

NICHOLAS R. MAGLIOCCA

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EDUCATION

- 2012 **Ph.D. in Geography and Environmental Systems**
Dept. of Geography and Environmental Systems
University of Maryland, Baltimore County
Specialization: Agent-based modeling of land-use change
Advisor: Dr. Erle C. Ellis, Geography and Environmental Systems, UMBC
Dissertation Title: Using agent-based models as virtual laboratories for exploring human-environment interactions in land-use systems
- 2009-2011 **National Science Foundation IGERT Trainee**
Center for Urban Environmental Research and Education
University of Maryland, Baltimore County
- 2008 **Master of Environmental Management**
Nicholas School of the Environment and Earth Sciences
Duke University, Durham, NC
Concentration: Ecosystem Science and Conservation
Master's Project: Long-term, large-scale morphodynamic effects of artificial dune construction in the Outer Banks of North Carolina.
Advisor: Dr. A. Brad Murray, Earth and Ocean Sciences, Duke University
- 2006 **Bachelor of Science, cum laude**
University of California, San Diego, La Jolla, CA
Major: Environmental Systems: Ecology, Behavior, and Evolution.
Senior Thesis: Managing overwhelming complexity in human-landscape interactions in the Los Angeles Basin.
Advisor: Dr. Brad Werner, Scripps Institute of Oceanography, UCSD

RESEARCH AREAS

- Human-environment interactions; Illicit supply networks
- Coupled natural-human systems; Land-use change and policy
- Agent-based modeling; Geographic information systems; Spatial analysis

RESEARCH FUNDING

- 2021 **New ATI Lab: Developing the Center for Complex Spatial Systems (CCSS): Security, Equity, and Sustainability.** Co-Principal Investigator with Kevin Curtin. Alabama Transportation Institute, \$54,000 (funded).
- 2021 **Making the Hidden Visible: Accelerated Land-Use Change and Degradation Caused by Narco-Trafficking In and Around Central America's Protected Areas.** Principal Investigator with Elizabeth Tellman (co-I), Matthew Fagan (co-I), Kendra McSweeney (co-I), Jennifer Devine (co-I), Erik Nielsen (co-I), and Steven Sesnie (co-I). NASA, \$696,112 (funded).
- 2020 **D-ISBN: TRACK 1: Illicit Drug Trafficking Networks: Behavioral Responses to Interdiction.** Co-Investigator with Kevin Curtin (PI), Diana Dolliver (co-I), and Matthew Hudnall (co-I). National Science Foundation, \$746,361 (funded).

- 2019 **Track-1-Food-Energy-Water Nexus in the Deep South: A Latent System Primed for Transition from Rain-fed to Irrigation-fed Agriculture.** Co-Investigator with Hamid Moradkhani (PI), Mukesh Kumar (co-I), Hamed Moftakhari (co-I), and Glenn Tootle (co-I). National Science Foundation, \$1,749,826 (funded).
- 2018 **Anticipatory Interdiction of Narco-Trafficking Networks.** Principal Investigator with Kevin Curtin (co-I, UA), Diana Dolliver (co-I, UA), and Kendra McSweeney (co-I, Ohio State U.). National Science Foundation, \$292,973 (funded).
- 2017 **A Forecast of the Timing, Locations, Sequence and Likeliest Destinations of Populations Displaced by Sea Level Rise and Coastal Extremes.** Participant with Valerie Muller (PI, Arizona State University) and David Wrathall (PI, Oregon State University). SESYNC Pursuit (funded).
- 2016 **The Global Land Rush: A Socio-Environmental Synthesis.** Co-Investigator with Ariane de Bremond (PI, UMD), Evan Ellicott (co-I, UMD), Klaus Hubacek (UMD), Kuishang Feng (UMD). NASA, \$747,414 (funded)
- 2015 **Assessing global knowledge gaps in local land change studies.** Principal Investigator with Erle Ellis (co-I, UMBC), SESYNC Workshop, \$18,000 (funded)
- 2014 **How can social media can be used to explore coupled socio-environmental systems?** Principal Investigator with Andrew Crooks (co-I, George Mason U.), SESYNC Workshop, \$20,500 (funded)
- 2013 **In Hot and Harm's Way: Modeling to Promote Regional Resilience to Repeated Heat Waves and Hurricanes.** Senior Personnel (subcontract from Resources for the Future). National Science Foundation, \$130,000 (funded)

AWARDS AND SCHOLARSHIPS

- 2023 Mid-Career President's Faculty Research Award, University of Alabama
- 2021-2023 Leadership Board Faculty Fellowship, College of Arts & Sciences
- 2021 Member of the inaugural cohort of the College of Arts & Sciences Community Engagement Academy 2021-2022
- 2020 2019 Best Paper Award, *Land*. Co-author with Bianca Lopez and Andrew Crooks on the paper, "Challenges and Opportunities of Social Media Data for Socio-Environmental Systems Research"
- 2017 ABM17 Star Award, Agent-Based Modeling 17 Symposium, National Science Foundation, San Diego CA, USA.
- 2012 East Asia and Pacific Summer Institutes Fellowship (EAPSI China), National Science Foundation
- 2011 Integrative Graduate Education, Research, and Traineeship (IGERT) Supplemental Research Grant recipient, UMBC
- 2010 Student Travel Stipend Award for Best Student Paper, International Environmental Modeling and Software Society, Ottawa, ON, Canada
- 2009 Integrative Graduate Education, Research, and Traineeship (IGERT) Award, National Science Foundation
- 2007 Sir Geoffery Vicker's Award for best student paper, International Society for the Systems Sciences, Tokyo, Japan
- 2007 First-ever recipient of Dorothy Bertine Internship Award for outstanding project proposed, Duke University
- 2006 Nicholas School of the Environment and Earth Sciences Merit Scholarship, Duke University
- 2006 Dean's Undergraduate Award for Excellence, UCSD

2006 Outstanding Senior Thesis, San Diego Environmental Professionals

TEACHING AND PROFESSIONAL EXPERIENCE

2022-Present **Associate Professor**
Department of Geography, University of Alabama

2017-2022 **Assistant Professor**
Department of Geography, University of Alabama

2013-2017 **Assistant Research Professor**
The National Socio-Environmental Synthesis Center (SESYNC), University of Maryland

2012 **Postdoctoral Research Associate**
University of Maryland, Baltimore County
GLOBE Project, funded by NSF's Cyber-Enabled Discovery and Innovation Program, under the direction of Dr. Erle C. Ellis

2012 **Undergraduate Research Internship Instructor**, UMBC, Baltimore, MD
Instructor for GES 497; an undergraduate research internship that supports the NSF-funded GLOBE project and provides high quality undergraduate students with instruction in and experience with scholarly research methods.

