Kevin Sparks

sparkska@ornl.gov
2022

_____

Education

2013 – 2015	**M.S. in Geography** | *The Pennsylvania State University*
	Thesis: Citizen Science Land Cover Classification Based on Ground and Aerial Imagery
2009 – 2013	**B.Sc. in Geography** | *The Pennsylvania State University*
	Emphasis in geographic information science (GIS), with a minor in Climatology

_____

Work Experience

2019 – present	**Research Associate** | *Oak Ridge National Laboratory*
	Location Intelligence group in the Geospatial Science and Human Security Division
2015 – 2019	**Post-Masters Research Associate** | *Oak Ridge National Laboratory*
	Management, enrichment, and analysis of global open source/social media data for population dynamics, and development of scalable big data infrastructure
	Geoinformatics Engineering and Spatial Computing group of National Security Emerging Technologies Division
2011 – 2015	**Research Assistant** | *The Pennsylvania State University*
	Dr. Alexander Klippel: Research on spatial info. theory and environmental cognition
	Dr. Cynthia Brewer: Research for cartographically redesigning The National Map (USGS) entailing land cover representation and processing of remotely sensed data
2013 – 2015	**Teaching Assistant** | *The Pennsylvania State University*
	Lectured a few classes and instructed Labs for the following courses:

Geog 464: Advanced Spatial Analysis
Geog 364: Spatial Analysis
Geog 363: Geographic Information Systems
Geog 362: Image Analysis
*Programming Spatial Statistics to Evaluate Data (*Instructor*)
   Summer class for statewide high school students

Summer 2011	**Research Intern** | *NASA Langley Research Center*
	Used hyperspectral remote sensing data to create agricultural monitoring methods for tillage practices

Selected Publications

2022   **Sparks**, **K.A.**, J. Moehl, E. Weber, C. Brelsford, A. Rose (2022) "Shifting Temporal Dynamics of Human Mobility in the United States", In *Transport Geography*.

2019   **Sparks**, **K.A.**, G.S. Thakur, A. Pasarkar, M.L. Urban (2019) "A Global Analysis of Cities' Geosocial Temporal Signatures for Points of Interest Hours of Operation", In *International Journal of Geographical Information Science*.

2016   **Sparks**, **K.A.**, R.G. Li, G.S. Thakur, R.N. Stewart, M.L. Urban (2016) "Facility Detection and Popularity Assessment from Text Classification of Social Media and Crowdsourced Data", In *GIR '16 Proceedings of the 10ᵗʰ Workshop on Geographic Information Retrieval*.

2015   **Sparks, K.A.**, A. Klippel, J.O. Wallgrün, D. Mark (2015) "Citizen Science Land Cover Classification Based on Ground and Aerial Imagery", In S. I. Fabrikant, M. Raubal, M. Bertolotto, C. Davies, S. M. Freundschuh, & S. Bell (Eds.), *Proceedings, Conference on Spatial Information Theory (COSIT 2015), Santa Fe, NM, USA, Oct. 12-16, 2015. Berlin: Springer.*

Remaining Publications

2020   Thakur, G., **K.A. Sparks**, A. Berres, V. Tansakul, S. Chinthavali, M. Whitehead, E. Schmidt, H. Xu, J. Fan, D. Spears, E. Cranfill (2020) "Covid-19 joint pandemic modeling and analysis platform", In *Proceedings of the 1st ACM SIGSPATIAL International Workshop on Modeling and Understanding the Spread of COVID-19* (pp. 43-52).

2019   **Sparks**, **K.A.**, K. Sims, G.S. Thakur, M.L. Urban, R.N. Stewart (2019) "Modeling Building Use and Population Distribution Opportunity Using Open Geosocial Data in Urban Areas", In *GeoComputation 2019*. Queenstown, New Zealand.

2018   Mao, H., G.S. Thakur, **K.A. Sparks**, J. Sanyal, B. Bhaduri (2018) "Mapping Near-Real-Time Power Outage from Social Media", In *International Journal of Digital Earth*.

2018   Sims, K., G.S. Thakur, **K.A. Sparks**, M.L. Urban, A. Rose, R.N. Stewart (2018) "Dynamically-Spaced Geo-Grid Segmentation for Weighted Point Sampling on a Polygon Map Layer (Short Paper)", In *10th International Conference on Geographic Information Science*.

2018   Thakur, G.S., K. Sims, H. Mao, J. Piburn, **K.A. Sparks**, M.L. Urban, R.N. Stewart, E. Weber, B. Bhaduri (2018) "Utilizing geo-located sensors and social media for studying population dynamics and land classification", In *Human Dynamics Research in Smart and Connected Communities*.

