

CAREER SUMMARY

Yoonjung Ahn has diverse experience in multi-disciplinary quantitative research throughout her career and education. She is currently a Postdoctoral Associate at the Institute of Behavior Science (IBS) at the University of Colorado, *utilizing spatial modeling, spatial analysis, spatial statistics, and big data* to analyze the impact of environmental risks. During her Ph.D., her research focused on *extreme heat prevention measures for indoor and outdoor environments*. Prior to her Ph.D., Yoonjung worked at the Korea Environment Institute and participated in projects related to *environmental policy*. Yoonjung hopes to contribute to society and communities with her knowledge and experience. Therefore, she participated in mentoring programs such as Undergraduate Research Opportunity and *served as a student chair* of the Korean-American Association for Geospatial and Environmental Science (KAGES) and Graduate Researchers of Geography. She is currently *serving as a broad member* of the Health and Medical Geography specialty group at the American Association of Geographers.

EDUCATION

Florida State University

Geography Department

Doctor of Philosophy, April 2022

(Dissertation: Extreme heat prevention measures for indoor and outdoor environments)

Seoul National University

Landscape Architecture, Department of Landscape Architecture and Rural Systems Engineering

Master of Landscape Architecture, August 2015

(Thesis: Estimating Korean Pine (Pinus Koraiensis) Habitat Distribution Considering Climate Change Uncertainty)

Sangmyung University

Landscape Architecture, Department of Environment and Landscaping

Bachelor of Landscape Architecture, August 2013

Vancouver Island University

Professional Development and Training, Trade and Technical, Master Gardener

Horticulture Technician, August 2012

PROFESSIONAL RESEARCH EXPERIENCE

Population Center, Institute of Behavioral Science | University of Colorado, Boulder

Postdoctoral Associate, May 2022– present

2022 Data Infrastructure for Research on Historical Settlement and Population Growth in the US

Director: Dr. Stefan Leyk

- Attended grant Bootcamp and wrote a grant proposal
- Dealt with big volume real estate data and spatial data
- Participated collaborative projects

Geography department | Florida State University

Doctoral Student Graduate Research Assistant, September 2019 – April 2022

2019 Verifying Experimental Wet Bulb Globe Temperature Hindcasts across the United States

- Used web crawling and Application Programming Interface (API) with python to download data
- Dealt with various data formats (.grib, .netCDF)
- Discussed with co-authors the methodology and results
- Applied Mixed Effect Model

2020 Classifying Roof Building Damage using High-Resolution Imagery

- Processing input data with High-Performance Computer
- Communicated with coworkers for problem-solving on codes and discussed research methodology
- Dealt with a big volume of data with python & R

Division of Climate Change and Interdisciplinary Research | Korea Environment Institute, Sejong, Korea

Researcher, April 2015-July 2018

2018 Developing heat warning systems with Artificial Neural Network (ANN); Director: Dr.Yeora Chae

- Dealt with various and large volume data (Landsat, climate data)
- Operated Command based computer system (Linux(ubuntu))
- Conducted Gaussian analysis and evaluated the results with computer scientists and meteorologists
- Discussed and wrote a report of the research results

2017 Relationship analysis of extreme heat and credit card transactions; Director: Dr.Yeora Chae

- Proposed and planned the project and discussed the budget with the credit card company
- Coded, verified, and visualized data
- Presented research results to the audience through written documents, workshops, and conferences

2015 – 2016 Evaluating Climate Change Adaptation Plans (CCAPs) in Korea; Director: Dr.Changseock Park

- Collected and analyzed census data, environment data, climate data
- Visualized and summarized the data and results
- Published three articles in a peer-reviewed journal
- Discussed with the Environmental Agency to implicate the results to CCAPs