2010-2012 **Teaching Assistant**, UMBC, Baltimore, MD
Teaching assistant for GES 600: Anthropogenic Biomes, GES 120: Introduction to Environmental Science, GES 305: Landscape Ecology

2011-2012 **Guest Lecturer**, UMBC, Baltimore, MD
Designed and delivered lectures covering earth systems science, ecology, and biology in GES 120 "Introduction to Environmental Science".

2011 **Visiting Scholar**, University of Michigan, Ann Arbor, MI
Contributed to the development of the developer decision-making module in the SLUCE 2 project.

2008-2010 **Research Assistant**, Resources for the Future, Washington, D.C.
As part of a research team, conceptualized and created an economic model of agent-based land and housing markets. The project was motivated by the investigation of transferrable development rights to control urban sprawl, and funded by an EPA STAR grant.

2006-2008 **Biocomplexity Researcher, Complex Systems Laboratory** of Dr. A. Brad Murray, Dept. of Earth and Ocean Sciences, Duke University, Durham, NC

2005-2006 **Wildland Fire Researcher, Complex Systems Laboratory** of Dr. Brad Werner Scripps Institute of Oceanography, UC San Diego, La Jolla, CA

PUBLICATIONS (* indicates student author)

Magliocca, N.R. (2023). Intersecting security, equity, and sustainability for transformation in the Anthropocene. *Anthropocene*, 43, 100396:
<https://doi.org/10.1016/j.ancene.2023.100396>

Magliocca, N.R., Aksu, R.*, McSweeney, K., Tanveer, H.* Curtin, K.M., Keskin, B. (in review). Towards spatially disaggregated cocaine supply chain modeling. *Applied Geography*.

Magliocca, N.R., Dhungana, P.*, Sink, C.D.* (2023). Review of counterfactual land change modeling for causal inference in land system science. *Journal of Land Use Science*, 18(1): DOI: <https://doi.org/10.1080/1747423X.2023.2173325>.

Han, X*., Deb, P., **Magliocca, N.R.**, Nadolnyak, D., Moftakhari, H., Pathak, R.*, Moradkhani, H. (2023). Water trading as a tool to combat economic losses in

agriculture under climate change. *Sustainability Science*. DOI: <https://doi.org/10.1007/s11625-023-01298-0>.

Magliocca, N.R., Price, A.N.*, Mitchell, P.*, Curtin, K.M., Hudnall, M., McSweeney, K. (2022). Coupling agent-based simulation and spatial optimization models to understand spatially complex and co-evolutionary behavior of cocaine trafficking networks and counterdrug interdiction. *IISE Transactions*. DOI: <https://doi.org/10.1080/24725854.2022.2123998>.

Pathak, R.*, **Magliocca, N. R.** (2022). Assessing the Representativeness of Irrigation Adoption Studies: A Meta-Study of Global Research. *Agriculture*, 12(12), 2105. <https://doi.org/10.3390/agriculture12122105>.

Price*, A.N., Pathak*, R., Guthrie, G., Kumar, M., Moftakhari, H., Moradkhani, H., Nodalnyak, D., **Magliocca, N.R.** (2022). Multi-level influences on center pivot irrigation adoption in Alabama. *Frontiers in Sustainable Food Systems*, 253. <https://doi.org/10.3389/fsufs.2022.879161>.

Williams, T., Brown, D., Guikema, S., Logan, T., **Magliocca, N. R.**, Müller, B., Steger, C. (2022). Integrating equity considerations into agent-based modeling: A conceptual framework and practical guidance. *Journal of Artificial Societies and Social Simulation*, 25(3): 1. DOI: 10.18564/jasss.4816

Magliocca, N.R., Ellicott, E., Ingalls, M.L., Epprecht, M., Hett, C., Nanthavong, V., de Bremond, A. (2022). Spatio-temporal unevenness in local land system regime shifts caused by land deals in Lao PDR. *Ecology & Society*, 27(4): 7. DOI: <https://doi.org/10.5751/ES-13405-270407>.

Magliocca, N. R., Torres, A., Margulies, J. D., McSweeney, K., Arroyo-Quiroz, I., Carter, N., Curtin, K. M., Easter, T., Gore, M., Hübschle, A., Massé, F., Rege, A., Tellman, E. (2022). Análisis comparativo de la estructura y las operaciones de las redes de suministro ilícito: cocaína, vida silvestre y arena. *Journal of Illicit Economies and Development*, 3(1). (Spanish translation of the original journal article to increase dissemination and inclusivity of Spanish-speaking researchers and practitioners.)

Price*, A., Curtin, K. M., **Magliocca, N. R.**, Mitchell*, P., Turner*, D., McSweeney, K., Dolliver, D. S. (2022). A Family of Models in Support of Realistic Drug Interdiction Location Decision Making. *Transactions in GIS*, 26(4): 1962-1980. DOI: 10.1111/tgis.12921.

Magliocca, N.R., de Bremond, A., Ellicott, E., Seghezzo, L., Venecia*, C.D., Moscario*, M.J., Nolte, C. (2022). Two of a kind? Large-scale land acquisitions and commodity frontier expansion in Argentina's Dry Chaco. *Ecology & Society*, 27(2): 25. DOI: <https://doi.org/10.5751/ES-13103-270225>.

Schlüter, M., Caniglia, G., Orach, K., Bodin, Ö, Magliocca, N.R., Meyfroidt, P., Reyers, B. (2022). Why care about theories? Innovative ways of theorizing in sustainability science. *Current Opinion in Environmental Sustainability*, 54, 101154. <https://www.sciencedirect.com/science/article/pii/S1877343522000069>.

