Bumseok Chun, Ph.D

Assistant Professor
Urban Planning & Environmental Policy
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PROFESSIONAL APPOINTMENT

2015−Present **Assistant Professor**
Urban Planning & Environmental Policy, Texas Southern University
Research areas: Spatial Big Data, Human-Nature Interaction, Microclimate Change, Spatial Econometrics, Green Infrastructures

2013−2015 **Research Scientist**
Urban Climate Lab, Georgia Institute of Technology

2012−2014 **Postdoctoral Research Fellow**
Center for Geographic Information Systems, Georgia Institute of Technology

2012 **Lecturer**
City and Regional Planning, The Ohio State University

2008−2011 **Graduate Research Associate**
Ohio Supercomputer Center & City and Regional Planning, The Ohio State University

EDUCATIONAL BACKGROUND

Ph.D. **City and Regional Planning, The Ohio State University, Columbus, OH, 2012**
• Dissertation: *Three-Dimensional City Determinants of the Urban Heat Island: A Statistical Approach*

M.CRP **City and Regional Planning, The Ohio State University, Columbus, OH, 2009**

M.S. **Civil and Environmental Engineering and Geodetic Science, The Ohio State University, Columbus, OH, 2006**
• Thesis: *Building reconstruction from feature vectors with LiDAR data*

B.Eng. **Civil and Geoinformatics Engineering, Inha University, South Korea, 2003**

PEER-REVIEWED JOURNAL PUBLICATIONS

1. **Chun, B. (2018).** Positive impacts of greening infrastructures on flood-prone areas: A case study of Hurricane Harvey. (Submitted to Remote Sensing Letters).

2. Park, T., Jang, C., Chang, S., & **Chun, B.** (2018). Road-traffic noise mapping by combining GIS DB and LiDAR dataset. *Transaction of Korean Society for Noise and Vibration Engineering*, Vol.28(4): 483-489. 3~489. DOI: 10.5050/KSNVE.2018.28.4.483

3. **Chun, B,** & Guldmann, J-M. (2018). Seasonal variations in the impacts of greening strategies for mitigation of the urban heat island. *Computers, Environment and Urban System*, Vol. 71: 165-176. DOI:10.1016/j.compenvurbsys.2018.05.006

4. Ryu, H., Park, I., **Chun, B.**, Chang, S. (2017). Spatial statistical analysis of the effects of urban forms on road-traffic noise exposure through noise mapping of a city in South Korea. *Applied Acoustics*, Vol.115: 93-100. DOI: 10.1016/j.apacoust.2016.08.025

5. **Chun, B.** & Guhathakurta, S. (2016). Impacts of Three Dimensional Surface Characteristics on the Urban Heat Islands over the Diurnal Cycle. *The Professional Geographer.* DOI: 10.1080/00330124.2016.1208102.

6. Kim, T. & **Chun, B.** (2016). Determinants of Acquirer-Target Distance in M&A. *Managerial Finance*, Vol.42 (2): 95-117. DOI: 10.1108/MF-08-2014-0220

7. **Chun, B.** & Guhathakurta, S. (2015). Daytime and nighttime urban heat islands statistical models for Atlanta. *Environment and Planning B* (Published online: December 29, 2015). DOI: 10.1177/0265813515624685

8. Ryu, H., **Chun, B.**, Park, I., & Chang, S. (2015). Road Traffic Noise Simulation for Small-scale Urban Form Alteration Using Spatial Statistical Model. *Transaction of Korean Society for Noise and Vibration Engineering*, Vol.25 (4): 284-290. DOI: 10.5050/KSNVE.2015.25.4.284

9. Park, T., **Chun, B.**, & Chang, S. (2014). Extraction of Three-dimensional Hybrid City Model based on Airborne LiDAR and GIS Data for Transportation Noise Mapping. *Transaction of Korean Society for Noise and Vibration Engineering*, Vol.25 (4): 284-290. DOI: 10.5050/KSNVE.2014.24.12.985

10. **Chun, B.** & Guldmann, J.-M. (2014). Spatial statistical analysis and simulation of the urban heat island in high-density central cities. *Landscape and Urban Planning*, Vol. 125: 76-88. DOI: 10.1016/j.landurbplan.2014.01.016

11. Ryu, H., Park, I., Chang, S., & **Chun, B.** (2014). The Spatial Statistical Relationships between Road-traffic Noise and Urban Components Including Population, Building, Road-traffic and Land-use. *Transaction of Korean Society for Noise and Vibration Engineering*, Vol.24 (4): 348-356. DOI: 10.5050/KSNVE.2014.24.4.348

12. **Chun, B.** & Guldmann, J.-M. (2012). Spatial Analysis of the Urban Heat Island Using a 3-D City Model. *Journal of the Korea Spatial Information System Society*, Vol.20 (4): 1-16. DOI:10.12672/ksis.2012.20.4.001

13. **Chun, B.** & Guldmann, J.-M. (2012).Two- and Three-Dimensional Urban Core Determinants of the Urban Heat Island: A Statistical Approach. *Journal of Environmental Science and Engineering,* Vol.B1: 363-378.

