Christopher D. Lippitt, PhD, CMS-RS
University of New Mexico Dept. Geography and Environmental Studies
1 University of New Mexico, Albuquerque NM, 87131, USA
Email: clippitt@unm.edu

Education
PhD, May 2012, Geography
> Joint Doctoral Program in Geography between San Diego State University and University of California Santa Barbara
> University of California Santa Barbara
> Santa Barbara, CA 93106
> Dissertation: Time Sensitive Remote Sensing
> Committee: Dr. Douglas Stow (SDSU, Chair), Dr. Micheal Goodchild (UCSB), Dr. Keith Clarke (UCSB), Dr. Dar Roberts (UCSB), and Dr Ming Tsou (SDSU).

M.A., May 2006, Geographic Information Science
> Clark University Graduate School of Geography
> Clark University, 950 Main St, Worcester, MA 01610
> Thesis: Incorporating Anthropogenic Variables into a Species Distribution Model to Estimate the Risk of Gypsy Moth Establishment in Uninfested Portions of the United States
> Committee: Dr. John Rogan (Chair) and Dr. Ronald Eastman

B.A., May 2005, Geography (Magna Cum Laude w/ High Honors)
> Clark University, 950 Main St, Worcester, MA 01610
> Honors Thesis: Machine Learning for Subtle Forest Change Mapping – Coping with Available Reference Data
> Committee: Dr. John Rogan and Dr. R. Gilmore Pontius

Employment History Part I
Professor, July 2023 - Present
> University of New Mexico Department of Geography and Environmental Studies
> 1 University of New Mexico, Albuquerque, NM 87131

Associate Dean for Research: August 1 2021 – Present
> University of New Mexico College of Arts & Sciences
> 1 University of New Mexico, Albuquerque, NM 87131
> Responsibilities: Manage $40m+ annual research budget, representative of the college to the Vice President for Research and other UNM colleges, supervise all college research centers and activities, set research priorities and policies for the college of 450+ faculty, manage all facilities and capital projects, manage college communications.

Founding Faculty Coordinator: June 2019 – July 31 2021
> University of New Mexico Interdisciplinary Science Cooperative
> University of New Mexico College of Arts & Sciences
> 1 University of New Mexico, Albuquerque, NM 87131
> Responsibilities: Manage unit containing 7 Research Centers housing 100+ researchers, an administrative staff of 3, approximately 50,000 square feet of laboratory and collaboration space, setting direction and goals for interdisciplinary science programming, events, and development.

Founding Director: June 2019 – Present
	Center for Advancement of Spatial Informatics Research and Education (ASPIRE)
	University of New Mexico College of Arts & Sciences
	1 University of New Mexico, Albuquerque, NM 87131
	Responsibilities: Managing all research and education activities, goals, and resources, including 2500 square foot laboratory space housing 9 researchers and 16 graduate research assistants, budget allocations, high-performance computing infrastructure, state of the art Visualization Lab, interface with UNM administration.

Associate Professor: August 2017-June 2023
	University of New Mexico Department of Geography and Environmental Studies
	1 University of New Mexico, Albuquerque, NM 87131

Special Assistant to the Associate Dean for Interdisciplinary Science Development: May 2016-June 2019
	University of New Mexico College of Arts & Sciences
	1 University of New Mexico, Albuquerque, NM 87131
	Responsibilities: Managing the development of new Data2knowledge Institute for interdisciplinary science, including building and programming design.

Assistant Professor: August 2012-2017
	University of New Mexico Department of Geography and Environmental Studies
	1 University of New Mexico, Albuquerque, NM 87131

Research Associate: Post-doc: July 2011-June 2012
	San Diego State University Department of Geography
	5500 Campanile Dr., San Diego, CA 92182
	Responsibilities: Demonstrate imaging system for real-time assessment of earthquake damage; imaging hardware development, image processing software development; proposal development; report generation, flight operations management and coordination.

Graduate Research Assistant: August 2006-August 2011
	San Diego State University Department of Geography
	5500 Campanile Dr., San Diego, CA 92182
	Responsibilities: Manager, Sensor Development Laboratory; Grant Author; Lecturer on remote sensing topics; Sensor development and operation; Research, including: Real-time Remote Sensing, Volunteered Geographic Information, Object Based Image Analysis.

Research Associate: June 2010-Sept 2010
	San Diego State University Research Foundation, US Forest Service Wildfire Monitoring
	5250 Campanile Dr., San Diego, CA 92182
	Responsibilities: Airborne sensor integration, Automated image processing routine development, Publication

Research Associate: June 2009-Sept 2009 & June 2010-Sept 2010
	San Diego State University Research Foundation, National Institute of Health, Health Poverty, and Place in Accra Ghana
	5250 Campanile Dr., San Diego, CA 92182
	Responsibilities: Neighborhood modeling, Object Based Image Analysis, Land Cover Classification, Publication

Research Associate: June 2007-Sept 2007 & June 2008-Sept 2008
	San Diego State University Research Foundation, NASA REASON GIScience for border security

5250 Campanile Dr., San Diego, CA 92182
Responsibilities: Accessibility Modeling, Image Processing, Sensor Development, Air photo interpretation, Publication
Research Associate: February 2005- August 2006
Clark Labs
950 Main St. Worcester, MA, 01610
Responsibilities: Modeling United States gypsy moth infestation risk for the USDA APHIS, Proposal and Report Author
Idrisi Kilimanjaro Technical Support Specialist: July 2004-August 2006
Clark Labs
950 Main St. Worcester, MA, 01610
Responsibilities: Customer Support, Support Literature Development, Software Testing

Employment History Part II
Board Member: January 2017 – January 2019
Ibex Aegis LLC
Albuquerque, NM
Responsibilities: Executive oversight, Strategic planning
Board Member: November 2007-2016
TerraPan Labs LLC.
330 A St., Suite 29, San Diego, CA 92101
Responsibilities: Business Development, Proposal development, Project Architecture, Report Review.
Technology Officer: January 2005-August 2006
Central Massachusetts Regional Environmental Council
9 Castle St., Worcester, MA 01610
Responsibilities: Hardware/Software/Network Support and Purchasing

Professional Recognition and Honors
Hexagon Geospatial Education Award (With Student Su Zhang), 2015, Hexagon Geospatial Inc.
Robert N. Colwell Memorial Fellowship, 2011, American Society for Photogrammetry and Remote Sensing
Graduate Student Travel Award, 2011, San Diego State University Graduate Division
Student Travel Award, 2011, American Society for Photogrammetry and Remote Sensing Southwest Region
Certified Mapping Scientist - Remote Sensing, 2010, American Society for Photogrammetry and Remote Sensing
Inducted to Scholars without Borders Honor Society, 2010, San Diego State University
Award for Excellence in GIS and Remote Sensing, 2010, American Society for Photogrammetry and Remote Sensing Southwest Region
Inamori Fellowship, 2009-2010, Awarded by the Inamori Foundation at San Diego State University
Doctoral Student Scholarship Award, 2009, Awarded by United States Geospatial Intelligence Foundation
McFarland Geography Scholarship, 2009, Awarded by the San Diego State Department of Geography

Student Travel Award, 2008, Awarded by the Association of Pacific Coast Geographers

Doctoral Student Scholarship Award, 2008, Awarded by United States Geospatial Intelligence Foundation

Finch Award for Excellence in Remote Sensing, 2008, Awarded by the San Diego State Department of Geography

Dangermond Travel Scholarship, 2008, Awarded by the Jack and Laura Dangermond Scholarship Fund, UC Santa Barbara

Student Travel Award, 2008, Awarded by the Southwest Chapter of the American Society for Photogrammetry and Remote Sensing

GeoEye Foundation Image Grant, 2007, Awarded by GeoEye Foundation

Doctoral Student Scholarship Award, 2007, Awarded by United States Geospatial Intelligence Foundation

NASA-MSU Professional Enhancement Award, 2007, Awarded by NASA and Michigan State University

First Place- AAG 2006 Geographic Information Systems and Science Specialty Group Honors Student Paper Competition, 2006, Awarded by Geographic Information Systems and Science Specialty Group

University Scholarship Award, 2005, Awarded by United States Geospatial Intelligence Foundation

First Place- New England-St. Lawrence Valley Geographical Society (NESTVAL) Graduate Student Poster Competition, 2005, Awarded by NESTVAL

AAG Remote Sensing Specialty Group Honors Student Paper Competition Undergraduate Award, 2004, Awarded by Remote Sensing Specialty Group of the Association of American Geographers

IDRISI Excellence in Geographic Information Science Award, 2005, Awarded by Clark Labs

Human Environment Regional Observatory Fellowship, 2005, Awarded by George Perkins Marsh Institute

Peter J. Condakes Summer Research Fellowship Award, 2004, Awarded by the Clark University Graduate School of Geography

AAG Remote Sensing Specialty Group Honors Student Paper Competition Undergraduate Award, 2004, Awarded by Remote Sensing Specialty Group of the Association of American Geographers

Hank Emery Award, 2004, Awarded by Geospatial Information Technology Association

Human Environment Regional Observatory Fellowship, 2004, Awarded by George Perkins Marsh Institute

John O'Connor Award for Excellence in Environmental Studies; Awarded by Clark University, 2004

Inducted to Gamma Theta Upsilon, International Geographical Honor Society, 2004.

Human Environment Regional Observatory Fellowship, 2003, Awarded by George Perkins Marsh Institute

Research, Teaching and Service Interests

My research, teaching, and service interests are largely synergistic and focus on advancing Geographic Information Science (GIScience) theory, methods, and practice to foster the use of geospatial technology to better understand and respond to environmental pressures on humanity, with a focus on remote sensing techniques. This necessarily includes collaboration with government and private industry and training the next generation of remote sensing scientists as integrative thinkers with a sound foundation in both theory and practice through coursework, research, and professional societies. Subsequently, my research, research training, and teaching activities are focused on theory and methods to apply remote sensing and spatial modeling to a broad range of application domains.

Current research activities employ and improve remote sensing system effectiveness across a range of disciplines (e.g., Geography, Biology, Civil Engineering, Archeology); all of which focus on expanding our ability to leverage the uniquely synoptic and persistent monitoring capabilities of remote sensing for societal benefit. In recent years, our team has designed remote sensing systems for infrastructure inspection, vegetation/habitat monitoring, animal species inventory, hazard response, and scaling of climate and carbon models. The common thread amongst all of our team's projects is a decision deficit of information; infrastructure managers, wildlife managers, hazard managers, and policymakers all require reliable information on which to base critical decisions, and remote sensing systems represent a cost effective, reliable, and verifiable information source. All of these research activities include substantial student research activity, manifested as research assistantships, theses, dissertations, community partnerships, and co-authored publications.

It is my strong belief that education, whether of research scientists or professionals, is best achieved through practice. This belief guides my approach to research, teaching, and service. My research is conducted with students of all levels (undergraduate-doctoral), provides practical examples and exercises to curriculums, and facilitates the development of students' professional networks. My service activities seek to expand opportunities for student experience and scholarship through student training programs (e.g., Museum Research Traineeship, NSF TCUP, Water fellowship), mentoring student chapters of professional societies (e.g., ASPRS), organizing and promoting training opportunities by practicing professionals (e.g., ASPIRE Spatial Data Brownbag), creating shared facilities to promote organic scholarship and collaboration (e.g., ASPIRE, IS Co-op), and serving on national and regional professional society boards (e.g., AAG RSSG, ASPRS). I find that my research and education goals are best achieved through an active role in the advancement and management of my department, college, and university. My position as founding Faculty Coordinator of the UNM Interdisciplinary Science Co-operative and, subsequently, Assoc. Dean for Research, allows me to coordinate and facilitate new research and research education initiatives across the UNM campus and has reinforced my belief that working across traditional disciplinary boundaries and collaborating outside of the academy makes for more effective research and education.

My research, teaching, and service goals, achieved through a variety of means, are the same: advancing humanity's ability to monitor, analyze and predict, and thus understand and respond to, its environment.

Scholarly Achievements

*Research conducted by a student as a mentee

Books Edited or Co-edited

Lippitt, C.D., D.A. Stow, and L.L. Coulter. 2015. Time-Sensitive Remote Sensing. Springer Press

Patents

Sanei, M., X.Yuan, F Moreau, C.D. Lippitt. Pending (Disclosed August 2022). Automatic RGBD-AR-UAV Rebar Inspection.

Moreau, F, C.D. Lippitt, and X.Yuan*. Pending (Filed in July 2022). "The Automatic Quality-Control Quality-Assurance Inspector (AQQI).

Coulter, L.L.A and C.D. Lippitt. 2019. "Wide area intermittent video using non-orthorectified feature matching in long period aerial image capture with pixel-based georeferencing" In: Google Patents. Patent US 9756293

Coulter, L.L.A., and C. D. Lippitt. 2017. "Systems, methods and devices for repeat pass imaging for wide area intermittent video." In.: Google Patents. Patent US 9756293 B2

Articles in Refereed Journals

Total Citations: 2217   H-Index: 20   i10-index: 42   As of: 04/05/2023

*Yuan, X. A. Smith, F. Moreu, R. Sarlo, C.D. Lippitt, M. Hojati, S. Alampalli, and Su Zhang. 2023. Automatic evaluation of rebar spacing and quality using LiDAR data: field application for bridge structural assessment. Automation in Construction 146,.

Yang L, Driscol J, Sarigai S, Wu Q, Chen H, Lippitt CD. Google Earth Engine and Artificial Intelligence (AI): A Comprehensive Review. *Remote Sensing*. 2022; 14(14):3253.

*Beene, D. S. Zhang, C.D. Lippitt, and S.M. Bogus. 2022. Performance Evaluation of Multiple Pan-sharpening Techniques on NDVI – A Statistical Framework. *Geographies*. 2 (3) 435-452.

Zhang, S., S.M. Bogus, C.D. Lippitt, V. Kamat, S.H. Lee, 2022, Implementing Remote-Sensing Methodologies for Construction Research: An Unoccupied Airborne System Perspective. Journal of Construction Engineering and Management 148 (9).

Weinstein, Ben G., Garner, Lindsey, Saccomanno, Vienna R., Steinkraus, Ashley, Ortega, Andrew, Brush, Kristen, Yenni, Glenda, et al. 2022. "A General Deep Learning Model for Bird Detection in High-Resolution Airborne Imagery." Ecological Applications e2694.

Yang, Liping, J. Driscol, S. Sarigai, Q. Wu, C.D. Lippitt, M. Morgan. 2022. Towards Synoptic Water Monitoring Systems: A Review of AI Methods for Automating Water Body Detection and Water Quality Monitoring Using Remote Sensing. *Sensors 22 (6):2416*.

Zhang, S., C.D. Lippitt, S.M. Bogus, T.D. Taylor, R. Haley*. 2022. Mapping Construction Costs at the National Level. *Geographies*, *2*, 132-144.