- Magliocca, N.R.**, Summers, D.S., Curtin, K.M., McSweeney, K., Price*, A.N. (2022). Shifting landscape suitability for cocaine trafficking through Central America in response to counterdrug interdiction. *Landscape & Urban Planning*, 221: 104359. DOI: <https://doi.org/10.1016/j.landurbplan.2022.104359>.
- Dávila, A., McSweeney, K., **Magliocca, N.R.**, Rueda, X. (2021). Spatializing illicit global commodity chains. *Area* 53(3): 501-510. DOI: 10.1111/area.12724.
- Magliocca, N.R.**, Torres, A., Margulies, J.D., Carter, N.H., Gore, M., Arroyo-Quiroz, I., Curtin, K.M., Easter*, T.S., Hübschle, A., Massé, F., McSweeney, K., Rege, A., Tellman, E. (2021). Comparative Analysis of Illicit Supply Network Structure and Operations: Cocaine, Wildlife, and Sand. *Journal of Illicit Economies and Development*, 3(1): pp. 50–73. DOI: <https://doi.org/10.31389/jied.76>.
- Bell, A.R., Wrathall, D., Mueller, V., Chen, J., Oppenheimer, M., Adams, H., Kulp, S., Clark, P., Fussell, E., **Magliocca, N.R.**, Tingyin, S., Gilmore, E., Abel, K., Call, M., Slangen, A. (2021). Migration towards Bangladesh coastlines projected to increase with sea-level rise through 2100. *Environmental Research Letters*, 16 024045. DOI: <https://doi.org/10.1088/1748-9326/abdc5b>.
- Magliocca, N.R.** (2020). Agent-Based Modeling for Integrating Human Behavior into the Food–Energy–Water Nexus. *Land*, 9(12), 519. DOI: <https://doi.org/10.3390/land9120519>.
- LaFevor, M., **Magliocca, N.R.** (2020). Farmland size effects on crop production and agrochemical use efficiency in Mexico. *Journal of Land Use Science*, 15(4): 532-546. DOI: <https://doi.org/10.1080/1747423X.2020.1800849>.
- Tellman, E., Sesnie, S., **Magliocca, N.R.**, Nielsen, E., Devine, J., McSweeney, K., Jain, M., Wrathall, D., Benessaiah, K., Aguilar-Gonzalez, B. (2020). Illicit Drivers of Land Use Change: Narcotrafficking and Forest Loss in Central America. *Global Environmental Change*, 63: 102092. DOI: <https://doi.org/10.1016/j.gloenvcha.2020.102092>.
- Wrathall, D.J., Devine, J., Aguilar Gonzalez, B., Benessaiah, K., Tellman, E., Sesnie, S., Nielsen, E., **Magliocca, N.R.**, McSweeney, K., Pearson, Z., Ponstingel, J., Rivera Sosa, A. (2020). The impacts of cocaine-trafficking on conservation governance in Central America. *Global Environmental Change*, 63:102098. DOI: <https://doi.org/10.1016/j.gloenvcha.2020.102098>.
- Cumming, G.S., Epstein, G.B., Anderies, J.M., Apetrei, C., Baggio, J., Bodin, O., Chawla, S., Clements, H.S., Cox, M., Egli, L., Gurney, G., Lubell, M., **Magliocca, N.R.**, Morrison, T., Müller, B., Seppelt, R., Schlüter, M., Unnkrishnan, H., Villamayor-Tomas, S., Weible, C. (2020). Advancing understanding of natural resource governance using the social-ecological systems framework: a post-Ostrom research agenda. *Current Opinion in Environmental Sustainability*, 44: 26-34. DOI: <https://doi.org/10.1016/j.cosust.2020.02.005>.

Carter, N., Baeza, A., **Magliocca, N.R.** (2020). Emergent conservation outcomes of shared risk perception in human-wildlife systems. *Conservation Biology*. DOI: <https://doi.org/10.1111/cobi.13473>.

Magliocca, N.R., Jimenez, E.G. (2020). Costa Rica's water paradox: Linking rainforests and droughts through the water-energy-food-environment nexus. *Case Studies in the Environment*, pp 1-9. DOI: <https://doi.org/10.1525/cse/2019/002253>.

Ligmann-Zielinska, A., Siebers, P.O., **Magliocca, N.R.**, Parker, D.C., Grimm, V., Du, J., Cenek, M., Radchuk, V., Arbab, N.N., Li, S., Berger, U., Paudel, R., Robinson, D.T., Jankowski, P., and An, L. (2020). One size does not fit all': a roadmap of purpose-driven mixed-method pathways for sensitivity analysis of agent-based models. *Journal of Artificial Societies and Social Simulation*, 23(1): 6. DOI: <https://doi.org/10.18564/jasss.4201>.

Tellman, B., **Magliocca, N.R.**, Turner, B.L., Verburg, P.H. (2020) Understanding the role of illicit transactions in land-change dynamics. *Nature Sustainability*, 3: 175-181. DOI: <https://doi.org/10.1038/s41893-019-0457-1>.

Magliocca, N.R., Khuc, Q.V., de Bremond, A., Ellicott, E.A. (2020). Direct and indirect land-use change caused by large-scale land acquisitions in Cambodia. *Environmental Research Letters*. <https://doi.org/10.1088/1748-9326/ab6397>.

Wrathall, D, Mueller, V., Clark, P.U., Oppenheimer, M., Hauer, M., Kulp, S., Gilmore, E., Adams, H., Bell, A., Kopp, R., Abel, K., Call, M., Chen, J., deSherbinin, A., Fussell, E., Hay, C., Jones, B., **Magliocca, N.R.**, Marino, E., Slangen, A., Warner, K. (2019). Meeting the challenge of future migration from global sea-level change. *Nature Climate Change*, 9: 898–901. DOI: <https://doi.org/10.1038/s41558-019-0640-4>

Verburg, P.H., Alexander, P., Evans, T., **Magliocca, N.R.**, Malek, Z., Rounsevell, M.D.A., van Vliet, J. (2019). Beyond land cover change: Towards a new generation of Land System Models. *Current Opinion in Environmental Sustainability*, 38: 77-85. DOI: <https://doi.org/10.1016/j.cosust.2019.05.002>.

Lopez, B. E., **Magliocca, N. R.**, & Crooks, A. T. (2019). Challenges and Opportunities of Social Media Data for Socio-Environmental Systems Research. *Land*, 8(7), 107. DOI: <https://doi.org/10.3390/land8070107>.