14. **Chun, B.**, Guldmann, J.-M. & Seo, W. (2011). Impacts of Multi-Dimensional Isovist on Commercial Property Values in the CBD Using GIS. *Seoul Studies*, Vol.9: 17-32.

15. **Chun, B.** & Kim, H. (2010). Analysis of Urban Heat Island Effect Using Information from a 3-Dimensional City Model, *Journal of the Korea Spatial Information System Society*, Vol. 18 (4): 1-11.

16. Hur, M., Nasar, J. L. & **Chun, B.** (2010). Neighborhood Satisfaction, Physical and Perceived Naturalness and Openness. *Journal of Environmental Psychology*, Vol.30: 25-59. DOI:10.1016/j.jenvp.2009.05.005

RESEARCH & GRANT PROPOSALS

1. **2018   National Foundation Science: HBCU-UP Excellence in Research (Co-PI).** Contribution of non-exhaust vehicle emission sources to polycyclic aromatic hydrocarbons in urban roadway dust. (Pending Support)

2. 2018   **NASA: ROSES-18 A.37 (Co-PI, TSU: PI).** Reduction risk for Harvey-like flood disasters using NASA Earth observations and lessons learned from Harris County Flood Control District. ***Collaboration with University of Houston, and University of Washington*** (Pending Support)

3. 2017   **US DOT: UTC Tier 1 Center: Cooperative Mobility for Competitive Megaregion. $1.5 million/year. 2017 – 2022 (Co-PI).** *Collaboration with University of Texas at Austin, Louisiana State University, and University of Pennsylvania.*

4. 2016   **Seed Research Grant, Texas Southern University. "Exploring the Dynamics of Urban Heat Island (UHI) Formation Using Comprehensive 3-D Models: Developing Climate-Smart Houston". $10,000. (PI).** The proposed research will attempt to model and interpret the dynamic relationships between surface temperature and urban objects during daytime and nighttime, respectively. After that, identifying hotspot areas in Houston will be more investigated based on parcel-level, specifying land use/land cover (LULC) in the 3-D space.

5. 2014 **Louisville, KY. "Urban heat management plan for Louisville Metro".** We are developing a comprehensive heat management assessment and plan for the Louisville metropolitan area to safeguard the public's health from elevated temperatures. We plan to map the spatial extent and structure of the Louisville Metro's heat island, model the effectiveness of specific management strategies, including extensive tree planting, and develop a heat management plan to coordinate policies across metro agencies charged with land use and sustainability planning. The resulting plan will be the first urban heat adaptation plan developed for a major U.S. city.

6. 2013 **NSF: Environmental Sustainability. "Exploring the dynamics of urban heat island (UHI) formation using comprehensive 3D models: an analysis of the urban core regions in three cities" (proposal #: 1336750). Role: Co-PI.**(Proposal not funded) The primary goal of this research is to develop comprehensive UHI models with statistical models. Knowledge of our UHI has been rapidly evolved for managing environmental impacts in the built environment, but it is not enough to interpret appropriate UHI mechanisms, yet. This work is very important because the proposed approach will allow us to assess the UHI in spatial analytic processing as it occurs in the real space. Then, it will extend to human activity relating the UHI to resolve the ultimate problem facing our communities. Therefore, we need to understand the results of this research for the interaction between3-D urban structures and human activities over the UHI.

7. 2013 **"Georgia SPLOST Database & Clearinghouse for Transportation Finance"**. Role: Investigator to develop database structures, design GIS architectures and Web-GIS frames. Given the established need for a comprehensive database to coordinate and promote the success of SPLOST ballot initiatives, this project's purpose was to develop an interactive clearinghouse of SPLOST related data with a spatial component. It includes development of a web portal and map to provide a centralized repository for transportation agencies and others to query and view the data. The clearinghouse also provides a baseline of data which can be updated and enhanced over time with additional information as it becomes available.

8. 2011 **"Cloud-based velocity profile optimization for everyday driving"**. Role: Preliminary study to implement 3-D traffic network system to optimize vehicle energy consumption. This research explores effective fuel management strategies for hybrid electric vehicles.

