Robert N. Stewart

Curriculum Vitae

April 7th, 2021

Overview

I am a senior scientist in the GeoAI group at the Oak Ridge National Laboratory. My work is focused on spatial and spatiotemporal modeling, with an emphasis on uncertainty, risk, and decision analytics. Areas of application include population dynamics, maritime safety, geomatics, urban dynamics, security, energy-water nexus, health, environmental risk and many others. Quantifying uncertainty and risk as well as understanding the implications of both for decision making is a recurring theme in my work.

Education

2011 Ph.D. Geography *(spatio-temporal analytics)*, University of Tennessee

1995 M.S. Mathematics, University of Tennessee

1992 B.S. Mathematics and Statistics, University of Tennessee

Experience

2009-now **Oak Ridge National Laboratory**

Senior Scientist in GeoAI Group (10/2020 – present)

Leading multiple projects in a wide array of R&D including machine learning, spatio-temporal analytics, data mining, big data workflows, simulation, visualization, ontology, semantics, and tool development. Work is informed by and applied to a wide range of use cases emerging from population dynamics, maritime safety, geomatics, urban dynamics, security, energy-water nexus, health, environmental risk and many others.

Geographic Data Sciences Group Lead (10/2015 – 9/30/2020)

I oversee a diverse and talented group of staff, post-docs, interns and students engaged in data science R&D. Research spans a wide spectrum of expertise, including imagery analytics, data mining, modeling and simulation, visualization, machine learning, and other big data challenges applied to a wide range of research domains.

Geographic Data Scientist (11/2009 – 9/2015)

Research continues to focus on statistical and computational methods in the areas of spatial and spatiotemporal modeling, with an emphasis on automation, machine learning, uncertainty quantification, data mining, probability modeling, risk, visualization, and decision support. Areas of application include population dynamics, sociocultural/economic analytics, social media analytics, geosciences, and environmental risk.

Professor of Geography, University of Tennessee (2012 – 2021)

I serve on graduate committees, proposal development, teaching, and mentoring students in summer programs, especially those interning at the Oak Ridge National Laboratory.

1994-2009 **University of Tennessee Senior Research Associate**

I served as principle investigator, technical lead, and in most cases point of contact with sponsoring agencies such as the Environmental Protection Agency, the Nuclear Regulatory Commission, the Department of Energy, and the Oak Ridge National Laboratory. My effort centered largely on management and development of novel geospatial approaches to environmental risk assessment, decision support, uncertainty quantification, and regulatory compliance. A key outcome of this work was the Spatial Analysis and Decision Assistance (SADA) software program, which presently has over 18,000 registered users in the environmental restoration space. New capabilities from this research laid the framework for future regulatory guidance with spatial analysis as a core factor.

stewartrn@ornl.gov 1.865.574.7646 https://www.ornl.gov/staff-profile/robert-n-stewart

SADA is now jointly managed by ORNL and UT, and I continue to serve in a leadership capacity.

Societies

Association of American Geographers
IEEE (+CIS, +Computer, +GRSS)
American for Computing Machinery (+SIGKDD, +SIGSPATIAL)
American Association for the Advancement of Science
United States Geospatial Intelligence Foundation

Honors & Service

2021
Ecological Society of America Sustainability Science Award for *US cities can manage national hydrology and biodiversity using local infrastructure policy*, doi.org/10.1073/pnas.1706201114
Invited Panelist, Panel on Spatiotemporal Sciences, American Association of Geographers, Annual Meeting 4/9/2021.

2019
DOE Oak Ridge National Laboratory Significant Event Award for WSTAMP deployment.
Chair (2nd year), Geographic Information Science and Systems Specialty Group. At ~1500 members, this specialty group is the largest within the American Association of Geographers.
Program Committee Member, Symposium on Frontiers in Geospatial Data Science, Association of American Geographers Annual Meeting, 2019.