Magliocca, N.R., McSweeney, K. Sesnie, S.E., Tellman, E., Devine, J.A., Nielsen, E.A., Pearson, Z. Wrathall, D.J., Dávila, A. (2019). Modeling cocaine traffickers and counterdrug interdiction forces as a complex adaptive system. *Proceedings of the National Academy of Sciences USA*, 116 (16): 7784-7792. DOI: <https://doi.org/10.1073/pnas.1812459116>

Magliocca, N.R., Khuc, Q.V., de Bremond, A., Ellicott, E. (2019). Archetypical pathways of direct and indirect land-use change caused by Cambodia's large-scale land acquisitions. *Ecology & Society*, 24(2): 25. [online] URL: <https://www.ecologyandsociety.org/vol24/iss2/art25/>.

- Eisenack, K., Villamayor-Tomas, S., Epstein, G., Kimmich, C., **Magliocca, N.R.**, Manuel-Navarrete, D., Oberlack, C., Roggero, M., Sietz, D. (2019). Design and quality criteria for archetype analysis. *Ecology & Society*, 24(3): 6. <https://doi.org/10.5751/ES-10855-240306>
- Sietz, D., Frey, U., Roggero, M., Gong, Y., **Magliocca, N.R.**, Tan, R., Janssen, P., Vaclavik, T. (2019). Archetype analysis in sustainability research: methodological challenges, potentials and analytical frontiers. *Ecology & Society*, 24(3): 6. <https://doi.org/10.5751/ES-11103-240334>.
- Ahmadalipour, A., Moradkhani, H., Castelletti, A., **Magliocca, N.R.** (2019). Future drought risk in Africa: Integrating vulnerability, climate change, and population growth. *Science of the Total Environment*, 662: 672-686. doi: <https://doi.org/10.1016/j.scitotenv.2019.01.278>.
- Magliocca, N.R.** and Walls, M. (2018). The role of subjective risk perceptions in shaping coastal development dynamics. *Computers, Environment, and Urban Systems*. DOI: <https://doi.org/10.1016/j.compenvurbsys.2018.03.009>.
- Magliocca, N.R.**, Ellis, E.C., Allington, G., de Bremond, A., Dell'Angelo, J., Mertz, O., Messerli, P., Meyfroidt, P., Seppelt, R., and Verburg, P. (2018). Closing global knowledge gaps: Producing generalized knowledge from case studies of social-ecological systems. *Global Environmental Change*, 50: 1-14. DOI: <https://doi.org/10.1016/j.gloenvcha.2018.03.003>.
- Walls, M., **Magliocca, N.R.**, and McConnell, V. (2018). Modeling coastal land and housing markets: Understanding the competing influences of amenities and storm risks. *Ocean and Coastal Management*, 157: 95-110. DOI: <https://doi.org/10.1016/j.ocecoaman.2018.01.021>.
- Magliocca, N.R.**, McConnell, V., and Walls, M. (2018). Integrating global sensitivity approaches to deconstruct spatial and temporal sensitivities of complex spatial agent-based models. *Journal of Artificial Societies and Social Simulation*, 21(1). DOI: 10.18564/jasss.3625.
- Ellis, E.C., **Magliocca, N.R.**, Stevens, C.J., and Fuller, D.Q. (2018). Evolving the Anthropocene: Linking multi-level selection with long-term social-ecological change. *Sustainability Science*, 13(1): 119-128. DOI: 10.1007/s11625-017-0513-6
- Seekell, D., Carr, J., Dell'Angelo, J., D'Odorico, P., Fader, M., Gephart, J., Kummu, M., **Magliocca, N.R.**, Porkka, M., Puma, M. and Ratajczak, Z., (2017). Resilience in the global food system. *Environmental Research Letters*, 12: 025010. DOI: <https://doi.org/10.1088/1748-9326/aa5730>.
- Magliocca, N.R.** and Ellis, E.C. (2016). Evolving Human Landscapes: A Virtual Laboratory Approach. *Journal of Land Use Science*, 11(6), 642-671. DOI: <http://dx.doi.org/10.1080/1747423X.2016.1241314>.
- Sun, Z., Lorscheid, I., Millington, J.D., Lauf, S., **Magliocca, N.R.**, Groeneveld, J., Balbi, S., Nolzen, H., Müller, B. Schulze, J., Buchmann, C.M. (2016). Simple or

- complicated agent-based models? A complicated issue. *Environmental Modelling & Software*, 86, 56-67. DOI: <http://dx.doi.org/10.1016/j.envsoft.2016.09.006>.
- Marchand, P., Carr, J., Dell'Angelo, J., Fader, M., Gephart, J., Kummu, M., **Magliocca, N.R.**, Porkka, M., Puma, M., Ratajczak, Z., Rulli, M.C., Seekell, D., Suweis, S., Tavoni, A., D'Odorico, P. (2016). Reserves and trade jointly determine exposure to food supply shocks. *Environmental Research Letters*, 11(9), 095009. DOI: <https://doi.org/10.1088/1748-9326/11/9/095009>.
- Fader, M., Rulli, M.C., Carr, J., Dell'Angelo, J., D'Odorico, P., Gephart, J., Kummu, M., **Magliocca, N.R.**, Porkka, M., Prell, C., Puma, M.J., Ratajczak, Z., Seekell, D.A., Suweis, S., Tavoni, A. (2016). Past and present biophysical redundancy of countries as a buffer to changes in food supply. *Environmental Research Letters*, 11(5), 055008. DOI:10.1088/1748-9326/11/5/055008
- Margulies, J., **Magliocca, N.R.**, Schmill, M.D., and Ellis, E.C. (2016). Ambiguous geographies: Connecting case study knowledge with global change science. *Annals of the Association of American Geographers*, 106(3): 572-596. <http://dx.doi.org/10.1080/24694452.2016.1142857>
- van Vliet, J., Verburg, P.H., **Magliocca, N.R.**, Ellis, E.C., Buchner, B., Cook, E., Benayas J.R., Heinimann, A., Keys, E., Lee, T.M., Liu, J., Mertz, O., Meyfoidt, P., Moritz, M., Poeplau, C., Robinson, B., Seppelt, R., and Seto, K. (2015). Meta-studies in land use science: current coverage and prospects. *AMBIO*. DOI: 10.1007/s13280-015-0699-8.
- Magliocca, N.R.** (2015). Model-based synthesis of locally contingent responses to global market signals. *Land*, 4(3), 807-841. DOI:10.3390/land4030807.
- Magliocca, N.R.**, van Vliet, J., Brown, C., Evans, T.P., Houet, T., Messerli, P., Messina, J.P., Nicholas, K.A., Ornetsmüller, C., Sagebiel, J., Schwiezer, V., Verburg, P.H., Yu, Q. (2015). From meta-studies to modeling: Using synthesis knowledge to build process-based land change models. *Environmental Modelling & Software*, 72: 10-20. DOI: 10.1016/j.envsoft.2015.06.009
- Magliocca, N.R.**, Rudel, T.K., Verburg, P.H., McConnell, W.J., Mertz, O., Gerstner, K., Heinimann, A., and Ellis, E.C. (2015). Synthesis in Land Change Science: Importance, Challenges and Opportunities. *Regional Environmental Change*, 15: 211-226. DOI: 10.1007/s10113-014-0626-8.
- Magliocca, N.R.**, McConnell, V., and Walls, M. (2015). Exploring sprawl: Results from an economic agent-based model of land and housing markets. *Ecological Economics*, 113: 114-125. DOI: 10.1016/j.ecolecon.2015.02.020
- Magliocca, N. R.**, Brown, D. G., McConnell, V. D., Nassauer, J. I., & Westbrook, S. E. (2014). Effects of alternative developer decision-making models on the production of ecological subdivision designs: experimental results from an agent-based model. *Environment and Planning B: Planning and Design*, 41(5), 907-927. DOI:10.1068/b130118p

