation. Total Amount: \$310,000, 1997-2002.
- "Near-Commercialization Venture for Solar-Assisted Air Conditioning Systems for Applications in Puerto Rico," **PI.** Sponsors: Department of Energy/PR Department of Natural Resources/Universal Solar. Total Amount: **\$200,000**, 1998-2000.
- "Educational Programs to Motivate Installation of PV Panels and Domestic Hot Water Heaters in Puerto Rico," **PI.** Sponsor: US Department of Energy. Total Amount: **\$50,000**, 2001-2002.
- "Regional Climate Studies for the Caribbean," PI. Sponsor: NASA. Total Amount: \$2,250,000, 1999-2006.
- "NOAA Cooperative Remote Sensing Science and Technology Center," **Co-PI.** Sponsor: NOAA. 2001-2022. Total Amount: **\$66,000,000**. Renewed in 2006, 2011, 2016.
- "Development of a Compact Air Cooled Solar Air Conditioning System," **PI.** Sponsor: NSF/STTR Program. Total Amount: **\$600,000**, 1999-2004.
- "NSF-GOALI: Industry/University Collaboration to Study Thermofluids Problems in TIJ," PI. Sponsors: National Science Foundation & Hewlett-Packard. Total Amount: \$400,000, 2002-2006.
- "A Solar Pumping System for Isla Zacatillo", **PI.** Sponsor: United Nations Development Program. Total Amount: **\$25,000**, 2005.
- "The Climatic Impact of the Changing Lowlands on the Caribbean National Forest in Eastern Puerto Rico," **PI**. Sponsor: NASA. Total Amount: **\$30,000**, 2006-2008.
- "Phase Change Material for Solar A/C," **PI**. Sponsor: California Energy Commission. Total Amount: **\$100,000**, 2006-2008.
- "Santa Clara University 2007 US DOE Solar Decathlon Entry," **PI.** Sponsor: US DOE and Private Companies. Total Amount: **\$1,000,000**, 2006-2007.
- "Enabling photovoltaic markets in California through building integration, standardization and metering in the carbon economy," Co-PI. Sponsor: California Energy Commission. Total Amount: **\$750,000**, 2008-2010
- "Planning Grant for NSF Industry/University Cooperative Research Center for Quantifiable Sustainability," **PI**. Sponsor, NSF. Total Amount: **\$30,000**, 2008-2009.
- "Understanding Impacts of Climate Change on Energy Infrastructure in Urbanized Coastal Area," **PI**. Sponsor: National Science Foundation. Total Amount: **\$323,000**, 2009-2012.