2018
Invited Panelist, Illuminating Space and Time in Data Science, Center for Geographic Analysis, Harvard University, April 26-27, 2018.
Invited Speaker, NGA GeoTrends, Update on World SpatioTemporal Analytics and Mapping Project, October 2018.
Chair (1st year), Geographic Information Science and Systems Specialty Group. At ~1500 members, this specialty group is the largest within the Association of American Geographers.

2017
Invited Panelist, Chair, Speaker at the International Symposium on Spatio-Temporal Computing, Harvard, August 2017.
Invited Panelist, Open Source Software in Geography: Theories, Developments, and Pathways toward Openness II, Boston, AAG 2017 Annual Meeting.
Vice Chair (2nd year), Geographic Information Science and Systems Specialty Group. At ~1500 members, this specialty group is the largest within the Association of American Geographers.

2016
Invited Panelist, Spatial Statistics and Big Data, AAG Annual Meeting, San Francisco.
Vice Chair (1st year), Geographic Information Science and Systems Specialty Group. At ~1500 members, this specialty group is the largest within the Association of American Geographers.

2015
Invited Speaker, JASON Summer Study (by invitation only), San Diego.
Lecturer for Geographic Concept and Method (599) Geography Department, University of Tennessee.

2014
DOE Oak Ridge National Laboratory Significant Event Award for R&D in WSTAMP Project.
ORNL Liaison to World Health Organization Chemical Risk Network.

2013
Invited Panelist, Characterization & Survey for Decommissioning & Waste Management, WM2013.
Invited Speaker, Colloquium, University of Chicago at Illinois, School of Public Health.

2010
Environmental Protection Agency 2010 Scientific and Technological Achievement Award.

Academic Service

Adjunct Associate Geography Professor, UT Knoxville
Geographic Concept and Method (599), Geography Department, University of Tennessee.
Independent Study (593), University of Tennessee, Knoxville
Serving as major professor or graduate committee member on a regular basis

Dissertation Committee Memberships
Evan Ezell, Bredesen Center Data Sciences (active)
April Morton, Bredesen Center Data Sciences (active)
Jesse Piburn, Bredesen Center for Data Sciences (active)
Janna Caspersen, Geography Department, University of Tennessee (graduated 2018)

Master's Thesis Committee Memberships
Karessa Manning, Geography Department, University of Tennessee (active)
Samantha Duchscherer, Mathematics, University of Tennessee (graduated 2018)
Matthew Miller, Geography Department, University of Tennessee (graduated, 2017)
Jessica Moehl, Geography Department, University of Tennessee (chair, graduated 2014)

Master's Research External Advising
April Morton, Mathematics, California Polytechnic Institute, Pomona (graduated 2012)
Apostolis Sambanis, Public Health, University of Illinois at Chicago (graduated 2012)

Other
Various university guest lectures and workshops in the U.S. and abroad (see below)

Peer Reviewed Publications & Conferences

2021

McManamay, R, KC Binita, M Allen-Dumas, S Kao, C Breslford, B Ruddle, J Sanyal, **R.N. Stewart**, and B. Bhaduri, (2021), Reanalysis of water withdrawal for irrigation, electric power, and public supply sectors in the conterminous United States, 1950 to 2016, Water Resources Research, Vol. 57(2) DOI: 10.1029/2020WR027751.

Ezell, E., S Lim, D Anderson, and **R.N.Stewart** (2021), Visualizing Communities and Structure in Dynamic Networks in Graph Drawing and Network Visualization, D. Auber and P. Valtr (Eds.): GD 2020, LNCS 12590, pp. 532–534, 2020. https://doi.org/10.1007/978-3-030-68766-3.

2019

Lunga, D, J Gerrand, L Yang, C Layton, **R.N. Stewart**, (2019) Apache Spark Accelerated Deep Learning Inference for Large Scale Satellite Image Analytics, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing. DOI 10.1109/JSTARS.2019.2

Sorokine, A, **R.N. Stewart** (2019) Replicability and Reproducibility in High-Performance and Cloud Geocomputations, Replicability and Reproducibility in Geospatial Research: A SPARC Workshop, February 2019, Tempe Arizona. DOI DOI 10.17605/OSF.IO/GVP3Q

2018

Duchscherer, S, **R.N. Stewart**, M Urban (2018), revengc: An R package to Reverse Engineer Summarized Data, The R Journal Vol. 10/2, December 2018 ISSN 2073-4859.

