

# Robert N. Stewart, Ph.D.

*Curriculum Vitae*

November 2023

## Overview

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, urban dynamics, security, energy-water nexus, health, and environmental risk. Quantifying uncertainty and risk as well as understanding the implications of both for decision making is a recurring theme in my work.

## Professional Highlights

29 years of experience at the nexus of geospatial data, algorithms, and decision support

Developed and deployed significant decision support tools/capabilities across the U.S. Government

75+ peer reviewed publications in journals, conference, book chapters, and technical reports.

22+ years professional service through chair, program committee, panelist, and editorial positions

11+ years serving graduate committees as Joint/Adjunct Faculty at multiple universities

Significant mentoring experience in guiding staff, post docs, and students at various career stages

Over 27 million in R&D funds from various federal agencies

## Education

Ph.D. Geography, University of Tennessee, 2011

M.S. Mathematics, University of Tennessee, 1995

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

## Experience

### **Oak Ridge National Laboratory**

*Geospatial Science and Human Security Division (10/2020 – present)*

As the Geographic Information Science and Technology Group grew into a division, I continued leading and expanding multiple projects in a wide array of R&D including Bayesian reasoning, machine learning, spatio-temporal analytics, data mining, visualization, and operational tool development. Work engages a wide range of use cases emerging from modeling the built environment, population dynamics, global socio-economic dynamics, maritime safety, geomatics, environmental risk, and many others. Research gained national and international presence and recognition evidenced through multi-agency funded projects, awards, invitation to national and international panels, editorial boards, and numerous speaking engagement invitations. Continued to serve as Bredesen Center Faculty advising Ph.D. students in Data Science.

### *Geographic Information Science and Technology Group (10/2009 – 9/30/2020)*

Focused 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. As group (team) leader (2015-2020) oversaw 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.

### **University of Tennessee Senior Research Associate (1994-2009)**

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

## **Societies**

IEEE Senior Member (+CIS, +Computer, +GRSS)  
Association of American Geographers (+GISS, +SAM)  
American for Computing Machinery (+SIGKDD, +SIGSPATIAL)  
American Association for the Advancement of Science  
International Society for Bayesian Analysis

## **Service**

IEEE Computational Intelligence Society Government Task Force Lead, (2023)

DoD Civilian Harm Mitigation and Response Action Plan Working Groups - Objectives 4 and 6 (2023)

Member of International Working Party on Technical, Environmental and Safety Aspects of Decommissioning and Legacy Management for the Organisation for Economic Co-Development (OECD) Nuclear Energy Agency (NEA), Paris (2023 - present)

Federal advisory panelist for the Natural Hazards Mitigation Needs Assessment Study conducted by the National Institute for Building Sciences and the Federal Emergency Management Agency (2023 - present)

Editorial board member of International Journal of Geographical Information Science

(2023- present)

Editorial board member of the Transactions in GIS (2/20/2022 – 12/31/2025)

Bredesen Center Data Science Professor, (6/1/2022 – 5/31/2027)

SIGKDD Program Committee Member (2022-present)

ACM Deep Spatial Workshop Co-Chair (2021-present)

Joint Faculty Professor, Geography Department, University of Tennessee (since 2012)

Ph.D. committees: Daniel Adams (active), Evan Ezell (active), Jesse Piburn (active), Janna Caspersen (2018), Master committees: Karessa Manning (2021), Samantha Duchscherer (Math, 2018), Matthew Miller (2017), Jessica Moehl (2014), April Morton (Math, CalPoly, 2012), Apostolis Sambanis, (Public Health, UIC, 2012), Classes: 599 Geographic Thought, 501 Independent Studies

Consortium Partner of TennesseeView, chapter of AmericaView (since 2022)

Chair, American Association of Geographers GISS Specialty Group (2018-2019)

Vice-Chair, American Association of Geographers GISS Specialty Group (2016-2017)

World Health Organization Chemical Risk Network ORNL Liaison (2014-2015)

## Awards/Honors

UT-Battelle Distinguished Researcher Award, 2023

ORNL National Security Sciences Directorate Distinguished Innovation Team Award, 2023.