2017   **Sparks**, **K.A.**, G.S. Thakur, M.L. Urban, R.N. Stewart (2017) "Temporal Signatures of Shops' and Restaurants' Opening and Closing Times at Global, Country, and City Scales", In *GeoComputation 2017*. Leeds, United Kingdom.

2017   Raposo, P., C.A. Brewer, **K.A. Sparks** (2017) "An Impressionistic Cartographic Solution for Base Map LandCover with Coarse Pixel Data", In *Cartographic Perspectives,* 83, 5-21.

2016   Thakur, G.S., **K.A. Sparks**, R.G. Li, R.N. Stewart, M.L. Urban (2016) "Demonstrating PlanetSense: gathering geo-spatial intelligence from crowd-sourced and social-media data", In *Proceedings of the 24th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems*. San Francisco, USA.

2016   Thakur, G.S., **K.A. Sparks**, R.G. Li, R.N. Stewart, M.L. Urban, B. Bhaduri (2016) "Curating Transient Population in Urban Dynamics Systems", In *Extended Abstract Proceedings of the GIScience 2016*. Montreal, Canada.

2016   Thakur, G.S., **K.A. Sparks**, R.G. Li, R.N. Stewart, M.L. Urban, B. Bhaduri (2016) "Landuse Classification and Occupancy Estimation form Fine Grained Social Media Analysis", In *GeoSocial: Social Media & GIScience workshop*. Montreal, Canada.

2015   Klippel, A., **K.A. Sparks**, J.O. Wallgrün (2015) "Pitfalls and potentials of crowd science: A meta analysis of contextual influences", *ISPRS Annals of the Photogrammetry, Remote Sensing and Spatial Information Sciences*.

2015   **Sparks, K.A.**, A. Klippel, J.O. Wallgrün, D. Mark (2015) "Crowdsourcing landscape perceptions to validate land cover classifications", In O. Ahlqvist, K. Janowicz, D. Varanka, S. Fritz (Eds.), *Land Use and Land Cover Semantics - Principles, Best Practices and Prospects*, CRC Press / Taylor & Francis.

2015   Klippel, A., J. Yang, J.O. Wallgrün, **K.A. Sparks** (2015) "Intuitive direction concepts", *The Baltic International Yearbook of Cognition, Logic and Communication*.

2014   **Sparks, K.A.**, A. Klippel, J.O. Wallgrün, D. Mark, (2014). Crowdsourcing landscape perceptions to validate land cover classifications. In K. Stewart, E. Pebesma, G. Navratil, P. Fogliaroni, & M. Duckham (Eds.), *Extended Abstract Proceedings of the GIScience 2014* (pp. 147–152). Vienna: Hochschülerschaft, TU Vienna.

2013	Brewer, C.A., L.V. Stanislawski, B.P. Buttenfield, P. Raposo, **K.A. Sparks**, J. McGilloway, and M. Howard (2013) "Automated thinning of road networks and road labels for multiscale design of *The National Map* of the United States", In *Cartography and Geographic Information Science, Vol. 40, No. 4, pp. 259-270*.
2012	Brewer, C.A., L.V. Stanislawski, B.P. Buttenfield, P. Raposo, **K.A. Sparks**, and M. Howard (2012) "Multiscale Design for The National Map of the United States: Road Thinning for Topographic Mapping", *Proceedings, AutoCarto 2012,* Columbus OH, September.

_____

Selected R&D

2020	Development of an updated national Social Capital Index data product for an Environmental Determinants of Health project at Oak Ridge National Laboratory in collaboration with the Department of Veterans Affairs.
2020	Data and visualization engineer for a multi-lab collaboration effort on Epidemiological Modeling for COVID-19 for Oak Ridge National Laboratory in collaboration with the National Virtual Biotechnology Laboratory.
2020	Contributed to writing multiple multi-million dollar grant proposals for the National Security Emerging Technologies Division at Oak Ridge National Laboratory.
2019	Lead researcher and co-designer of City Pulse, an Oak Ridge National Laboratory visual analytics tool which visualizes hours of operation temporal signatures for more than 100 cities around the world.

_____

Selected Accomplishments

2021	Organized the *Temporal Dynamics of Place* session for the Symposium on Human Dynamics Research at AAG 2021 in Seattle, Washington.
2019-2020	Reviewer for a) *ISPRS International Journal of Geo-Information* b) *Remote Sensing in Ecology and Conservation*
2019	Mentored five summer interns from 2017 - 2019 while at Oak Ridge National Laboratory. Students' experience ranged from recent high school graduates to PhD candidates. Project topics included data analysis, cartography, machine learning, natural language processing, and advanced city science research.