9. 2008 **"Identifying and quantifying critical urban green spaces in the Columbus metropolitan region"**. Role: Preliminary study to identify urban green spaces with topological characteristics and to define future potential green space. This research (1) explores current knowledge on the benefits of green urban spaces and their impact on mental, physical and community health, (2) assesses the quantity and quality of green open spaces and their accessibility as measures of the social capital of a community through a Columbus, Ohio, case study, and (3) establishes a framework for future research in this area.

10. 2007 **"Harrison County: Smart growth resource guide"**. Role: Coordinate GIS data and design maps. This research is to assist government officials, planners, developers, and citizens in thinking about how Smart Growth principles can be applied to achieve land use goals throughout the county. This Resource Guide provides a review of community opinion surveys, existing planning documents, and policies in both municipalities and unincorporated areas of the county. This information is used to determine the current and desired future conditions. Next, given these conditions, the Resource Guide includes land use policy tools that can be used to achieve the desired future conditions in each community.

MANUSCRIPTS IN PREPARATION

1. **Chun, B.** & Guldmann, J.-M. "Optimizing greening space to minimize the UHI intensity"

2. **Chun, B.** & Guldmann, J.-M. "Urban Morphology and Solar Energy Availability: A Spatio-Temporal Regression Analysis"

3. **Chun, B.**, Hur, M., & Won, J. "Analysis of urban greenery impacts on public health"

PATENTS

2015   3D City Modeling System for Transportation Noise Mapping and method (co-investor). Patent #: 2-2006-033481-0

TECHNICAL REPORTS AND OTHER PUBLICATIONS

1. Ross, C., **Chun, B.**, Clarke, W., Guhathakurta, S., Lee, D., & Smith, S. (2013). User Manual: Georgia SPLOST Database & Clearinghouse for Transportation Finance. Center for Quality Growth and Regional Development, Center for Geographic Information Systems, CARL Vinson Institute of Government, Georgia Institute of Technology and The University of Georgia, Atlanta, GA, U.S.

2. Lara, J. & **Chun, B.** (2009). Identifying and Quantifying Critical Urban Green Spaces in the Columbus Metropolitan Region. Project report to the Center for Urban and Regional Analysis, The Ohio State University, Columbus, OH, U.S.

3. Cowley, J., Gough, M., Yeager, R., Decker, B., Das, S, & **Chun, B.** (2006) Harrison County: Smart Growth Resource Guide. Project report to the Southern Mississippi Planning and Development District and the Mississippi Department of Environmental Quality.The Ohio State University, Columbus, OH, U.S.

CONFERENCE PRESENTATIONS AND PROCEEDINGS

1. Pan, Q., **Chun, B**. & Jin, Z. (2018). Megaregion Truck Flow Estimation Model. International Association for China Planning (IACP) Annual Conference, Xi'an, China.

2. **Chun, B.,** Hur, M. & Won, J. (2018). Urban greenery impacts on public health: utilizing an advanced 3D analysis. The Association of American Geographers (AAG) Conference, New Orleans, LA.

3. Hur, M., **Chun, B.** & Rocha-Peralta, J. (2017). Out of sight, out of mind: farmworker's labor camp isolation for access to resources. Association of Collegiate Schools of Planning, Denver, CO.

4. Pan, Q., **Chun, B.**, Jin, T. & Zhou, J. (2017). Development and applications of megaregion truck flow estimation model. Association of Collegiate Schools of Planning, Denver, CO.

5. Park, T., **Chun, B.** & Chang, S. (2017). Build 3D urban model for noise mapping. International Congress & Exposition on Noise Control Engineering, Hong Kong.

6. **Chun, B.** & Guldmann, J. (2016). Seasonal impacts of green space strategies on the urban heat island. Association of Collegiate Schools of Planning, Portland, OR.

7. **Chun, B.** & Guldmann, J. (2015). Mitigation of the urban heat island with greening strategies: a nonlinear programming model. Association of Collegiate Schools of Planning, Houston, TX.

8. Guldmann, J. & **Chun, B.** (2014). Optimization of roof and ground greening strategies to mitigate the urban heat island. INFORMS Annual Meeting, San Francisco, CA.

9. Zhang, W., Guhathakurta, S., Fang, J., Zhang, G., & **Chun, B.** (2014). Exploring the impact of shared autonomous vehicles on urban parking demand. Association of Collegiate Schools of Planning, Philadelphia, PA.

10. Park, T., **Chun, B.**, & Chang, S. (2014). Extraction of three-dimensional city model by utilizing airborneLiDAR data for road-traffic noise mapping. The Association of American Geographers (AAG) Conference 2014, Tampa, FL.