*Sa'Doun, MM, CD Lippitt, G Paulus, KH Anders. *2021*. A Comparison of Convolution Neural Network Architectures for Automated detection and Identification of Waterfowl in Complex Environments. GI Forum – Journal of Geographic Information Science, 2.

Lin, Y., CD Lippitt, D Beene & J Hoover. 2021. Impact of travel time uncertainties on modeling of spatial accessibility: a comparison of street data sources, Cartography and Geographic Information Science, 48:6, 471-490

*Yuan, X., Smith, A., Sarlo, R., Lippitt, C. D., & Moreu, F. 2021. Automatic evaluation of rebar spacing using LiDAR data. Automation in Construction, 131, 103890

*Converse, R., C.D. Lippitt, and C.L. Lippitt. 2021. Assessing Drought Dynamics in Semiarid Grass- and Shrubland Using MESMA. Remote Sensing 2021, *13* (19), 3840.

Huang, C.-W., Krofcheck, D. J., Duman, T., Fox, A. M., Pockman, W. T., Lippitt, C. D., et al. (2020). Ecosystem-level energy and water budgets are resilient to canopy mortality in sparse semiarid biomes. Journal of Geophysical Research: Biogeosciences, 125, e2020JG005858.

*Bajracharya, Pankaj, C.D. Lippitt & S. Sultana (2020) Modeling Urban Growth and Land Cover Change in Albuquerque Using SLEUTH, The Professional Geographer, 72:2, 181-193.

Lippitt, C.D. and S. Zhang. 2018. The Impact of Small Unmanned Airborne Systems on Remote Sensing; a conceptual perspective. International Journal of Remote Sensing: 39:15-16, 4852-4868.

*Loerch, A., C.D. Lippitt, and Gernot Paulas. *2018.* Change Detection with Structure from Motion - The Impact of Repeat Station Imaging. GI Forum – Journal of Geographic Information Science, Volume 1.

Stow, D., C.D. Lippitt, L.L. Coulter, and A. Loerch*. *2018*. Towards an End-to-end Airborne Remote Sensing Systems for Post-Hazard Assessment of Damage to Critical Infrastructure: research progress and needs. International Journal of Remote Sensing 39:5, 1441-1458.

*Zhang, C.D. Lippitt, S. Bogus. *2017*. Pavement Surface Condition Estimation Based on Geospatial Modeling. Annuls of GIS: 23:3, 167-181.

*Brewer, W., C.L. Lippitt, C.D. Lippitt, and M.E. Litvack. *2017*. Assessing Drought-Induced Change in a Piñon-Juniper Woodland with Landsat: A Multiple Endmember Spectral Mixture Analysis Approach. International Journal of Remote Sensing 38 (14): 4156-4176.

*Healy, A., C.D. Lippitt, D. Phillips, and M.D. Lane. *2017*. A Comparison of Suitability Models to Identify Prehistoric Agricultural Fields in Western New Mexico. Journal of Archeological Research Science 11: 427-434.

Stow, D.A., L.L. Coulter, C.D. Lippitt, G. MacDonald, R. McCreight, and N. Zamora. *2016*. Evaluation of Geometric Elements of Repeat Station Imaging and Registration. Photogrammetric Engineering & Remote Sensing 82(10): 775-788.

Lippitt, C.D., D.A. Stow, and P.J. Riggan. *2016*. Application of the remote-sensing communication model to a time-sensitive wildfire remote-sensing system. International Journal of Remote Sensing Vol. 37 No.14, 3272-3292.

*Zhang, S., S.M. Bogus, C.D. Lippitt, Giovanni C. Migliaccio. *2016 Online*. Estimating Location-Adjustment Factors for Conceptual Cost Estimating Based on Nighttime Light Satellite Imagery. Journal of Construction Engineering and Management. DOI: 10.1061/(ASCE)CO.1943-7862.0001216.

*Zhang, S. C.D. Lippitt, S. Bogus, P. Neville. *2016.* Characterizing Pavement Surface Distress Conditions with Hyper-Spatial Resolution Natural Color Aerial Photography. Remote Sensing 8(5): 392.

*Krofcheck, D.J., M.E. Litvack, C.D. Lippitt, and A. Neuenschwander. *2016.* Woody Biomass Estimation in a Southwestern U.S. Juniper Savanna Using LiDAR- Derived Clumped Tree Segmentation and Existing Allometries. Remote Sensing 8(6), 453.

*Kirk, Scott, A.E. Thompson, C.D. Lippitt. *2016.* Predictive Modeling for Site Detection Using Remotely Sensed Phenological Data. Advances in Archeological Practice 4(1), pp. 87-101.

Bensen, M.H., C.D. Lippitt, R. Morrison, B. Cosens, J. Boll, B. Chaffin, A.K. Fremier, R. Heinse, D. Kauneckis, T.E. Link, C. Scruggs, M. Stone, V. Valentin. *2016.* Five ways to support interdisciplinary work before tenure. Journal of Environmental Studies and Sciences 6(2) pp. 260-267.

Zhang, S., C.D. Lippitt, S.M. Bogus, A. Loerch, and J. Sturm*. *2016.* The accuracy of aerial triangulation products automatically generated from hyper-spatial resolution digital aerial photography. Remote Sensing Letters 7:2, pp.160-169.

*Krofcheck, D.J., J.U.H. Eitel, C.D. Lippitt, L.A. Vierling, U. Schulthess, and M.E. Litvack. *2016.* Remote Sensing Based Simple Models of GPP in Both Disturbed and Undisturbed Piñon-Juniper Woodlands in the Southwestern U.S. Remote Sensing 8(1), 20

*Ferlando, J. and C.D. Lippitt. *2016.* Spatial forest valuation: The role of location in determining attitudes towards payment for ecosystem services policies. Forestry Policy and Economics 62

*Zhang, S., S.M. Bogus, C.D. Lippitt, P.R.H. Neville. G. Zhang, C. Chen, and V. Valentin. *2015.* Extracting Pavement Surface Distress Conditions Based on High Spatial Resolution Multispectral Digital Aerial Photography, Photogrammetric Engineering & Remote Sensing Vol. 81, No. 9, pp. 709-720.

Lippitt, C.D., D.A. Stow, and K. Clarke. *2014.* On the nature of models for time-sensitive remote sensing. International Journal of Remote Sensing, 35:18, 6815-6841, DOI: 10.1080/01431161.2014.965287.

Stow, D.A., Y. Tsai, L.L. Coulter, and C.D. Lippitt. *2014.* Detecting and measuring moving objects with airborne repeat station imaging in rapid succession mode. Remote Sensing Letters, 5:3, 213-220, DOI: 10.1080/2150704x.2014.894654

Stow, D.A., J.R. Weeks, S. Toure, L.L. Coulter, C.D. Lippitt, and E Ashcroft. *2013.* Urban Vegetation Cover and Vegetation Change in Accra, Ghana: Connection to Housing Quality. The Professional Geographer 65:3, 451-465, DOI:10.1080/00330124.2012.697856

Stow, D.A., S.I. Toure, C.D. Lippitt, C.L. Lippitt, and C. Lee. *2012.* Frequency distribution signatures and classification of within-object pixels. International Journal of Applied Earth Observation and Geoinformation 15, pp. 49-56.

Weeks, J.R., A. Getis, D.A. Stow, A.G. Hill, D. Rain, R. Engstrom, J. Stoler, C.D. Lippitt, and M. Jankowska. A.C. Lopez-Carr, L. Coulter and C. Ofiesh. *2012.* Connecting the Dots between Health, Poverty and Place in Accra, Ghana. Annals of the Association of American Geographers 102:5, pp. 932-941.

Lippitt, C.D., L.L. Coulter, M. Freeman, J. Lamantia-Bishop*, W. Pang*, and D.A. Stow. *2012.* The effect of input data transformations on object-based image analysis. Remote Sensing Letters, 3:1, 21-29.

Coulter, L.L., A.S. Hope, D.A. Stow, C.D. Lippitt, and S.J. Lathrop. *2011*. Time-space radiometric normalization of TM/ETM+ images for land-cover change detection. International Journal of Remote Sensing, DOI: 10.1080/01431161.2010.524676.

Stow, D.A., C.D. Lippitt, and J.R. Weeks. *2010*. Geographic Object-based Delineation of Neighborhoods of Accra, Ghana Using Quickbird Satellite Imagery. Photogrammetric Engineering & Remote Sensing, Vol. 76, No. 8, pp. 907-914.

Lippitt, C. D., J. Rogan, Z. Li, J.R. Eastman, and T.G. Jones. *2008*. Mapping Selective Logging in Mixed Deciduous Forest: A Comparison of Machine Learning Algorithms. Photogrammetric Engineering & Remote Sensing, Vol. 74, No. 10, pp. 1201-1212.

Lippitt, C. D., J. Rogan, J. Toledano, F. Sangermano, J.R. Eastman, V. Mastro, and A. Sawyer. *2008*. Incorporating anthropogenic variables into a species distribution model to map gypsy moth risk. Ecological Modelling 210:3, pp. 339-350.

Pontius Jr, R.G., W. Boersma, J. Castella, K. Clarke, T.d. Nijs, C. Dietzel, Z. Duan, E. Fotsing, N. Goldstein, K. Kok, E. Koomen, C.D. Lippitt, W. McConnell, A.M. Sood, B. Pijanowski, S. Pithadia, S. Sweeney, T.N. Trung, A.T. Veldkamp, and P.H. Verburg. *2008*. Comparing the input, output, and validation maps for several models of land change. Annals of Regional Science, 42(1): pp. 11-37.

Stow, D., A. Lopez, C. D. Lippitt, S. Hinton, and J. Weeks. *2007*. Object-based classification of residential land use within Accra, Ghana based on QuickBird satellite data. International Journal of Remote Sensing, 28:22, 5167-5173.

Pontius Jr, R. G. and C. D. Lippitt. *2006*. Can error explain map differences over time?. Cartography and Geographic Information Science 33(2): 159-171.

Holden, M.T., C. Lippitt, R. G. Pontius, Jr., and C. Williams. *2003*. Building a Database of Historical Land Cover to Detect Landscape Change. Biological Bulletin 205: 257-258.

Articles Appearing in Peer-reviewed Proceedings

Moreau, F., C.D. Lippitt, and X. Yuan*. 2021. Bridge Construction Monitoring using LiDAR for Quality Control. Proceedings of the 10th International Conference on Structural Health Monitoring of Intelligent Infrastructure; Porto Portugal.

Maharjan, D., Agüero, M., Lippitt, C., & Moreu, F. (2019). Infrastructure Stakeholders' Perspective in Development and Implementation of New Structural Health Monitoring (SHM) Technologies for Maintenance and Management of Transportation Infrastructure. In MATEC Web of Conferences (Vol. 271, p. 01010). EDP Sciences.

Zhang, S. S.M. Bogus, C.D. Lippitt, and J.Sprague. 2018 Geospatial Technologies for Collecting Construction Material Information. Proceedings of the Construction Research Congress 2018, New Orleans, LA.

*Zhang, S., S.M. Bogus, and C.D. Lippitt. 2016. Estimating Infrastructure Condition Based on Geospatial Modeling. Proceedings of the Construction Research Congress 2016, San Juan, Puerto Rico.

*Zhang, S., S.M. Bogus, and C.D. Lippitt. 2015. Infrastructure Condition Assessment Based on Low-cost Hyper-Spatial Resolution Multispectral Digital Aerial Photography. Proceedings of the 2015 International Construction Specialty Conference, CSCE, Vancouver, Canada.

*Zhang, S., Bogus, S.M., and Lippitt, C.D. 2015. Pavement surface permanent deformation detection and assessment based on digital aerial triangulation. Proceedings of the 2015 International Workshop on Computing in Civil Engineering, ASCE, Austin, TX.

Coulter, L.L., D.A. Stow, Y.H. Tsai, C.M. Chavis, R.W. McCreight, C.D. Lippitt, and G.W. Fraley. 2012. A New Paradigm for Persistent Wide Area Surveillance. Proceedings of the IEEE International Conference on Technologies for Homeland Security. Waltham, MA.

Coulter, L.L., D.A. Stow, S. Kumar, S. Dua, B. Loveless, G. Fraley, C. Lippitt, V. Shrivastava. 2012. Automated Co-registration of Multitemporal Airborne Frame Images for Near Real-time Change Detection. Proceedings of the Annual Meeting of the American Society for Photogrammetry and Remote Sensing. Sacramento, CA.

Coulter, L.L., D.A. Stow, Y.H. Tsai, C.M. Chavis, C.D. Lippitt, G.W. Fraley, R.W. McCreight. 2012. Automated Detection of People and Vehicles in Natural Environments Using High Temporal Resolution Airborne Remote Sensing. Proceedings of the Annual Meeting of the American Society for Photogrammetry and Remote Sensing. Sacramento, CA.

Coulter, L.L., C.D. Lippitt, and D.A. Stow. 2011. Near Real-Time Change Detection for Border Monitoring. Conference Proceedings of the Annual Meeting of the American Society for Photogrammetry and Remote Sensing. Milwaukee, WI.

Pontius Jr, R.G., J. Castella, T. Nijs, Z. Duan, E. Fotsing, N. Goldstein, K. Kok, E. Koomen, C.D. Lippitt, W. McConnell, B. Pijanowski, A.M. Sood, A.T. Veldkamp, and P.H. Verburg. 2007. Lessons and challenges in land change modeling as revealed by map comparisons. Proceedings of the conference on the science and education of land use. Washington DC, USA 37 pages.

Pontius Jr, R. G. and C. D. Lippitt. 2004. A method to distinguish real landscape change from map error during map comparison. Conference Proceedings of the joint meeting of The Fifteenth Annual Conference of The International Environmetrics Society and The Sixth Annual Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences. Portland ME.

Articles Appearing in Chapters in Edited Volumes

Lippitt, C. D. (2020). Georeferencing and Georectification. *The Geographic Information Science & Technology Body of Knowledge* (3rd Quarter 2020 Edition), John P. Wilson (Ed.).

Pontius Jr, Robert Gilmore, Jean-Christophe Castella, Ton de Nijs, Zengqiang Duan, Eric Fotsing, Noah Goldstein, Kasper Kok, Eric Koomen, Christopher D. Lippitt, William McConnell, Alias Mohd Sood, Bryan Pijanowski, Peter Verburg and A. Tom Veldkamp. 2018. Lessons and Challenges in Land Change Modeling Derived from Synthesis of Cross-Case Comparisons. Chapter 8 in Martin Behnisch and Gotthard Meine (eds.) Trends in Spatial Analysis and Modelling. Geotechnologies and the Environment 19: 143-164. Springer International Publishing: Cham, Germany.

Lippitt, C.D., and D.A. Stow. *2015*. Remote Sensing Theory and Time-Sensitive Information. In: Lippitt, Stow, and Coulter (eds), Time-Sensitive Remote Sensing, Springer Press

Coulter, L.L., D.A. Stow, C.D. Lippitt, and G.W. Fraley. *2015*. Repeat Station Imaging for Rapid Airborne Change Detection. In: Lippitt, Stow, and Coulter (eds.), Time-Sensitive Remote Sensing, Springer Press.