GRANTS, FELLOWSHIPS, & AWARDS

National Academy of Sciences

2022 Neighborhood Level, Cumulative, Climate Change Attributable Health Burdens (Role: Co-PI)
(submitted)

Health and Medical Geography Specialty Group

2021 *Travel Award* \$60

Korea-America Association for Geospatial and Environmental Science

2021 *Paper Award* \$400

Korea-America Association for Geospatial and Environmental Science

2021 *Student Leadership Award*

Korea-America Association for Geospatial and Environmental Science

2021 *Travel Award* \$50

American Association of University Women

2021 *Dissertation Grant (not funded)*

Florida State University

2021 *Dissertation Research Grant* \$1,000

American Association and Geography

2020 *Dissertation Research Grant (not funded)*

Florida State University

2018 Congress of Graduate Students Attendance and Presentation Grants, FSU (\$200)

Florida State University

2018 *Departmental Assistantship* (\$ 44,297 per year for five years)

Seoul National University

2014 *Scholarship* \$1,000

Vancouver Island University

2012 *Scholarship* \$200

Sangmyung University

2011 *First place in the department* \$4,000

Sangmyung University

2008 *Second place in the department* \$2,000

PEER REVIEWED PUBLICATIONS

- 1 Gonsoroski, E., **Ahn, Y.**, Beitsch, L., Countess, N., Harville, E., Lichtveld, Y.M., Pan, K., Serchan, P.S., Uejio, C.K., “Classifying Building Roof Damage using High-Resolution Imagery for Disaster Recovery.” Photogrammetric Engineering & Remote Sensing (Accepted)
 - Utilized High-Resolution Imagery and machine learning techniques to detect damaged rooftops from Hurricane Michael.
- 2 **Ahn, Y.**, Uejio C.K. (2022). Modeling air conditioning ownership and availability. *Urban Clim.* 2022;46:101322.
 - Estimating Air Conditioning ownership in California at the census tract level with Random Forest
- 3 **Ahn, Y.**, Uejio, C. K., Rennie, J., & Schmit, L. (2022). Verifying Experimental Wet Bulb Globe Temperature Hindcasts Across the United States. *GeoHealth*, 6(4).
 - Validated nationwide real-time Wet Bulb Globe Temperature predictions using ground observations data from 12 different institutes
- 4 Jung, J., **Ahn, Y.**, & Bommarito, J. (2022). Disparities in COVID-19 health outcomes among different sub-immigrant groups in the U.S. - a study based on the spatial Durbin model. *Geospatial Health*, 17(s1), 1–10.
 - Analyzed the relationship between socioeconomic variables and COVID-19 mortality rates and the number of patients among immigrant groups.
- 5 **Ahn, Y.**, Okamoto, D. & Uejio, C.K. (2021). Ahn, Y., Okamoto, D., Uejio, C., 2022. Investigating city bike rental usage and wet-bulb globe temperature. *Int. J. Biometeorol.* 1–12.
 - Examining preferred weather conditions of city bike users in San Francisco and New York City with Generalized Additive Models and bootstrapping
- 6 Kim, H. G., Lee, D. K., Park, C., **Ahn, Y.**, Kil, S. H., Sung, S., & Biging, G. S. (2018). Estimating landslide susceptibility areas considering the uncertainty inherent in modeling methods. *Stochastic environmental research and risk assessment*, 32(11), 2987-3019.
 - Applied ten machine learning models to quantify the uncertainties of estimating landslide susceptible areas. Applied five ensemble methods for aggregating the results from the ten models and suggested landslide susceptible areas. The results showed that the ensemble methods reduced the uncertainties of the individual models’ results.