- Magliocca, N.R.**, Shelley, M., Smorul, M. (2014). Agent-Based Virtual Laboratories for a Novel Experimental Approach to Socio-Environmental Synthesis. In: Ames, D.P., Quinn, N.W.T., Rizzoli, A.E. (Eds.), *Proceedings of the 7th International Congress on Environmental Modelling and Software*, June 15-19, San Diego, California, USA. ISBN: 978-88-9035-744-2
- Schmill, M.D, Gordon, L.M., **Magliocca, N.R.**, Ellis, E.C., Oates, T. (2014). GLOBE: Analytics for assessing global representativeness. *2014 Fifth International Conference on Computing for Geospatial Research and Application (COM.Geo)*, August 4-6, 2014, Washington, D.C. DOI: 10.1109/COM.Geo.2014.21
- Magliocca, N.R.**, Ellis, E.C., and Brown, D.G. (2014). Cross-site comparison of land-use decision-making and its consequences across land systems with a generalized agent-based model. *PLoS ONE* 9(1): e86179. doi:10.1371/journal.pone.0086179.
- Magliocca, N.R.**, Ellis, E.C., and Brown, D.G. (2013). Exploring agricultural livelihood transitions with an agent-based virtual laboratory: Global forces to local decision-making. *PLoS ONE* 8(9): e73241. DOI:10.1371/journal.pone.0073241
- Rounsevell, M.D.A., Arneth, A., Alexander, P., Brown, D.G., de Noblet-Ducoudre, N., Ellis, E.C., Finnigan, J., Galvin, K., Grigg, N., Harman, I., Lennox, J., **Magliocca, N.R.**, Parker, D.C., O'Neil, B.C., Verburg, P.H., and Young, O. (2013). Toward decision-based global land use model for improved understanding of the Earth System. *Earth Systems Dynamics Discussions*, 4(2): 875-925.
- Young, A.L., Lutters, W.G., **Magliocca, N.R.**, Ellis, E.C. (2013). Designing a system for land change science meta-study. *CHI'13 Extended Abstracts on Human Factors in Computing Systems*, ACM: 1473-1478.
- Magliocca, N.R.** and Ellis, E.C. (2013). Using pattern-oriented modeling to cope with uncertainty in multi-scale agent-based models of land change. *Transactions in GIS*. doi: 10.1111/tgis.12012.
- Magliocca, N.R.**, McConnell, V., Walls, M., and Safirova, E. (2012). Zoning on the Urban Fringe: Results from a New Approach to Modeling Land and Housing Markets. *Regional Science and Urban Economics*, 42: 198-210.
- Magliocca, N.R.** (2011) "Exploring Coupled Housing and Land Market Interactions Through an Economic Agent-Based Model (CHALMS)". In *Spatial Agent-based Models: Principles, Concepts and Applications*, Heppenstall, A.; Crooks, A.; Batty, M. (Eds.). Berlin: Springer-Verlag.
- Magliocca, N.R.**, Safirova, E., McConnell, V., and Walls, M. (2011). An economic agent-based model of coupled housing and land markets (CHALMS). *Computers, Environment, and Urban Systems*, 35(3): 183-191.

Magliocca, N.R., McNamara, D., and Murray, A.B. (2011). Long-term, large-scale morphodynamic effects of artificial dune construction along a barrier island coastline. *Journal of Coastal Research*, 27(5): 918-930.

Magliocca, N.R., Safirova, E., McConnell, V., and Walls, M. (2010). An agent-based model of coupled housing and land markets. In *Proceedings of the International Environmental Modelling and Software Society (iEMSs) 2010 International Congress on Environmental Modelling and Software, Modelling for Environment's Sake, Fifth Biennial Meeting, Ottawa, Canada*, Swayne, D., Yang, W., Voinov, A., Rizzoli, A. and Filatova, T. (eds). Available at <http://www.iemss.org/iemss2010/proceedings.html>.

Magliocca, N.R. (2008). Induced coupling: An approach to modeling and managing complex human-landscape interactions. *Systems Research and Behavioral Science*, 25(5): 655-651.

SERVICE

2023-Present	Member of the Scientific Steering Committee of the Global Land Programme.
2020-2022	Editor , section of “Land Systems and Global Change” in the journal Land.
2018-Present	Review Editor , Frontier in Sustainable Food Systems
2018-2019	Member , Global Land Programme Open Science Meeting 2019 Science Committee
2018-2019	Program Committee , ACM SIGSPATIAL, International Workshop on Geospatial Simulation.
2017	SESYNC-Coppin State University Mentoring and Training Program , Coppin State University (HBCU), Baltimore, MD. I helped launch a mentoring and training program with a HBCU campus in Baltimore, Maryland (Coppin State University), and actively mentored both minority students and faculty with a focus on socio-environmental systems and quantitative skills.
2011-2012	Development of a Graduate-Undergraduate Student Mentoring Program , UMBC, Baltimore, MD I was the lead student representative in developing a mentoring program that pairs graduate students seeking teaching experience with undergraduates seeking research experience and/or mentoring to develop specific research skills. When implemented, the program will be the first of its kind for UMBC.
2004-2008	Chair of the Special Integration Group for Students , International Society for the Systems Sciences Participated in conferences for the International Society for the Systems Sciences in Crete, Greece, Monterey, CA, Cancun, Mexico, and Tokyo, Japan. Facilitated guided group discussion and presentation of scholarly papers. Contributed to the organization of student activities within the South American systems society ALAS. Generated feedback on the operation of the society in the form of recommendations for student and public outreach, member support, and future conference activities.