Stow, D.A., C.D. Lippitt, L.L. Coulter, and B. Davis. *2015*. Time Sensitive Airborne Remote Sensing Systems for Post-Hazard Damage Assessment. In: Lippitt, Stow, and Coulter (eds), Time-Sensitive Remote Sensing, Springer Press.

Lippitt, C.D., D.A. Stow, S.I. Toure, and M. Vejraska. *2013*. Delineation and Classification of Urban Neighborhoods of Accra, Ghana, from Quickbird Imagery: Manual vs. Semi-

automated Approaches. In: Spatial Inequalities: Health, Poverty, and Place in Accra, Ghana (Eds. John R. Weeks, Allan G. Hill, and Justin Stoler), Springer Press.

Pontius Jr, R.G., J. Castella, T.d. Nijs, Z. Duan, E. Fotsing, N. Goldstein, K. Kok, E. Koomen, C.D. Lippitt, W. McConnell, A.M. Sood, B. Pijanowski, A.T. Veldkamp, and P. H. Verburg. *2009*. Advances from comparative land change modeling approaches, In: The dynamics of land use and ecosystem services; a transatlantic, multidisciplinary and comparative approach (Eds. Floor Brouwer and Stephan Goetz)

Other Scholarly Works

Moreu, F. M. Sanei, and C.D. Lippitt. 2022. Increasing Bridge Durability and Service Life with LIDAR Enhanced Unmanned Aerial Systems (UAS). Report to the US Department of Transportation.

*Yuan, X., F. Moreu, and C.D. Lippitt. 2021 Bridge Construction Monitoring Using LiDAR Data. Report to US Department of Transportation.

Moreu, F., C.D. Lippitt, and X. Yuan. 2020. Bridge Construction Monitoring using LiDAR for Qualified, Objective Quality-Control Quality-Assurance (QOQCQA). Report to US Department of Transportation.

Moreu, F., C.D. Lippitt. 2019. Augmented Reality Enhancing the Inspections of Transportation Infrastructure: Research, Education, and Industry Implementation. Report to US Department of Transportation, Submitted November 2019

Moreau, F., C.D. Lippitt, D. Maharjan, M. Aguero, and R. Nasima. Development, Training, Education, and Implementation of Low-Cost Sensing Technologies for Bridge Structural Health Monitoring (SHM). Report to US Department of Transportation, Submitted November 2018: http://transet.lsu.edu/wp-content/uploads/sites/18/2018/11/17STUNM02_Final_Report.pdf

Lippitt, C.D. 2016. Development of a Remote Sensing Network for Time-Sensitive Detection of Fine Scale Damage to Transportation Infrastructure. Report to U.S. Department of Transportation, Submitted 4/18/2017.

Taylor, T., J. Sturm, and C.D. Lippitt. 2016. After Action Report for the Demonstration of the Time Sensitive Remote Sensing System. Report to U.S. Department of Transportation, Submitted 12/28/2016.

Loerch, A., S. Zhang, C.D. Lippitt, and S. Bogus. 2016. Total Time of Information Delivery of the Optimized TSRSS. Report to U.S. Department of Transportation, Submitted 12/28/2016.

*Zhang, S., S. Bogus, and C.D. Lippitt. 2016. Potential Applications of the Optimized TSRSS for Assessing Roadway and Bridge Conditions. Report to U.S. Department of Transportation, Submitted 12/28/2016.

*Zhang, S., S. Bogus, and C.D. Lippitt. 2016. New Mexico Department of Transportation Optimized TSRSSS Products Utility and Desirability Survey Report. Report to U.S. Department of Transportation, Submitted 9/30/2016.

Stow, D.A., H. Lan, A.S. Walker, C.D. Lippitt, L.L. Coulter, E.A. Storey, C. Chen, E. Schweizer, and S. Zhang*. 2016. Automated Change Detection with Airborne Imagery for Rapid Post-hazard Transportation Assessment. Report to U.S. Department of Transportation, Submitted 9/30/2016.

Coulter, L.L., H. Lan, D.A. Stow, A.S. Walker, C.D. Lippitt, G.R. MacDonald, C. Chen, E.

Schweizer, S. Zhang*, and T. Taylor*. 2016 Development and Testing of Automated, Multitemporal Image Co-Registration Software for Repeat Station Imaging and Rapid, Detailed Change Detection. Report Submitted to U.S. Department of Transportation, Submitted 06/30/2016.

*Loerch, A. and C.D. Lippitt. 2016 Report Detailing Total Time to Information Delivery under Various TSRSS Configurations. Report Submitted to U.S. Department of Transportation, Submitted 05/09/2016.

Lippitt, C.D. 2015. Remote Sensing from Small Unmanned Platforms: A Paradigm Shift. Environmental Practice 17:3.

Stow, D.A., L.L. Coulter, G.R. MacDonald, and C.D. Lippitt. 2015. Evaluation Of Geometric Capture And Processing Elements In The Context Of A Repeat Station Imaging Approach To Registration And Change Detection. Report Submitted to U.S. Department of Transportation, Submitted 12/31/2015.

Grebe, M. and C.D. Lippitt. 2015. Wireless Air-to-Ground Image Transmission. Report Submitted to U.S. Department of Transportation, Submitted 10/15/2015.

*Zhang, S., C.D. Lippitt, and S. Bogus. 2015. New Mexico Department of Transportation Infrastructure Manager Survey Report. Report Submitted to U.S. Department of Transportation, Submitted 09/29/2015.

Lippitt, C.D. 2014. Remote Sensing: a critical disaster response technology. Enduring Questions: To what extent will remote sensing data mitigate hazards of natural disasters in the future? ABC-CLIO Press, Santa Barbara, CA.

Lippitt, C.D. 2012. Time-Sensitive Remote Sensing. Dissertation, University of California Santa Barbara, CA.

Lippitt, C.D. 2010. J. Ronald Eastman, In: Encyclopedia of Geography (Ed. Barney Warf)

Works in Progress

Articles in Refereed Journals

*Loerch, A and C.D. Lippitt. *Submitted 01/28/22*. Estimating the timeliness of airborne remote sensing data. International Journal of Remote Sensing.

Lippitt, C.D., G. Harris, B. Mirka, M. Gurule, S. Sensie, R. Converse, and Z. Rossman. *In Prep*. Automating abundance estimate from camera trap imagery; a photogrammetric approach. Ecological Informatics.

Lippitt, C.D., R. *Converse, S. M. Mustafa, S. Sesnie, and G. Harris. *In Prep*. A Crowdsourced model for automated waterfowl identification. Remote Sensing.

Zhang, S., H. Barret, T. Eishelman, L. Sinclair, P. Neville, and C.D. Lippitt. A method for evaluating coverage from the Planet Labs constellation. *In Pre*p. Remote Sensing Letters.

*Sharma, P., S. Zhang, P. Neville, and C.D. Lippitt. *In Prep*. Characterizing vegetation phenology at high spatio-temporal resolution: a comparison of transformations. Remote Sensing.

*Converse, R. and C.D. Lippitt. *In Prep*. Duck, Duck, Goose; an evaluation of consistency amongst expert and crowdsourced waterfowl labels. Ecological Informatics.

Zhang, S. T. Eishelman, P. Neville, and C.D. Lippitt. *In Prep*. A comparison of high-resolution vegetation index compositing approaches. Remote Sensing.

*Zhang, S. C.D. Lippitt, S. Bogus, G. Zhang. *In Prep for resubmission.* Quantifying the Impact of Road Lighting Conditions on Nighttime Vehicle Crash Rates Using Nighttime Light Satellite Imagery. Journal of Transport Geography.

Invited or Refereed Abstracts and/or Presentations at Professional Meetings

2023 - Converse, Rowan, Christopher Lippitt, Grant Harris, Steven Sesnie, Matthew Butler and David Stewart. Progress toward automated migratory waterfowl census using drones and deep learning. GeoWildLife 2023 at 31st Annual ACM SIGSPATIAL International Congress on Advances in Geographic Information Systems, Hamburg, Germany.

2023 - Blair Mirka, Christopher Lippitt, Grant Harris, Rowan Converse, Michael Gurule, Steven Sesnie, Matthew Butler, David Stewart and Zoe Rossman. Automated Estimation of Distance to Animals in Images: Applications for Monitoring Wildlife Abundance. GeoWildLife 2023 at 31st Annual ACM SIGSPATIAL International Congress on Advances in Geographic Information Systems, Hamburg, Germany.

2023 - Lippitt, C.D., Convergent Remote Sensing; a path forward. Colloquium, USC Spatial Sciences Institute, Los Angeles, CA.

2023 – Lippitt, C.D., Convergent Remote Sensing. Transactions in GIS Plenary Lecture, Annual Meeting of the Association of American Geographers, Denver, CO.

2021 – Lippitt, C.D., R. Converse, M. Sa'Doun, S. Sesnie, and G. Harris. Drones for Ducks: a Croudsourcing approach to automated waterfowl labeling. New Mexico Geographic Information Council Annual Meeting, Albuquerque, NM (Virtual); Oct 21, 2021

2021 – Yuan, X., Moreau, F., and C.D. Lippitt. Bridge Construction Monitoring using LiDAR Data. Tran-SET 2021. Arkansas State University (Virtually); June 3&4.

2021 – Mohammad, S., C. Lippitt, G. Paulus, and A. Karl-Heinrich. A Comparison of Convolution Neural Network Architectures for Automated Detection and Identification of Waterfowl in Complex Environments. Salzburg Austria (Virtual); July 8 & 9.

2021 – Yuan, X., A. Smith, R. Sarlo, and C.D. Lippitt. Bridge Construction Monitoring using LiDAR for Quantified, Objective Quality-Control Quality-Assurance. 10th Annual international Conference on Structural Health Monitoring of Intelligent Infrastructure, July 2, Porto, Portugal.

2021 – Lippitt, C.D. and S. Zhang. Remote Sensing for Infrastructure Damage Detection. New Mexico TransCon 2021, Los Cruces, NM; April 21 & 22.

2020 – Moreau, F. and C.D. Lippitt. Bridge Deck Construction Evaluation using LiDAR and Photogrammetry. Annual Paving and Transportation Conference, Albuquerque, NM: January 8-9.

2019 – Lippitt, C.D. Remote Sensing or Natural Resource Management. Annual Tribal GIS Conference, Albuquerque, NM: November 18-22 2019.

2019 – Lippitt, C.D. Panelist: UAS Symposium Panel: UAS in Higher Education – Challenges and Prospects in Instruction. Annual Meeting of the American Association of Geographers, Washington D.C.

2019 - Maharjan, D., M. Agüero, C.D. Lippitt, and F. Moreu. Infrastructure Stakeholders' Perspective in Development and Implementation of New Structural Health Monitoring (SHM) Technologies for Maintenance and Management of Transportation Infrastructure. 2019 Tran-SET Conference, San Antonio, Texas: 4/11-4/12.

2019 – Lippitt, C.D. Towards Realizing the Latent Potential of Remote Sensing. New Mexico Big Data Analytics Summit: 2/22

2018 – Lippitt, C.D. Time-Sensitive Remote Sensing in the age UAS and Satellite Constellations: Development Priorities. University of New Mexico Dept. of Computer Science Colloquium Series: 4/4.

2018 - Moreu, F. C.D. Lippitt, R. Soni, A. Ozdagli, B. Liu, X. Li, E. Ayorinde, and S. Zhang. High School Students Building and Using Sensors Towards Smart Management of Transportation Systems. Tran-SET 2018, New Orleans, LA.

2018 – Zhang, S, S. Bogus, and C.D. Lippitt. "An Adaptive Two-stage Survey Method for Development of a Remote Sensing Network for Time-sensitive Detection of Fine Scale Damage to Transportation Infrastructure" Transportation Research Board 2018, Washington, D.C., 1/7-1/11.

2018 – Brown, J., G. Debenedetto, C.D. Lippitt, and J. Winkle. "Structure-From-Motion Based Digital Elevation Model Derived Flow Modeling for Stage-Discharge Rating Development Using a Balloon Platform". ASCE- World Environmental & Water Resources Congress, Minneapolis, MN, 6/3-6/7.

2018 – Lippitt, C.D. "The impact of UAS on remote sensing and photogrammetry at large. USGS New Mexico Water Sciences Center Speaker Series, 01/26.

2017 – Lippitt, C.D. and J. Sprague. "Workshop: Structure From Motion and Multi-view Stereo". American Society for Photogrammetry and Remote Sensing Rocky Mountain Region Annual Meeting.

2017 – Lippitt, C.D. "Panelist: Geospatial Careers". American Society for Photogrammetry and Remote Sensing Rocky Mountain Region Annual Meeting.

2017 - Lippitt, C.D. "ASPRS Certification" American Society for Photogrammetry and Remote Sensing Rocky Mountain Region Annual Meeting.

2017 – Lippitt, C.D. "The impact of UAS on remote sensing and photogrammetry at large. New Mexico Geographic Information Council Annual Meeting, Albuquerque NM: 4/28

2017 – Lippitt, C. D. " Taking a Step Back: The potential of remote sensing for hazard response". University of New Mexico Earth and Planetary Sciences Colloquium Series: 4/21

2017 – Lippitt, C.D., S. Bogus, and S. Zhang. "Development of a Remote Sensing Network for Time-sensitive Detection of Fine Scale Damage to Transportation Infrastructure". Annual Meeting of the Transportation Research Board, Washington, DC.

2016 - Kirk, Scott, Amy E. Thompson, and Christopher D. Lippitt "Predictive Modeling for Site Detection in Central New Mexico using Remotely Sensed Data on Phenology" 81st Annual Meeting of the Society for American Archaeology. Orlando, Florida

2016 – Lippitt, C.D. "Near Real-time Remote Sensing Data and Earth Science Priorities". NASA Workshop to Develop a Portfolio of Low-latency Datasets for Time-sensitive Applications, NASA Langley, Hampton VA: 9/27-9/29.

2016 – Lippitt, C.D. "Unmanned airborne systems as part of the internet-of-things". UNM Data to Knowledge Symposium, Sevilleta Field Station, NM: 09/24.

2016 – *Zhang, S. S.M. Bogus, and C.D. Lippitt. "Estimating Infrastructure Condition Based on Geospatial Modeling". Construction Research Congress 2016, San Juan, Puerto Rico.

2015 – Krofcheck, D., C.D. Lippitt, A. Loerch*, and M. Litvack. "Repeat, low altitude measurements of vegetation biomass and status using UAS imagery in a Pinon-Juniper woodland". Annual Meeting of the American Geophysical Union, San Francisco, CA.

2015 – *Thompson, Nicholas, Christopher D. Lippitt. "Land Cover Change in the Vias Caldera: assessing the impact of changes in management". 8th Annual Phenology Research and Observations of Southwest Ecosystems Symposium, Tuscon, AZ.