- 7 Ahn, Y., & Chae, Y. (2018). Analyzing spatial equality of cooling service shelters, Central district of Seoul metropolitan city, South Korea. *Spatial Information Research*, 26(6), 619-627.
 - Evaluated the suitability of cooling centers with the adequacy of cooling centers' location and the capacity of cooling centers. Suggested geographic suitability of cooling center locations with network analysis.
- 8 Ahn, Y., Kang, Y., Park, C. S., & Kim, H. G. (2016). The Characteristics and Improvement Directions of Regional Climate Change Adaptation Policies in accordance with Damage Cases. *Journal of Environmental Impact Assessment*, 25(4), 296-306. **(Korean with English abstract)**.
 - Evaluated the effectiveness of regional climate change measures by analyzing damage frequency from newspapers regarding climate change impacts. The results of the paper were reported in the media.
- 9 Ahn, Y. J., Kang, Y. E., & Park, C. S. (2016). Developing indexes for analyzing severe heat hot spots under climate change. *J. Korea Plan. Assoc*, 51, 199-209. **(Korean with English abstract)**.
 - Suggested proxy measures for nationwide risk assessment and identified the most heat-vulnerable regions in Korea.
- 10 Ahn, Y., Kang, Y. E., Choi, C.S. & Park, C. S. (2016). "The Analysis of Residents' Participation in the Ditch Management Project and Typology of Agents to Improve Participation." *Journal of Korea Planning Association* 51 (4): 225-36. **(Korean with English abstract)**.
 - Conducted a survey to evaluate community engagement ditch management projects and applied network analysis to identify important components of community engagement environment recovery programs.
- 11 Ryu, J., Lee, D. K., Park, C., Ahn, Y., Lee, S., Choi, K., & Jung, T. (2016). Assessment of the vulnerability of industrial parks to flood in South Korea. *Natural Hazards*, 82(2), 811-825.
 - Suggested vulnerability assessment proxies and conducted vulnerability assessments for industrial parks in Korea
- 12 Kang, Y. G., Ahn, Y., & Park, C. S. (2016). Analysis of the Importance of Climate Change Adaptation Strategies and Systematization. *J Environ. Policy Admin*, 24(1), 243-262. (Korean with English abstract).
 - Analyzed climate change adaptation strategies based on a review of the literature and a survey of experts. Conducted principal component analysis and divided global climate change adaptation strategies into six categories. Based on the results, we suggested a framework for the 2nd Korea Climate Change Adaptation Plan.
- 13 Ahn, Y., Lee, D. K., Kim, H. G., Park, C., Kim, J., & Kim, J. U. (2015). Estimating Korean Pine (*Pinus koraiensis*) habitat distribution considering climate change uncertainty using species distribution models and RCP Scenarios. *Journal of the Korean Society of Environmental Restoration Technology*, 18(3), 51-64. **(Korean with English abstract)**.
 - Applied species distribution models based on machine learning algorithms and two Representative Concentration Pathway scenarios to consider the uncertainties of estimating potential Korean Pine habitat under climate change. Compared the models' results and suggested potential Korean Pine tree habitats with the ensemble models' results.
- 14 Ahn, Y., Lee, D. K., Kim, H., & Mo, Y. (2014). Applying connectivity analysis for prioritizing unexecuted urban parks in Sunnam. *Journal of the Korean Society of Environmental Restoration Technology*, 17(3), 75-86. **(Korean with English abstract)**
 - Applied network analysis to prioritize the development of city parks and contribute towards improving the green network for urban ecosystems.

PAPERS UNDER REVIEW

- 1 Ahn, Y. & Uejio, C.K. "Spatial Disparities of Air Conditioning Ownership in Florida, United States" (Submitted)
 - Identifying Spatial Clusters of Air Conditioning (AC) Ownership in Florida and analyzing the association of socioeconomic variables and A.C. prevalence at census tract level with Spatial Durbin Model.

Yoonjung Ahn

Tel: 850-559-1916

Email: yoonyung.ahn@colorado.edu

Website: <https://yoonyungahn.weebly.com>

- Kim, K., Lee, J., **Ahn, Y.**, Sim, S., Jung, J., “How the COVID-19 Pandemic Changed Spatiotemporal Patterns of Crime: A Case Study of Atlanta, Georgia” (Under review)
 - Investigating crime spatiotemporal patterns during COVID-19 space-time permutation scan statistic (STPSS)

BOOK CHAPTER

- Uejio, C.K., Tamerius, J.D. **Ahn, Y.** & Gonsioroski, E. (2020). Primer on climate science. Global Climate Change and Human Health: From Science to Practice, 1. (eds. Lemory, J., Lubert, G, Knowlton, K., Sorensen, C.). Wiley.

