



The American Association of Geographers Spatial Analysis and Modeling Specialty Group Newsletter

2020

<http://sam-aag.org/>

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FROM THE CHAIR

Dear SAM Members,

It was unfortunate that the AAG Annual Meeting in Denver was canceled and that we did not have a chance to gather together. While many SAM activities were canceled, 11 sessions among around 70 sessions that SAM sponsored were held through the virtual platform, including two sessions for John Odland Award (our annual student paper competition). Here are some news items that I would like to share.

First, Daoqin Tong (Arizona State University) has been elected for the vice chair position. She will replace Eric Delmelle (UNC Charlotte) and will serve the SAM community for the next four years (the next two years as vice chair and then two more years as chair). I would like to thank Eric for his service for the last three years.

Second, I would like to ask you join me in congratulating the 2020 SAM award winners. The John Odland Award winners are Ziqi Li (1st place, Arizona State University), Nana Luo (2nd place, San Diego State University), and Paul H. Jung (3rd place, University of North Carolina at Charlotte). They presented their research in the virtual sessions and their presentations are available on the AAG website. David Wong (George Mason University) received the 2020 SAM Outstanding Service Award and Ran Wei (UC Riverside) received the 2020 SAM Emerging Scholar Award. I thank award committees for their taking effort and time.

Third, the SAM board was excited to announce that Serge Rey (UC Riverside) was selected for the 2020 SAM Plenary Lecture. His lecture was not delivered due to the cancellation of the 2020 annual meeting. The SAM board, with the consultation of the editor of *Geographical Analysis*, has requested that he gives his lecture at the 2021 Annual meeting in Seattle. Hopefully, many SAM members can attend the SAM Plenary Lecture next year.

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I hope that everyone has a great summer. If you have any suggestions and comments for us to better serve the SAM community, please do not hesitate to contact any of the SAM board members.

Best wishes,



Yongwan Chun
Associate Professor
The University of Texas at Dallas

AWARDS

SAM Outstanding Service Award



Dr. David Wong from George Mason University was selected as this year's SAM Outstanding Service Award recipient. This prestigious award is to recognize Dr. Wong's substantial contribution to the SAM group through his enormous service.

Highlights of Dr. David Wong:

Dr. David Wong has served SAM and the subfield of spatial analysis-statistics in various capacities throughout his career. He was an elected SAM board member (2000-2003) and chair (2003-2006).

Under his leadership, SAM grew and increased in visibility during annual AAG meetings; he successfully promoted awareness of it and its reputation. He led the effort in sponsoring and co-sponsoring paper sessions and panels. The numbers of sessions and papers, respectively, increased from 15 and 62 in 2003, to 24 and 94 in 2005. In 2006, SAM sponsored 18 sessions, with an additional 31 sessions containing 154 papers falling under its heading. Membership in SAM also grew during Dr. Wong's chair term. In 2002, the unofficial SAM membership was 427, dipping to 200 in 2004 (its lowest in recent decades), and then recovering and growing to about 600 in 2005 (details are available in the SAMSG online reports), and 750 in 2006.

Dr. Wong also expended significant effort raising the profile of spatial analysis and statistics inside and outside of the AAG beyond his term as a SAM officer. Besides organizing 13 SAM general topic sessions for AAG meetings, he also organized special session about various specialized quantitative geography topics: the MAUP, urban analysis and GIS, visualization and mining of spatial data, residential segregation, big spatiotemporal data analytics, and uncertainty and quality issues in spatial data analysis—a total of 18 sessions of this

type. In addition, he offered SAM-sponsored workshops during AAG meetings (2001, 2011). To promote spatial analysis-statistics outside of geography, he offered workshops and consultations to the U.S. Environmental Protection Agency, and offered workshops during annual meetings of the Population Association of America and the American Political Science Association, as well as for the Committee on National Statistics, the National Academies, all of which are exceptional outreach activities.

Emerging Scholar Award



Dr. Ran Wei from University of California, Riverside was selected as this year's SAM Emerging Scholar Award recipient. The award honors early- to mid-career scholars who have made significant contributions to education and research initiatives that are congruent with the mission of AAG-SAM Specialty Group.

Biosketch of Ran Wei:

Dr. Ran Wei is an Assistant Professor in the School of Public Policy at the University of California, Riverside. She received her Ph.D. from the Arizona State University back to 2013.

Wei's research has focused on GISciences, spatial analysis and optimization, with the aim of supporting policy and decision making

in transportation, energy infrastructure, environment sustainability, community resilience, public health, and crime issues. Her work has been published in a number of peer-reviewed journals including *Geographical Analysis*, *International Journal of Geographic Information Science*, the *Professional Geographer*, *Journal of Geographical Systems*, *Environment and Planning B*, *Transactions in GIS*, and *Annals of the Association of American Geographers*. In addition, she was the recipient of 2012 Benjamin Stevens Fellowship from the Regional Science Association International, Best Student Paper awards from the Spatial Analysis and Modeling specialty group of the American Association of Geographers and the University Consortium for Geographic Information Science. Her research has been funded by the National Science Foundation, Utah Transit Authorities, U.S. Department of Transportation, National Academies of Sciences, and Regional Science Association International.