2015 – Bogus, Susan, Christopher D. Lippitt, Su Zhang*. "Development of a Remote Sensing Network for Time-sensitive Detection of Fine Scale Damage to Transportation Infrastructure". ASCE New Mexico and APA New Mexico Joint Fall Conference, Las Cruces, NM.

2015 – Pockman, W, S. Collins, M. Litvak, J. Rudgers, K. Vanderbilt, D. Gutzler, D. Lightfoot, C.L. Lippitt, C.D. Lippitt, D. Moore, D. Natvig, S. Newsome, B. Sinsabaugh, A. Swann, K. Whitney, B. Wolf, A. Chung, S. Jones, J. Noble, M. Petrie. "The Sevilleta (SEV) LTER Program: Drivers of Variations in Drylands". 2015 LTER All Scientists Meeting, Estes Park, CO.

2015 - Coulter, L.L., C.D. Lippitt, D. Stow, S. Walker, H.Lan, and R. McCreight. "Development of a Remote Sensing System for Rapid Post Hazard Assessment of Transportation Infrastructure". Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Tampa, FL.

2015 – *Krofcheck, D. J., C.D. Lippitt, A. Loerch*, S. Schmiege, and M.E. Litvak "Passive optical imagery for the rapid determination of above ground biomass and vegetation status in pinon-juniper woodlands. Environmental System Science (ESS) PI Meeting 2015, Potomac, MD.

2015 – Lippitt, C.D. "The Impact of UAS on Remote Sensing; a conceptual perspective". Invited special session "Unmanned Aircraft System (UAS) Applications to Land and Natural Resource Monitoring" at annual meeting of the Association of American Geographers 2015, Chicago, IL.

2015 – Lippitt, C.D. "Low Altitude Aerial Triangulation for Detailed 3D Surface Reconstruction". 2015 Meeting of the New Mexico Floodplain Managers Association, Albuquerque, NM.

2015 – *Zhang, S. S.M. Bogus, and C.D. Lippitt. "Infrastructure Condition Assessment Based on Low-cost Hyper-Spatial Resolution Multispectral Digital Aerial Photography". 2015 International Construction Specialty Conference, CSCE, Vancouver, Canada

2015 – *Zhang, S., S.M. Bogus, and C.D. Lippitt. "Pavement surface permanent deformation detection and assessment based on digital aerial triangulation." 2015 International Workshop on Computing in Civil Engineering, ASCE, Austin, TX.

2015 – *Zhang, S., S.M. Bogus, and C.D. Lippitt. "Pavement Distress Condition Assessment Using Aerial Photographs at Differing Spatial Resolutions". Annual Meeting of the Transportation Research Board, Washington DC.

2014 – Lippitt, C.D. "The impact of UAS on remote sensing for earth science". UAS/Land and Natural Resources Monitoring Workshop, Argonne National Laboratory Environmental Science Division, Argonne IL

2013- Lippitt, C.D. "A Preliminary Review of Time-Sensitive Remote Sensing Methods". Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.

2013- Stow, D.A., L. Coulter, C.D. Lippitt, G.W. Fraley, and R. McCreight. "A Workflow for Automated Change Detection with High Spatial Resolution Imagery for Post-disaster Damage Assessment". Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.

2013- Lippitt, C.D., L. Coulter, and D.A. Stow. "Large Are, Slow Frame Rate Video using Nadir Viewing Frame Images Collected on a Single Moving Aircraft". Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.

2013- Stow, D.A., L. Coulter, C.D. Lippitt, Y.H. Tsai, G.W. Fraley. "Detection of Moving Objects through Rapid Succession Airborne Imaging". Annual Meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.

2012- Stow, D.A., L. Coulter, C.D. Lippitt, G.W. Fraley, and S. Kumar. "Detection of Earthquake Damage to Critical Infrastructure with Flexible, Repeat-pass Imaging". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Sacramento, CA.

2012- Coulter, L., D.A. Stow, C.D. Lippitt, G.W. Fraley, S. Kumar, S. Dua, B. Loveless, and V. Shrivastrava. "Automated Co-registration of Multi-temporal Airborne Frame Image for Rapid Change Detection". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Sacramento, CA.

2012- Lippitt, C.D. "Time-sensitive Remote Sensing". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Sacramento, CA.

2011- Lippitt, C.D., D.A. Stow, S. Toure, L. Coulter, and J. Weeks. "Object-based Delineation of Urban Neighborhoods of Accra, Ghana from QuickBird Imagery". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Milwaukee, WI.

2011- Lippitt, C.D. "Reducing the cost of remote sensing based land use updating". Monthly meeting of San Diego Regional GIS Council

2011- Lippitt, C.D. "On the utility of time-sensitive models in remote sensing". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Milwaukee, WI.

2011- Lippitt, C.D. "Time-Sensitive Remote Sensing: changing expectations" Invited lecture, Virginia State Polytechnic University Department of Geography.

2010- Lippitt, C.D. "A Low-cost Unmanned Imaging System; imaging from unmanned aerial systems". Annual meeting of the American Society for Photogrammetry and Remote Sensing, San Diego, CA.

2010- Lippitt, C.D. "Volunteer Hazard Mapping Corps: A student Based GIS Support Group". Annual meeting of the California Geographic Information Society, Huntington Beach, CA.

2009- Lippitt, C.D. "The Volunteer Hazard Mapping Corp: A Student Based GIS Support Group". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Baltimore, MD.

2008 – Lippitt, C.D., "OpenAerialMap.org: A democratization of remotely sensed imagery". Annual meeting of the American Society for Photogrammetry and Remote Sensing, Portland, OR.

2008 – Lippitt, C.D., C. Giovando, and C. Schmidt. "A Low Cost Imaging System for Autonomous Data Collection". Meeting of the Southwest Region American Society of Photogrammetry and Remote Sensing and the Arizona Nevada Academy of Science, Tempe, AZ.

2007 – Lippitt, C.D., J. Toledano, J. Rogan, V. Maestro, and R. Eastman. "Gypsy Moth Risk in the United States". Annual Meeting of the United States Regional Association of the International Association for Landscape Ecology, Tucson, AZ.

2006 – Lippitt, C.D., J. Toledano, J. Rogan, V. Maestro, and R. Eastman. "Incorporating human interaction variables into a nonparametric DSS to predict gypsy moth outbreak". –

Annual Meeting of the American Society of Photogrammetry and Remote Sensing, Reno, NV.

2006 - Lippitt, C.D., J. Toledano, J. Rogan, V. Maestro, and R. Eastman. "A model of Gypsy most infestation risk for the conterminous United States". Annual Meeting of the Entomological Society of America, Eastern Branch, Charlettsville, VA.

2006 - Lippitt, C.D. "A framework for modeling invasive species risk". Annual Meeting of the Association of American Geographers GIScience Specialty Group Student Paper Competition. Chicago, Il.

2005 – Lippitt, C.D., J. Toledano, J. Rogan, V. Maestro, and R. Eastman "Incorporating human interaction variables into a non-parametric decision support system". Annual Gypsy Moth Review. Philadelphia, PA.

2005 – Lippitt, C.D. and J. Rogan "Subtle change detection using machine learning". Annual meeting of the American Society for Photogrammetry and Remote Sensing. Baltimore, MD.

2005 – Lippitt, C.D. "Subtle change detection using machine learning". Annual meeting of the Association of American Geographers Remote Sensing Specialty Group Student Paper Competition. Denver, CO.

2004 - Pontius, R. and C.D. Lippitt. "Distinguishing true change from map error during map comparison". The joint meeting of The Fifteenth Annual Conference of The International Environmetrics Society and The Sixth Annual Symposium on Spatial Accuracy Assessment in Natural Resources and Environmental Sciences. Portland, ME.

2004 – Lippitt, C.D. "Distinguishing true change from map error during map comparison". Association of American Geographers centennial meeting Remote Sensing Specialty Group Student Paper Competition. Philadelphia, PA.

Contributed (un-refereed) Abstracts and/or Oral Presentations at Professional Meetings

2023 - *Mirka, B., R. Converse*, M. Gurule*, Z. Rossman*, and C.D. Lippitt. Automating Distance Sampling from Camera Traps using Structure From Motion. Annual Meeting of the Association of American Geographers, Denver, CO.

2023 - *Converse, R. and C.D. Lippitt. Understanding Consensus in labeled UAS images of waterfowl. Annual Meeting of the Association of American Geographers, Denver, CO.

2022 – Lippitt, C.D., and R. Converse*. A crowdsourced model for automating airborne waterfowl surveys. Annual Meeting of the Association of American Geographers, virtual.

2022 - *Kirk, S., C. Shuing, A. Thompson, and C.D. Lippitt. Colonialism and Religion in Taiwan: Monumental and Religious Architecture as a Proxy for Historic Settlement Growth and Urbanization. Annual Meeting of the Association of American Geographers, virtual.

2021 – Lippitt, C.D. Chair, John Jensen Distinguished Lecture Series. Annual Meeting of the Association of American Geographers, Washington D.C.

2019 – Lippitt, C.D. Drones, Artificial Intelligence, and the Future of Mapping. 2019 UNM Geography and Environmental Studies Alumni colloquium, University of New Mexico.

2019 – Lippitt, C.D. Chair, John Jensen Distinguished Lecture Series. Annual Meeting of the Association of American Geographers, Washington D.C.

2018 – Lippitt, C.D. Chair, John Jensen Distinguished Lecture Series. Annual Meeting of the Association of American Geographers, New Orleans, LA.

2018 – Converse, R., C.D. Lippitt, and M Stone. High-resolution digital surface characterization and hydrodynamic flow modeling of the Rio Chama in New Mexico. Annual Meeting of the Association of American Geographers, New Orleans, LA.

2017 – Lippitt, C.D. "Near Real-time Remote Sensing Data and Earth Science Priorities". Annual Meeting of the Association of American Geographers, Boston, MA

2017 - *Taylor, T. and C.D. Lippitt. "An Index of Criticality for Transportation Infrastructure". Annual Meeting of the Association of American Geographers, Boston, MA.

2016 - *Bajracharya, P. and C.D. Lippitt. "Modeling Urban Growth and Land Use Change in Albuquerque using SLEUTH". Annual Spring Meeting of the Rio Grande Chapter of the American Society for Photogrammetry and Remote Sensing, Albuquerque, NM.

2016 - *Healy, A.K. M.D. Lane, C.D. Lippitt, and D. Phillips. "A Comparison of Suitability Models to Identify Prehistoric Agricultural Fields in Western New Mexico". Annual Spring Meeting of the Rio Grande Chapter of the American Society for Photogrammetry and Remote Sensing, Albuquerque, NM.

2016 - *Brewer, W., C.L. Lippitt, C.D. Lippitt, and M.E. Litvack. "Assessing Drought-Induced Change In A Piñon-Juniper Woodland With Landsat: A Multiple Endmember Spectral Mixture Analysis Approach". Annual Spring Meeting of the Rio Grande Chapter of the American Society for Photogrammetry and Remote Sensing, Albuquerque, NM.

2016 - Lippitt, C.D. "The Design of Remote Sensing Systems to Optimize Information". Annual Spring Meeting of the Rio Grande Chapter of the American Society for Photogrammetry and Remote Sensing, Albuquerque, NM.

2016 - *Zhang, S., C.D. Lippitt, and S.M. Bogus. "Estimating Location Adjustment Factors for Conceptual Cost Estimating Based on Nighttime Light Satellite Imagery". Annual Spring Meeting of the Rio Grande Chapter of the American Society for Photogrammetry and Remote Sensing, Albuquerque, NM.

2016 - *Loerch, A. and C.D. Lippitt. "Modeling the timeliness of airborne remote sensing systems". Annual Meeting of the Association of American Geographers, San Francisco, CA.

2016 - *Taylor, T., C.D. Lippitt, D. Xiao, and S Zhang*. "An Index of Criticality for Transportation Infrastructure". Annual Meeting of the Association of American Geographers, San Francisco, CA.

2016 – *Zhang, S., C.D. Lippitt, S.M. Bogus. "Assessing Pavement Surface Distress Condition Using Hyper-spatial Resolution Natural Color Digital Aerial Photography Acquired From A Low-cost Unmanned Aircraft System". Annual Meeting of the Association of American Geographers, San Francisco, CA.

2015 – *Kirk, S., A. Thompson, and C.D. Lippitt. "Predictive Modeling for Site Location Using a Multi-Layer Perceptron Approach". 19th Annual University of New Mexico Anthropology Graduate Student Union Conference. Albuquerque, New Mexico.

2015 – Lippitt, C.D. "Development of a Remote Sensing Network for Time-sensitive Detection of Fine Scale Damage to Critical Infrastructure". Annual Meeting of the Southwest Region of the Association of American Geographers, San Antonio, TX.

2015 – *Loerch, A. and C.D. Lippitt. "Assessing the accuracy of capacity estimates using the Remote Sensing Communication Model for Time-Sensitive Remote Sensing Systems". Annual Meeting of the Southwest Region of the Association of American Geographers, San Antonio, TX.

2015 - *Zhang, S. and C.D. Lippitt. "Infrastructure Condition Assessment Based on Low-cost Hyper-spatial Resolution Multispectral Digital Aerial Photography". Annual Meeting of the Southwest Region of the Association of American Geographers, San Antonio, TX.

2015 - Lippitt, C.D. - Panelist: "Supporting Women in Remote Sensing and GIS" at the Annual Meeting of the Association of American Geographers 2015, Chicago IL. Panel Participants: Jane Southworth, Michaela Buenemann, Daoqin Tong, and Elizabeth Wentz

2015 – Lippitt, C.D. "The Impact of Small-Unmanned Airborne Systems on Remote Sensing; a conceptual perspective". American Society for Photogrammetry and Remote Sensing Rio Grande Chapter Spring Meeting, Los Cruces, NM.

2015 – Lippitt, C.D. "The Impact of Small-Unmanned Airborne Systems on Remote Sensing; a conceptual perspective". Data 2 Knowledge Conference, University of New Mexico, Albuquerque, NM.

2014 – *Zhang, S., A. Loerch*, and C.D. Lippitt. "Best Practices for Balloon Mapping". Annual Meeting of the Southwest Region of the Association of American Geographers, Albuquerque, NM.

2012- Lippitt, C.D. "A Remote Sensing Communication Model".Annual meeting of the Association of American Geographers, New York, NY.

2011- Stow, D.A., C.D. Lippitt, Y. Tsai, L. Coulter, and J. Weeks. "Vegetation and Building Change in Accra Ghana Based on Multitemporal Quickbird Satellite Data". Annual meeting of the Association of American Geographers, Seattle, WA.

2009- Stow, D.A., C.D. Lippitt, G.W. Fraley, and R. McCreight. "Flexible and Inexpensive Airborne Color Infrared Imaging System" Annual meeting of the American Pacific Coast Geographers, San Diego, CA.

