**CURRICULUM VITAE**

**CHANDANA MITRA, Ph.D.**

**ASSOCIATE PROFESSOR**

**DEPARTMENT OF GEOSCIENCES,**

**AUBURN UNIVERSITY**

**Professional Preparation**

**Ph.D,** Geography, 2011, University of Georgia, Georgia, USA

**M.A.,** Geography, 1994, University of Calcutta, India

**B.A.,** Geography, 1992, University of Calcutta, India

**Appointment**

8/2017-present - Associate Professor, Department of Geosciences, Auburn U.

8/2011-7/2017 - Assistant Professor, Department of Geosciences, Auburn U.

8/2005-5/2011 - Teaching Assistant & Research Assistant, University of Georgia

**List of Honors and Awards:**

**Received ‘Spirit of Sustainability’ Award,** Office of Sustainability, Auburn University, Spring 2021. <http://sustain.auburn.edu/people/ssa/chandana-mitra/>

**Invited** to be a member of **Union of Concerned Scientists,** December 2020<https://www.ucsusa.org/>

**Featured in Bloomberg Law** newspaper<https://news.bloomberglaw.com/environment-and-energy/world-leaders-call-for-go-slow-approach-to-mining-the-oceans> June 2020

**Featured on SciLine, an American Association of Advancement of Science (AAAS)** as a climate expert in September 2020<https://www.sciline.org/election/expert-quotes/climate-plan>

**Elected chair of ‘Bureau of Urban Environment’,** American Meteorological Society (AMS) – **2020 to 2023 -** (A member since 2015)

**Invited** to serve on the **scientific committee** of the next International Conference on Urban Climate (ICUC-11) in Sydney, Australia, 2021 (2019)

**Nominated** as a World Meteorological Organization (WMO) Technical Commission Representative in the **Urban Expert Team (UET), WMO** Secretariat Urban Focal Points, Demo City Summary Contributor and the Writing Team member. UET Geneva WMO workshop, 6-9th March 2019

**Featured on public media:**

<https://www.alreporter.com/2020/04/22/earth-day-mother-earth-as-art-online-exhibit-at-auburn-blends-art-and-science/>

<https://www.youtube.com/watch?v=UPtBDZF0DRM&feature=youtu.be>

<https://www.alreporter.com/2019/08/01/heat-stagnation-impact-of-climate-change-in-alabama/>

<https://www.alreporter.com/2019/08/08/july-hottest-global-month-ever-recorded/>

<https://www.theguardian.com/cities/2019/aug/20/death-blackouts-melting-asphalt-ways-the-climate-crisis-will-change-how-we-live>

<https://omny.fm/shows/newstalk1010/august-25-2019-not-mild-in-the-city>​

**Featured on** [**www.WLTZ.com**](http://www.WLTZ.com) **-** Auburn Scientists Study Hurricanes and their Impacts on 09/22/2017

<http://www.wltz.com/2017/09/22/auburn-scientists-study-hurricanes-impacts/pic/90158/>

**Featured on Auburn University front page news ‘Auburn researcher compares heat produced by large and small urban areas’** on 07/25/2016. <http://ocm.auburn.edu/newsroom/news_articles/2016/07/auburn-researchers-compare-heat-produced-by-large-and-small-urban-areas.htm>

**Featured in an online news website ‘India Climate Dialogue’** on 06/29/2016. <http://indiaclimatedialogue.net/2016/06/29/kolkatas-heat-islands-show-increased-intensity/>

**Elected as ‘Co-chair of South Asia’,** Asian Geography Specialty Group, American Association of Geographers (AAG) for 2015-2017 terms (Declared December 2014, effective through 2017).

\***Xia Li** – One of six award winners for the **Auburn University Graduate School’s 2015 Master’s Thesis Awards** (2015).

**Invited and funded to attend the WUDAPT workshop at Dublin, Ireland** as a team member and researcher on an urban global project (July 2014)

**Invited to join ‘Climate Voices’ – Science Speakers Network** a new climate communications initiative of University for Atmospheric Research and the united Nations Foundation. (May 2014) <http://climatevoices.org/speakers/?region=south>

**Awarded the 2014 Distinguished Service Award** as the chair of Regional Development and Planning Specialty Group, AAG (Apr 2014)

**Interviewed on public media on climate change –** e-newspaper (al.com; <http://blog.al.com/wire/2014/04/global_warming_auburn_universi.html>) and radio (WVAS Radio News) (April 2014)

**Teaching:**

**Graduate students (alumni)**

**Major Advisor:**

- Alamin Molla, **Master of Science**, **(Advisor),** Geography, completed by spring 2020

- Shihab Nur, **Master of Science**, **(Advisor),** Geography, completed by spring 2020

- Megha Shrestha, **Master of Science (Advisor),** Geography, completed in spring 2019

- Austin Bush, **Master of Science (Advisor),** Geography, completed in spring 2018

- Seth Greer, **Master of Science (Advisor),** Geography, completed in fall 2017

- Tracy Bowen, **Master of Science, (Advisor),** Geography, completed in spring 2016.