ORNL National Security Sciences Directorate Distinguished Researcher Award, 2022

Ecological Society of America Sustainability Science Award for US cities can manage national hydrology and biodiversity using local infrastructure policy, 2021.

DOE Appreciation Letter from Director of the Office of Science for COVID pandemic modeling under the National Virtual Biotechnology Laboratory (NVBL), 2021

Elevated to IEEE Senior Member, 2021

DoD Appreciation Letter from the Pentagon for life saving work in population modeling, 2019.

Oak Ridge National Laboratory Significant Event Award for Spatio-temporal R&D, 2019.

Oak Ridge National Laboratory Significant Event Award for Spatio-temporal R&D, 2014.

EPA Scientific and Technological Achievement Award for Providing Efficient Methods to

## Peer Reviewed Publications

Krapu, C., **R.N. Stewart**, K Kurte, N Hayes, A Rose, A Sorokine, and M Urban (2023) A Bayesian Model for multivariate discrete data using spatial and expert information with application to inferring building attributes, *Spatial Statistics*, Vol 55 (100745) <https://doi.org/10.1016/j.spasta.2023.100745>.

Urban, M, **R.N. Stewart**, S Basford, Z Palmer, and J Kaufman (2023), Estimating Building Occupancy: A machine learning system for day, night, and episodic events, *Natural Hazards*, Vol 116, pp 2417-2436, <https://doi.org/10.1007/s11069-022-05772-3>.

Tuccillo J., **R.N. Stewart**, A Rose, N Trombley, J Moehl, N Nagle, and B Bhaduri (2023) UrbanPop: A spatial microsimulation framework for exploring demographic influences on human dynamics, *Applied Geography*, Volume 151, pp. 102844. <https://doi.org/10.1016/j.apgeog.2022.102844>

Maguire, D., J Kaufman, A Sorokine, and **R.N. Stewart** (2022) Enhancing and validating GeoNames data with Digital Nautical Charts data: A case study in the mapping of freeform Map Labels, *AutoCarto 2022 Extended Abstract*, Redlands, CA, Nov 2-4.

**Stewart, R.N.**, S Erwin, J Piburn, N Nagle, J Kaufman, A Peluso, J Blair Christian, J Grant, A Sorokine, and B Bhaduri (2022), Near Real-Time Monitoring and Forecasting of COVID-19 Situational Awareness, *Applied Geography*, Vol 146, pp 102759. <https://doi.org/10.1016/j.apgeog.2022.102759>

Krapu, C, **R.N. Stewart**, A Rose (2022) "A Review of Bayesian Networks for Spatial Data", *ACM Transactions on Spatial Algorithms and Systems*, Vol 9 (1), <https://doi.org/10.1145/3516523>.

Ezell, E, S Lim, D Anderson, and **R.N. Stewart** (2022) "Community Fabric: Visualizing Communities and Structure in Dynamic Networks." *Information Visualization* 21, no. 2 (February 2022): 130–42. <https://doi.org/10.1177/14738716211056036>.

**Stewart, R.N.**, J Piburn, S Walters, J Kaufman E Ezell, D Anderson, D Axley, J Grant, B Eaton, A Sorokine, and G Simpson (2021), A Taxonomic Classification Approach for Global Spatio-temporal Data, *Spatial Data Science Symposium 2021*, University of California at Santa Barbara, <https://doi.org/10.25436/E22S3H>.

