



Symposium on Scale in Spatial Analytics and Modeling

2022 AAG Annual Meeting, New York City, Feb. 25 – Mar. 1, 2022

Sponsored by the *Cyber Infrastructure, Geographic Information Science and Systems; Spatial Analysis and Modelling* Specialty Groups.

Synopsis

Scale is a fundamental topic in geography and carries various meanings when mentioned in different contexts. We conduct 'large scale' studies to understand general patterns and relations, and also use 'local scale' indicators and models to analyze spatial variations of the patterns and relations. The scale of mapping, spatial analysis and modeling to a large extent determines the insights that can be gained from geographical phenomena. The importance of scale in spatial analysis has been epitomized in the well-known Modifiable Areal Unit Problem (MAUP) and its temporal equivalent.

With the advent of the Big Data era, geospatial data are collected in novel and ever diversifying ways at unprecedented speeds. These changes provide everyone new opportunities to study geographic phenomena at new spatial and temporal scales. Meanwhile, the revolutions in Artificial Intelligence (AI) and computing techniques have created advanced modeling capacities for spatial pattern/object detection, data assimilation, multi-scale analysis and modeling. With technological advances, various spatial metrics and modeling frameworks have been developed to detect and quantify scales of spatial processes and explore interplays among spatial processes at multiple scales.

In 2020 February, the Scale and Spatial Analytics Workshop held at ASU's Spatial Analysis Research Center (SPARC) aroused extensive discussions and highlighted the latest research developments on this topic. Following that workshop, this symposium brings the fundamental topic of scale to a broader audience within the AAG community in order to facilitate idea exchange, collaboration, and personal connections among interdisciplinary scholars and practitioners.

The symposium intends to discuss several longstanding questions on scale in spatial analytics and modeling, which include but are not limited to:

1. What do we mean by scale, and how does it affect geographic analysis and decision-making?
2. How do we detect and measure the scale(s) of processes that generate the geographic phenomena we observe?
3. How do processes at multiple spatial and temporal scales interact, and how do we handle these multi-scale processes and interactions in spatial analysis and modeling?
4. What is the relationship between spatial association, spatial heterogeneity, and the MAUP?
5. What is the role of humans when handling scales in geographic analysis?
6. How does observational scale relate to analysis scale? How does the choice of analysis scale impact the identification of patterns captured in data?
7. Do geographic phenomena follow underlying universal scaling laws?

We welcome paper sessions (virtual or in-person), panel discussions and individual presentations in various aspects related to scale issues in Geography, GIScience, and other disciplines. We are particularly interested in novel methodologies, modeling frameworks, tools and data sources that address scale issues in emerging geographic problems. Example session topics are listed below. However, you are encouraged to propose new sessions in relevant areas of your interest.

Call for Abstracts

The Symposium currently has virtual and in-person sessions covering the seven different topics. You can find Call for Paper (CFP) of individual sessions in the AAG Knowledge Community, Session Gallery, and the URLs below. Please contact the session organizers to submit your abstract.

- **Symposium on Scale in Spatial Analytics and Modeling: Recent Progress in the Modifiable Areal Unit Problem (MAUP).**
 - Type: Virtual Paper.
 - Organizer: Xiang Ye (xiangye@buffalo.edu) and Ziqi Li (ziqi.li@glasgow.ac.uk)
 - URL: <https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2890>
- **Symposium on Scale in Spatial Analytics and Modeling: On the Measurement of Scale in Spatial Processes.**
 - Type: Paper.
 - Organizer: Mehak Sachdeva (msachde1@asu.edu) and Taylor Oshan (toshan@umd.edu).
 - URL: <https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2990>
- **Symposium on Scale in Spatial Analytics and Modeling: Movement and Mobility Data Analytics.**
 - Type: Paper
 - Organizer: Somayeh Dodge (sdodge@ucsb.edu) and Evgeny Noi (noi@ucsb.edu)
 - URL: <https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2948>
- **Symposium on Scale in Spatial Analytics and Modeling: Multi-Scale Data Visualization, Analytics and Modeling**
 - Type: Paper
 - Organizer: Yi Qiang (qiangy@usf.edu)
 - URL: <https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2847>
- **Symposium on Scale in Spatial Analytics and Modeling: Scales of Vulnerability, Resilience and Disaster Risk Assessment**
 - Type: Paper
 - Organizers: Jinwen Xu (jinwenxu@usf.edu), Yi Qiang, Lei Zou, and Heng Cai
 - URL: <https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2945>
- **Symposium on Scale in Spatial Analytics and Modeling: Scaling Analysis on Urban Big Data.**
 - Type: Virtual Paper
 - Organizer: Ding Ma (dingmartin1@gmail.com) and Xiang Ye (xiangye@buffalo.edu)
 - URL: <https://aag-annualmeeting.secure-platform.com/a/solicitations/19/sessiongallery/2891>
- **Symposium on Scale in Spatial Analytics and Modeling: Scale and Spatial Associations**
 - Type: Virtual Paper
 - Organizer: Yongze Song (yongze.song@curtin.edu.au)

Call for Sessions

If you are interested in organizing a session or sessions in the Symposium, please submit a session proposal with the title, abstract, and modality (virtual or in-person, paper session or panel session) to Yi Qiang (qiangy@usf.edu) before the 2022 AAG abstract submission deadline (currently Oct. 19 with possible

extensions). Please follow the format of the example sessions to name the proposed sessions: "Symposium on Scale in Spatial Analytics and Modeling: SUBTITLE OF YOUR SESSION". The session organizer(s) will be responsible for the call for papers and abstract acceptance for their session(s).

Organizing Committee

Yi Qiang, University of South Florida
Taylor Matthew Oshan, University of Maryland
Peter Kedron, Arizona State University
Amy Frazier, Arizona State University
Mehak Sachdeva, Arizona State University
Levi Wolf, University of Bristol
Xiang Ye, Shenzhen University
Somayeh Dodge, University of California, Santa Barbara
Eun-Hye Yoo, University of Buffalo
Lei Zou, Texas A&M University
Heng Cai, Texas A&M University
Ziqi Li, University of Glasgow
Yongze Song, Curtin University
Ding Ma, Shenzhen University