- "Study to Determine Causes for Lake Enriquillo Growth," Co-PI. Agency: Government of Dominican Republic. Total Amount. **\$300,000**, May 2010-April 2013.
- "US DOE Solar Decathlon-CCNY Entry for 2011," Co-PI, Agency: US Department of Energy. Total Amount: **\$100,000**, April 2010-December 2011.
- "Earth Sciences and Environmental Sustainability (ESE) Graduate Initiative," **PI.** Agency: US Department of Education. Total amount; **\$2,400,000**. October 2010-September 2016.
- "A Regional Earth System Model of the Northeast Corridor: Analyzing 21st Century Climate and Environment," Co-PI. Agency. NSF. Total amount. **\$3,000,000**, April 2011-March 2014.
- "The Alliance for Continuous Innovative Learning Environments in STEM (CILES)," **PI.** Sponsor: US Department of Education. Total Amount: **\$4,200,000**, October 2011-September 2017.
- "RAPID: Understanding Sudden Hydro-Climatic Changes and Exploring Sustainable Solutions in the Enriquillo Closed Water Basin (Southwest Hispaniola)," **PI.** Agency. NSF. Total amount: **\$199,000**, October 2012-December, 2013.
- "Impacts of Urbanization and Climate Change on the Energy Infrastructure of Tropical Coastal Regions," **PI.** Agency: NSF. Total amount; **\$327,000**, August 2014-July 2018.
- "Improved Access to Relevant and Usable Climate Information," **PI.** Agency: USAID. Total amount: \$306,000, April 2015-March 2018.
- "Energy Forecasting for Dense Urban Environments," **PI.** Agency. NYSERDA/PowerBridge NY. Total amount: **\$150,000**, May 2015-April 2017.
- "CCNY Initiative to Promote Academic Success in STEM (*CiPASS*)," **PI.** Agency: US Department of Education, Total Amount \$5,500,000. 2016-2023.
- "New York City Built Environment: Wind Effects and Public Safety in a Changing Climate," Co-PI. Agency: City of New York. Total Amount: **\$561,000**, Jan 2017-November 2018.
- "Collaborative Research: AGEP-T: The Hispanic Alliance for the Graduate Education and the Professoriate on Environmental Sciences and Engineering," **PI.** Agency: NSF. Total Amount: **\$3,200,000** (in partnership with U. of Texas-El Paso), July 2017-June 2022.
- "RAPID: Impacts of Post-Hurricane Land-Atmosphere Interactions on Convective and Precipitation Processes in the Caribbean Region," CoPI. Agency. NSF. Total amount; **\$175,000**. December 1, 2017-November 30, 2018.
- "HSI Conference: URBANO-INCREASING ACCESS AND SUCCESS IN URBAN STEM PROGRAMS," **PI.** Agency. NSF. Total amount; **\$100,000**, January 1, 2018-December 31, 2018.
- "Urban Climate and Resiliency Workshop," **PI.** Agency. NSF. Total amount; **\$50,000**, January 1, 2018-December 31, 2018.
- CRISP Type 2: Integrated Socio-Technical Modeling Framework to Evaluate and Enhance Resiliency in Islanded Communities (ERIC), **PI.** Agency. NSF. Total amount; **\$2,128,000**, August 1, 2018-February 28, 2023. (in partnership with Arizona State University, New York University and University of Puerto Rico-Mayagüez).
- "CIPASS-ExL: Experiential Learning and Industry Engagement for Workforce Readiness" **PI.** Agency: US Department of Education, Total Amount **\$3,000,000.** 2020-2025.
- "Development of Sustainable Heat Pump Systems for Electrified Transitions in Winter Markets", **PI**, US Department of Energy, \$750K. 2021-2024.
- "NSF/IUCRC: Center for Building Energy Smart Technologies", PI, NSF, 2021-2026. \$750K.
- "Convective Cloud Urban Boundary Layer Studies", **Co-PI**, NSF \$660K (PI-P. Ramamurthy)

## **RECENT INVITED TECHNICAL OPINIONS AND PRESS RELEASES:**

1. *STEM Initiatives at City College of New York: A Formula for Success.* Hispanic Outlook; March 23, 2012.

- 2. Jorge E. González, *Buildings, Sustainability and Impacts for the Mechanical Engineer*. ASME Magazine, March 2013, pp 08-09.
- 3. See press release of heat wave event in NYC summer 2010 http://www1.cuny.edu/mu/forum/2010/07/28/more-frequent-more-intense-heat-waves-in-store-for-newyork/
- See ASME Podcast on Integrated Technologies for Buildings http://www.asme.org/kb/news---articles/media/2011/12/trends-in-environmental-monitoring-andmodeling
- See article about Lake Enriquillo water level changes in Dominican Republic: New York Times Cover (January 12, 2014) http://www.nytimes.com/2014/01/12/world/americas/rising-tide-is-a-mystery-that-sinks-islandhopes.html? r=1
- 6. See article EOS Science Spotlight on Increasing sea-surface temperatures in the Caribbean: December 2015.

https://eos.org/research-spotlights/sea-surface-temperatures-on-the-rise-in-the-caribbean

- 7. See Opinion on EOS April 2017. https://eos.org/opinions/climate-changes-pulse-is-in-central-america-and-the-caribbean
- Editorial. González, J. E., and Krarti, M. (March 12, 2021). Reflecting on impacts of COVID19 on sustainable buildings and cities. ASME. J. Eng. Sustain. Bldgs. Cities. February 2021; 2(1): 010201. https://doi.org/10.1115/1.4050374

## BOOKS

- Jorge E. González and Fred Moshary. <u>Energy Engineering for a Sustainable Environment</u>. Textbook in Preparation to be released August 2021. Springer.
- <u>Handbook on Mechanical Systems for Sustainable Buildings.</u> Moncef Krarti and Jorge González (Editors). ASME Press. June 2017. ISBN: 9780791861271.