McManamay, R, KC Binita, M Allen-Dumas, S Kao, C Brelsford, 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), <https://doi.org/10.1029/2020WR027751>

Lunga, D, J Arndt, J Gerrand and **R.N. Stewart** (2021), "ReSFlow: A Remote Sensing Imagery Data-Flow for Improved Model Generalization," in *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, vol. 14, pp. 10468-10483, 2021, <https://doi.org/10.1109/JSTARS.2021.3119001>

National Virtual Biotechnology Laboratory, (2021) Report on Rapid R&D Solutions to the COVID-19 Crisis, USDOE Office of Science, (**R.N. Stewart** led Near-Real-Time Situational Awareness effort), website ([https://science.osti.gov/-/media/nvbl/pdf/NVBL\\_report\\_021822.pdf](https://science.osti.gov/-/media/nvbl/pdf/NVBL_report_021822.pdf)).

Erwin, S, **R.N. Stewart**, J Piburn, J Kaufman, A Peluso, B Christian, J Grant, B Bhaduri, N Nagle (2021) A 7-day Moving Window Ensemble for Real-Time Monitoring and Forecasting of COVID-19 Disease Progression, Presentation, SIAM Conference on Computational Sciences and Engineering,

March 2021, Fort Worth, TX.

Lunga, D, J Gerrand, L Yang, C Layton, **R.N. Stewart**, (2020) Apache Spark Accelerated Deep Learning Inference for Large Scale Satellite Image Analytics, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing. <https://doi.org/10.1109/JSTARS.2019.2959707>

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. <https://doi.org/10.17605/OSF.IO/GVP3Q>

Sparks, K, K Sims, T Gautam, M Urban, **R.N. Stewart** (2019) Modeling Building Use and Population Distribution Opportunity Using Open Geosocial Data in Urban Areas. Geocomputation 2019, Queenstown, New Zealand, September 18-21.

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.

Sims, K, G Thakur, K Sparks, M Urban, A Rose, and **R.N. Stewart** (2018) *Dynamically-Spaced Geo-Grid Segmentation for Weighted Point Sampling on a Polygon Map Layer*, Leibniz International Proceedings in Informatics series, 10.4230/LIPIcs.GISCIENCE.2018.58, 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>)

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](http://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, DOI 10.5194/isprs-annals-IV-4-W2-47-2017.

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. DOI: 10.5194/isprs-annals-IV-4-W2-47-2017

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. Accessible 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 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) Minisymposium: 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 3<sup>rd</sup>, 2017, Atlanta, GA.

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).

**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)

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

**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.

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

**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 ([https://trace.tennessee.edu/utk\\_graddiss/1130/](https://trace.tennessee.edu/utk_graddiss/1130/))

**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

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.

Norman, J., Purucker, S.T., **Stewart, R.N.**, Back, P.-E., Engleke, 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  
Purucker, S.T., C Welsh, **R.N. Stewart**, P. Starzec (2007) Use of habitat-contamination spatial correlation to determine when to perform a spatially explicit ecological risk assessment, *Ecological Modeling* 204(1-2), pp 180-192. <https://doi.org/10.1016/j.ecolmodel.2006.12.032>

**Stewart, R.N.**, Purucker, S.T., 2006. *SADA: A Freeware Decision Support Tool Integrating GIS, Sample design, Spatial Modeling, and Risk Assessment*. Proceedings of the Third Biennial Meeting of the International Environmental Modelling and Software Society, Burlington, Vermont.  
[https://www.researchgate.net/publication/255586959\\_SADA\\_A\\_Freeware\\_Decision\\_Support\\_Tool\\_Integrating\\_GIS\\_Sample\\_design\\_Spatial\\_Modeling\\_and\\_Risk\\_Assessment](https://www.researchgate.net/publication/255586959_SADA_A_Freeware_Decision_Support_Tool_Integrating_GIS_Sample_design_Spatial_Modeling_and_Risk_Assessment)

**Stewart, R.N.**, Purucker S.T. 2004. *Incorporating Secondary Information Into Environmental Sampling Designs*. Joint Proceedings of the Sixth International Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences and the 15th Annual Conference of the International Environmetrics Society

Lyon, B.F., Purucker, S.T., **Stewart, R.N.**, 1994. *The Value of Perfect Information: How Much is a Crystal Ball Worth?* Proceedings of the International Specialty Conference. Cost Effective Acquisition and Utilization of Data in the Management of Hazardous Waste Sites. Air & Waste Management Association. Pittsburgh, PA. CONF-940386-2:44-55.