Zaidi, S., V Chandola, M Allen, J Sanyal, **R.N. Stewart**, B. Bhaduri, and R McManamay, (2018), Machine Learning for energy-water nexus: challenges and opportunities, Big Earth Data, https://doi.org/10.1080/20964471.2018.1526057.

Allen, M., S Zaidi, V Chandola, A Morton, C Brelsford, R McManamay, B KC, J Sanyal, **R.N. Stewart**, and B Bhaduri (2018) A Survey of Analytical Methods for Energy-Water Nexus Knowledge Discovery, Big Earth Data, https://doi.org/10.1080/20964471.2018.1524344.

Aziz, H.M., B Park, A Morton, **R.N. Stewart,** M Hilliard, and M Maness (2018) A high resolution agent-based model to support walk-bicycle infrastructure investment decisions: A case study with New York City, Transportation, Vol 86, pp. 280-299. doi.org/10.1016/j.trc.2017.11.008.

Aziz, H.M., N Nagle, A Morton, M Hilliard, D White, **R.N. Stewart** (2018) Exploring the impact of walk-bike infrastructure, safety perception, and built-environment on active transportation mode choice: A random parameter model using New York City commuter data, Transportation, Vol 45, pp. 1207-1229. doi.org/10.1007/s11116-017-9760-8.

Thakur G, K Sims, H Mao, J Piburn, K Sparks, M Urban, **R.N. Stewart**, E Weber, B Bhaduri (2018) *Utilizing Geo-Located Sensors and Social Media Insight for Research in Population Dynamics and Land Classification* in Human Dynamics Research in Smart and Connected Communities, Springer. doi.org/10.1007/978-3-319-73247-3_2

Sims, K, G Thakur, K Sparks, M Urban, A Rose, and **R.N. Stewart** (2018) *Dynamically-Spaced Geo-GridSegmentation for Weighted Point Sampling on a Polygon Map Layer*, GIScience 2018, Melbourne, Australia

Byung Hoon Park, H M Abdul Aziz, A Morton, **R.N. Stewart** (2018) High performance Data Driven Agent-based Modeling Framework for Simulation of Commute Mode Choices in Metropolitan Area. 21st IEEE International Conference on Intelligent Transportation System, November 4-7, 2018, Hawaii, USA. doi.org/ 10.1109/ITSC.2018.8569232

Weber, E, V Seaman, **R.N. Stewart**, T Bird, A Tatem, J McKee, B Bhaduri, J Moehl, and A Reith (2018), *Census-independent population mapping in northern Nigeria*, Remote Sensing of Environment, In Press https://doi.org/10.1016/j.rse.2017.09.024)

2017

Morton, A., J Piburn, R McManamay, N Nagle, **R.N. Stewart**, and V. Chandola (2017), Leveraging Advances in Population Modeling to Support Energy and Water Nexus Knowledge Discovery,

American Geophysical Union Fall Meeting, 12/15 – 12/17, New Orleans (poster).

McManamay, R., M Allen, J Piburn, J Sanyal, **R.N. Stewart**, B Bhaduri (2017), Using Dynamic Time Warping and Data Forensics to Examine Tradeoffs among Land-Energy-Water Networks Across the Conterminous United States, American Geophysical Union Fall Meeting, 12/15 – 12/17, New Orleans (poster).

Morton, A., J Piburn, **R.N. Stewart**, R McManamay, N Nagle (2017) A High-Resolution Spatially-Explicit Statistical Framework for Estimating Residential Electricity Consumption. Proceedings of the 2017 Grace Hopper Celebration of Women in Computing. Orlando, FL. October 4, 2017.

McManamay, R, S Nair, C DeRolph, B Ruddell, A Morton, **R.N. Stewart**, M Troia, L Tran, H Kim, and B Budhendra (2017) *US Cities can manage national hydrology and biodiversity using local infrastructure policy*, Proceedings of the National Academy of Sciences, currently online at www.pnas.org.