WORKING PAPERS

- Ahn, Y.** & Uejio, C.K. “Air Conditioning Ownership and Heat-Related Mortality Rates in Florida”
 - Analyzing the relationship between heat-related mortality rates and central and room air conditioning ownership at the census tract level in Florida
- Ahn, Y.**, Tuholske, C. & Parks, R. “Comparing Approximated Heat Index and Wet Bulb Globe Temperature Across the United States”
 - Comparing approximated WBGT Liljegren, WBGT Bernard, and Heat Index from PRISM, DayMet, and ERA5 data with hindcast WBGT with in situ data
- Uejio, C.K, **Ahn, Y.**, Jane, Ludovica, Julia, “Miami Dade County Extreme Heat Action Plan”
- Ahn, Y.**, Leyk S., Uhl. J. “Gridded Settlement Data for the Conterminous United States Over 200 years”
 - Utilizing nationwide building footprint data, property data, and parcel data and generated trajectory of settlement data from 1800 to 2020

TEACHING EXPERIENCE

Department of Geography, Florida State University

Teaching Assistant, August 2018 – June 2020

June 2020 *Instructor of record*; GEO1330 Environmental Science, Online

- Designed the course and lectured as a sole instructor
- Uploaded recorded lecture videos and extra materials related to the lecture videos
- Created a discussion board and discussed current environmental issues with students
- Participated in a workshop and learned about virtual class tools and creating online class materials

January 2020 *Lab instructor*; GIS4421 Health GIS, Hybrid

- Led lab activities and introduced programs (Arc GIS, Rstudio Cloud, and R)
- Instructed spatial data visualization with Arc GIS, Rstudio Cloud, and R
- Interacted with students with Rstudio Cloud and helped with code errors
- Communicated with students and a supervisor
- Created one of the spatial analysis lab materials in R

September 2019 *Instructor of record*; GEO1330 Environmental Science, In-person &

June 2019 *Instructor of record*; GEO1330 Environmental Science, In-person

- Designed the course and lectured as a sole instructor
- Introduced current environmental issues and environmental policies and discussed with students

September 2018, *Teaching Assistant*, GEO4300 Biogeography, online

- Evaluate and grade examinations, assignments, or papers and record grades, Word processing software
- Participated in several Program for Instructional Excellence (PIE) workshops and learned about teaching skills

INVITED TALKS AND COLLOQUIA

May 2022 The International Society of Biometeorology

- “Investigating city bike rental usage and wet-bulb globe temperature.”

January 2023 Southwestern University

- “Utilizing GIS programming and big data for extreme heat prevention.”

February 2023 New Mexico State University

- “Utilizing GIS programming and big data for extreme heat prevention.”