# SELECTED *PEER-REVIEWED* PUBLICATIONS AND CONFERENCE PUBLICATIONS (Google Scholar h10 index-58; 2400+ Citations)

- J. P. Montoya-Rincon, S. Azad, R. Pokhrel, M. Ghandehari, M. P. Jensen and J. E. Gonzalez, "On the Use of Satellite Nightlights for Power Outages Prediction," in *IEEE Access*, vol. 10, pp. 16729-16739, 2022, https://doi:10.1109/ACCESS.2022.3149485.
- 1. Z.S. Han, J.E. González-Cruz, H.N. Liu, D. Melecio-Vázquez, H. Gamarro, Y.H. Wu, F. Moshary, R. Bornstein. Observed sea breeze life cycle in and around NYC: Impacts on UHI and ozone patterns, Urban Climate, Volume 42, 2022, 101109, https://doi.org/10.1016/j.uclim.2022.101109.
- Faiz, Q., and González, J. E. (December 2, 2021). Climatology and Trends of Heat Index, Human Discomfort Index, and Energy Per Capita for CONUS and Meso-America. ASME. J. Eng. Sustain. Bldgs. Cities. November 2021; 2(4): 044501. https://doi.org/10.1115/1.4053022.
- L. Ortiz, H. Gamarro, J.E. González, T. McPhearson. (2021). Energy burden and air conditioning adoption in New York City under a warming climate. Sustainable Cities and Society. https://doi.org/10.1016/j.scs.2021.103465.
- Mejia Manrique, S.A.; Harmsen, E.W.; Khanbilvardi, R.M.; González, J.E. Flood Impacts on Critical Infrastructure in a Coastal Floodplain in Western Puerto Rico during Hurricane María. Hydrology 2021, 8, 104. https://doi.org/10.3390/hydrology8030104
- Rabindra Pokhrel, Salvador del Cos, Juan Pablo Montoya Rincon, Equisha Glenn, Jorge E. González. (2021). Observation and modeling of Hurricane Maria for damage assessment, Weather and Climate Extremes, 33, 2021, 100331, https://doi.org/10.1016/j.wace.2021.100331.
- Pokhrel, R., and González-Cruz, J. E. (2021). Mitigation options to reduce peak air temperature and airconditioning demand in the context of a warming climate for a tropical coastal city. ASME. *J. Eng. Sustain. Bldgs. Cities.* 2: 021004. https://doi.org/10.1115/1.4051160.

- Jorge E. González, Prathap Ramamurthy, Robert D. Bornstein, Fei Chen, Elie R. Bou-Zeid, Masoud Ghandehari, Jeffrey Luvall, Chandana Mitra, Dev Niyogi. (2021). Urban climate and resiliency: A synthesis report of state of the art and future research directions, Urban Climate, 38, https://doi.org/10.1016/j.uclim.2021.100858.
- González, J. E., and Krarti, M. (March 12, 2021). Reflecting on impacts of COVID19 on sustainable buildings and cities. ASME. J. Eng. Sustain. Bldgs. Cities. February 2021; 2(1): 010201. https://doi.org/10.1115/1.4050374
- Glenn, E., Smith, T.M., Gálvez, J.M., Davison, M., Hibbert, K.; González, J.E. Tropical Convection in the Caribbean and Surrounding Region during a Regional, Warming Sea-Surface Temperature Period, 1982–2020. *Hydrology* 2021, 8, 56. https://doi.org/10.3390/.
- Hrisko, J., Ramamurthy, P., Melecio-Vázquez, D., and Gonzalez, J.E. (2021). Spatiotemporal variability of heat storage in major U.S. cities—A Satellite-based analysis. Remote Sensing, 13(1), 59; https://doi.org/10.3390/rs13010059
- Hosannah, N., Ramamurthy, P., Marti, J, Muñoz, J., and González, J. E. (2021). Impacts of Hurricane Maria on Land and Convection Modification Over Puerto Rico. *Journal of Geophysical Research: Atmospheres*. https://doi.org/10.1029/2020JD032493
- 12. Hrisko, J., Ramamurthy, and Gonzalez, J.E. (2021). Estimating heat storage in urban areas using multispectral satellite data and machine learning. *Remote Sensing of Environment* 252 (2021) 112125. https://doi.org/10.1016/j.rse.2020.112125.
- H. Gamarro, L. Ortiz, and J.E. González. (2020). Adapting to Extreme Heat: Social, Atmospheric, and Infrastructure Impacts of Air Conditioning in Megacities-The Case of New York City. J. Eng. Sustain. Bldgs. Cities (August 2020). https://doi.org/10.1115/1.4048175.
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## **INVITED PRESENTATIONS**