Sorokine, A and **R.N. Stewart** (2017) Spatio-temporal Data Model for Integrating Evolving Nation-level Datasets, ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences, Vol 4, pp. 69-76.

Piburn, J, **R.N. Stewart**, A Myers, A Sorokine, D Axley, D Anderson, J Burdette, C Biddle, A Hohl, R Eberle, J Kaufman, and A Morton (2017), *The World Spatiotemporal Analytics and Mapping Project (WSTAMP): Further Progress in Discovering, Exploring, and Mapping Spatiotemporal Patterns Across the World's Largest Open Source Data Sets*, ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences, Vol 4, pp 199-205.

Piburn, J, **R.N. Stewart**, and A Morton (2017) *A Simple Spatially Weighted Measure of Temporal Stability for Data with Limited Temporal Observations,* ISPRS Annals of Photogrammetry, Remote Sensing & Spatial Information Sciences, Vol 4, pp 47-51.

Morton, A, J Piburn, N Nagle, H M Aziz, S Duchscherer and **R.N. Stewart** (2017), *A Simulation Approach for Modeling High-Resolution Daytime Commuter Travel Flows and Distributions of Worker Subpopulations*, Geocomputation 2017 Shortpaper, Leeds UK, September 2017.

Sparks, K, G Thakur, M Urban, and **R.N. Stewart** (2017) *Temporal Signatures of Shops' and Restaurants' Opening and Closing Times at Global, Country, and City Scales*, Geocomputation 2017 Shortpaper, Leeds UK, September 2017. Accesible at http://www.geocomputation.org/2017/papers/51.pdf.

R.N. Stewart, M Urban, D Anderson, S Duchscherer, D Axley, and J Piburn (2017), *Towards a Virtual Reality Elicitation of Building Occupancy*, Geocomputation 2017 Shortpaper, Leeds UK, September 2017. Accessible at http://www.geocomputation.org/2017/papers/52.pdf.

Piburn, J, **R.N. Stewart** and A Morton, (2017) *An Approximate Entropy Based Approach for Quantifying Stability in Spatio-Temporal Data with Limited Temporal Observations*, Geocomputation 2017 Shortpaper, Leeds UK, September 2017. Accessible at http://www.geocomputation.org/2017/papers/55.pdf.

Stewart, R.N., J Piburn, E Weber, M Urban, A Morton, G Thakur, and B Bhaduri (2017). *Can Social Media Play a Role in the Development of Building Occupancy Curves?* Advances in Geocomputation: Geocomputation 2015--The 13th International Conference. D. A. Griffith, Y. Chun and D. J. Dean. Cham, Springer International Publishing: 59-66.

Piburn, J, A Morton, and **R.N. Stewart** (2017). *Attribute Portfolio Distance: A Dynamic Time Warping based approach to comparing and detecting common spatiotemporal patterns among multi-attribute data portfolios*. Advances in Geocomputation: Geocomputation 2015--The 13th International Conference. D. A. Griffith, Y. Chun and D. J. Dean. Cham, Springer International Publishing: 197-205.

Morton, A, N Nagle, J Piburn, **R.N. Stewart**, R McManamay (2017). *Hybrid Dasymetric and Machine Learning Approach to High-Resolution Residential Electricity Consumption Modeling* In Advances Advances in Geocomputation: Geocomputation 2015--The 13th International Conference. D. A. Griffith, Y. Chun and D. J. Dean. Cham, Springer International Publishing: 47-58.

Stewart, R.N., A Myers, D Axley, A Sorokine, and J Piburn (2017) Minisymposterium: World SpatioTemporal Analytics and Mapping Project (WSTAMP): Cloud Implementation of Open Source Algorithms and Data Stores for Sustainable, Scalable Analysis of Space-Time Data. Society for Industrial and Applied Mathematics (SIAM) Conference on Computational Science and Engineering, February 27- March 3rd, 2017, Atlanta, GA.