11. **Chun, B** & Kim, T. (2014). Determinants of acquirer-target distance in M&A. Southwestern Finance Association, Dallas, TX, U.S.

12. **Chun, B.** & Guhathakurta, S. (2013). Impacts of 2- and 3-D urban surface characteristics on daytime and nighttime UHIs. North American Meetings of the Regional Science Association International (RSAI), Atlanta, GA, U.S.

13. **Chun, B.** & Guldmann, J.-M. (2013). Solar energy access and complex urban cores three-dimensional morphology: a spatial statistical approach. North American Meetings of the Regional Science Association International (RSAI), Atlanta, GA, U.S.

14. **Chun, B.** & Guldmann, J.-M. (2013). Three-dimensional city determinants of the urban heat island. The Association of American Geographers (AAG) Conference 2013, Los Angeles, CA, U.S.

15. Hur, M. & **Chun, B.** (2012). Searching a network tool for pedestrian wayfinding: a proposal for the space syntax added network analysis. The Environmental Design Research Association (EDRA 43), Seattle, WA, U.S.A.

16. **Chun, B.** & Guldmann, J.-M. (2011). Urban core determinants of the urban heat island: spatial regression models. Association of Collegiate Schools of Planning, Salt Lake City, UT, U.S.

17. Kim, M. & **Chun, B.** (2010). Optimization tool for wireless network architecture based on 3D built environment. Korean Society for Internet Information Conference, Kwangju, South Korea.

18. **Chun, B.** & Guldmann, J.-M. (2010). Modeling the urban heat island (UHI) using the 3-D geometry of built environments. Association of Collegiate Schools of Planning, Minneapolis, MN, U.S.

19. Lara, J. & **Chun, B.** (2010). Identifying and quantifying critical urban green spaces in the Columbus metropolitan region. The Environmental Design Research Association (EDRA 41), Washington D.C., U.S.

20. **Chun, B.** & Guldmann, J.-M. (2010). Measurement of visibility with building pattern impacted by property value in urban area. The Association of American Geographers (AAG) Conference 2010, Washington D.C., U.S.

21. **Chun, B.** & Guldmann, J.-M. (2009). Three-dimensional city model based on data fusion for virtual environments. The 2009 US-Korea Conference on Science, Technology and Entrepreneurship, Raleigh, NC, U.S.

22. **Chun, B.** & Guldmann, J.-M. (2008). Textural analysis on NDVI for Land-Cover change detection. The Association of American Geographers (AAG) Conference, Boston, MA, U.S.

OTHER PRESENTATIONS

1. **Chun, B.** (2018). Planning Strategies for Extreme Heat in Urban Areas: Applications of Spatial Big Data. Hanyang University. South Korea.

2. **Chun, B.** (2016). Application of Geospatial Technology. Invited Seminar, Earth and Atmospheric Science at University of Houston, April 15

3. **Chun, B.** (2015). Introduction to GIS application in the world. Invited Lecture, Civil and Environmental Engineering at University of Houston, September 22

4. **Chun, B.** (2015). Analysis of Land-Use and Urban Heat Island by Big Data and Data-Mining. Invited Lecture, Korea Planners Association, South Korea.

5. **Chun, B.** (2015). Urban Informatics and Environmental GIS. Invited Lecture, University of Seoul & Kangwon University. South Korea.

6. Guldmann, J-M, & Ch**un, B.** (2013). Solar Energy Access and Urban Morphology in Complex Central Core Urban Areas. Beijing Forum 2013. China.

7. **Chun, B.** (2011). 3-D city determinants of the Urban Heat Island with geospatial data. Geography Awareness Week and GIS Day, The Ohio State University, Columbus, OH, U.S. - Poster

8. **Chun, B.** (2011). Application of 3-D GIS: Environmental Planning. Guest lecturer in CRP 608 GIS in Professional Planning on January 11, 2011, The Ohio State University, Columbus, OH, U.S.

9. **Chun, B.** (2010). Modeling the urban heat island (UHI) using the 3-D geometry of built environments. CRP Research Seminar Series on November 12, 2010, The Ohio State University, Columbus, OH, U.S.

10. Lara, J. & **Chun, B.** (2009). Identifying and quantifying critical urban green spaces in the Columbus metropolitan region. Geography Awareness Week and GIS Day, The Ohio State University, Columbus, OH, U.S. - Poster

11. Hur, M. & **Chun, B.** (2006). Neighborhood satisfaction, physical and perceived naturalness and openness. CRP Research Seminar Series on April 7, 2006, The Ohio State University, Columbus, OH, U.S.

