

**THEODORE C LIM**  
*Curriculum Vitae*  
January 2022

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<https://theochli.github.io>

## **Appointments and Positions**

### **Assistant Professor**

Department of Urban Affairs and Planning, Virginia Tech (since 2019)

Research Expertise: nature-based infrastructures, urban and environmental analytics, use of data and models in environmental decision-making

Teaching core courses in Smart and Sustainable Cities undergraduate and Master of Urban Regional Planning (MURP) programs

### **Environmental Data Scientist**

Monsanto Company & Bayer Crop Science (2017 - 2019)

Implemented data science methods in areas of hydrology, meteorology/climatology, and environmental risk quantification to support precision agriculture initiatives

### **Graduate Research Assistant**

Department of City and Regional Planning, University of Pennsylvania (2013 - 2017)

Taught core courses in GIS, statistics, and programming for the Master of City Planning (MCP) and Master of Urban Spatial Analytics (MUSA) programs

### **Civil Engineer**

Sherwood Design Engineers (2009 - 2013)

Created models and designs of integrated, sustainable water infrastructure at site and district scales

### **Fulbright Scholar**

US Department of State (2007 - 2008)

Conducted public health research in Northeast China

## **Education**

Ph.D. City and Regional Planning, University of Pennsylvania (2017)

M.S. Environmental Science and Engineering, Tsinghua University (2011)

B.A. Special Major: Immigrant Studies, Swarthmore College (2007)

## **Refereed Journal Articles**

Huang, Lechuan\*, **Theodore C. Lim**, and Shalini Misra (2022) “Interdisciplinary inquiry and spatial green stormwater infrastructure research” *Sustainability*. <https://doi.org/10.3390/su14031198>  
\*undergraduate student researcher

**Lim, Theodore C.**, Amanda Cuellar, Kyle Langseth, and Jefferson L Waldon (2022) “A technoeconomic analysis of negative emissions BECCS through pyrolysis and bioenergy district heating infrastructure” *Environmental Science & Technology*. <https://doi.org/10.1021/acs.est.1c03478>

**Lim, Theodore C.** and Kaidi Wang (2022) “Comparison of machine learning algorithms for emulating a complex hydrologic model for spatial land use decision support” *Computers and Geosciences*. <https://doi.org/10.1016/j.cageo.2021.105025>

**Lim, Theodore C.** (2021) “Patterns in environmental priorities through open government data” *Telematics and Informatics* 64 (November): 101678. <https://doi.org/10.1016/j.tele.2021.101678>

**Lim, Theodore C.** (2021) “Model emulators and complexity management at the environmental science-action interface” *Environmental Modelling & Software*. <https://doi.org/10.1016/j.envsoft.2020.104928>

Hoover, Fushcia-Ann and **Theodore C. Lim** (2020) “Examining privilege and power in US urban parks and open space during the double crises of anti-Black racism and COVID-19.” *Socio-Ecological Practice Research*. <https://doi.org/10.1007/s42532-020-00070-3>.

Hsu, David, **Theodore C. Lim**, and Meng Ting. (2020) “Rocky steps towards adaptive management and adaptive governance in implementing green infrastructure at urban scale in Philadelphia” *Urban Forestry and Urban Greening*. <https://doi.org/10.1016/j.ufug.2020.126791>

**Lim, Theodore C.** (2019). “Use of the McHargian LUSA in Agricultural Research and Decision-Making in the Age of Non-Stationarity and Big Earth Observation Data.” *Socio-Ecological Practice Research*. <https://doi.org/10.1007/s42532-019-00022-6>.

**Lim, Theodore C.**, and Claire Welty. (2018). “Assessing Variability and Uncertainty in Green Infrastructure Planning Using a High-Resolution Surface-Subsurface Hydrological Model and Site-Monitored Flow Data.” *Frontiers in Built Environment* <https://doi.org/10.3389/fbuil.2018.00071>.