CONFERENCE, PRESENTATIONS, AND COURSES ATTENDED

- 1 Balk, D., Leyk, S., MacManus, K., and **Ahn, Y.**, “Implications of Global vs. Local Data for Understanding Populations at Risk of Seaward Hazards and Adaptation Planning” Managed Retreat conference, New York City, NY, USA (in-person). 20-23, June 2023 (submitted).
- 2 **Ahn, Y.**, Uhl, J. Leyk, S. “Integrating Real Estate, Cadastral, and Remote Sensing Derived Data for Quantifying Hazards and Risks” Spatial Statistics, Annual meeting, Boulder, CO, USA (in-person). 18 – 21, July 2023 (submitted).
- 3 **Ahn, Y.**, 2023. “Studying Environmental Change and Disaster Preparation with Nationwide Property Data” Associate of Geography, Annual meeting. Denver, CO, USA (in-person). 23-27 March 2023 (submitted)
- 4 **Ahn, Y.**, Leyk, S., Uhl, J. 2023. “Integrating Real Estate, Cadastral, and Remote Sensing Derived Data for Long-Term, Fine-Resolution Settlement Modeling” Associate of Geography, Annual meeting. CO, USA (in-person). 23-27, March 2023 (submitted)
- 5 **Ahn, Y.**, Uejio, C.K., Leyk, S. 2023. “Heat Related Mortality in Florida: A Case- Crossover Study Investigating Effect Modification by Air conditioning Ownership” Associate of Geography, Annual meeting. Denver, CO, USA (in-person). 23-27, March 2023 (submitted)
- 6 **Ahn, Y.** & Uejio, C.K., 2022. “Spatial Analysis of Air Conditioning Ownership in Florida, United States,” Associate of Geography, Annual meeting. New York City, USA (Virtual). 24-28, February 2022
 - *Session organizer* in “Geospatial Health Symposium #19: The health impacts of climate change and society’s response to climate change: a call for climate justice”, Associate of Geography, Annual meeting
- 7 **Ahn, Y.** & Uejio, C.K., 2022. “Disparity of Air Conditioning Ownership in Florida, United States,” American Meteorological Society. Annual meeting. Huston, Texas, USA (Virtual). 23-27, January 2022
- 8 **Ahn, Y.**, Uejio, C.K. & Rennie, J., 2021. “Verifying Experimental Wet Bulb Globe Temperature Hindcasts across the United States,” American Meteorological Society, Annual meeting. Virtual. 12–16 January 2021
- 9 **Ahn, Y.** & Chea, Y.R., 2019. “Analyzing spatial equality of cooling service shelters The central district of Seoul metropolitan city, South Korea” American Associate of Geography, Annual meeting, Washington D.C, USA, 3-7 April 2019
 - *Session chair* in “Leveraging New Technologies in Changing Health Care Conditions,” American Associate of Geography, Annual meeting, Washington D.C., USA. 3-7 April 2019
- 5 **Ahn, Y.**, Chea, Y.R. & Park, J.C., 2018. “Analyzing the correlation between heat-related illness and social, environmental variables” spring conference of the Korea Society of Climate Change Research, Jeju, Korea, 18-20 June 2018
- 6 **Ahn, Y.**, Chea Y.R. & Park, J.C.. 2017. “Analyzing of Consumption Behavior according to Temperature” Fall conference of the Korea Society of Climate Change Research, Ulsan, Korea, 30 November - 1 December 2017
- 7 **Ahn, Y.**, 2016. “The Characteristics and Improvement Directions of Regional Climate Change Adaptation Policies in accordance with Damage Cases” Spring conference of Environmental Policy and Administration, Seoul, Korea, 22-23 April 2016
- 8 **Ahn, Y.**, 2015. “Estimating Korean Pine (*Pinus Koraiensis*) Habitat Distribution Considering Climate Change Uncertainty,” Climate Change: Impact and Responses, Vancouver, Canada, 10-11 April 2015

- 9 **Ahn, Y.**, 2014. "Applying Connectivity Analysis for Prioritizing Unexecuted Urban Parks in Sunnam," Journal of Environment Impact Assessment, Jeju, Korea, 16-17 May 2014