TEACHING EXPERIENCE

Texas Southern University (2015 – Present)
UPEP 802	Quantitative Methods in Planning
UPEP 804	Introduction to Site Design
UPEP 805	Plan Preparation Studio
UPEP 811	Introduction to Geographic Information System in Urban Planning
UPEP 813	Introduction to Land Use Planning
UPEP 841	Application of Geographic Information System
UPEP 842	Advanced Studies in GIS
UPEP 903	Applied Planning Analysis
UPEP 909	Population and Development Planning
GEOG833	Geographic Information System (Undergrad)
AJ 502	Seminar in Research Methodology

Georgia Institute of Technology (2013 – 2014)
CP 6521	Advanced GIS
CP 6542	Transportation and GIS

The Ohio State University (2009 – 2012)
CRP 762	Urban Planning Data and Forecasting
CRP 510	Plan Service Learn
LARCH 740	Research Methods in Landscape Architecture and Design (Teaching Assistant)

HONORS AND AWARDS

2018	QEM/NSF S-STEM Proposal Development Workshop, *National Science Foundation*, Linthicum Heights, MD
2011	ACSP Student Travel Scholarship, *Association of Collegiate Schools of Planning*, Salt Lake City, UT.
2011	Pixoneer Fellowship for GIS, RS, and Spatial Statistics, *Korean-American Association for Geospatial and Environmental Sciences*, Cincinnati, OH.
2007	Caukins Scholarship, Austin E. Knowlton School of Architecture, The Ohio State University, Columbus, OH
2007	Innovation Award, The National Association of Development Organizations, U.S.A
2003 – 2005	National R&D Scholarship, Korean Science and Engineering Foundation (KOSEF), Republic of Korea

COMPUTER KNOWLEDGE

- Language/Script: Python, Matlab
- Geographic Information System: ArcGIS series, ArcIMS, ArcView, TransCAD
- Image Processing: ERDAS Imagine series, ENVI
- Statistical Package: Stata, R, GeoDa, SPSS
- Design: Adobe Design Series

SERVICE

Departmental Service
2017-2019   Member, Curriculum Committee, Budget Committee
2017-2018   Member, Admission Committee
2016-2017   Member, Technology Committee

School of Public Affair
2018-2019   Member, Technology Committee, Scholarship Committee
2016-2017   Member, Strategic Planning Committee
2015-2016   Member, Research Committee

Community Service
2016 –   Member, 3rd Ward Community Redevelopment Workgroup

Professional Service
2018   Member of Legacy Project, APATX18 Texas Chapter State Conference Planning Committee
2017   Scholarship Reviewer of Korean-American Association for Geospatial and Environmental Science
2017   Paper Reviewer of the COTA international Conference for Transportation Professionals
2017   Reviewer of Sustainable Cities and Society
2017   Reviewer of Computer, Environment, and Urban System
2017   Reviewer of Remote Sensing of Environment
2016   Reviewer of Journal of Environmental Psychology
2016   Reviewer of International Journal of Environmental Research and Public Health
2014 –2015   Reviewer of Journal of Water Supply: Research and Technology – AQUA
2014   Reviewer of Environment and Planning B
2013   Reviewer of Social Science and Literature

Graduate Student Advising
• Edward Booker (Academic adviser, 2016~): Aircraft noise analysis for sustainable communities
• Fatai Oyejobi (Ph.D Dissertation committee, 2018): Reducing Drug Entry into the Environment: An Evaluation of the Drug Take-back Program in the Houston Area
• Grace Arthur   (Ph.D Dissertation committee, 2015~): Public transit preparedness and mitigation for natural disaster
• Ibrahim Ethem (Ph.D Dissertation committee, 2015~): Ozone impact on vulnerability
• Eric Tucker   (Ph.D Dissertation committee, 2016~): Optimization of facility location
• Jamaal Schoby (Ph.D Dissertation committee, 2016~): Special purpose local option sales tax for sustainable transportation infrastructures

MEMBERSHIPS IN PROFESSIONAL ORGANIZATION

Association of American Geographers (AAG), International
The Association of Collegiate Schools of Planning, International
American Planning Association, Texas Chapter, State
Korean-American Association for Geospatial and Environmental Sciences (KAGES), National
Korean-American Scientist and Engineers Association, National

REFERENCES

Professor Emeritus Jean-Michel Guldmann, Ph.D.
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- o   Fax: (404) 385-0450

Professor Steven I. Gordon, Ph.D.
Director of the Ralph Regula School of Computational Science / Senior Director of Education
Ohio Supercomputer Center

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