2009- Lippitt, C.D., L.L. Coulter, M. Freeman, J. Lamantia*, W. Pang*, and D.A. Stow "The Effect of Input Data Transformations On Object Based Image Classification". Annual meeting of the American Pacific Coast Geographers, San Diego, CA.

2009- Lippitt, C.D. - President's Plenary Session: Neogeographies: Just another Spin of the Globe - Annual meeting of the American Pacific Coast Geographers, San Diego, CA.

(Student Panel Coordinator, Panel participants John Paul Jones III, Keith Clarke, Sarah Elwood, Andre Skupin, Stuart Aitken, Sean Crotty, and Georgio Curti)

2009- Lippitt, C.D., C.L Lippitt, and G.W. Fraley. "Volunteer Hazard Mapping Corps: A student Based GIS Support Group". Annual meeting of the American Pacific Coast Geographers, San Diego, CA.

2009- Lippitt, C.D., L.L. Coulter, M. Freeman, J. Lamantia*, W. Pang*, and D.A. Stow "The effect of input data transformations on Object-based Land Cover Classification". Annual meeting of the Association of American Geographers, Las Vegas, NV.

2008 - Lippitt, C.D. and C. Giovando. "The democratization of remote sensing". Annual meeting of the American Pacific Coast Geographers, Anchorage, AK.

2008 - Lippitt, C.D. and C. Giovando. "OpenAerialMap.org – A democratization of remotely sensed imagery". Annual meeting of the Association of American Geographers, Boston, MA.

2007 – Lippitt, C.D. and J. Rogan. "Machine Learning for Subtle Forest Change Mapping – Coping with Available Reference Data". Annual meeting of the Association of American Geographers, San Francisco, CA.

2005- Jones, T.G, J. Rogan, and C.D. Lippitt. "The Massachusetts Forest monitoring Program", NESTVAL 2005, Keene, NH.

2005- Pontius Jr., R.G. and C.D. Lippitt. "The State of the Art of Land-use Change Modeling". Worcester Consortium Symposium. Worcester, MA.

2005- Lippitt, C.D. "Timber Harvest Detection Using Change Vectors". Clark University's Academic Spree Day. Worcester, MA.

2005- Rogan, J., T.G. Jones, and C.D. Lippitt. "The Massachusetts Forest Monitoring Program". Worcester Consortium 2005 Symposium. Worcester, MA.

2004- Rogan, J., T.G. Jones, and C.D. Lippitt. "The Massachusetts Forest Monitoring Program". Clark University's Fall Fest. Worcester, MA.

2004- Pontius, R.G. and C.D. Lippitt "Land-change model comparison". Clark University's Fall Fest. Worcester, MA.

2003- Pontius, R.G. and C.D. Lippitt "Distinguishing true change from map error during map comparison". Clark University's Academic Spree Day. Worcester, MA.

2003- Pontius, R.G., C. Williams, C.D. Lippitt, and M. Holden. "Building a historical database of land cover/use". Clark University's Fall Fest. Worcester, MA.

Research

Research Funding
New Mexico Terrestrial Habitat Map (NMHabMap)
Muldavin, Esteban, Christopher D. Lippitt, and Su Zhang
October 1 2023 – June 30 2026, $2,010,775 Direct Cost, $402,155 Indirect Cost
<u>Role</u>: Co-PI
<u>Responsibilities</u>: Lead Remote Sensing and mapping effort
<u>Collaborators</u>: New Mexico Department of Game & Fish

Automated Wildlife Monitoring from Airborne and Terrestrial imagery
December 1 2022 – November 30 2024, $132,404 Direct Cost, $13,702 Indirect Cost
Lippitt, Christopher D.
<u>Role</u>: Lead PI
<u>Responsibilities</u>: Project management and research design, including automating species identification from camera trap imagery and unoccupied airborne systems (UAS), community engagement through crowdsourcing, and integration with existing management protocols.
 <u>Collaborators</u>: USFWS

Planning Grant: Expanding academic Careers through Inclusive Transitions in Environmental Sciences (EXCITES)
Lin, Yolanda, Cari Hushman, Eric Lindsey, Lindsay Lowe Worthington, and Christopher D. Lippitt.
October 1 2023 – March 31 2026, $239,688.00 Direct Cost, $60,312.00 Indirect Cost
<u>Role</u>: Co-PI
<u>Responsibilities</u>: Lead institutional integration activities, participate in core leadership team, support certificate program development and workshop development.
<u>Collaborators</u>: *None as subs*, San Diego State, University of Arizona, University of Texas El Paso, San Diego State University, New Mexico State university, Sandia National Laboratory, Bohannon-Houston Inc., Bosque Ecosystem Monitoring Program.

NMDGF New Mexico Riparian Habitat Map (NM RIPMAP) Supplement
Muldavin, E., C.D. Lippitt, S. Zhang
New Mexico Department of Game & Fish
April 1 2022 – Jun 30 2023, $588,946 Direct Cost, $117,789 Indirect Cost
<u>Role</u>: Co-PI
<u>Responsibilities</u>: Lead all mapping, including prototyping and evaluating new classification techniques based on Planet Labs, NAIP, and LiDAR data fusion, for Bandelier National Monument and Sevilleta National Wildlife Refuge.
<u>Collaborators</u>: New Mexico Dept. of Game and Fish, NM Natural Heritage, and (as stakeholders) USFS, USFWS, BLM, NPS, and NM State Land Office

LiDAR capable Unmanned Aircraft System (UAS)
Lippitt, Christopher D., Fernando Moreau, and Gary Weissman

Program for Enhancing Research Capacity, University of New Mexico Office of the Vice President for Research
October 2021, $40,931 Direct Costs, $0.00 Indirect Costs
Role: Lead PI

Increasing Bridge Durability and Service Life with LIDAR Enhanced Unmanned Aerial Systems (UAS)
Moreu, Fernando and Christopher D. Lippitt
TranSET USDOT University Transportation Center, Louisiana State University
July 1 2021 – December 31 2022, $50,000.00 Direct Cost, $18,696 Indirect Cost
Role: Co-PI
Responsibilities: Oversee development of LiDAR measurements.
Collaborators: New Mexico Department of Transportation

UAV and camera trap imagery identification and assessment
Lippitt, Christopher D.
U.S. Fish and Wildlife Service
April 1 2021 – March 31 2021, $127,168 Direct Cost, $22,254 Indirect Cost
Role: Lead PI
Responsibilities: Oversee all research tasks and personnel, including development of crowdsource label collection and automated object-based duck and camera trap classification system, and STEM engagement materials.
Collaborators: US Fish and Wildlife Service

Developing a consequence-driven risk framework for earthquake scenario selection in stable continental Regions
Lin, Yolanda
United States Geological Survey
July 15 2021 – July 14 2022, $61,480 Direct Cost, $28,569 indirect Cost
Role: Co-I
Responsibilities: Oversee survey design and execution for stage 1 and 2 of Emergency Scenario Planners.
Collaborators: Nanyang University, USGS National Earthquake Information Center

Wildfire Risk to Electrical Systems: Long-term Fire Behavior Forecasting
Lippitt, Christopher D.
Sandia National Laboratory
December 12 2020-September 13 2022, $47,766 Direct Cost, $19,618 Indirect Cost
Role: Lead PI
Responsibilities: Development of future wildfire risk estimates based on projected climate condition calibrated wildfire models.
Collaborators: Sandia National Laboratory

NRT-HDR: Science Museums Advance Research and Training through Convergence of Objects, Data, and Inference
Turner, Tom, Christopher D. Lippitt, Corinne Myers, Carla Synopoli, Christopher Witt

National Science Foundation
September 1 2020 – August 31 2025, $2,643,307 Direct Cost, $356,692 Indirect Cost
Role: Co-PI
Responsibilities: Data Science Curriculum Development and lead for institutional transformation activities.
Collaborators: None

Bridge Construction Monitoring using LIDAR for Quantified, Objective Quality-Control Quality-Assurance (QOQCQA)
Moreu, Fernando and Christopher D. Lippitt
TranSET USDOT University Transportation Center, Louisiana State University
August 15 2019 – February 15 2021, $51,485.00 Direct Cost, $23,515 Indirect Cost
Role: Co-PI
Responsibilities: Oversee development of LiDAR measurements.
Collaborators: New Mexico Department of Transportation

Augmented Reality Enhancing the Inspections of Transportation Infrastructure: Research, Education, and Industry Implementation
Moreu, Fernando and Christopher D. Lippitt
TranSET USDOT University Transportation Center, Louisiana State University
March 15 2018 – September 15 2019, $78,004.00 Direct Cost, $21,816 Indirect Cost
Role: Co-PI
Responsibilities: Oversee development of augmented reality capability for projecting measurement results onto infrastructure features.
Collaborators: New Mexico Department of Transportation

A small unmanned aircraft system (sUAS) approach to waterfowl survey design and implementation for the US Fish and Wildlife Service Southwest Region
Lippitt, Christopher D.
U.S. Fish and Wildlife Service
August 1 2017 – July 31 2020, $87,886.00 Direct Cost, $10,612 Indirect Cost
Role: Lead PI
Responsibilities: Oversee all research tasks and personnel, including survey of duck habitats, development of automated object-based duck classification system, development of crowd sourced classification system, and error bound analysis.
Collaborators: U.S. Fish and Wildlife Service

Ibex Aegis LLC I-CORPS Proposal: Automated Spatiotemporal Intelligence Operations for Asset Integrity Management
Lippitt, Christopher D.
National Science Foundation
10/17/2017 – 12/01/2017, $45,000 Direct Cost, $5,000 Indirect Cost
Role: Lead PI
Responsibilities: Attend iCorp events and interviews, oversee technical and business model direction based on customer interaction.
Collaborators: Ibex Aegis LLC

Development, Training, Education, and Implementation of Low-cost Sensing Technologies for Bridge Structural Health Monitoring (SHM)
Moreu, Fernando and Christopher D. Lippitt
TranSET USDOT University Transportation Center, Louisiana State University
May 1 2017 – October 31 2018, $52,947.00 Direct Cost, $22,053 Indirect Cost
Role: Co-PI
Responsibilities: Development of UAS deployable bridge survey system, including laser based characterization of structure movement and detailed 3-dimensional characterization. Assist in development of training materials.
Collaborators: New Mexico Department of Transportation

LTER: Climate Variability at Dryland Ecotones
Rudgers, Jennifer, Marcy Litvack, Yiqi Luo, Thomas Miller, and Seth D. Newsome
NSF DEB – Long-Term Ecological Research
July 1 2017 – June 30 2023, $3,975,178.00 Direct Cost, $1,424,822.00 Indirect Cost
Role: Senior Personnel
Responsibilities: –Oversee all Remote Sensing tasks and graduate assistants, including Moderate resolution MESMA time series to detect biome transitions, changes in fractional cover, and quantify variance in live/dead biomass from 1985-present, biomass estimation and individual level change detection from structure from motion applied to UAS acquired color infrared image data for comparison to plot samples and validation of moderate resolution MESMA based estimates of fractional cover.
Collaborating institutions: University of Oklahoma (Sub), Rice University (Sub)

Collaborative Research: Partnership for Geoscience Education and Research, Watershed Science, and Climate Change in the Southwestern United States
Mark Stone, Ricardo Gonzalez-Pinon, Christopher D. Lippitt, and Laura Crossey
National Science Foundation
10/01/2016 – 9/30/2021, $563,810.00 Direct Cost, $250,940.00 Indirect Cost
Role: Co-PI
Responsibilities: Oversee GIScience equipment and instructional capacity building at Southwest Indian Polytechnic Institute (SIPI), graduate research assistants instructing at SIPI, and all remote sensing research tasks, including balloon photography, UAS missions, and manned airborne missions for invasive species mapping in riparian areas, alpine snow pack quantification, and rangeland monitoring on Isleta Pueblo.
Collaborators: Southwest Indian Polytechnic Institute

Monitoring Post Wildfire Climate Change and Floodplain Impacts in Peralta Canyon
Christopher D. Lippitt
Bureau of Land Management Rio Puerco Field Office
July 2015 – September 2017, $34,031.00 Direct Cost, $5,957.00 Indirect Costs
Role: Lead PI
Responsibilities: Oversee design, validation, and implementation of a color-infrared sensor package on Civil Air Patrol aircraft, concept of operations, and processing workflow for tactical volumetric soil loss estimation by the US Army Corps of Engineers.

Collaborators: US Army Corp of Engineers (No Cost Collaborator), US Civil Air Patrol (No Cost Collaborator),

Sevilleta Long Term Ecological Research V: Long term ecological research in a biome transition zone
Pockman, William, Scott Collins, Marcy Litvack, Kristen Vanderbilt, Jennifer Rudgers
National Science Foundation
April 1, 2015 – March 31 2018, $1,385,930.00 Direct Costs, $584,070.00 Indirect Costs
Role: Senior Personnel
Responsibilities: Individual level change detection and biomass estimation from low altitude color-infrared imagery collected using our custom sensor suite and process through high-density aerial triangulation (structure-from-motion). Biomass data are compared to climate records and flux tower measurements to calibrate moderate resolution regional biomass change estimates.
Collaborators: None

Request for equipment funding: real-time kinematic global positioning system
Christopher D. Lippitt and Wirt Wills
UNM Office of the Vice President of Research
Direct Cost $59,335.26
Role: Lead PI

Collaborative Proposal: Optimization of Remote Sensing Networks for Time-sensitive Detection of Fine Scale Damage to Critical Infrastructure
Lippitt, Christopher D.
National Science Foundation
August 1 2014 – July 31 2017, $118,068.00 Direct Costs, $54,164 Indirect Costs
Role: Institutional Lead PI
Responsibilities: Oversee all UNM research activities, including evaluation of software design paradigms for application to remote sensing system design, validation and implementation of the Remote Sensing Communication Model, a survey of emergency managers on the use of remote sensing to inform hazard response, a survey of aerial survey providers, and a feasibility study of operational air-to-ground wireless data transfer.
Collaborators: San Diego State University

Development of a Remote Sensing Network for Time-sensitive Detection of Fine Scale Damage to Transportation Infrastructure
Lippitt, Christopher D. and Susan Bogus-Halter
Department of Transportation – Research and Innovative Technologies
September 1 2014 – January 31 2017, $ 1,217,397 Direct Costs and $71,103.00 Indirect Costs
Role: Lead PI
Responsibilities: Oversee all institutional and collaborator research and development activities.
Collaborators: BAE Systems Inc. (Sub), San Diego State University (Sub)

Infrastructure Condition Assessment Using Low-Cost Remote Sensing Techniques
Bogus-Halter, Susan and Christopher D. Lippitt
Research Allocations Committee, University of New Mexico

May 21 2013 – November 20 2014, $9,040.00 Direct Cost
Role: Co-PI
Responsibilities: Oversee all research tasks, including UAS based evaluation of pavement surface conditions based on Department of Transportation evaluation protocols.
Collaborators: None