2016

Morton, A, J Piburn, R McManamay, N Nagle, **R.N. Stewart** (2016), *A Dasymmetric-Based Monte Carlo Simulation approach to the Probabilistic Analysis of Spatial Variables*. International Conference on GIScience Short Paper Proceedings, Montreal Canada. Volume 1 (1), pp. 208 – 211. http://escholarship.org/uc/item/9hf8b2wb

Thakur, G, K Sparks, **R.N. Stewart**, M Urban, and B Bhaduri, (2016), *Curating Transient Population in Urban Dynamics System*, International Conference on GIScience Short Paper Proceedings,

Montreal Canada. Volume 1 (1), pp. 300 – 303. http://escholarship.org/uc/item/971896bp#page-1

Stewart, R.N., C Wilkerson, E Ragan, M Agreda, D White, S Duchscherer, and J Piburn (2016) *A 3D Virtual Environment for Spatio-Temporal Analysis: Theoretical Approach, Proof of Concept, and User Study*. International Conference on GIScience Short Paper Proceedings, Montreal Canada. Volume 1 (1), pp. 280 – 283. http://escholarship.org/uc/item/6mg271rn

Stewart, R.N., M Urban, S Duchscherer, J Kaufman, A Morton, G Thakur, J Piburn, J Moehl (2016) *A Bayesian Machine Learning Model for Estimating Building Occupancy from Open Source Data*, Natural Hazards 81 (3).

2015

Stewart, R.N., J Piburn, A Sorokine, A Myers, and D White (2015) *World Spatiotemporal Analytics and Mapping Project (WSTAMP): Discovering, Exploring, and Mapping Spatiotemporal Patterns across the World's Largest Open Source Geographic Data Sets*, ISPRS Annals of Photogrammetry, Remote Sensing, and Spatial Information Sciences. Volume II-4W2.

Stewart, R.N., K Tucker, and F Dolislager (2015) *SADA: A Free Geospatial Human Health Risk Tool*, Society of Toxicology Annual Meeting, San Diego, CA.

Thakur, G., B Bhaduri, J Piburn, K Sims, **R.N. Stewart**, M Urban (2015). *PlanetSense: A Real-time Streaming and Spatio-temporal Analytics Platform for Gathering Geo-spatial Intelligence from Open Source Data*, ACM Sigspatial, Seattle, WA. (Among top 3 vision papers)

Stewart, R.N., M Urban, J Weaver, and D White. *A Geographic Data Fusion Model for Estimating Quantitative Population Dynamics from Qualitative Survey Data*. Journal of GEOINT Science. (2015)

2014

Bhaduri, B., E Bright, A Rose, C Liu, M Urban, and **R.N. Stewart** (2014), Data Driven Approach for High Population Distribution and Dynamics Models, Winter Simulation Conference, Savannah, Georgia

Purucker, S.T., **R.N. Stewart,** and J Wulff (2015) *A spatial decision support system for efficient environmental assessment and remediation*. In Madden, M., Allen, E., (Eds.) Landscape Analysis Using Geospatial Tools (accepted), Springer-Verlag.

2013

Stewart, R.N. D White, M Urban, A Morton, C Webster, M Stoyanov, E Bright, and B Bhaduri (2013) *Uncertainty quantification techniques for population density estimates derived from sparse open source data.* Proceedings of the SPIE: Geospatial InfoFusion III (refereed) 8747: 874705-874705.

2012

Stewart, R.N. (2012) *A Subsurface Decision Model for Supporting Environmental Compliance*, NUREG/CR-7021. Washington, D.C., United States Nuclear Regulatory Commission.

2011

Stewart, R.N. (2011). *A Geospatial Based Decision Framework for Extending MARSSIM Regulatory Principles into the Subsurface*. Doctoral Dissertation, Department of Geography at the University of Tennessee

Stewart, R.N. and S.T. Purucker (2011) *An environmental decision support system for spatial assessment and selective remediation.* Environmental Modelling & Software 26(6): 751-760

<2010

Purucker, S. T., **R. N. Stewart**, and C. J. Welsh (2009) *SADA: Ecological Risk Based Decision Support System for Selective Remediation*. Chapter 11, A. Marcomini, G.W. Suter, and A. Critto (ed.), Decision Support Systems for Risk Based Management of Contaminated Sites. Springer Science + Business Media, LLC, New York, NY, pgs. 239-256.