- Adapting to Extreme Heat: Social, Infrastructure, and Atmospheric Impacts of Air Conditioning Adoption The Case of New York City. 2021 Virtual Conference of the Architectural Engineering Institute of the American Society of Civil Engineers, April 8, 2021.
- Re-engineering Energy Engineering for Buildings & Cities at the International Conference on Sustainable Energy-Water-Environment Nexus in Desert Climates, Doha, Qatar, December 2019.
- Future Projections of Building Cooling Energy Demand for New York City (Invited Presentation). 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. 2018. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/341904
- Advances on City Scale Energy Modeling: Developments, Opportunities & Challenges, Plenary speech at the Annual Conference of the Mexican Solar Energy Society (ANES), Puebla, México, October 21, 2016.
- Regional Climate Changes in Coastal Areas: Combined and Separate Effects of Changing Landscapes and Regional Climate Signals. Invited talk given at the Centro de Investigación de Energía y Medio Ambiente (CIEMAT), Madrid, Spain, July 15, 2015.
- Invited talks (2) at the 3<sup>rd</sup> Planning Workshop for Beijing Field Study of Urban Rainfall-Impacts and Fog/Haze (SURF), Beijing, China, October 21-23, 2015.
- 9<sup>th</sup> International Conference of the Urban Climate. A new parameterization for surface heat fluxes in dense urban environments. Toulouse, France, July 20-24, 2015.
- On the Energy Forecasting for Dense Cities: Invited Key-note at the Autonomous University of Mexico City. August 2013.
- 2011 ASME Energy Sustainability Conference, Washington DC, August 2011. Invited Plenary Talk on: On the Environmental and Energy Sustainability of Cities. http://www.asmeconferences.org/ESFuelCell2011/PlenarySpeakers.cfm
- Investigation of Long-Term Impacts of Urbanization and Global Warming in a Coastal Tropical Region. Invited Talk at the International Workshop on Urban Weather and Climate, Beijing, China, July 2011. http://www.cms1924.org/cum-wksp/index-English.html
- 2011 ASLO Aquatic Sciences Meeting. San Juan, PR, February 2011. Large-scale long-term climate change (1950-2000) in the mid tropical Atlantic and its impacts on the hydrological cycle of Puerto Rico.
- A short course in hydrometeorology. Instituto Tecnológico de Santo Domingo, January 2011.
- Regional Climate Modeling Studies for Coastal Areas, Cornell University, Department of Mechanical Engineering, April 2010.
- Impacts of Urbanization in the Regional Environment of San Juan Puerto Rico, Sierra Club Summer Meeting, June 2010.
- High Resolution Urban Climate Modeling for the City of New York, Invited talk at the SimBuild 2010 Conference, NY City, August 2010.
- 7<sup>th</sup> International Urban Climatology Meeting, Yokohama, Japan, July 2009, Total Climate Changes In Tropical Coastal Areas: LCLU + Green Houses Gases.
- 2009 US-EU-China Thermophysics Conference Renewable Energy (UECTC-RE), Beijing, China, June 2009. Impacts of Climate Change In Degree Days And Energy Demands in a Coastal Environment.
- 2007. New Trends on Solar Cooling. Key-note speech at the Annual Conference of the Mexican Solar Energy Society (ANES), Oaxaca, México.

# CONFERENCE PRESENTATIONS (more than 150 over the past 10-years; sample for the past two years; PEER REVIEWED-PR)

## • <u>2017 (15)</u>

- Jorge Gonzalez. Regional Climate Changes in Urban Coastal Areas: On the Combined and Separate Effects of Changing Landscapes and Regional Climate Signals (Invited Presentation). 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307177.html
- Moises Angeles and J. Gonzalez. Extreme Events Detection and 21st Century Projections in The Intra-America Region. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307117.html
- Nathan Hosannah, J. E. Gonzalez, R. Rodriguez, H. Parsiani, F. Moshary, L. Aponte, R. A. Armstrong, E. W. Harmsen, P. Ramamurthy, M. Angeles, L. León, R. D. Bornstein, N. D. Ramirez, D. Niyogi, R. Davis, and W. Peña. On Understanding Multi-Scale Precipitation Processes in Tropical Islands Via the Convection, Aerosol, and Synoptic-Effects in the Tropics (CAST) Campaign. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307821.html
- Nathan Hosannah, J. E. Gonzalez and C. Lunger. Impacts of Local Convective Processes on Total Water Budgets in the Coastal Tropics via the Analysis of Multi-Sensor Observational Data from the Convection, Aerosol, and Synoptic-Effects in the Tropics (CAST) Experiment. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307906.html
- Chris Lunger, N. Hosannah and J. E. Gonzalez Investigation of Convective Storms during the Caribbean Mid-Summer Drought. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA.