- Xia Li, **Master of Science**, **(Advisor),** Geography, completed in spring 2015

- Andrew Hug, **Master of Science**, **(Advisor),** Geography, completed in fall 2014

- Mahjabin Rahman, **Master of Science**, **(Advisor),** Geography, completed in summer 2014

**Committee (Alumni):**

* Zachary Reichle, Committee Member, **Master of Science**, completed in summer 2021

- Ishita Akhter Eva, Committee Member, **Master of Science**, completed in summer 2021

- Sukanya Dasgupta, Committee Member, **Masters of Civil Engineering**, completed in fall 2020

- Summer Cliff, Committee Member, **Master of Science**, Geography, completed in spring 2020

- Al Emran, Committee Member, **Master of Science**, Geography, completed in spring 2019

- Jarred Ronald, Committee Member, **Master of Science**, Geography, completed in spring 2019

- Robin M King, Committee Member, **Master of Science**, Geography, completed in spring 2019

- Tyler Jones, Committee Member, **Philosophy of Doctorate**, **School of Forestry and Wildlife Sciences**, completed in fall 2018

- Sumaiya Siddique, Committee Member, **Master of Science**, Geography, completed in Fall 2017

- Zachary Johnston, Committee Member, **Master of Arts**, Sociology, completed in fall 2017

- Khalid Hossain, Committee Member, **Master of Science**, Geography, completed in spring 2017

- Andrew Campbell, Committee Member, **Master of Science**, Geography, completed in fall 2016

- Brian Norris, Committee Member, **Master of Science**, Geography, completed in spring 2016

- Jose Torres, Committee Member, **Master of Science**, Geography, completed in spring 2016

- Michael Moore, Committee Member, **Masters in Civil Engineering**, completed in fall 2015

- Carter Garrison, Committee Member, **Masters in Civil Engineering**, completed in fall 2015

- Jia Yang, Committee Member, **Philosophy of Doctorate**, **School of Forestry and Wildlife Sciences**, completed in Summer 2015.

- Samriddhi Shakya, Committee Member, **Master of Science**, Geography, completed in spring 2015.

- Ting Du, Committee Member, **Master of Science**, Geography, completed in spring 2015

- Alyson Cederholm, Committee Member, **Master of Science**, Geography, completed in summer 2014

- Jeff Caudill, Committee Member, **Master of Science**, Geography, completed in spring 2014.

- Holly Pak, Committee Member, **Master of Arts**, Geography, completed in spring 2014.

- Tyler Jones, Committee Member, **Master of Science**, Geography, completed in fall 2013.

- Andrew Turner, Committee Member, **Master of Science**, Geography, completed in spring 2013.

**Graduate students (currently)**

**Major Advisor:**

- Megha Shrestha, **ESS PhD**, **(Advisor),** Department of Geosciences, dissertation to be completed by spring 2023

- Kristin Younquist, **ESS PhD**, **(Advisor),** Department of Geosciences, dissertation to be completed by spring 2023

- Sukanya Dasgupta, **ESS PhD**, **(Advisor),** Department of Geosciences, dissertation to be completed by spring 2024

- Brandon Ryan, **M. Sc. (Advisor),** Department of Geosciences, thesis to be completed by spring 2022

- Subhasis Ghosh, ESS PhD, (Advidor), Department of Geosciences, dissertation to be completed by Spring 2025

- Syeda Nazifa Tasneem, **M. Sc. (Advisor),** Department of Geosciences, thesis to be completed by fall 2022

- Miranda Silano, **M. Sc. (Advisor),** Department of Geosciences, thesis to be completed by spring 2023

- Olivia Ainooson, **M. Sc. (Advisor),** Department of Geosciences, thesis to be completed by spring 2023

- Jane Nader, M. Sc. (Advisor), Department of Geosciences, thesis to be completed by fall 2021