REPORTS PUBLISHED BY RESEARCH CENTERS AND INSTITUTES

- 1 Chea, Y.R., Lee, S.J. Jeon, H. C. **Ahn, Y.** & JH Lee (2017). "Evidence-based climate change risk management framework for customized adaptation." Korea Environment Institute
- 2 Chea, Y.R., Chio, J.S. & **Ahn, Y.** (2016). "Estimating Heat Wave Vulnerability by Using Deep Learning Model." National Information Society Agency
- 3 Chea, YR, Song, Y. & **Ahn, Y.** (2016). "Developing Climate Change Response Capacity Assessment Framework." Korea Environment Institute
- 4 Park, C.S., Song, Y., Kang, Y., **Ahn, Y.** Moon, T., Kim, D. & Byang, B. (2015). "Climate-Environmental Risk Outlook and National Strategy (II)." Korea Environment Institute
- 5 Park, C.S., Lee, J.H., Kang, E., **Ahn, Y.** Park, J., & Son, M. (2015). "Regional Resources Management Strategies Considering Climate Change Adaptation." Korea Environment Institute
- 6 Ministry of Agriculture Food and Rural Affairs (2015). "The Analysis of Residents' Participation in the Dutch Management Project and Typology of Agents to Improve Participation."
 - Contribution: Visited villages that conducted community-engaged ditch management projects. Interviewed with the NOG leaders and discussed environmental improvements in the villages.
- 7 Ministry of Trade, Industry, and Energy (2015). "Climate Change Vulnerability Assessment in Industry Part."
 - Contribution: Developed the proxies for Industry Park vulnerability assessment and analyzed the vulnerable review of four industrial parks.
- 8 Ministry of Environment (2015). "Developing and Integrating Model for Climate Change Impact and Vulnerability Assessment (I)."
 - Contribution: Literature review for developing an integrating model for climate change.
- 9 Ministry of Trade Industry and Energy (2013). "Developing Methods for Vulnerability Assessment and Risk Assessment of Industrial Parks under Climate Change."
 - Contribution: Suggested research design and vulnerability and risk assessment methodology based on Intergovernmental Panel on Climate Change.
- 10 Ministry of Environment (2013). Developing Climate Change Adaptation and Management Method for Urban Ecosystem

SERVICE & MEMBERSHIP

Professional service

Proposals/awards reviewer

- 2023 Judge, Undergraduate Research Opportunity Program, *University of Colorado Boulder*
- 2023 Judge, Health Data Visualization Contest, *Health and Medical Geography Group Specialty Group*
- 2023 Judge, Emerging Scholar Award, *Health and Medical Geography Group Specialty Group*

Manuscript reviewer

- 2022 GeoHealth
- 2020 Journal of Emergency Management

Session organizer / chair

- 2023 "Geospatial Health Symposium #19: The health impacts of climate change and society's response to climate change: a call for climate justice", Associate of Geography, Annual meeting, New York City, USA. 24-28 February 2022
- 2019 "Leveraging New Technologies in Changing Health Care Conditions," American Associate of Geography, Annual meeting, Washington D.C., USA. 3-7 April 2019

Mentorship

January 2022 Mentored graduate students

- Kyung Hee University- Korea-America Association for Geospatial and Environmental Science Mentoring Program

October 2021- April 2022 Undergraduate Research Opportunity Program

- Mentored an undergraduate research student and worked on a project together

Membership and service

2018-current Health and Medical Geography Specialty Group at American Association of Geographers

- 2022 *Serving as a board member*

Korea-America Association for Geospatial and Environmental Science

- July 2021-June 2022 Served as *student chair*

2018-current American Association of Geographers (AAG)

2018-current Geographic Information Science and Systems Specialty Group at American Association of Geographers

2018-2022 Geography department graduate student officer at Florida State University

July 2020- May 2021 Served as Vice president

2020 Developing COVID-19 patients map

March 2020 Helped KSIC create a database of COVID-19 patients during the outbreaks(<https://coronapath.info/new/eng.html>)

2019 Florida State University Global Ambassadors

Introduced Korean culture on the FSU campus

PROFESSIONAL DEVELOPMENT

Ethics workshop

January 2023 KAGES

Grant boot camp

June – July 2022 Population Center, Institute of Behavioral Science

PIE teaching workshops

August 2018 Florida State University

SKILLS

Programming Languages: Python, R

Applications: Google Earth Engine (GEE), Microsoft Office Suite, Internet Explorer, Adobe Photoshop, CAD, SPSS

Operating Systems: Windows, OSX, Ubuntu

Languages: English (Fluent), Korean (Fluent), Japanese (Beginner)

CERTIFICATION

November 2015 *National Technical Certification of Nature Environment and Ecological Restoration*

January 2013 *Microsoft Office Specialist*