ORGANIZED CONFERENCES/WORKSHOPS

2019

Convergent Research Priorities, Data Sources, and Methodologies for Understanding the Socio-Environmental Causes and Consequences of Illicit Supply Networks

Lead organizer of a collaborative research workshop that brought together 16 domestic and international researchers to the University of Alabama. It was the first of its kind to comparatively analyze multiple illicit supply networks, and it built a unique, international, and multidisciplinary research consortium. The workshop was co-sponsored by Alabama Water Institute, Alabama Transportation Institute, and the College of Arts & Sciences.

REPORTS AND WORKING PAPERS

Davalos, L. and **Magliocca, N.R.** (2022). Coca's contributions to deforestation in the Western Amazon. *UNODC World Drug Report 2022: Booklet 5 Drug and the Environment*. Available at: https://www.unodc.org/unodc/en/data-and-analysis/wdr-2022_booklet-5.html.

Rounsevell, M.D.A. Arneth, A., Brown, D.G., de Noblet-Ducoudré, N., Ellis, E., Finnigan, J., Galvin, K., Grigg, N., Harman, I., Lennox, J., **Magliocca, N.**, Parker, D., O'Neil, B., Verburg, P.H. and Young, O. (2012). Incorporating human behaviour and decision making processes in land use and climate system models. GLP Report No. 7. GLP-IPO, São José dos Campos.

Magliocca, N.R., Safirova, E., McConnell, V., and Walls, M. (2010a). "An Economic Agent-Based Model of Coupled Housing and Land Markets," Resources for the Future Discussion Paper, Washington, D.C (September).

Magliocca, N.R., Safirova, E., McConnell, V., and Walls, M. (2010b). "An Urban Growth Model with Heterogeneous Agents and Land and Housing Markets," Resources for the Future Discussion Paper, Washington, D.C (October).

Magliocca, N.R. (2005). "Case Study: Systemic Evaluation of Compensatory Mitigation Sites Within the Carlsbad Hydrological Unit". Carlsbad Watershed Network and UCSD Natural Reserve System. Available at: <http://www.carlsbadwatershednetwork.org/projects.php>

PRESENTATIONS

"Diverse farmer behaviors lead to complex food-water interactions." **Magliocca, N. R.**, *Pathak, R., Moradkhani, H., Alabama Water Institute Symposium, Tuscaloosa, AL, United States. (April 7, 2023).

"Causally attributing land use change from narco-trafficking activities in and around Central America's protected areas," Magliocca, N.R., *Sink, C.D., Devine, J., Fagan, M., McSweeney, K., Mukherjee, R., Nielsen, E., Sennie, S., Tellman-Sullivan, B.. Annual Meeting of the American Association of Geographers, Denver, CO. (March 2023).

"Central American Coca: Eight Questions," McSweeney, K., Murrillo Sandoval, P. J., Sesnie, S., Ordonez, M., Nielsen, E., Devine, J., Tellman, B., **Magliocca, N. R.**, Conference of Latin American Geography 2023, Conference of Latin American Geography, Tucson, AZ. (January 2023).

"Illicit Drivers, climate change, and accelerated forest loss within aa Central American World Heritage Site," *Arellano-Thompson, E., Sesnie, S., Nielsen, E., **Magliocca, N. R.**, McSweeney, K., Conference of Latin American Geography 2023, Conference of Latin American Geography, Tucson, AZ. (January 2023).

"Integrating Disparate Qualitative Data Sources Using a Data Pedigree System," *Sink, C., Magliocca, N. R., Conference of Latin American Geography 2023, Conference of Latin American Geography, Tucson, AZ. (January 2023).

"Towards more spatially disaggregated cocaine supply chain modeling," Magliocca, N. R., *Aksu, R., McSweeney, K., *Tanveer, H., Curtin, K. M., Keskin, B., Conference of Latin American Geography 2023, Conference of Latin American Geography, Tucson, AZ. (January 2023).

"Diverse farmer behaviors lead to complex food-water-energy interactions." **Magliocca, N. R.**, *Pathak, R., *Price, A., *Tanveer, H., American Geophysical Union Fall Meeting 2022, American Geophysical Union, Chicago, IL. (December 2022).

"Making the Hidden Visible: Accelerated Land-Use Change Caused by Narcotrafficking In and Around Central America's Protected Areas." **Magliocca, N. R.**, NASA Land Cover and Land use Change (LCLUC) Science Team Meeting, NASA Land Cover and Land use Change (LCLUC) Program, Bethesda, MD, United States. (October 18, 2022).

"Making the Hidden Visible: Accelerated Land-Use Change Caused by Narcotrafficking In and Around Central America's Protected Areas." **Magliocca, N. R.**, NASA LCLUC Agriculture and Forestry Hotspots Webinar Series, NASA LCLUC program. (October 14, 2022).

"Making the Hidden Visible: Accelerated Land-Use Change Caused by Narcotrafficking In and Around Central American's Protected Areas." **Magliocca, N. R.**, Department of Geography Colloquium Series, University of Alabama, AL, United States. (October 13, 2022).

"Diverse farmer behaviors lead to complex food-water-energy interactions." **Magliocca, N. R.**, *Pathak, R., Moradkhani, H., Alabama Water Resources Conference, Alabama Water Resources Association, Perdido Beach Resort, Orange Beach, AL, United States. (September 9, 2022).

"Coupling agent-based simulation and spatial optimization models to understand spatially complex and co-evolutionary behavior of cocaine trafficking networks and counterdrug interdiction." **Magliocca, N. R.**, *Price, A., *Mitchell, P., Curtin,

K., Hudnall, M., McSweeney, K., Narco-Landscapes Research Workshop, NASA, Columbus, OH, United States. (July 26,2022).