**Lim, Theodore C.** (2018) Revitalizing urban neighborhoods by adopting green infrastructure—the case of Washington D.C. *Urban Planning International*. doi:10.22217/upi.2017.423

**Lim, Theodore C.**, Claire Welty. (2017). “Effects of spatial configuration of imperviousness and green infrastructure networks on hydrologic response in a residential sewershed”. *Water Resources Research*, doi: 10.1002/2017WR020631

- Lim, Theodore C.** (2017) “An empirical study of spatial-temporal growth patterns of a voluntary residential green infrastructure program”. *Journal of Environmental Planning and Management*, doi: 10.1080/09640568.2017.1350146
- Lim, Theodore C.** (2016) “Predictors of Urban Variable Source Area: A Cross-Section Analysis of Urbanized Catchments in the United States.” *Hydrological Processes*, doi:10.1002/hyp.10943
- Lim, Theodore C.,** Wang, B., Huang, J., Deng, S., & Yu, G. (2011). Emission Inventory for PFOS in China: Review of Past Methodologies and Suggestions. *The Scientific World Journal*, 11, <http://doi.org/10.1100/2011/868156>

## **Funding**

**NSF Smart and Connected Communities Planning Grant.** 2021 - 2022. “The Prospects of Artificial Intelligence in Urban Planning” (\$150,000)

- Role: Co-PI (PI Tom Sanchez)

**Virginia Tech Institute for Society, Culture, and Environment (ISCE) Scholars Seed Grant** 2021-2022 “Engaging vulnerable populations in extreme heat resilience planning through citizen science and co-production of knowledge” (\$29,965)

- Role: Principal Investigator
- Funding support for two graduate students, urban sensing equipment, and pilot citizen science program

**Virginia Tech Institute for Society, Culture, and Environment (ISCE) Scholars Seed Grant** (2021-2022) “The Prospects for Artificial Intelligence in Urban Planning” (\$30,000)

- Role: Co-Investigator

**GO Virginia Developing a Destination for Talent Initiative** 2020-2021 “Mapping Urban Heat Islands with UAVs” (\$5,000)

- Role: Principal Investigator

**Virginia Tech, Office of the Provost** 2020-2021

New Faculty Mentoring Program (\$1,500)

**Virginia Tech +Policy Fellows Program.** 2020 – 2021 “Regional environmental planning and policy for bioenergy production and infrastructure: A linked water-energy-agriculture systems approach” (\$12,000)

- Role: Principal Investigator
- Co-PIs: R Stewart (VT), RQ Thomas (VT), J Little (VT), M Edwards (U Wisconsin – Madison), S Fletcher (Stanford)
- Funding support for PI summer salary, data collection, and workshop

**Virginia Tech Institute for Society, Culture, and Environment.** 2019-2020 “Designing and training a physical simulation-machine learning-based watershed planning support system” (\$16,517)

- Role: Principal Investigator

- Funding support for graduate student and PI summer salary and machine learning algorithm testing and development

### **Conference Presentations**

Guillaume, Joseph A, , Joffa Applegate, Barry Croke, Pierre Glynn, William E. Gran, Volker Grimm, Serena Hamilton, Takuya Iwanaga, Tony Jakeman, Tomasz E. Koralewski, Theodore Lim, John Little, Saman Razavi, Gary Shenk, and Hsiao-Hsuan Wang. “Reasoning about model complexity with a multi-scale approach” American Geophysical Union Fall Meeting. Dec 13, 2021, virtual meeting.

Lim, Theodore C, Amanda Cuellar, Kyle Langseth, and Jefferson L Waldon. “Potential transition pathways and uncertainty for achieving negative emissions with bioenergy and biochar at local scale” American Geophysical Union Fall Meeting. Dec 13, 2021, virtual meeting.

Lim, Theodore C. and Bev Wilson. “Building community extreme heat resilience through science engagement with middle school students” Assoc. of Collegiate Schools of Planning Annual Conference, Oct 7, 2021, Virtual conference.

Huang, Lechuan\*\*, and Theodore C Lim. “Trends in disciplinary research frameworks for spatial green stormwater infrastructure” American Association of Geographers. April 7 – 11, 2021. Virtual conference \*\*undergraduate presenter

Lim, Theodore C. “The carbonshed planning framework for rural communities” Assoc. of Collegiate Schools of Planning Annual Conference, Nov 7, 2020. Virtual conference.

Lim, Theodore C. “Stakeholder perceptions of models: an exploration of model complexity through model emulation” Chesapeake Community Research Symposium. June 8, 2020. Virtual conference.

Lim, Theodore C. Claire Welty, and James Woodworth. “‘Optimal location’ planning for urban stormwater BMP performance and management: implications and limitations” Chesapeake Community Research Symposium. June 9, 2020. Virtual conference.