More information about Ran and her research work can be found [here](#).

SAM Student Paper Competition-John Odland Award

The award committee received a total of 6 extended abstracts. After a careful evaluation of the abstracts and eligibility consideration, the committee invited all 6 students to submit the full paper. In the final AAG virtual competition session, 5 students presented their research via pre-recorded videos. The committee made the award selection based on: (1) potential contribution to the use of mathematical models, statistical techniques and other technological and computational approaches for analyzing spatial phenomena in any subfield of geography; (2) appropriate and sound use of methodology; (3) originality; (4) organization and written composition of the paper; and (5) quality of oral presentation. Three students were

selected as the 2020 **John Odland Award** recipients.

The first place
Ziqi Li, Arizona State University

Presentation title
Measuring Bandwidth Uncertainty in Multiscale Geographically Weighted Regression Using Akaike Weights

The second place
Nana Luo, San Diego State University

Presentation title
Modeling Human Daily Movement in a Spatially and Temporally Explicit Framework: A Simulator Integrating Bayesian Network and Activity-based Models

The third place
Paul H. Jung, University of North Carolina at Charlotte

Presentation title
Multivariate Neighborhood Trajectory Analysis: A Proposal of Functional Data Analysis Approach

NEW VICE CHAIR

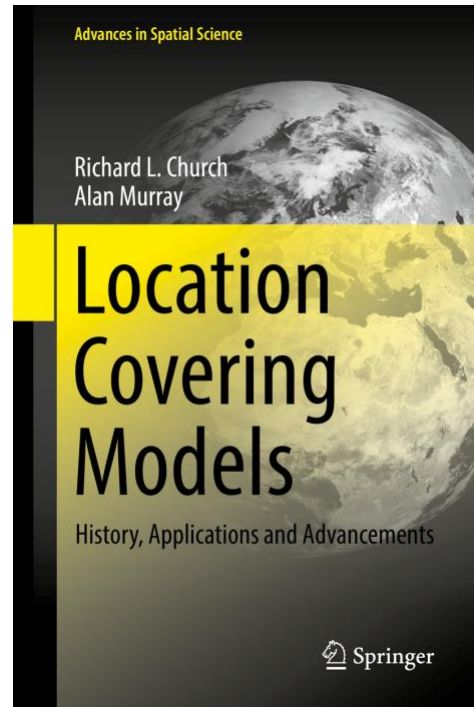
This year we had vacancies of vice chair position. After the general election from all the SAM members, **Dr. Daoqin Tong** from Arizona State will serve as our new SAM vice chair. Welcome Daoqin! We also want to express our acknowledgement to **Dr. Eric Delmelle** for his continuous contributions to the SAM community!



ANNOUNCEMENTS

Richard Church and Alan Murray have been awarded the **2019 William Alonso Memorial Prize for Innovative Work in Regional Science** from the North American Regional Science Council. This is in recognition of their recent book:

Church, R.L. and A. Murray (2018), Location Covering Models: History, Applications, and Advancements (Berlin: Springer).



More details on the award may be found at: <http://www.narsc.org/newsite/awards-prizes/narsc-awards-prizes/>.

Past recipients include Masahisa Fujita and Paul Krugman (The Spatial Economy), Jacques Thisse (Economics of Agglomeration), Luc Anselin (Local Indicators of Spatial Association, published in Geographical Analysis), Ann Markusen (Sticky Places in Slippery Space, published in Economic Geography), Michael Batty (Cities and Complexity), Robert Sampson (Great American City), David Boyce and Huw Williams (Forecasting Urban Travel: Past, Present and Future) and Michael Batty (The New Science of Cities).

The AAG Marble Fund for Geographic Science (\$1000) was established in 1998 to stimulate, advance, and reward theoretical and operational scientific approaches to geography. The Fund has been awarding the achievements of both PhD recipients and undergraduate students. More information can be found at <http://www.aag.org/cs/marble-boyle>.

The Garrison Award (\$3500) recognizes excellence in academic performance for the best dissertation in computational geography. The Marble-Boyle Undergraduate Achievement Award recognizes excellence in the academic performance of students with a background and career goals at the intersection of geographic science and computer science. More information can be found at <http://www.aag.org/cs/garrison>.

The 2020 recipient of the Garrison Award Taylor Anderson finished her PhD from Simon Fraser University in 2019. Her dissertation was titled **Towards the Integration of Complex Systems Theory, Geographic Information Science, and Network Science for Modelling Geospatial Phenomena**. She conducted research that integrated the methodological approaches of complex systems theory, geographic information science, and network theory to better understand how local spatial interactions emerge into system-level patterns.
Committee Chair, Margaret Schmidt
Department of Geography
Faculty of Environment
Simon Fraser University

The 2020 Marble-Boyle Undergraduate Awards Jacob Bostick, University of Colorado – Colorado Springs, Department of Geography
Nathan Fiscus, University of North Alabama, Department of Geography
Chelsie Perkins, East Tennessee State University, Department of Computing

The International Spatial Accuracy Research Association (ISARA) awards its **Peter Burrough medal to Dan Griffith**, an honor it bestows every four years, at its July 2020 conference in Buffalo, NY, in recognition of his outstanding contributions to spatial uncertainty research. Dan received an ISARA Founders award in 2016, and is a past chair of its Steering Committee. More information can be found at <https://www.spatial-accuracy.org/about>.