2018   Co-organized (with Dr. Yingjie Hu) a session titled *Artificial Intelligence and Deep Learning Symposium: Geospatial Semantics and Geo-Text Data Analytics* at AAG 2018 in New Orleans, Louisiana.

2012   Recipient of the Jeff Gockley Memorial Award, given to the top rising senior in the Pennsylvania State Geography program in Geographic Information Science.

_____

Presentations

2021   **Sparks**, **K.A.**, G.S. Thakur (2021) "POIs illustrating detailed temporal dynamics of human behavior" Virtual Points of Interest (POInt) Research Symposium, April.

2019   **Sparks**, **K.A.**, G.S. Thakur (2019) "Assessing cultural and geophysical influences on when cities operate" AAG Annual Meeting, Washington D.C., April.

2017   **Sparks**, **K.A.**, G.S. Thakur, R.N. Stewart, M.L. Urban (2017) "Comparing Social-media Users' Facility Visitations Patterns" AAG Annual Meeting, Boston, Massachusetts, April.

2016   Thakur, G.S., **K.A. Sparks**, R.N. Stewart, M.L. Urban, B. Bhaduri (2016) "The Efficacy of Applying Open and Crowd Source Data in Urban Dynamics Research", In *Conference on Data Analysis 2016*. CoDA, 2016.

2015   Klippel, A., **K.A. Sparks,** J.O. Wallgrün (2015) "Pitfalls and Potentials of Crowd Science: A Meta-Analysis of Contextual Influences" ISSDQ 2015, La Grande Motte, France, September.

2015   **Sparks**, **K.A.**, A. Klippel, J.O. Wallgrün, D. Mark (2015) "Assessing Environmental Information Channels for Citizen Science Land Cover Classification" AAG Annual Meeting, Chicago, Illinois, April.

2015   Klippel, A., J.O. Wallgrün, D. Mark, R. Purves, **K.A. Sparks** (2015) "Cognition of the Top of the World: Investigating Humans' Conceptions and Linguistic Expressions of Mountain Peaks" AAG Annual Meeting, Chicago, Illinois, April.

2015   **Sparks**, **K.A.**, A. Klippel, J.O. Wallgrün, D. Mark (2015) "Ground and Aerial Based Land Cover Classification for Citizen Science" 2nd Pennsylvania Spatial Cognition Symposium, State College, PA, May.

2014   Klippel, A., A. Robinson, **K.A. Sparks** (2014) "Sketch-based Geospatial Learning Objects," COIL Research Symposium, The Pennsylvania State University, October.

2014   **Sparks**, **K.A.,** A. Klippel, J.O. Wallgrün, D. Mark (2014) "Crowdsourcing landscape perceptions to validate land cover classifications" Pennsylvania Spatial Cognition Symposium, State College, PA, May.

2014   Klippel, A., A. Robinson, **K.A. Sparks** (2014) "Enhancing Online Geospatial Education with Sketch-based Geospatial Learning Objects," Symposium for Teaching and Learning with Technology, The Pennsylvania State University, March.

2013   **Sparks**, **K.A.,** J. Yang, A. Klippel (2013) "Day and night: Analyzing cultural differences through perceived similarities of lighting patterns" Conference on Spatial Information Theory (COSIT), Scarborough UK, September.

2012   Raposo, P., **K.A. Sparks**, and C.A. Brewer (2012) "Techniques for Cartographic Presentation of Upsampled Raster Land Cover Data" North American Cartographic Information Society (NACIS) annual meeting, Portland OR, October.

2012   Brewer, C.A., L.V. Stanislawski, B.P. Buttenfield, P. Raposo, **K.A. Sparks**, and M. Howard (2012) "Multiscale design for The National Map of the United States: Road Thinning for Topographic Mapping," AutoCarto 2010, Columbus OH, September.

2012   *Three invited presentations*—Center of Excellence for Geospatial Information Science (CEGIS) meeting, U.S. Geological Survey (USGS), Rolla MO, June 2012:

        Brewer, C.A., **K.A. Sparks** and P. Raposo (2012), "Multiscale Design for *The National Map.*"

        Sparks, **K.A.**, P. Raposo, and C.A. Brewer (2012) "Multiscale Land Cover Design for *The National Map.*" (presenter).

        Raposo, P., **K.A. Sparks**, and C.A. Brewer (2012) "Multiscale Land Cover Processing for *The National Map.*"