**Committee (currently):**

- Stephanie Courtney, **ESS PhD**, **(Committee member),** Department of Geosciences, thesis to be completed by spring 2023

- Haven Cashwell, **M. Sc.,** **(Committee member),** Department of Geosciences, thesis to be completed by spring 2021

**Courses and curricula developed**

Global Systems I & II – Science core courses

Urban Climatology

Introduction to climatology

Urban geography and sustainability

Introduction to GIS

Panama Study Abroad – Climate Change and Environmental Management

**Teaching publications**

**Invited talk – South Highland Middle School, Bullock County, AL** – Heat, water and connection to climate variability – (Teacher – M. Anwar Walker). June 2021

Lee, M.-K., **Mitra, C.,** Thomas, A., Lucy, T., Hickman, E., Cox, J., Rodger, C., 2015, Bringing global climate change education to middle-school classrooms – an example from Alabama, Handbook for Climate Change Mitigation and Adaptation, 2nd edition. Springer, pp 1-17. (Cross-referenced in ‘research publications)

**Other teaching contributions**

**Invited talk at Osher Lifelong Learning Institute (OLLI) –** Impacts of Climate Change on Humans and the Economy, March 2019

**Invited talk at** **Auburn Unitarian Universalist Fellowship Church** – Climate Change and human impacts. June 2019

**Invited talk - Auburn High School** – Environment Science class – (Teacher - Ms. Amanda Savrda). Climate Change and the urban environment – Can we do anything about it? November 2018

**Invited Guest Lecture** for Osher Lifelong Learning Center (OLLI) to teach about climate change to elderly community (2017, 2018)

**Panama Study Abroad – Climate Change and environmental management (GEOG 5270/6270)** has been accepted as a minor elective substitute for **‘Minor in Sustainability Studies’ courses on a one to one basis**, Auburn University (October 2015)

**Poster Presentation - Mitra. C.** and L. Marzen‘Bringing Global Climate Change Education (GCCE) to Alabama Classrooms’ America View Fall Technical Meeting, Davis, CA (October 2014)

**Paper Presentation** - Lee. M.K., **Mitra. C**. and others. ‘*Introducing new climate change education modules to Alabama Middle School Classrooms’*. GSA Annual Meeting in Vancouver, British Columbia (19–22 October 2014)

**Poster Presentation - Mitra. C,** Lee. MK., Percival. E., ThomasA., LucyT., Elizabeth Hickman. E., Cox. J., Chaudhury. S. R., Rodger. C. ‘Bringing Global Climate Change Education (GCCE) to Alabama Middle and High School Classrooms’. American Meteorological Society Conference, Atlanta. (February 2014)

**Poster Presentation - C. Mitra,** Ming-Kuo Lee, Erin Percival, Amy Thomas, Tyaunnaka Lucy, Elizabeth Hickman, Jennifer Cox, Shiladitya Raj Chaudhury, Chris Rodger. Bringing Global Climate Change Education (GCCE) to Alabama Classrooms. Tri-Agency PI Meeting, NICE; Arlington VA. (October 7 – 9, 2013)

**Climatology (GEOG 5210/6210) has been accepted as a minor elective for ‘Watershed Sciences minor’**, Auburn University (March 2013)

**Climatology (GEOG 5210/6210) has been accepted as a minor elective for ‘Natural Resources Ecology minor’**, Auburn University (March 2013)

**Urban Geog and Sustainability (GEOG 5010/6010)** has been accepted as a minor elective for **‘Minor in Sustainability Studies’**, Auburn University (November 2012)

**Climatology (GEOG 5210/6210)** has been accepted as a minor elective for **‘Minor in Sustainability Studies’**, Auburn University (November 2012)

**Attended Faculty workshop ‘Sustainability across the Curriculum - Fall Line Project V’** organized by the Office of Sustainability, Auburn University (May 2012).

Completed **NFTS (New Faculty Teaching Scholars, 1 year program)** organized by Biggio Center, Auburn University (May 2012).

**Attended** a seminar on **‘Building your career portfolio’** (ADVANCE Auburn Center and the Women in Science & Engineering (WISE) Institute, in the Office of Diversity and Multicultural Affairs), Auburn University, Fall 2011.

**Statement of teaching philosophy:**

On the first day of class I tell my students that learning is a two way process. I share my knowledge with them and encourage them, and in turn, I expect them to also share and discuss with the class the knowledge they have or will acquire during the course. So, my teaching philosophy centers on maintaining an atmosphere based on mutual respect and co-operation, in which students can feel free to ask questions without the fear of recrimination.