https://ams.confex.com/ams/97Annual/webprogram/Paper316667.html

- Mark Arend, V. Dominguez, A. Diaz, M. Bah, M. Dagan, L. Ortiz, D. Melecio, J. E. Gonzalez, and F. Moshary. Applications of Remote Sensing and Modeling to Study Urban Energy Systems and Processes. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper315241.html
- Luis Ortiz, J. Gonzalez, R. D. Bornstein, W. Wu, and J. S. Tongue Urban Impacts on New York City Weather During a Heat Wave. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper305181.html
- Nazario D. Ramirez-Beltran, J. E. Gonzalez, J. M. Castro, M. E. Angeles, C. M. Salazar, E. W. Harmsen, and N. Hosannah. Characteristics of Heat Waves in Mesoamerica and Caribbean Region. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper314918.html
- Equisha Glenn, T. Smith and J. Gonzalez. Precipitation Variations Using Satellite Data during the Recent Sea Surface Temperature Warming Period in the Intra-Americas Region, 1982–2012. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307126.html
- Prathap Ramamurthy, J. E. Gonzalez, F. Moshary, and M. Arend. Observing The Boundary-layer Dynamics Over New York City. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA.

https://ams.confex.com/ams/97Annual/webprogram/Paper308369.html

- David Melecio-Vazquez, N. Nalli, Q. Liu, and J. E. Gonzalez Thermal Boundary Layer Retrievals over the Washington D.C. Metro Area using Satellite-Based NUCAPS-EDRs. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper316131.html
- David Melecio, J. Gonzalez, P. Ramamurthy, and M. Arend Modeling and Observations of the Structure and Evolution of the Urban Boundary Layer of New York City. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307115.html

- Alvaro Lentz, J. Gonzalez and M. E. Angeles. Impacts of Regional Climate and Urbanization Changes on Power Consumption in Mexico City Valley. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper313665.html
- Ahmed Krarti, L. Ortiz and J. Spatiotemporal Distribution of Urban Building Energy Consumption By End Use Using Building Modeling and High Resolution Forecasted Weather Data. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper307174.html
- Xiaoyu Xu, S. Miao and J. Gonzalez. Assessment of Urban Heat Island Effect on Building Energy Consumption for Beijing Using Off-Line Urban Parameterizations. 97<sup>th</sup> Annual Meeting of the American Meteorological Society, January 22-26, 2017, Seattle, WA. https://ams.confex.com/ams/97Annual/webprogram/Paper308069.html
- Rabindra Pokhrel, L.E. Ortiz, J.E. González, and N.D. Ramírez-Beltran, On the climate variability and energy demands for indoor human comfort levels in tropical urban environment. AGU 2017 Fall Meeting, New Orleans, LA Dec 11-15, 2017. Session on Integrated Human-Earth Systems Modeling for Vulnerability and Risk Assessment, Adaptation, and Resilience I.

## <u>2018 (9)</u>

- Rabindra Pokhrel, L.E. Ortiz, N.D. Ramírez-Beltran, and J.E. González. (2018). Analysis of climate variability on energy demands for indoor human comfort levels in tropical urban environments. ASME Energy Sustainability Conference, Orlando, FL, June 24-28, 2018. Paper No. PowerEnergy2018-7131 (PR).
- David Melecio-Vazquez, Prathap Ramamurthy, Jorge E. Gonzalez-Cruz. Limitations of the Current Planetary Boundary Layer Schemes to Model the Urban Boundary Layer. ISEH 2018.
- David Melecio-Vazquez, Jorge E. Gonzalez-Cruz, Prathap Ramamurthy, Fred Moshary, Mark Arend. Thermal and Humidity Coastal-Urban Boundary-Layers over New York City. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/342612
- David Melecio-Vazquez, Prathap Ramamurthy, Fred Moshary, Mark Arend, Jorge E. Gonzalez. Boundary-Layer Characteristics over New York City from Observations and the urbanized-Weather Research and Forecasting Model. . 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/343067
- Ortiz, L. and González, J. Future Projections of Building Cooling Energy Demand for New York City (Invited Presentation). 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/341904
- Ortiz, L., González, J., Horton, R., and Lin, W. High Resolution Heat Wave Projections for New York City. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/341899
- Pokhrel, R., González, J., Ramirez, Nazario. On the Assessment of Different Mitigating Alternatives for Cooling Load Reductions for the Tropical Coastal City of San Juan, Puerto Rico. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/341423
- Comarazamy, D., González, J, Andreopoulos, Y. Possible Effects of Future Climate Change on Wind Statistics for New York City 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York. https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/343334
- Gamarro, H, Ortiz, L., and González, J.E. Assessment of uWRF-Solar forecasts for New York City. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment, New York, New York, August 6-10, 2018,