Mahmoud, M., Y Liu, H Hartmann, S Stewart, T Wagener, D Semmens, **R.N. Stewart**, H.V. Gupta, D Dominguez, F Dominguez, D Hulse, R Letcher, B Rashleigh, C Smith, R Street, J Ticehurst, M Twery, H van Delden, R Waldick, D White, L Winter. (2009). *A Formal Framework for Scenario Development to Support Environmental Decision Making*. Environmental Modelling & Software. 24(7): 798-808.

Liu, Y., M Mahmoud, H Hartmann, S Stewart, T Wagener, D Semmens, **R.N. Stewart**, H Gupta, D Dominguez, D Hulse, R Letcher, B Rashleigh, C Smith, R Street, J Ticehurst, M Twery, H van Delden, R Waldick, D White, and L Winter., (2008), *Formal scenario development for environmental impact assessment studies*, Developments in Integrated Environmental Assessment, edited by Jakeman, A., A. Voinov, A. E. Rizzoli, and S. Chen, Elsevier. Volume 3: 145-162

Voinov, A., R Hood, J Daues, H Assaf, and **Stewart, R.N.** (2008) *Building a Community Modelling and Information Sharing Culture* In Developments In Integrated Environmental Assessment, edited by Jakeman, A., A. Voinov, A. E. Rizzoli, and S. Chen, Elsevier. Volume 3: 345-366

Modis, K, H-L Yu, G Christakos, **R.N. Stewart** and G Papantonopoulos (2007). *"BME-generated temperature maps of the Nea Kessani geothermal field"*, Invited chapter, In Geothermal Energy Research Frontiers, Columbus, F. (ed.), Nova Science Publ., Inc., Hauppauge, NY.

Purucker, S.T., C.J.E. Welsh, **R.N. Stewart**, and P Starzec. (2007). *Use of habitat-contamination spatial correlation to determine when to perform a spatially explicit ecological risk assessment*. Ecological Modelling, 204(1-2):180-192 (winner of EPA 2010 Level II Scientific and Technological Achievement Award).

Other Conferences, Workshops, Lectures, & Reports

2019

Lunga, D. H Alemohammad, Y Liu, S Newsam, F Pacifici, H Santos-Villalobos, E Shook, **R.N. Stewart**, S Voisin, L Yang, and B Bhaduri (2019). The Trillion Pixel GeoAI Challenge Workshop, ORNL September 26-27, 2019. OSTI Identifier 1606744.

2018

Bhaduri, B., AJ Simon, M Allen, J Sanyal, **R.N. Stewart**, R McManamay, (2018), Energy-Water Nexus Knowledge Discovery Framework, Experts' Meeting, Technical Report, ORNL/TM-2017/753, Available through OSTI.

2017

Invited Panelist, Open Source Software in Geography: Theories, Developments, and Pathways toward Openness II, Boston, AAG 2017 Annual Meeting.

Towards a Virtual Reality Elicitation Approach for Facility Occupancy 3D Virtual and Augmented Realities for Geoinformation Science, II

2016

Invited Panelist, Spatial Data Mining and Big Data Analytics (chair: Diansheng Guo), Association of American Geographers Annual Meeting, San Francisco , CA.

Stewart, R.N., Wilkerson, C., Ragan, E. (2016) ST World: Spatiotemporal Analytics Within a Prototype Serious Gaming Environment Association of American Geographers Annual Meeting, San Francisco , CA.

2015

Piburn, J, **R.N. Stewart** (2015) Using non-linear data mining algorithms for exploring global spatiotemporal trends, Conference on Complex Systems, Tempe, AZ

Stewart, R.N., J Piburn, A Sorokine, and A Myers, (2015) WSTAMP: Discovering, Exploring, and Mapping Patterns of Strategic Importance from SpatioTemporal Data Across Major Global Vendors, Conference on Complex Systems, Tempe, AZ.