Kianmehr, Ayda and Theodore Lim. “A global sensitivity analysis of thermal conditions in urban street canyons to physical morphology and vegetation parameters” American Geophysical Union Fall Meeting. Dec 11, 2019, Moscone Center, San Francisco, CA.

Lim, Theodore C. “Use of emulation modeling on a process-based hydrological model for spatial land use decision support: proof of concept and research agenda” American Geophysical Union Fall Meeting. Dec 10, 2019, Moscone Center, San Francisco, CA.

Lim, Theodore C. “Natural Language Processing (NLP) tools to characterize environmental data coverage in the US” Assoc. of Collegiate Schools of Planning Annual Conference, Oct 27, 2019, Hyatt Regency Greenville, Greenville, SC.

- Lim, Theodore C. "Open Environmental Data: A Vision for Smart, Sustainable, and Inclusive Cities." Smart Cities Symposium. March 28, 2019. The Ohio State University, Knowlton School. Columbus, OH.
- Lim, Theodore C. and Claire Welty "Spatial-Temporal Considerations of Distributed Green Infrastructure Implementation." American Geophysical Union Fall Meeting. Dec 14, 2018, Walter E. Washington Convention Center, Washington, DC.
- Lim, Theodore C. "Social Influence and Green Infrastructure Installation." Assoc. of Collegiate Schools of Planning Annual Conference, Nov 4, 2016, Hilton Portland & Executive Tower, Portland, OR.
- Lim, Theodore C. "Beyond imperviousness: A statistical approach to identifying functional differences between development morphologies on variable source area-type response in urbanized watersheds." American Geophysical Union Fall Meeting. Dec 12, 2016, Moscone Center, San Francisco, CA.
- Lim, Theodore C., Hu Hong and David Hsu. "Heterogeneous Reactions to Price Incentives Promoting Private Implementation of Green Infrastructure." Assoc. of Collegiate Schools of Planning Annual Conference, Oct 22, 2015, Hyatt Regency, Houston, TX.
- Lim, Theodore C., Bin Wang, Jun Huang, Shubo Deng, and Gang Yu. "Fugacity Modeling to Estimate Source Load of PFOS in Lower Third of Huangpu River, Shanghai." China Persistent Organic Pollutants Forum, May 17, 2011, Harbin, China.

### **Other Writing**

- Lim, Theodore C., Vincent Wang, and Nina Ha. "We will build community through seeing each other". *Roanoke Times Op-Ed*. 3/21/21.  
[https://roanoke.com/opinion/columnists/lim-wang-and-ha-we-will-build-community-through-seeing-each-other/article\\_f861d214-82bd-11eb-b38a-a762ca7001e2.html?fbclid=IwAR2fgvHcRQn9ROU3bgRWK5JPjTdNZd\\_tcX9FQxKJn9qRFagPxwr\\_YujnhSk](https://roanoke.com/opinion/columnists/lim-wang-and-ha-we-will-build-community-through-seeing-each-other/article_f861d214-82bd-11eb-b38a-a762ca7001e2.html?fbclid=IwAR2fgvHcRQn9ROU3bgRWK5JPjTdNZd_tcX9FQxKJn9qRFagPxwr_YujnhSk)
- Lim, Theodore C. "Dynamic environmental models and participatory planning: prospects for integration." Fall 2019. Planning and Technology Today: The Newsletter of the American Planning Association's Technology Division.
- Lim, Theodore C. "Urban water underground: How green infrastructure makes it visible." July 5, 2019. European Geophysical Union Blogs: Water Underground.  
<https://blogs.egu.eu/network/water-underground/2019/07/05/urban-water-underground-how-green-infrastructure-makes-it-visible/>
- Lim, Theodore C. "Infrastructural Ecology's Value in Conceptual Design." March 31, 2014. Scenario Journal. <https://scenariojournal.com/infrastructural-ecology/>