## Book Chapters

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

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. [https://link.springer.com/chapter/10.1007/978-0-387-09722-0\\_11](https://link.springer.com/chapter/10.1007/978-0-387-09722-0_11)

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

## Invited Speaker/Panelist, Short Courses, and Workshops

Alan Turing Institute Speaker (2023) GeoAI for Rich Attribution and Mapping of the Built Environment, September 11<sup>th</sup>, Alan Turing Institute, London UK.

Overview of Global Building Intelligence, Human Planet Forum, Columbia University, NY, July 2023

Co-chair for AGU Annual Meeting 2022 Session U53: Mapping the Built Environment: New Data, Advances and Challenges in Creating Detailed Understanding of Building Characteristics from Materials to Occupancy. Chicago, IL, December 11-16, 2022.

Speaker/Panelist: Nuclear Energy Association Workshop on Innovative Techniques and Technologies, talk titled “A Geospatial Based Decision Framework for Extending MARSSIM, Regulatory Principles into the Subsurface”, Boulogne-Billancourt, France, November 2022

SpatioTemporal Computing Workshop: Setting the ST 5-10 Year Research Agenda. University of Washington, Seattle, Washington, August 18-19, 2022.

Program Committee Member ACM SIGKDD 2022, Washington D.C.

Co-Chair for ACM SIGKDD DeepSpatial Workshop 2022, Washington D.C.

Keynote Speaker, 6<sup>th</sup> IEEE Workshop on Big Spatial Data, talk titled “Uncertainty Revisited” part of IEEE Big Data 2021, December 15<sup>th</sup>, 2021.

Co-Chair for ACM SIGKDD DeepSpatial Workshop 2021.

AAG Annual Meeting Panel on Spatiotemporal Sciences April 9<sup>th</sup>, 2021

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

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

Speaker: *What Can(t) SADA Do for You?*, University of Illinois at Chicago (invited speaker), 5/2013

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

Speaker: *Spatial Analysis and Decision Assistance Version 5 Overview*, Midwestern States Risk Assessment Symposium, Indianapolis, IN. 2009

Speaker: 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. 2009.

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

Lecturer, USEPA, TRIAD Conference June 10th-12th, 2008 in Amherst, MA. SADA Short Course.

Lecturer, State of Illinois, Department of Natural Resources May 21-22nd, 2008. SADA Short Course

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

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

Lecturer, Uranium Recovery Workshop, SADA Short Course, Denver CO, May 2007.

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

Speaker, *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), 2007

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

Speaker, Stewart, R.N., 2006. SADA: A Freeware Decision Support Tool Integrating GIS, Sample design, Spatial Modeling, and Risk Assessment, Graduate Seminar, Department of Geography, UTK, Knoxville, TN

Lecturer, University of Tennessee, "Environmental Assessment Methods Using SADA", Knoxville, TN, 25-27 October 2006.

Lecturer, Swedish Geotechnical Institute, Goteborg, Sweden, 10-12 May 2006. SADA Short Course

Lecturer, University of Tennessee, "Environmental Assessment Methods Using SADA", Knoxville, TN, 26-28 April 2006.

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Lecturer, Swedish Geotechnical Institute, Goteborg, Sweden, 12-15 September 2005. SADA Short Course.

Lecturer, US Naval Facilities Engineering Command (NAVFAC) SADA Workshop, Philadelphia, Pennsylvania, 2-3 August 2005.

Lecturer, University of Tennessee, “Environmental Assessment Methods Using SADA”, Knoxville, TN, 23-25 February 2005

Lecturer, Petróleo Brasileiro SA (Petrobras), Rio de Janeiro, Brazil, 16-20 Aug 2004 SADA Workshop.

Lecturer: FIELDS/SADA 2003 Training Conference in Chicago, 5-7 March 2003.

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

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