Stewart, R.N., J Piburn, A Myers, D White, A Sorokine, 2015*, The World Spatiotemporal Analysis and Mapping Project (World STAMP).* Association of American Geographers Annual Meeting, Chicago, IL.

Duchscherer, S., **R.N. Stewart**, M Urban, *Reverse Engineering Census Summary Data for Population Density Estimation*, (2015) Association of American Geographers Annual Meeting, Chicago, IL.

Morton, A., Stewart**, R.N. Stewart**, S. Duchscherer, and M. Urban, (2015), *A Bayesian Model for Estimating Building Occupancy: Integrating Data, Knowledge, and Uncertainty in an Open Source Environment*, Association of American Geographers Annual Meeting, Chicago, IL.

Piburn, J., **R.N. Stewart**, 2015, *Using Dynamic Time Warping for Finding and Assessing Spatiotemporal Trends in Large Global Datasets: applications and findings from the World STAMP Project*, Association of American Geographers Annual Meeting, Chicago, IL

Moehl, J., **R.N. Stewart**, N. Nagle, 2015, *Comparing Demographic Household Modeling Techniques*, Association of American Geographers Annual Meeting, Chicago, IL

Urban, M., **R.N. Stewart**, A Myers, D Axley, E Bright, 2015, *Open Source Occupancy Modeling and Services*, Association of American Geographers Annual Meeting, Chicago, IL.

2014

Stewart, R.N., A Rose, E Bright, 2014 *Spatial Analysis and Decision Assistance: A Free Program Integrating LandScan High Resolution Population Datasets with Advanced Spatiotemporal Risk-Based Decision Support Models*. Association of American Geographers Annual Meeting, Tampa, FL.

Sorokine, A, RN Stewart, 2014, *Multiperspective Database Architecture for Spatiotemporal Geodatasets*, Association of American Geographers Annual Meeting, Tampa, FL

Urban, M, **RN Stewart**, A Myers, D Axley, and E Bright, 2014, *Occupancy Modeling Framework Overview*, Association of American Geographers Annual Meeting, Tampa, FL.

2013

Stewart, R.N., Bright, Eddie, Rose, Amy, McGinn, Wilson. *Enriching Risk Based Decision Support Models with Large Scale, High Resolution Population Data*, Society for Risk Analysis Annual Meeting, December 8th-11th, 2013. Baltimore, MD.

Stewart, R.N. *What Can('t) SADA Do for You?*, University of Illinois at Chicago (invited speaker), 5/2013

Stewart, R.N. and White, D. 2013. *Towards a 3D Virtual Gaming Environment for Spatiotemporal Analytics,* Association of American Geographers Annual Meeting, Los Angeles, CA, April 9th-13th

Sorokine, A. and **Stewart, R.N.** 2013. *Ontology-driven Geographic Database Design for Spatiotemporal Data Mining,* Association of American Geographers Annual Meeting, Los Angeles, CA, April 9th-13th

Morton, A. and **Stewart, R.N.** 2013. *A Spatiotemporal Process Model for Capturing Museum Visitation Dynamics.* Association of American Geographers Annual Meeting, Los Angeles, CA, April 9th-13th.

Moehl, J and **Stewart, R.N.** 2013. *Relating Indicators and Economic Growth*. Association of American Geographers Annual Meeting, Los Angeles, CA, April 9th-13th.

Urban, M. and **Stewart, R.N.** 2013. *Developing Uncertainty in Population Density Data*. Association of American Geographers Annual Meeting, Los Angeles, CA, April 9th-13th.

Stewart, R.N., 2013. *Application of SADA for 3D Subsurface Characterization and Suggested Approach for Volumetric Compliance with Decommissioning Dose Criteria,* Waste Management Symposium, February 24th-28th, Phoenix (invited panelist, Panel Session 87: Characterization for Decommissioning and Waste Management)

2012

Stewart, R.N. and Urban, M., and Morton, A. 2012. *Population Density Tables: Incorporating socio-cultural dynamics in estimating small area populations at risk,* Society for Risk Analysis Annual Meeting, December 8th-14th, San Francisco, CA.