RESEARCH ACTIVITIES

The Laboratory for Location Science at the University of Alabama's work on wildfire detection tower location optimisation - led by **Dr. Andries Heyns** - has been selected as a finalist for the International Federation of Operational Research Societies (IFORS) triennial award for OR in Development, which will be awarded at the triennial IFORS conference in Korea in June (<http://www.ifors2020.kr/sub05/sub01.php>). Quote d from the website: "The competition aims at promoting the practice of OR in developing countries. Past winners and finalists include works that have improved health, wellness, education, public investments and other issues in Africa, Asia and Latin America."

This follows on our publication in the International Journal of Wildland Fire (<https://www.publish.csiro.au/WF/WF18196>) and ongoing research, and the application of our solution methodology to a real-world problem in South Africa's Southern Cape.

Abstract

Early wildfire detection can effectively be achieved by systems of specialised tower-mounted cameras. Historically, the locations at which a system's towers are placed have been planned by foresters and locals with intimate knowledge of the terrain rather than by computational optimisation tools. When entering vast new territories, however, such knowledge and expertise may not be available to system planners. With the aim of maximising system visibility of smoke above a prescribed region, the process of selecting multiple tower sites from a large number of potential site locations is a complex combinatorial optimisation problem. We

present a site-selection optimisation framework which may be used in such instances. Novel geographical and spatial analysis tools are implemented together with a genetic algorithm and a weighted-sum integer-linear programming approach to determine superior candidate tower-site layout alternatives. Guided by feedback from experts from the popular South African-developed ForestWatch wildfire detection system, the framework has matured into a fully-functioning decision support tool. This was recently demonstrated when the framework was implemented in the site-selection process of a four-tower camera-based wildfire detection system in South Africa's Southern Cape – a mere 60 km away from the location of arguably the most devastating wildfire in South Africa's history, which occurred in 2017.

Dr. Jing Gao from University of Delaware published a new set of global spatial urban land projections throughout the 21st century using data science and Shared Socioeconomic Pathways. The paper is in Nature Communications doi.org/10.1038/s41467-020-15788-7, and the data are downloadable at doi.org/10.7910/DVN/ZHMI1L and doi.org/10.7910/DVN/85PJ1D

This work improves existing urban land change modeling in three key aspects: (1) the model captures changes in urbanization styles over time; (2) local-scale spatial variations in urbanization are accounted for by treating the world as 375 sub-national regions each with their own unique models; (3) the method is capable of modeling the emergence of new urban centers (calibrated to detailed time-series data).

INFORMATION

Spatial Analysis and Modeling (SAM) Specialty Group

Our mission is to foster and maintain interaction, cooperation and community among individuals interested in the analysis of geo-referenced data, modeling of spatio-temporal processes and the use of analytical and computational techniques in solving geographic problems. The specialty group promotes the scientific study of physical,

environmental and socioeconomic geography and the development, use and teaching of analytical cartography, GIS, remote sensing, spatial statistical, mathematical and computational techniques for spatial analysis. For more information, see the SAM-SG homepage (<http://sam-aag.org/>).

Membership Dues

Regular: \$6
Student: \$1

Submissions

This newsletter reaches a large number of readers and is therefore an excellent venue for getting the word out on community news, departmental happenings, research findings, media appearances, and the like. It is also a good place to post calls for proposals, awards, grants, fellowships, and jobs. We also invite you to submit commentaries or features of broad interest to specialty group members.

The newsletter relies on volunteers to submit articles, so please take a moment to send along relevant items when they are solicited.

Officers

Chair

Yongwan Chun

School of Economic, Political and Policy Sciences
University of Texas at Dallas
Email: ywchun@utdallas.edu
Term expires: 2022

Vice Chair/Treasurer

Daoqin Tong

School of Geographical Sciences and Urban Planning
Arizona State University
Email: Daoqin.Tong@asu.edu
Term expires: 2024

Board Members**Qunshan Zhao**

School of Social and Political Sciences
University of Glasgow
Email: Qunshan.Zhao@glasgow.ac.uk
Term expires: 2021

Hyun Kim

Department of Geography
University of Tennessee, Knoxville
Email: hkim56@utk.edu
Term expires: 2022

Wei Kang

School of Public Policy
University of California, Riverside
Email: weikang@ucr.edu
Term expires: 2022

Student Representative**Jimmy Feng**

Department of Geography
University of Tennessee, Knoxville
Email: jfeng12@utk.edu
Term expires: 2021