In my eight years of teaching students at Auburn University and University of Georgia, from various disciplines and diverse cultural backgrounds, I have learned that successful teaching depends on engaging students actively in the learning process and delicately challenging them. I have taught both lecture and lab-based courses. I am comfortable teaching in a range of environments, from large lecture classes to small seminars.

My teaching philosophy is based on two tenets, one is to create a student-centric classroom, and the second is to be a facilitator for students in their process of learning. Classroom activities such as discussions, debates, and projects develop a sense of bonding among the students and the teacher. Even small gestures, like knowing and using each student’s first name, build such a connection.

As a facilitator, I like to provide them with all the means and amenities, which would help them to kindle and nurture their urge to learn more. This is consistent with the inquiry-based learning paradigm that is found within advanced learning environments. One cannot learn by just listening to PowerPoint presentations; synthesis and discussion are essential to the learning process. By intermixing short lectures with discussions, student-run forums, labs, and numerous other activities, a teaching environment is created that allows one freedom to express ideas while still being connected to the course content. For example, when teaching extreme weather phenomena or the ‘Intergovernmental Panel for Climate Change’ my students have multiple interactive poster/PPT presentation sessions. Or, when teaching GIS, students use the hand-held GPSs’ to collect primary data from within the campus. While teaching, I always leverage real-world processes and events as examples and to explain phenomenon, making it easier for the students to understand.

One thing which the students have always commented positively about my lectures is the recapitulating of salient points from the previous lecture at the beginning of the next class. I believe this connects each lecture to the next. Periodically I stop to ask them inquiry questions and ask them to identify the link. I post all my lectures on Canvas after class, so that the students do not invest too much time in writing what’s on the screen but take notes of the explanations and pay more attention.

In every course through mentoring and effective teaching I foster in my students an urge to do research, see its applicability in real life and easily communicate complex scientific concepts to all levels. Every section of the courses I teach has a project component. Undergraduates in pairs and graduates individually have to focus on one topic of their interest and research on it. It is very common amongst undergraduates after finishing their projects have expressed surprise and satisfaction to have acquired new knowledge.

In spring of 2016, I have been invited to lecture in a course proposed by Dr. Andrew Gillespie which will be a part of the ‘International certificate for AU students Office of International Programs’. This course is an introductory course that would look at human impact across resources and geographic locations around the world. I believe that this invitation is my recognition as a researcher and educator doing international and national research on human environment interactions. On similar lines I would continue creating new and involving courses for Auburn students and also share my research and knowledge though invited lectures in various classes.

**RESEARCH/CREATIVE WORK:**

**Books (include % Contribution)**

None

**Peer reviewed article-length publications (\* Students’ publication)**

González, J. E., P. Ramamurthy, R. Bornstein, F. Chen, E. Bou-Zeid, M. Ghandehari, J. Luvall, C. Mitra, and D. Niyogi. 2021. Urban climate and resiliency: A synthesis report of state of the art and future research directions. *Urban Climate* 38: 100858.

Saha, P., Bandopadhyay, S., Kumar, C., & **Mitra, C.** 2020. Multi-approach synergic investigation between land surface temperature and land-use land-cover. *Journal of Earth System Science*, *129*(1), 1-21.

\*Nur, S. and **Mitra, C.** 2020. Urban Growth and Multi-Seasonal Land Cover Classification of Dhaka, Bangladesh: An Approach Using Google Earth Engine. *Advances in 21st Century Human Settlement Series* of Springer for the publication of *Cities and Regions of Asia—Transformation and Sustainable Development*, edited by Debnath Mookherjee, George Pomeroy, and Le Thi Thu Huong (In Review)

\*Nur. S. and **Mitra C.** 2020. A Tale of Two Cities: A Comparative Study of Spatiotemporal Multi-Seasonal Land Cover Classification of Kolkata and Dhaka. Annals of the American Association of Geographers. (Submited)

\*Molla, A., **Mitra, C.** and Vasconcelos. J. 2020. Assessment of and Solutions to the Stormwater Management System of Auburn University Campus in Auburn, Alabama. Journal of Water Management Modeling. (Submitted)

**Contributor** in the **Urban Expert Team (UET) -** World Meteorological Organization (WMO) Publication. 2019. *Guidance on Integrated Urban Hydrometeorological, Climate and Environment Services. Volume II: Demonstration Cities***.**

Chatterjee, S., Khan, A., Dinda, A., Mithun, S., Khatun, R., Akbari, H. Kusaka, H., **Mitra, C**, ... & Wang, Y. 2019. Simulating micro-scale thermal interactions in different building environments for mitigating urban heat islands. *Science of the Total Environment*, *663*, 610-631.