"Cocaine Supply Chain Modeling." *Aksu, R., **Magliocca, N. R.**, Keskin, B., Production and Operations Management Society Annual Meeting, Production and Operations Management Society. (April 25, 2022).

"Towards Mapping Clandestine Infrastructure in Central America's protected areas affected by narco-trafficking using Multi-sensor Data Fusion and Deep Learning." Rohit Mukherjee, Beth Tellman, Matthew E Fagan, **Nicholas Magliocca** and Steven Sesnie. American Geophysical Union Fall Meeting, New Orleans, December 16, 2021.

"Roads, Deforestation, and the Evolution of a Narco-Trafficking Economy in Eastern Honduras." Erik Nielsen, **Nicholas R. Magliocca**, Kendra McSweeney, Matthew Fagan, Steven Sesnie, Beth Tellman-Sullivan, Jennifer Devine. American Geophysical Union Fall Meeting, New Orleans, December 16, 2021.

"A Globally Representative Framework for Irrigation Adoption Factors and Geography with an Application to Alabama, United States." **Nicholas Magliocca**, Ruchie Pathak*, Ashleigh Price*, Greg Guthrie, Mukesh Kumar, Hamed Moftakhari and Hamid Moradkhani. American Geophysical Union Fall Meeting, New Orleans, December 16, 2021.

"Exploring the Potential Benefits of Agricultural Water Markets in Deep South, USA." Xiaoliang Han*, Proloy Deb, **Nicholas Magliocca**, Ruchie Pathak*, Hamed Moftakhari and Hamid Moradkhani. American Geophysical Union Fall Meeting, New Orleans, December 16, 2021.

"Narco-Trafficking Caused Land-Use Change". GIZ and UNODC Expert Meeting on Drugs and the Environment. Vienna, Austria (virtual). September 21, 2021.

"Transitioning Rain-fed to Irrigated Agriculture in Alabama: Challenges and Prospects". Alabama Agribusiness Council Annual Meeting. Orange Beach, AL, June 21st, 2021.

"Comparing Illicit Supply Networks: Cocaine, Wildlife, and Sand". Side Event at the 64th Commission on Narcotic Drugs: Illicit Economies and the Environment. Organized by the Global Initiative Against Transnational Organized Crime. Vienna, Austria, April 15th, 2021.

"Two of a kind? Large-scale land acquisitions and commodity frontier expansion in Argentina's Dry Chaco". Virtual paper presented at the Annual Meeting of the American Association of Geographers, Seattle, WA, April 7-10, 2021.

"Spatio-temporal patterns of irrigation adoption and water use in Alabama." Presented at the American Geophysical Union Fall Meeting 2020 (virtual). December 9, 2020.

- “Commodity frontier expansion dynamics of large-scale land acquisitions in Salta Province, Argentina.” Presented at the Annual Meeting of the American Association of Geographers (cancelled), Denver, CO, USA, April 6, 2020.
- “Large-scale land acquisitions catalyze commodity frontier expansion in Argentina’s Dry Chaco.” Presented at the American Geophysical Union Fall Meeting 2019, , San Francisco, CA USA, December 10, 2019.
- “Modeling cocaine trafficking and counterdrug interaction as a complex adaptive system.” Presented at the Global Land Programme Open Science Meeting, Bern, Switzerland, April 24-26, 2019.
- “Archetypical pathways of direct and indirect land-use change caused by Economic Land Concessions in Cambodia.” Presented at the Global Land Programme Open Science Meeting, Bern, Switzerland, April 24-26, 2019.
- “Archetypical pathways of direct and indirect land-use change caused by Economic Land Concessions in Cambodia.” Invited oral presentation at the NASA Land-Cover/Land-Use Change Science Team Meeting, Washington, D.C., April 9-11, 2019.
- “Social contagion of risk perception in human-wildlife interactions.” Presented at the American Association of Geographers Annual Meeting, Washington, D.C., April 3-7, 2019.
- “Archetypical pathways of direct and indirect land-use change caused by Economic Land Concessions in Cambodia.” Presented at the American Association of Geographers Annual Meeting, Washington, D.C., April 3-7, 2019.
- “Anticipatory Interdiction in Narco-Trafficking Networks”. Invited research talk at GMU-NSF Disrupting Operations in Illicit Supply Networks conference, Washington, D.C., March 25, 2019.
- “Transnational and Illicit Economies as Drivers of Land-Use Change”. Invited seminar, Human-Environment Systems Research Group, College of Innovation and Design, Boise State University, March 1, 2019, Boise Idaho, USA.
- “Archetypical pathways of direct and indirect land-use change caused by Economic Land Concessions in Cambodia.” Presented at the American Geophysical Union Fall Meeting 2018, December 11, 2018, Washington, D.C., USA.
- “Exploring socio-economic tipping points in dynamic adaptive policy pathways for repeated coastal hazards.” Presented at the Biannual Congress of the International Environmental Modelling and Software Society, June 26, 2018, Fort Collins, CO, USA.
- “Exploring socio-economic tipping points in dynamic adaptive policy pathways for repeated coastal hazards.” Presented at the Waterloo Institute for Complexity and Innovation Conference on Modelling Complex Urban Environments, June 22, 2018, Waterloo, ON, Canada.