### **Other Presentations**

- “Building community resilience to extreme heat through youth engagement” Dec 8, 2021 (Guest speaker at Kiwanis Club of Roanoke)
- “Environmental Data and Models in the Wild: Urban Heat Islands” Sep 21, 2021 (InspirAsian Series at Virginia Tech)
- “Stakeholder participation in green infrastructure planning: from problem definition to environmental simulation” Sep 13, 2021 (Guest speaker at Virginia Tech Leadership & Social Change Residential College)
- “Two examples of data science in smart environmental planning” Oct 22, 2019 (Virginia Tech Data and Decisions Destination Area DDREAM seminar series)
- “Two examples of data science in smart environmental planning” Oct 20, 2019 (Virginia Tech UrbComp seminar series)
- “Frontiers of socio-hydrological research in distributed stormwater management systems planning (“green infrastructure”) June 2, 2017 (Philadelphia Water Department)
- “Land, Water, Infrastructure & People: Considerations of planning distributed stormwater management systems” May 12, 2017. (University of Pennsylvania Urban Doctoral Symposium)
- “Implementation of green infrastructure on the municipal scale” 2015 (NYC Department of Environmental Protection)
- “Beyond percent impervious: importance of context in planning green stormwater infrastructure” 2015 (Penn Institute for Urban Research Urban Doctoral Poster Session)
- “District-scale integrated water infrastructure systems” 2014 (University of Pennsylvania Department of Landscape Architecture)
- “Infrastructure planning, green infrastructure, and urban hydrology” 2014 (Penn Institute for Urban Research Research Summit Poster Session)

### **Professional Memberships**

Association of Collegiate Schools of Planning  
American Geophysical Union  
American Association of Geographers  
American Planning Association

### **Academic, Professional, and Personal Recognitions and Awards**

Virginia Tech College of Architecture and Urban Studies Certificate for Excellence in Teaching (2021)

Plant Breeding Analytics Data Science Prize (top 2% of data scientist employees), Monsanto Company (2018)

Outstanding Student Paper (top 5% of all papers), American Geophysical Union, Hydrology Section (2016)

Center for Teaching and Learning Graduate Fellowship for Teaching Excellence (2016 – 2017)

Winner, Disruptive Technologies in Real Estate Challenge, Urban Land Institute (2015)

Doctoral Fellow Award, University of Pennsylvania (2013 – 2017)

National Honor Award, Jiaxing China Master Plan, American Society of Landscape Architects (2012) (Sherwood Design Engineers, with: SOM, HOK, Woods Bagot, and SWA)

Merit Award for Urban Design, Langfang Eco-Smart City Master Plan, American Institute of Architects, Hong Kong (2010) (Sherwood Design Engineers, with: CW Group, HOK, and Woods Bagot)

Tsinghua University Full Scholarship, China Scholarship Council (2009 – 2011)

Fulbright Research Scholarship, US State Department (2007 – 2008)

Intercultural Center Lifetime Service Award, Swarthmore College (2007)

Dean's Award, Swarthmore College (2007)

Eugene M. Lang Summer Humanities Grant (2006)

## **Service**

### Program

- Member, Master of Urban and Regional Planning Admissions Committee, Urban Affairs and Planning Program, Virginia Tech (2019 - )
- Member, Master of Urban and Regional Planning Marketing Committee, Urban Affairs and Planning Program, Virginia Tech (2019 - 2020)
- Chair, Anti-Racism and Diversity Committee, Urban Affairs and Planning Program, Virginia Tech (2020 - )
- Member, UAP Faculty member search committee (2021)

### School

- Member, SPIA Diversity Committee (2021 - )

### College

- Member, College of Architecture and Urban Studies Diversity Committee (2020 - )
- Member, Diversity Director Search Committee (2021 - )
- Judge, 2021 CAUS Student Initiated Research Grant (SIRG) program (2021)

## University

- Co-Chair, Asian Pacific Islander Desi American (APIDA) Caucus, Virginia Tech (2020 - )
- Member, College of Architecture and Urban Studies Diversity and Inclusion Committee, Virginia Tech (2020 - )
- Member, Global Change Center admissions committee (2021- )

## Broader Academic Community

- NSF Ad-Hoc Reviewer for Environmental Sustainability
- Judge, Outstanding Student Paper Award, American Geophysical Union Hydrology Section (2018, 2019)
- Peer reviews given for the following academic journals:
  - 2019
    - *Elementa* (1)
    - *Landscape and Urban Planning* (1)
    - *Water Resources Research*
    - *Socio-Ecological Practice Research* (1)
    - *Sustainability*
    - *Climate*
  - 2021
    - *Journal of Environmental Policy and Planning* (3)
    - *Journal of Water Resources Planning and Management* (1)
    - *Socio-Ecological Practice Research* (1)