Evolving Priorities in Land Management: A Pilot Study Assessing Historical Intersections and Interactions between Management Practice and Land Cover in Large-Tract Landholdings throughout New Mexico's Rio Grande Valley
Lippitt, Christopher D. and K. Maria Lane
Research Allocations Committee, University of New Mexico.
January 17 2013 – July 16 2014, $10,000.00 Direct Cost
Role: Lead PI
Responsibilities: Oversee land cover change analysis from 1985-present on a 2-3 interval and design of quantitative land cover change results and qualitative land manager survey results comparison.
Collaborators: None

Emerging Landscapes, Evolving Priorities: Assessing the Intersections between Land Cover Change and the Management of Introduced Species and Habitats on the Turner Ranches in Southern New Mexico
Lane, K. Maria, and Christopher D. Lippitt.
University of New Mexico College of Arts and Sciences and Turner Enterprises Inc.
August 1 2012 – January 31 2014, $10,000.00 Direct Cost
Role: Co-PI
Responsibilities: Oversee land cover change analysis from 1985-present on a 2-3 interval and design of quantitative land cover change results and qualitative land manager survey results comparison.
Collaborators: None

Pending Research Funding
Development of empirical models for deriving full ground coverage phenological data of an AOI using hyper-temporal resolution PlanetScope Imagery
Zhang, Su and Christopher D. Lippitt
October 1 2023 – September 30 2026, $226,168 Direct Cost, $118,738 indirect Cost
Role: Co-PI
Responsibilities: Lead algorithm and testing framework design.
Collaborators: None

Proposals Declined For Funding
Center for Strategic Technology Scaling and Community Development
Walsh, T, E. Schamiloglu, Y. Marinkis, C. Christodoulou, and M. Montoya
Air Force Research Laboratory
December 1 2021 – November 30 2026, $45,725,677 Direct Cost, $8,481,288 Indirect Cost
Role: Senior Personnel
Responsibilities: Oversee creation of Remote Sensing and GIS analysis curriculum and protocol for Bosque Ecosystem Monitoring Program (BEMP)

Collaborators: 18 universities

BII: WATER – Water Availability Thresholds and Ecosystem Resilience
Hansen, D., C.D. Lippitt, J. Rudgers, and K. Eichorst
National Science Foundation
August 1 2021 – July 31 2026, $9,607,802 Direct Cost, $2,892,198 Indirect Cost
Role: Co-PI
Responsibilities: Remote Sensing data collection and analysis (Satellite, UAS, and ground spectra), WATER data Portal design and Implementation
Collaborators: University of Missouri

NSF INCLUDES Alliance: Opportunities for Emerging Scientist Teams
Lippitt, C.D., T. Schroeder, and T. Peele-Eady
National Academy of Sciences
July 1 2021 – June 30 2026, $1,490,142 Direct Cost, $742,320 Indirect Cost
Role: Lead Institutional PI,
Responsibilities: Oversee all research at UNM, Alliance board member, lead development of graduate student and faculty team science training programs.
Collaborators: San Diego State University (Lead), University of California Merced

Proposed AASHTO Guidelines for Application of Unmanned Aerial Systems Technologies for Element-Level Bridge Inspection
Moreu, F., S. Bogus, C.D. Lippitt, and S. Zhang
National Academy of Sciences
June 6 2021 – November 30 2023, $259,836 Direct Cost, $80,164 Indirect Cost
Role: Co-PI
Responsibilities: Remote sensing data collection and analysis, best practices
Collaborators: University of Kansas

New Mexico Department of Transportation Culvert Inspection System
Lippitt, C.D., S. Bogus, and S. Zhang
New Mexico Department of Transportation
March 1 2021 – November 30 2022, $416,701 Direct Cost, $80,324 Indirect Cost
Role: Lead PI
Responsibilities: Oversee all research and reporting to NMDOT, including development of a mobile-GIS based asset inventory system
Collaborators: None

BII-Implementation: Multi-scale Institute for Stress Tolerance (MIST)
Hansen, D., K. Eichorst, J. Rudgers, and C.D. Lippitt
National Science Foundation
September 1 2020 – August 31 2020, $9,207,612 Direct Cost, $3,292,388 Indirect Cost
Role: Co-PI
Responsibilities: Remote Sensing data collection and analysis (Satellite, UAS, and ground spectra), Rio Grande Biological Monitoring Portal design and Implementation
Collaborators: None

Commercialization of a process and products for automated linear infrastructure inspection based on repeat stating imaging technology
Christopher D. Lippitt
National Science Foundation
June 1 2020 – May 31 2022, $111,821 Direct Cost, $48,675 Indirect Cost
Role: Institutional PI
Responsibilities: Oversee all research at UNM, including complex structure oblique flight planning and oblique RSI feasibility testing.
Collaborators: San Diego State University, Action Drone Inc., Change Aerial Inc.

The National Center for Durability and Extended Life for Local Transportation Assets (DELLTA) (Michigan Tech. as Lead Institution
Lippitt, Christopher D.
US Department of Transportation
March 1 2019 – September 30 2024, $870,000 Direct Cost, $340,000 Indirect Cost
Role: Institutional PI & Diversity Director
Responsibilities: Oversee all research, workforce development, and education development activities at UNM and oversee diversity activities center wide.
Collaborators: Michigan Tech., University of Virginia, University of Texas San Antonio, South Dakota School of Mines & Technology, University of Delaware, University of Kansas, university of Louisiana Lafayette

Flying Sky High with STEM
Lippitt, Christopher D., Timothy Hawthorne (UCF), Martin Jones, and Caitlin Lippitt.
National Science Foundation
June 1 2019 – May 31 2023, $1,461,720 Direct Cost, $538,078 Indirect Cost
Role: Lead PI
Responsibilities: Oversee all research activities and program deployment, including activities in Florida and New Mexico.
Collaborators: University of Central Florida

Collaborative research: Optimization of a hazard response remote sensing system driven by emergency manager needs
Lippitt, Christopher D.
National Science Foundation
July 1 2019 – June 31 2021, $194,774.00 Direct Cost, $86,575.00 Indirect Cost
Role: Institutional PI
Responsibilities: Oversee all UNM research activities and administration, including Modeling of remote sensing system timeliness, evaluation of onboard processing potential, and survey of emergency and infrastructure managers.
Collaborators: San Diego State University

Change Makers K-12 Students as STEM learning teachers for sustainable agriculture in underserved communities
Carr, John, Tema Milstein, Christopher D. Lippitt, Deborah Roberts-Harris

NSF Changemakers
July 1 2018 – June 30 2022, $2,223,988 Direct Cost, $698,194 Indirect Cost
Role: Co-PI
Responsibilities: Oversee design and implementation of Geoscience curriculum for K-12 students and its adaptation to culturally significant aspects of learners.
Collaborators: Friends of Via Del Oro

Flying Sky High with STEM
Lippitt, Christopher D., Timothy Hawthorne (UCF), Martin Jones, Caitlin Lippitt, and Rafael Fierro.
National Science Foundation
June 1 2018 – May 31 2022, $1,487,260 Direct Cost, $519,993 Indirect Cost
Role: Lead PI
Responsibilities: Oversee all research activities and program deployment, including activities in Florida and New Mexico.
Collaborators: University of Central Florida

Collaborative Proposal: Time-sensitive remote sensing system for post-hazard damage assessment: Integrating small unmanned aircraft systems with repeat station imaging and machine learning routines
Lippitt, Christopher D.
National Science Foundation
June 1 2018 – May 31 2020, $194,774.00 Direct Cost, $86,575.00 Indirect Cost
Role: Institutional PI
Responsibilities: Oversee all UNM research activities and administration, including Modeling of remote sensing system timeliness, evaluation of onboard processing potential, and survey of emergency and infrastructure managers.
Collaborators: San Diego State University

Dimensions US-China: Collaborative Research: Phylogenetic breadth, genetic diversity and functions of seed-transmitted fungal endophytes
Rudgers, Jennifer, Kenneth Whitney, Caitlin Lippitt, and Christopher D. Lippitt
NSF Division of Division of Environmental Biology
January 1 2018 – December 31 2022, $272,933.00 Direct Cost, $114,820.00 Indirect Cost
Role: Co-PI
Responsibilities: Oversee extraction of Biomass and land cover change information from MODIS and projection of endophyte diversity under projected land cover change.
Collaborators: University of Kentucky, University of West Virginia, Samuel Roberts Noble Foundation Inc., Indiana University, New Mexico State University

Change Makers K-12 Students as STEM learning teachers for sustainable agriculture in underserved communities
Carr, John, Christopher D Lippitt, Tema Milstein
NSF Changemakers
July 1 2017 – June 30 2021, $1,816,567 Direct Cost, $469,364 Indirect Cost
Role: Co-PI

Responsibilities: Oversee all GIScience Curriculum development and student research tasks
Collaborating institutions: Via Del Oro National Wildlife refuge (Sub)

Remote Sensing for Asset Management (Submitted 5/6/2016)
Lippitt, Christopher D., and Susan Bogus Halter
Department of Transportation – University Transportation Center
9/30/16-9/30/17, $310,000.00 Direct Cost (+$40,000.00 3rd party cost share), $91,125.00
Indirect Cost
Role: Institutional Lead PI and Associate Center Director for Research
Responsibilities: Oversee all UNM research and administration tasks, including annual center
funding calls.
Collaborators: Michigan Technical University (Lead), University of Vermont, University of
Texas Arlington

Center for Extended Service Life Transportation Infrastructure (ExSel TraIn) (Submitted 5/6/2016)
Taha, Mahmoud, Fernando Moreu, Christopher D Lippitt
Department of Transportation – University Transportation Center
9/30/16-9/30/17, $239,113.00 Direct Cost (+$175,000.00 3rd party cost share), $110,887.00
Indirect Cost
Role: Co-PI
Responsibilities: Oversee all remote sensing tasks, including estimation of bridge deflection from
aerial triangulation of UAS acquired passive optical imagery.
Collaborators: Washington State University (Lead), Missouri University of Science and
Technology, University of Alabama Birmingham

NRT-IGE: Resilient Communities- The Science of Bouncing Back
Mahmoud Taha, Mark Stone, Marsha Baum, Melinda Benson, Manuel Montoya
NSF-IGE
July 1 2016 – June 30 2019, $321,882.00 Direct Cost, $165,769.00 Indirect Cost
Role: Senior Personnel
Responsibilities: Student training/mentoring, lectures, participation in workshops, resilience
seminar
Collaborators: Sandia National Laboratory (Sub), Resilient Solutions 21 Inc. (Sub), Bohannan
Houston Inc. (Sub)

Understanding the significance of wildfire secondary hazards on infrastructure resilience using remote sensing data in the US Southwest
Vanessa Valentine, Mahmoud Taha, Mark Stone, Susan Bogus-Halter, and Christopher Lippitt
NSF IMEE
July 1 2016 – June 30 2019, $398,509.00 Direct Cost, $121,570 Indirect Cost
Role: Co-PI
Responsibilities: UAS and manned imaging, aerial triangulation, inverted aerial triangulation for
calibration of flow table models, moderate scale satellite mapping of burn severity
Collaborators: Sandia National Laboratory, Resilient Solutions 21 Inc., Bohannan Houston Inc.

Individual-Level Interpretation of Remote Sensing Imagery for the Production of Time-sensitive Information.
Christopher D. Lippitt and Danqing Xiao
Research Allocations Committee, University of New Mexico
01/15/2016 – 07/15/2017, $6,000.00 Direct Cost
Role: Lead PI
Responsibilities: Oversee all research activities, including the design of analyst surveys and analysis of linkages between personal characteristics and image interpretation biases.
Collaborators: None

Collaborative Research: Partnership for Geoscience Education and Research, Watershed Science, and Climate Change in the Southwestern United States (Submitted 3/16/2015)
Mark Stone, Ricardo Gonzalez-Pinon, Christopher D. Lippitt, and Laura Crossey
National Science Foundation
10/01/2015 – 9/30/2020, $563,810.00 Direct Cost, $250,940.00 Indirect Cost
Role: Co-PI
Responsibilities: Oversee GIScience equipment and instructional capacity building at Southwest Indian Polytechnic Institute (SIPI), graduate research assistants instructing at SIPI, and all remote sensing research tasks, including balloon photography, UAS missions, and manned airborne missions for invasive species mapping in riparian areas, alpine snow pack quantification, and rangeland monitoring on Isleta Pueblo.
Collaborators: Southwest Indian Polytechnic Institute (Collaborator)

Water to farm: enhancing water use efficiency in the Rio Grande/Pecos River watersheds through 2050 (submitted 8/12/2014).
David Hanson
New Mexico Consortium Inc. – United States Department of Agriculture
July 1 2015 – June 30 2019, $349,611 Direct Costs and $149,825 Indirect Costs
Role: Senior Personnel
Responsibilities: Oversee all remote sensing activity, including high temporal frequency biomass monitoring from UAS and development of novel techniques for estimating plant respiration from remote sensing.
Collaborators: None

Sevilleta Long Term Ecological Research V: Long term ecological research in a biome transition zone (submitted 03/04/2014).
Pockman, William, Scott Collins, Marcy Litvack, Kristen Vanderbilt, Jennifer Rudgers.
National Science Foundation
October 1 2014 – September 30 2018, $2,743,720.00 Direct Costs and $1,176,280.00 Indirect Costs
Role: Senior Personnel
Responsibilities: Individual level change detection and biomass estimation from low altitude color-infrared imagery collected using our custom sensor suite and process through high-density aerial triangulation (structure-from-motion). Biomass data are compared to climate records and flux tower measurements to calibrate moderate resolution regional biomass change estimates.
Collaborators: None

Research Demonstration of Innovative Approach to Decrease System-Wide Vulnerability to Flooding (Submitted 11/26/2013)
Bogus-Halter, Susan, Christopher D. Lippitt, Mark Stone, Gregory Rowangould, and Guohui Zhang
Department of Transportation – Federal Transit Authority
07/01/2014 – 12/31/2016, $565,003 Direct Costs and $247,630.00 Indirect Costs
Role: Co-PI
Responsibilities: Oversee all remote sensing related research tasks and integration of remote sensing derived information into high resolution urban flood models.
Collaborators: None

Linking Surface Hydrology, Landscape Structure, and Phenology to Resolve Soil Moisture Information Derived from Remote Sensing (Submitted w/ Argon National Laboratory on 07/15/2013)
Lippitt, Christopher D.
National Aeronautics and Space Administration
January 1 2014 – December 31 2016, $117,820.00 Direct Costs and $53,267.00 Indirect Costs
Role: Institutional Lead PI
Responsibilities: Oversee all research tasks, including detailed surface characterization from aerial triangulation, soil moisture estimation from middle infrared moderate resolution passive and active RADAR.
Collaborators: Argonne National Labs (Lead)