https://ams.confex.com/ams/ICUC10/meetingapp.cgi/Paper/342670 (*Awarded Best Poster of the Conference*)

## <u>2020 (9)</u>

- Joshua Hrisko, P. Ramamurthy, J. E. Gonzalez, H. Norouzi, and A. Bah Quantifying the Heat Stored in Urban Environments Using Remote Sensing Technology. 15<sup>th</sup> Symposium of the Urban Environment at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 13.1
- Jingjing Dou, E. Gutierrez, S. Miao, J. Gonzalez, and R. Bornstein Effects of a Variety of WRF Urbanization Schemes on the Simulation of a Bifurcating Thunderstorm over Beijing. 15<sup>th</sup> Symposium of the Urban Environment at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 5.1.
- Rabindra Pokhrel and J. Gonzalez On the Energy Sustainability of Active and Passive Building-Integrated Technologies in the Context of Changing Climate for a Tropical Coastal City 15<sup>th</sup> Symposium of the Urban Environment at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 6.3.
- David Melecio-Vazquez, City College of New York, New York, NY; CREST, New York, NY; and J. B. Olson, J. S. Kenyon, G. A. Grell, P. Ramamurthy, M. Arend, and J. Gonzalez Toward Improving the Representation of Urban Processes in the HRRR Model: A Coupling of the MYNN Scheme with <u>BEP+BEM</u> 15<sup>th</sup> Symposium of the Urban Environment at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 9B.5.
- Harold Gamarro, L. E. Ortiz and J. E. Gonzalez Adapting to Extreme Heat: Social, Infrastructure, and Atmospheric Impacts of Air Conditioning Adoption in Megacities . 15<sup>th</sup> Symposium of the Urban Environment at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 8A.6.
- Shiguang Miao, M. Chen, M. Chen, X. Zhao, Y. Zhang, C. Huang, Y. Liu, F. Chen, J. Gonzalez-Cruz, and R. D. Bornstein Integrated Urban Model System RMAPS for Integrated Urban Service 15<sup>th</sup> Symposium of the Urban Environment at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 3.5.
- Juan Montoya, R. Pokhrel, S. Del Coss, M. Yue, M. Jensen, and J. Gonzalez <u>BART—Physical</u> <u>Damage Approach for Power Outages Forecast</u>. 11th Conference on Weather, Climate, and the New Energy Economy at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Paper No. 2.4.
- Rabindra Pokhrel, City College of New York, CUNY, New York, NY; and S. del Cos, J. P. Montoya Rincon, E. Glenn, and J. Gonzalez <u>Observation and Modeling of Hurricane Maria for Damage</u> <u>Assessment</u>. Severe Local Storms Symposium\_at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Poster No. 978.
- Equisha Glenn, J. E. Gonzalez, T. Smith, J. M. Galvez, and M. Davison <u>The Role of Convection on</u> the Decreasing Caribbean Precipitation during a Regional, Warming Sea Surface Temperature Period: <u>1982–2017</u>. 33rd Conference on Climate Variability and Change at the 100<sup>th</sup> American Meteorological Society, January 12-16, 2020, Boston, MA, January. Poster No. 1179.

## <u>2021 (3)</u>

- Jorge E. Gonzalez and Juan Pablo Montoya-Rincon. Power Outages Prediction Using Weather and Night-Light Satellite Data. ASME Energy Sustainability Conference. ES2021-64971.
- Jorge Gonzalez and Rabindra Pokhrel. On the Role of Energy Mitigation Measures to Reduce Energy Demands in the Context of Changing Climate for a Tropical Coastal City. ASME Energy Sustainability Conference. ES2021-62618.
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