- “NarcoLogic: Spatial structure and adaptation of Central American cocaine trafficking networks”. Presented at the Conference for Latin Americanist Geographers (CLAG), May 21, 2018, San Juan, Costa Rica.
- “Detecting and linking indirect land-use change associated with large-scale land acquisitions in Southeast Asia”. Presented at AAG Annual Meeting 2018, April 12, 2018, New Orleans, LA, USA.
- “The Global Land Rush: A Socio-Environmental Synthesis”. Presented (co-author) at the NASA LCLUC Science Team Meeting, Gaithersburg, MD, April 3-5, 2018.
- “Model-Driven Synthesis for Investigating Adaptive Land-Use Change from Local to Global Scales”. Invited seminar, UA-National Water Center Group Meeting, University of Alabama, November 17, 2017, Tuscaloosa, AL, USA.
- “A ‘Building-Block Processes’ Approach to Investigate the Role of Subjective Risk Perceptions in Coastal Development”. Presented at the National Science Foundation Agent-Based Modeling Symposium 2017, April 20-22, 2017, San Diego, CA, USA.
- “NarcoLogic: An agent-based model for linking illicit commodity chains to land-use change in Central America”. Presented at the US International Association of Landscape Ecology conference, April 12, 2017, Baltimore, MD, USA.
- “Model-Driven Synthesis for Investigating Adaptive Land-Use Change from Local to Global Scales”. Invited seminar, Department of Geography, University of Alabama, November 10, 2016, Tuscaloosa, AL, USA.
- “The Influence of Subjective Risk Perceptions and Competing Behavioral Models on Coastal Housing and Land Markets”. Presented at the Biannual Congress of the International Environmental Modelling and Software Society, July 11, 2016, Toulouse, France.
- “The Role of Subjective Risk Perceptions in Shaping Coastal Dynamics”. Presented at Coastal and Natural Resources Economics and Policy, March 21, 2016, New Orleans, LA, USA.
- “Model-based synthesis of locally contingent responses to global market forces”. Invited presentation at Fall Meeting of the American Geophysical Union (AGU), December 14, 2015, San Francisco, CA, USA.
- “Investigating spatial and temporal sensitivities in coastal development dynamics in response to coastal amenities, risk perceptions, and a changing storm climate”. Presented at AAG Annual Meeting 2015, April 20, Chicago, IL, USA.
- “Agent-based modeling of land use change in developed and developing world contexts”. Invited talk in SESYNC Seminar Series, April 7, 2015, Annapolis, MD, USA.

- “Data-Driven Synthesis for Investigating Food Systems Resilience to Climate Change”. Presented at AGU Fall Meeting 2014, December 19, San Francisco, CA, USA.
- “Investigating the effects of repeated storms and 'near misses' on adaptation responses to coastal hazards”. Presented at AAG Annual Meeting 2014, April 8, 2014, Tampa, FL, USA.
- “Globally representative meta-analyses of land change”. Global Land Project Open Science Meeting, March 18, 2014, Berlin, Germany.
- "Comparing decision-making across land-livelihood systems". Presented at AAG Annual Meeting 2013, April 11, 2013, Los Angeles, CA, USA.
- "Using an agent-based virtual laboratory to explore smallholder land-use decisions and implications for 'induced intensification' theory". Presented at AAG Annual Meeting 2012, February 25, 2012, New York City, New York, USA.
- “The Use of Agent-Based Models (ABMs) as Virtual Laboratories for Exploring Human-Environmental Interactions in Land-Use Systems”. Center for Urban and Environmental Research and Education (CUERE), February 17, 2012, University of Maryland, Baltimore County, Baltimore, MD, USA.
- “An Agent-Based Virtual Laboratory for Exploring Human-Environmental Interactions Globally”. Presented at Resilience 2011, March 15, 2011, Arizona State University, Tempe AZ, USA.
- “Emergent Landscapes: An Agent-Based Model of Urban Growth” Presented at the 2011 AAAS Annual Meeting, February 20, 2011, Washington, D.C., USA.
- “Explaining Sprawl with an Agent-Based Model of Ex-Urban Land and Housing Markets”. Presented at 2010 North American Regional Science Council Annual Meeting, Denver, CO, November 11-14, 2010.
- “Designing Land Change Case Studies for Generalization”. Presented at the GLP Open Science Meeting 2010- Land Systems, Global Change, and Sustainability, October 17, 2010, Arizona State University, Tempe, AZ, USA.
- “Zoning on the Urban Fringe: Results from an Economic Agent-Based Model”. Presented at the GLP Open Science Meeting 2010- Land Systems, Global Change, and Sustainability, October 17, 2010, Arizona State University, Tempe, AZ, USA.
- “Towards a General Theory of Land-Use Systems”. Presented at the 54th Annual Meeting of the International Society for the Systems Sciences, July 21, 2010, Waterloo, ON, Canada.
- “An Agent-Based Model of Coupled Housing and Land Markets”. Presented at the 5th Biennial International Congress on Environmental Modeling and Software,

International Environmental Modeling and Software Society, July 7, 2010, Ottawa, ON, Canada.

“Introduction to Systems Thinking and Complexity”. Presented as part of the IGERT Student-led Workshop Series, April 30, 2010, University of Maryland, Baltimore County.

“Can Markets for Development Rights Improve Land Use and Environmental Outcomes?”. Presented at the Workshop on Market Mechanisms and Incentives: Applications to Environmental Policy, U.S. EPA, NCEE and NCER, April 29, 2009, Resources for the Future, Washington, DC.

“Induced Coupling: An Approach to Modeling and Managing Complex Human-Landscape Interactions”. Presented at the 51st Annual Meeting of the International Society for the Systems Sciences, July 14, 2008, Tokyo, Japan.
“Managing Overwhelming Complexity in Human-landscape Interactions”. Presented at the 50th Annual Conference of the International Society for the Systems Sciences, July 9, 2006. Sonoma State University, Sonoma, CA.

DIRECTED STUDENT RESEARCH

Ruchie Pathak (2021-Present). "TBD." Dissertation Committee Chair.

Nishani Moragoda (2021-Present). "Anthropogenic and Climatic Impacts on Global River Sediment Dynamics in the 21st Century." Dissertation Committee Member.

Penelope Mitchell (2021- Present). "Geographic Framework for the Optimal Placement of Interventions for Opioid Incident Deployment in Underserved Areas (OPIOID-UA)." Dissertation Committee Member.

Daniel Turner (2019-Present). “TBD”. Dissertation Committee Member.

Jordan Cissell (2018-2020). "MANGROVE FOREST CHANGES IN NORTH AND CENTRAL AMERICA: REMOTELY SENSED PERSPECTIVES ON LOCAL-SCALE DRIVERS AND IMPACTS." Dissertation Committee Member.

Xioaliang Han (2021-Present). Doctoral Advisory Committee Member.

Anna Holland-Levine (2018 - 2020). "Mapping coexistence and conflict between sheep herders and carnivores in Blaine county, Idaho." Master’s Thesis Chair.

Kory Pilet (2018-2019). "Land use impacts on North River discharge." Master’s Thesis Chair.

Anuska Narayanan (2021- Present). "The Effects of Deforestation on Suspended Sediment within the Amazon River Basin." Master's Thesis Committee Member.

Aubrey Loria (2018 - May 2019). "Florida Bay Vegetation Response to Hurricane Irma and Investigation of Trends in Long-term Storm Impacts." Master's Thesis Committee Member.