Stewart, R.N. and Urban, M, 2012. *Eliciting and Transforming Population Density Knowledge into a Bayesian Prior Probability Distribution*, Association Of American Geographers Annual Meeting, New York, NY.

2011

Conley, J. and **Stewart, R.N,** 2011**.** *Using Fine Resolution Population Data and Spatial Interaction Modeling to Estimate Risk from Airborne Toxic Releases*, The 11th International Conference of Geocomputation, London.

Urban, M., Bright, E., **Stewart, R.N.**, Lee, R., and Sylvester, L., 2011 *Creating a Database for Demographic and Socio-cultural Characteristics*, Association of American Geographers Annual Meeting, Seattle, WA.

<2010

Stewart, R.N., 2010. *A Geostatistically Informed Environmental Sampling Design for Improving Boundary Delineation of Contaminated Areas*, Association of American Geographers Annual Meeting, Washington D.C

Norrman, J., Purucker, S.T., Back, P.-E., Engelke, F., **Stewart, R.N**., 2009. Metodik för statistik utvärdering av miljötekniska undersökningar I jord (Method for statistical evaluation of environmental soil investigations). Naturvårdsverket (Swedish Environmental Protection Agency), Rapport 5932. ISBN 978-91-620-5932-3.

Stewart, R.N., 2009. *Spatial Analysis and Decision Assistance Version 5 Overview*, Midwestern States Risk Assessment Symposium, Indianapolis, IN.

Stewart, R.N., 2009. *Spatial Analysis and Decision Assistance (SADA): An integration of spatial analysis, risk, sample design, and GIS*, *Interagency* Steering Committee on Multimedia Environmental Models Public Workshop, Rockville, MD.

Norman, J., Purucker, S.T., **Stewart, R.N**., Back, P.-E., Englelke, F., 2008. Framework for optimizing the evaluation of data from contaminated soil in Sweden. Conference proceedings of ConSoil 2008, 10th International Conference on Soil-Water Systems; Milan, Italy

Lecturer: ITRC ARAMS/SADA Conference October, 2008. Kennebunkport, ME, SADA Training

USEPA, TRIAD Conference June 10th-12th, 2008 in Amherst, MA. SADA Training.

State of Illinois, Department of Natural Resources May 21-22nd, 2008. SADA Training.

University of Tennessee SADA Training, Knoxville, TN, April 23rd-25th, 2008. SADA Training

Purucker, S.T., **Stewart, R.N.**, Dolislager, F., 2007. *Human health and ecological risk assessment with Spatial Analysis and Decision Assistance (SADA) Freeware.* Office of Solid Waste and Emergency Response, Technology Innovation Program, CLU-IN Studio Internet Seminar (presentation).

Stewart, R.N.., Purucker, S.T., Powers, G.E., 2007. *SADA: A Freeware Decision Support Tool Integrating GIS, Sample design, Spatial Modeling, and Risk Assessment.* Proceedings of the International Symposium on Environmental Software Systems, Prague, Czech Republic.

Stewart, R.N., 2007, Purucker, S.T., 2007. *SADA: A freeware decision support tool integrating GIS, sample design, spatial modeling, and environmental risk assessment*. 233rd American Chemical Society National Meeting, Chicago, IL.

University of Helsinki, "Overview of Environmental Methods in SADA", Helsinki, May 2007.

Uranium Recovery Workshop, SADA training, Denver CO, May 2007.

University of Tennessee, "Environmental Assessment Methods Using SADA", Knoxville, TN, April, 2007.

Uses of Spatial Analysis and Decision Assistance. Office of Solid Waste and Emergency Response, Technology Innovation Program, CLU-IN Studio Internet Seminar.

Starzec, P., Purucker, S.T., **Stewart, R.N.**., 2006. Kvantifiering och presentation av osäkerheter i riskbedömning och beslutsprocess: exemplifiering med fallstudier. Rapportutkast (Swedish).

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