Collaborative Proposal: Optimization of Remote Sensing Networks for Time-sensitive Detection of Fine Scale Damage to Critical (Submitted 2/14/2013)
Lippitt, Christopher D.
National Science Foundation
June 1 2013 – May 31 2015, $118,068.00 Direct Costs, $54,164 Indirect Costs
Role: Institutional Lead PI
Responsibilities: Oversee all UNM research activities, including evaluation of software design paradigms for application to remote sensing system design, validation and implementation of the Remote Sensing Communication Model, a survey of emergency managers on the use of remote sensing to inform hazard response, a survey of aerial survey providers, and a feasibility study of operational air-to-ground wireless data transfer.
Collaborators: San Diego State University

Research In the Press
November 29, 2023 – UNM News Room - Drones for Ducks: Researchers develop AI to measure migratory bird populations
> http://news.unm.edu/news/drones-for-ducks-researchers-develop-ai-to-measure-migratory-
> bird-populations
September 1, 2023 – KQRE – Drones for Ducks.
> https://www.krqe.com/news/environment/drones-for-ducks-research-program-helping-
> catalogue-new-mexico-wildlife/

April 22, 2020 – Discover Magazine – Earth Day activities: These Science Projects Get You Outside Virtually. https://www.discovermagazine.com/environment/earth-day-activities-these-science-projects-get-you-outside-virtually

September 28th, 2018 – UNM Newsroom – Cross-discipline collaboration hub set to open in Fall http://artsci.unm.edu/news-events/news/item/cross-discipline-collaboration-hub-set-to-open-in-fall-2019.html

July 1st, 2018 – Albuquerque Journal – Story on impact of unmanned system's economic impact – *Commercial drones TAKING OFF*

August 17th, 2016 – KOB (New Mexico NBC Affiliate) – Story on post-wildfire imaging system – *UNM professor developing way to map burn scars* http://www.kob.com/albuquerque-news/unm-professor-developing-way-to-map-burn-scars/4237524/

August 16th, 2016 – KRQE (New Mexico CBS Affiliate) - Story on post-wildfire imaging system – *UNM Professor Crates Technology to Help Predict Landslides* http://krqe.com/2016/08/16/unm-professor-creates-technology-to-help-predict-landslides/

August 15th, 2016 – KUNM (NPR) – Story on post-wildfire imaging system

August 12th, 2016 – UNM Newsroom article on post-wildfire imaging system – *UNM professor developing imaging to save lives after fires* http://news.unm.edu/news/unm-professor-developing-imaging-to-save-lives-after-fires

June 4nd, 2015 - GEM student all-star Su Zhang receives- the Hexagon Geospatial Education Challenge Award for his paper: *Pavement Surface Cracks Detection and Assessment Based on Hyper-spatial Resolution Natural Color Digital Aerial Photographs*
Articles:
http://www.hexagongeospatial.com/solutions/education/education-contest
http://www.prweb.com/releases/2015/06/prweb12765333.htm
http://blog.hexagongeospatial.com/video-2015-education-contest-award-winners-su-zhang-and-dr-chris-lippett/
Video Interviews:
with Su Zhang - https://embed.widencdn.net/video/intergraphhub/ebetw7fyks?u=kgakme
with Chris Lippitt - https://embed.widencdn.net/video/intergraphhub/e8hkphthcr?u=kgakme

March 4th, 2015 - UNM Newsroom press release on the DOT Remote Sensing Project - *UNM Researchers Take to the Skies to Assess Infrastructure Damage* http://news.unm.edu/news/unm-researchers-take-to-the-skies-to-assess-infrastructure-damage

Feb. 17th, 2015 - UAS Vision covers the NSF Critical Infrastructure Project http://www.uasvision.com/2015/02/17/uas-to-assess-disaster-damage/

Feb. 12th, 2015 - An article about the NSF Critical Infrastructure Project appeared on the front page of the San Diego Union-Tribune, along with the same story on SignOnSanDiego.com http://www.utsandiego.com/news/2015/feb/12/drones-aerial-response-disaster/

Feb. 9th, 2015 - The Daily Aztec (SDSU campus newspaper) did an online story about the NSF Critical Infrastructure Project http://www.thedailyaztec.com/62829/news/sdsu-developed-drone-software-to-detail-disaster-damage/

Feb. 6th, 2015 - Homeland Security News Wire picks up the news story about the NSF Critical Infrastructure Project

http://www.homelandsecuritynewswire.com/dr20150206-beforeandafter-aerial-imagery-of-
    infrastructure-to-help-first-responders
Feb. 3rd, 2015 - Channel 6 San Diego (CW network) 10 pm news did a piece on the NSF Critical
    Infrastructure Project
http://www.sandiego6.com/news/local/SDSU-professor-using-drones-to-prepare-for-disasters-
    290751621.html
Feb. 3rd, 2015 - SDSU communications put out a press release regarding NSF Critical
    Infrastructure Project
    http://newscenter.sdsu.edu/sdsu_newscenter/news.aspx?s=75413

Teaching

Doctoral Advisement
In Progress as Committee Chair (5)
Rowan Converse; Automating waterfowl inventory through crowd-trained convolution neural networks; expected completion May 2025
Blair Mirka; Museums as data lakes: digitizing museum records to improve automated recognition of rare species and morphologies; expected completion May 2025
Dayna Dominguez; Fine-scale air transport modeling to improve canine search; expected completion May 2027
Sarafi Saghi; Dissertation Title undefined; expected Completion May 2028
Westin Guthrie; Dissertation Title undefined; expected Completion May 2028

Completed as Committee Member (10) [#]*student awarded distinction*
Xinxing Yuan (UNM CCEE); May 2022; Automating LiDAR-based construction quality control and quality assurance.
[#]Timothy Nagle-McNaught (UNM EPS); 2022; Mapping Martian Transverse Aeolian Ridges using Machine Learning Approaches
Scott Kirk (UNM Anthropology); 2021; Functional Changes in Fortified Places: Strategy and Defensive Architecture in the Medieval and Early Modern Era
Alesia Hallmark (UNM Biology); December 2020; Tracking vegetation Biomass using low-cost Phenocams
Jennifer Sturm (UNM Anthropology); October 2019; Using Archaeological Remote Sensing to Evaluate Land Use and Constructed Space in Chaco Canyon
Patrick Hudson (UNM Biology); December 2016; Physiologic response to drought stress in Pinon and Juniper
#Su Zhang (UNM Civil Engineering); July 2016; Pavement Surface Distress Detection, Assessment, and Modeling Using Geospatial Techniques
Adam Byrd (UNM Anthropology); December 2015; Settlement Patterns During the Gallina Phase
#Daniel Krofcheck (UNM Biology); October 2014; Bridging structure and function in semi-arid ecosystems by integrating remote sensing and eddy-covariance data sets
Jeff Ferlando (UNM Economics); May 2013; Temporal and Spatial Analysis of Forest Management: a case study of Kam Cha I, Thailand

In Progress as Committee Member (4)
Paulina Przystupa (UNM Anthropology); Expected Completion Spring 2023; Reconstructing Indigenous boarding schools in the United States.
Kory Kirchner (UNM EPS); Expected Completion May 2026; Dissertation Title undefined
Zoe Rossman (UNM Biology); Expected Completion May 2025; Urban Wildlife in drylands cities
Saragai Saragai, Expected Completion May 2025; Dissertation Title undefined

Masters Advisement

Completed as Chair (20) [#]*student awarded distinction*

Pratistha Sharma; December 2023; Fusing fine-scale phenology, vegetation structure, and spectra for vegetation object-based vegetation mapping

[#]Westin Guthrie; May 2023; Projecting Wildfire risk at the Wildland Urban interface in 2050 and 2100 Southern California; a succession modeling approach.

Michael Gurule; May 2023; Camera trap image labeling using crowdsourced image labels; a comparison of convolutional neural networks

[#]Jillian Rutherford; June 2021; In pursuit of comparability: evaluating the performance of home range estimators on chimpanzee datasets.

[#]Tammira Taylor; May 2021; Plan II UAS-based roof inspection plan for Albuquerque Public Schools

[#]Aron Roberts; May 2020; An analysis of contraflow network resiliency under mass evacuation conditions in Houston, Texas

[#]Rowan Converse; May 2020; Evaluating the impacts of the tamarisk leaf beetle on Middle Rio Grande riparian vegetation

[#]Sean O'Neil; May 2019; Project: A Continuously Updated Forest Mapping Portal

Jacob Winkle; May 2019; USGS Channel surveys: the potential for drones.

[#]Samuel Thompson; May 2018; The proximity effect of crime on housing prices: a hedonic pricing analysis of inner-loop Houston, TX

Marshall Grebe; December 2016; Designing a Broadband Radio Transmission System for Time-sensitive Remote Sensing

Bryce Lockett; May 2016; Economic analysis of a proposed 'Acequia Park".

Alissa Healy (Co-Chair w/ K. Maria Lane); May 2016; Comparing Remote Sensing Models Ability to Accurately Identify Prehistoric Agricultural Fields in New Mexico

[#]Andrew Loerch; May 2016; Estimating the timeliness of remote sensing information delivery.

Pankaj Bajracharya; May 2016; Predicting Land Use Change in Albuquerque, NM using Sleuth.

Kilko Paz; May 2016; A variable spatial unit data portal for socio-demographic data.

Nicholas (Thommy) Thompson; May 2016; Land cover change in the Vias Caldara

[#]Su Zhang; December 2015; Nighttime lights satellite Imagery for Improved Estimation of the City Cost Index.

Willard Hunter; May 2015; Examining a Natural Experiment: U.S. House Redistricting in Texas Preceding the 2002 and 2004 U.S. House Elections based on the 2000 Federal Census

Sandra Daras; May 2014; Crime And Immigration In Albuquerque, NM: Real Or Misperception?

Completed as Committee Member (15)

Joshua Driscol; May 2023; An interactive map for Social Justice .

Lindsey Rotche; An Automated Avalanche Risk Monitoring System for New Mexico; June 2022

Joe Scala; The Changing Urban Forest in Gallup, New Mexico: Contextualizing Urban Tree Programs and Planning Processes; April 2022

Claudia Jimenez (Civil, Construction, and Environmental Engineering); December 2020; Thermal Mapping and Evaporation Estimation of Cochiti Lake Using LandSat 8 Imagery

Alexander Marx; 2019; Urban Farming in the Barelas Neighborhood of Albuquerque, NM.

Zachary Tarachi; July 2018; Evaluating The Utility Of Object-Based Image Analysis For Ecological Monitoring Of Piñon-Juniper Mortality.

Akashia Allen; may 2018; multiple end member spectral mixture analysis for mapping
    Vegetation Change at Sevilletta National Wildlife Refuge
Gladys Valentine; December 2017; Quantifying post-fire recovery in Bandelier National
    Monument
William Tintor (Water Resources); July 2017; Remotely-measured Evapotranspiration of a
    Restoration Landscape at Bosque del Apache NWR.
William Brewer; May 2016; Mapping Regional Pinon-Juniper Dynamics using Multiple
    Endmember Spectral Mixture Analysis.
Greg Maynard; May 2016; Multi-Criteria Evaluation Model for Road Maintenance Planning.
Brian Kinworthy; August 2015; New Mexico Rock Glacier Inventory: Geomorphology and
    Paleogeogrpahy Analysis.
Micheal Campanovo; May 2013; Assessing Uncertainty in Volunteered Geographic Information
    for Emergency Response
[#]Kristopher Lingren; May 2013; Humate Potential in the San Juan Basin of New Mexico: An
    Assessment of Digital Terrain Analysis and Multispectral Analysis Techniques as
    Applied to Exploration Targeting (Project)
[#]Choongman Oh; December 2013; Evacuation Vulnerability Mapping Using GIS Network
    Analysis (Project)

In Progress as Chair (3)
Amanda Araujo; expected completion May 2025; Vegetation mapping
Alexandra Vivier; expected completion date May 2022; A Weather RADAR Analysis of the
    Effects of the Albuquerque Urban Area on Thunderstorms from 1997-2017.
Caleb Garrett; expected completion date May 2022; Porcupine monitoring and positioning using
    photogrammetric thermal infrared radiometry from an unmanned airborne system.

In Progress as Committee Member (1)
Elicia Ramirez; Expected Completion May 2019; Foxtail Pine (Pinus balfouriana) encroachment
    in Inyo National Forest: assessing treeline fluctuations with remotely sensed data.

Bachelor's Honors Advisement

Completed as Committee Member (2)
Jillian Rutherford; May 2019; Patterns in Chimpanzee movement over 20+ years.
Andrew Loerch; May 2014; B.S. in Geography; An Analysis of the Effects of Near-infrared
    Wavelengths on the Bayer Mosaic Filter of a Consumer Digital Camera

In Progress as Committee Member (0)

In Progress as Chair (0)

Advising for Other Universities (4)
Saghi, Sarafi, (M.S., CUAS – Marshall Plan); 2022; Analyzing the relationship between urban
    heating and composition; a global approach.
Shaffhouser, Lukas (M.S., CUAS – Marshall Plan); 2021; Automated Recognition of Monkeys
    in Natural Habitats using Convolutional Neural Networks (CNN)

Sa'Doun Mohammad (M.S., CUAS – Marshall Plan); 2020; A Comparison of Convolutional Neural Network Architectures for Waterfowl Species Detection and Classification

Thomas Schneider (M.S., CUAS- Marshall Plan); 2019; Quantitative comparison of NADIR vs oblique view imagery in 3-dimensional scene reconstruction for low altitude aerial photography

Classroom Teaching
2021; Spring; Integrative research design; UNM GEOG 602; 9 students
2020; Fall; Fundamentals of Remote Sensing; UNM GEOG 483/583 (Online); 16 students
2020; Spring; Applications of Remote Sensing; UNM GEOG 4/584 (Shift to Online Mid-semester); 19 students
2019; Fall; Fundamentals of Remote Sensing; UNM GEOG 483/583; 22 students
2019; Spring; Introduction to GIS; UNM GEOG 381; 51 students
2018; Spring; Applications of Remote Sensing; UNM GEOG 4/584; 19 students
2018; Spring; GIScience Capstone; UNM GEOG 525; 10 students
2017; Fall; Advanced Topics in Remote Sensing (UAS Remote Sensing); UNM GEOG 524; 9 students
2017; Spring; Applications of Remote Sensing; UNM GEOG 484/584; 12 students
2016; Fall; Fundamentals of Remote Sensing; UNM GEOG 483/583; 17 students
2016; Spring; Applications of Remote Sensing; UNM GEOG 484L/584L; 16 students
2015; Spring; Introduction to Geographic Information Systems; UNM GEOG 381L; 54 students
2015; Spring; Applications of Remote Sensing; UNM GEOG 484L/584L; 19 students
2014; Fall; Fundamentals of Remote Sensing; UNM GEOG 483L/583L; 28 students
2014; Fall; Advanced Topics in Land Remote Sensing; UNM GEOG 499; 4 students
2014; Spring; GIScience Capstone; UNM GEOG 525; 9 students
2014; Spring; Applications of Remote Sensing; UNM GEOG 484L/584L; 11 students
2013; Spring; Applications of Remote Sensing; UNM GEOG 484L/584L; 19 students
2013; Spring; Introduction to Geographic Information Systems; UNM GEOG 381L; 45 students
2012; Fall; Fundamentals of Remote Sensing; UNM GEOG483L/583L; 20 students
2011; Introduction to Digital Image Processing; SDSU GEOG588; ~25 students
2009; Remote Sensing of Environment; SDSU GEOG587; ~25 students
2009; Remote Sensing of Environment Laboratory; SDSU GEOG587L ; ~25 students

Other Teaching
2022; Spring; Problems; UNM GEOG 591; 2 students
2022; Spring; Masters Thesis; UNM GEOG 599; 2 students
2021; Fall; Masters Thesis; UNM GEOG 599; 2 students
2021; Fall; Applied Geography Internship; UNM GEOG 593; 1 student
2021; Fall; Problems; UNM GEOG 591; 1 student
2021; Summer; Masters Thesis; UNM GEOG 599; 1 student
2021; Summer; Applied Geography Internship; UNM GEOG 593; 1 student
2021; Spring; Master's Project; UNM GEOG 597; 1 student
2021; Spring; Masters Thesis; UNM GEOG 599; 2 students
2021; Spring; Applied Geography Internship; UNM GEOG 593; 1 student
2021; Spring; Problems; UNM GEOG 591; 3 students
2020; Fall; Masters Thesis; UNM GEOG 599; 2 students
2020; Fall; Problems; UNM GEOG 591; 2 students

2020; Fall; Problems; UNM GEOG 491; 1 student
2020; Spring; Master's Thesis; UNM GEOG 599; 4 students
2020; Spring; Problems; UNM GEOG 591; 1 student
2019; Fall; Master's Thesis; UNM GEOG 599; 4 students
2019; Fall; Applied Geography Internship; UNM GEOG 593; 1 student
2019; Fall; Applied Geography Internship; UNM GEOG 493; 2 students
2019; Fall; Problems; UNM GEOG 491; 1 student
2019; Summer; Master's Thesis; UNM GEOG 599; 1 student
2019; Summer; Applied Geography Internship; UNM GEOG 493; 1 student
2019; Summer; Problems; UNM GEOG 491; 3 students
2019; Spring; Master's Project; UNM GEOG 597; 2 students
2019; Spring; Master's Thesis; UNM GEOG 599; 3 students
2018; Fall; Master's Thesis; UNM GEOG 599; 3 students
2018; Fall; Master's Project; UNM GEOG 597; 1 students
2018; Fall; Problems; UNM GEOG 591; 1 students
2018; Spring; Master's Thesis; UNM GEOG 599; 3 students
2018; Spring; Problems; UNM GEOG 491; 1 student
2018; Spring; Applied Geography Internship; UNM GEOG 493; 2 students
2017; Summer; Applied Geography Internship; UNM GEOG 593; 1 student
2017; Fall; Problems; UNM GEOG 591; 1 student
2017; Fall; Master's Thesis; UNM GEOG 599; 3 students
2017; Spring; Problems; UNM GEOG 591; 2 students
2017; Spring; Master's Thesis; UNM GEOG 599; 2 students
2016; Fall; Master's Project; UNM GEOG 597; 1 student
2016; Fall; Master's Thesis; UNM GEOG 599; 1 student
2016; Summer; Master's Thesis; UNM GEOG 599; 1 student
2016; Summer; Applied Geography Internship; UNM GEOG 493; 1 student
2016; Spring; Problems; GEOG 591; 1 student
2016; Spring; Master's Project; UNM GEOG 597; 2 students
2016; Spring; Master's Thesis; UNM GEOG 599; 4 students
2015; Fall; Master's Thesis; UNM GEOG 599; 4 students
2015; Fall; Applied Geography Internship; UNM GEOG 593; 2 students
2015; Fall; Problems; UNM GEOG 591; 1 student
2015; Spring; Problems; UNM GEOG 599; 5 students
2015; Spring; Problems; UNM GEOG 591; 3 students
2014; Fall; Master's Thesis; UNM GEOG 599; 3 students
2014; Fall; Applied Geography Internship; UNM GEOG 593; 1student
2014; Spring; Master's Thesis; UNM GEOG 599; 3 students
2014; Spring; Problems; UNM GEOG 591; 1 student
2013; Fall; Problems; UNM GEOG 591; 2 students
2013; Summer; Applied Geography Internship; UNM GEOG 593; 1 student
2013; Spring; Problems; UNM GEOG 591; 2 students
2010; Remote Sensing of Environment Laboratory; SDSU GEOG587L; ~25
2010; Digital Image Processing Laboratory; SDSU GEOG 588L TA; ~25
2009; Advanced Topics in Remote Sensing Laboratory; SDSU GEOG688 TA
2006; Idrisi Andes 3-day training series, Denver CO, San Jose CA, Worcester MA

Service

Journal Editing
2019-2020: Guest Editor, Remote Sensing, Special Issue on Remote Sensing of Infrastructure

Journal Reviews
2022; Spring; PLOS One
2021; Spring; GIS&T Body of Knowledge
2020; Fall; GIS&T Body of Knowledge
2019: Fall; IJRS (2)
2019; Summer; Remote Sensing
2019; Spring; IJRS
2017; Fall; PE&RS
2017; Fall; PLOS One Guest Editor
2017; Summer; PLOS One
2017; Spring; PLOS One
2016; Fall; Remote Sensing of Environment
2016; Spring; Remote Sensing of Environment
2015; Fall; International Journal of Remote Sensing (2)
2015; Spring; International Journal of Remote Sensing
2014; Spring; Transactions in GIS
2014; Spring; International Journal of Applied Earth Observation and Geoinformation
2014; Spring; ISPRS Journal of Photogrammetry and Remote Sensing
2014; Spring; International Journal of Remote Sensing
2013; Spring; Computers, Environment and Urban Systems
2012; Fall; ISPRS Journal of Photogrammetry and Remote Sensing
2011; Spring; International Journal of Digital Earth
2011; Spring; Remote Sensing Letters
2011; Spring; Crop Protection
2011; Fall; International Journal of Remote Sensing
2009; Fall; Community Ecology

Funding Proposal Reviews
2020; Fall, NSF HEGS Proposal Review
2020; Summer, UNM VPR Pre-proposals for Keck Foundation
2017; Spring; UNM VPR Pre-proposals for Aetna Healthy Communities

Administrative work with professional societies, elect offices held
2020-Present; Member; NM Geospatial Advisory Committee UAS Subcommittee
2015-Present; Regional Director; American Society for Photogrammetry and Remote Sensing
    Rocky Mountain Region
2019-2021; Board Member, New Mexico Geographic Information Council
2019-2021; Chair; Remote Sensing Specialty Group of the American Association of
    Geographers
2018: Co-Chair, AAG Remote Sensing Specialty Group Awards Committee

2017; Organizing Committee, American Society for Photogrammetry and Remote Sensing
Rocky Mountain Region Annual Meeting

2017-2019; Vice Chair; Remote Sensing Specialty Group of the American Association of
Geographers.

2015-2017; President; American Society for Photogrammetry and Remote Sensing Rio Grande
Chapter

2016; Chair; Organizing Committee; American Society for Photogrammetry and Remote
Sensing Rio Grande Chapter Annual Fall Meeting

2016; Chair; Organizing Committee; American Society for Photogrammetry and Remote
Sensing Rio Grande Chapter Annual Spring Meeting

2014-2015; Founding Faculty Advisor; UNM-ASPRS Student Chapter

2014; Chair; Organizing Committee; American Society for Photogrammetry and Remote
Sensing Rio Grande Chapter Annual Spring Meeting

2013-2015; Vice President; American Society for Photogrammetry and Remote Sensing Rio
Grande Chapter

2012-2013; Board Member; American Society for Photogrammetry and Remote Sensing Rio
Grande Chapter

2013; Organized and Chaired two special sessions entitled "Time-Sensitive Remote Sensing 1 &
2" at Annual Meeting of the American Society for Photogrammetry and Remote Sensing.

2009- 2010; Student Representative to the Board; Geographic Information Science Specialty
Group of the Association of American Geographers (GIS-SG).

2007 – 2010; Founding President of the SDSU Student Chapter of ASPRS

2004 – 2005; President of the Clark University Chapter of Gamma Theta Upsilon, International
Geographical Honor Society

Administrative work in Department, College, and University committees
Fall 2023 – Present; Member, UNM Capital Projects Leadership Team

Fall 2023 – Present; Chair, UNM Research Facilities Committee

Fall 2021-Present; Associate Dean for Research, UNM College of Arts & Sciences

Fall 2021- Present; Member; UNM IT Strategic Planning Committee for Research

Fall 2021- Present; Member, UNM Asset Management Advisory Committee

Spring 2020 – Present; Member; UNM Department of Geography and Environmental Studies
Personnel Committee

Summer 2019-Present; Director; Center for the Advancement of Spatial Informatics Research
and Education (ASPIRE)

Spring 2021; Member, hiring committee, Coordinator of Graduate Programs for UNM
Department of Geography and Environmental Studies

Spring 2021; Conference Chair; UNM Team Research Symposium

Fall 2019 – Fall 2021; Faculty Coordinator; UNM Interdisciplinary Science Cooperative (Co-op)

Spring 2019-Spring 2021; Graduate Program Director; UNM Department of Geography and
Environmental Studies.

Fall 2017 – Spring 2021; Member, Curriculum Committee, UNM Department of Geography and
Environmental Studies

Fall 2020: Member and Hiring Officer; Program specialist for UNM Museum Research
Traineeship (NSF-NRT); College of Arts & Sciences

Spring 2020; Member, College of Arts & Sciences Tenure and Promotion Committee

Spring 2019-Spring 2020; Co-Chair; UNM IT Strategic Planning Committee for Research

Spring 2019-Spring 2020; Member; Research IT Scoring Sub-Committee

Spring 2017-Spring 2020; College of Arts & Sciences representative to IT Strategic Planning Committee for Research

Summer 2019-Spring 2020; Associate Chair; UNM Department of Geography and Environmental Studies

Fall 2019, Member, Hiring Committee; IT Manager for UNM Department of Geography and Environmental Studies

Fall 2019, Member, Hiring Committee; Department Administrator for UNM Department of Geography and Environmental Studies

Fall 2019, Member, Hiring Committee; Department Administrator for UNM Department of Geography and Environmental Studies

Fall 2019; Chair, Hiring committee; UNM Interdisciplinary Science Cooperative (Co-op) Program Planning Manager

Fall 2019; Chair, Hiring committee; UNM Interdisciplinary Science Cooperative (Co-op) Operations Manager

Summer 2019; Member, UNM Department of Geography Hiring Committee (DA)

Spring 2019; Member, College of Arts & Sciences Retention Committee

Spring 2019; Member, College of Arts & Sciences/OVPR Hiring Committee (FRSO)

Spring 2016- Summer 2019; Special Assistant to Associate Dean for Research for Interdisciplinary Science; UNM College of Arts & Sciences

Spring 2019 – Member; PAIS (Building) Furnishing Review Committee

Spring 2018 – Hiring committee member for Faculty Research Support Officer position

Summer 2017 – Summer 2018; Undergraduate Program Director, UNM Department of Geography and Environmental Studies

Fall 2017 – Spring 2018; Member, Committee for Strategic Planning, UNM Department of Geography and Environmental Studies

Fall 2016 – Spring 2017; Personnel Committee Member; UNM Geography and Environmental Studies.

2014 – Spring 2017; Computing Coordinator; UNM Geography and Environmental Studies

2014 – Spring 2017; Budget Committee Member; UNM Geography and Environmental Studies

Fall 2015 – Spring 2016; Hiring Committee for TT GIScience Faculty position; UNM Geography and Environmental Studies.

2015 – Chair; Hiring Committee for Network Tech Position; UNM Geography and Environmental Studies.

2014 – 2015; Personnel Committee Member; UNM Geography and Environmental Studies

2013 – 2014; Member, Executive Committee; UNM Geography and Environmental Studies

2013; Member; Hiring Committee for Visiting GIScience position; UNM Geography and Environmental Studies

2012 – present; Colloquium Coordinator; UNM Geography and Environmental Studies

2009 – 2010; Doctoral Student Representative to the Faculty; San Diego State University Department of Geography.

Community Service/Outreach

2022 – Workshop on Workshop on base-map data creation from Remote Sensing. Annual Tribal GIS Conference. Albuquerque, NM: April 25-29.

2019 – Workshop on Remote Sensing Land Cover Classification. Annual Tribal GIS Conference. Albuquerque, NM: November 18-22.

2019 – Poster Competition Judge, Student poster competition at the Southwest American Association of Geographers (SWAAG) annual meeting, Forth Worth, TX.

2018 – Volunteer mentor for Garfield Middle School (Albuquerque, NM) "Engineering the Future" event, December 5.

2018 – Volunteer moderator for New Mexico Geography Bee, April 6.

2014 - Invited presentation to Advanced Remote Sensing (GEOG 688) class at San Diego State University on "The impact of UAS on remote sensing for earth science", November.

2014 - Exhibitor Coordinator, Joint Annual Meeting of the Southwest and Great Plains Regions of the Association of American Geographers, Albuquerque, NM.

2014 - Coordination and facilitation of workshop on 'R' for spatial analysis through UNM ASPRS Student Chapter (15 attendees).

2011 - Presentation on UAS for GIScience, San Diego State University Department of Geography.

2011 - Demonstration of remote sensing from unmanned platforms, San Diego State University chapter of the American Society for Photogrammetric Engineering and Remote Sensing.

2010 - Demonstration of remote sensing from unmanned platforms, Association of Environmental Professionals and San Diego State University chapter of the American Society for Photogrammetric Engineering and Remote Sensing.

2009 - Presentation for Career Day at Patrick Henry High School, San Diego, CA.

2008 - Founded and manage Volunteer Hazard Mapping Corp at San Diego State University – The VMHC supports local GIS managers during hazards by training and organizing GIS/Remote Sensing capable graduate students to support processing tasks. Training includes 3 workshops and 1-2 training scenarios annually.

2008 - Presentation on GIScience and Remote Sensing to disadvantaged youth at Hoover High School, San Diego, CA.

2007 - Organized and Directed 3-day workshop series on field methods in Remote Sensing in response to student survey's citing it as a deficiency in their education (through SDSU-ASPRS).

2007 - Volunteer (Geospatial) response to 2007 San Diego Wildfires; producing maps of fire perimeter and home damage and publishing them to the web for public viewing, San Diego, CA

2004 – 2006; Volunteer Technology consultant to Regional Environmental Council, Worcester, MA.

2004; Presentation on Geography to Elementary School Science Class, Worcester, MA