\*Chieppa, J., Bush, A., & **Mitra, C**. 2018. Using “Local Climate Zones” to Detect Urban Heat Island on Two Small Cities in Alabama. *Earth Interactions*, *22*(16), 1-22.

\*Jones, T., Marzen, L., Mitra, C., & Barbour, M. 2018. Identification and classification of geographically isolated wetlands in North Alabama using geographic object-based image analysis (GeOBIA). *Geocarto International*, 1-16.

Dong, L., **Mitra, C.**, Greer, S., & Burt, E. 2018. The Dynamical Linkage of Atmospheric Blocking to Drought, Heatwave and Urban Heat Island in Southeastern US: A Multi-Scale Case Study. *Atmosphere*, *9*(1), 33.

\*Emran, A., Roy, S., Bagmar, M. S. H., & Mitra, C. 2018. Assessing topographic controls on vegetation characteristics in Chittagong Hill Tracts (CHT) from remotely sensed data. *Remote Sensing Applications: Society and Environment*, *11*, 198-208.

Khan. A, **Mitra. C**. et al. 2017.Stepwise land-class elimination approach for extracting mixed-type built-up areas of Kolkata megacity. Geocarto International. pp 1-24.

\*Li, X., **Mitra, C.**, Dong, L., Yang, Q. 2017. Understanding land use change impacts on microclimate using Weather Research and Forecasting (WRF) Model, *Physics and Chemistry of the Earth.* doi: 10.1016/j.pce.2017.01.017

**Mitra, C.,** Pandey, B., Allen, N. B., and Seto, K. C.  2016. Contemporary urbanization in India. Pp. 64-76. The Routledge Handbook of Urbanization and Global Environmental Change. Eds. Karen C. Seto, William D. Solecki, and Corrie A. Griffith. London and New York: Routledge. ISBN: 978-0-41573226-0

**Mitra, C.** and Shepherd, J. M. 2016. Urban Precipitation: A global perspective. Pp. 152-168. The Routledge Handbook of Urbanization and Global Environmental Change. Eds. Karen C. Seto, William D. Solecki, and Corrie A. Griffith. London and New York: Routledge. ISBN: 978-0-41573226-0

\*Li, X., **Mitra, C.**, Marzen, L., and Yang, Q. 2016. Spatial and Temporal Patterns of Wetland Cover changes in East Kolkata Wetlands, India from 1972 to 2011. *International Journal of Applied Geospatial Research*. Volume 7 Issue 2. DOI: 10.4018/ijagr.2016040101

Lee, M.-K., **Mitra, C.,** Thomas, A., Lucy, T., Hickman, E., Cox, J., Rodger, C. 2015, Bringing global climate change education to middle-school classrooms – an example from Alabama, Handbook for Climate Change Mitigation and Adaptation, 2nd edition. Springer, pp 1-17. (Cross-referenced in ‘Teaching publications’)

Alley, Kelly D.; Hile, R.; and **Mitra, C.** 2014. Visualizing Hydropower across the Himalayas: Mapping in a time of Regulatory Decline. *Himalaya, the Journal of the Association for Nepal and Himalayan Studies.* Vol. 34: No. 2, Article 9. Available at: http://digitalcommons.macalester.edu/himalaya/vol34/iss2/9

\*Hug, A., **Mitra, C,** Li, Y., and Marzen, L. 2013. The Relationship between Land Cover and Temperature in the Auburn–   Opelika, Alabama Urban Area.  *Papers of the Applied Geography.* 36: 316-323.

\*Rahman, M., **Mitra, C.,** Marzen, L. and Li, Y. 2013. Urban Expansion and Environmental Parameters--A Case Study of Huntsville, Alabama. *Papers of the Applied Geography*. 36, 458-466.

Alley, K., Hile, R., **C. Mitra**, 2013. “Transparency, GIS and River Basin Management in the Ganges-Brahmaputra-Meghna River Basin”. Page 36 – 57. *Water Resources in South Asia: Conflict to Cooperation*. Eds. M. F. Ahmed, Md. Khalequzzaman and Tanvir. Ahmed. BAPA and Ben, Bangladesh. ISBN: 978-984-33-6234-6

Hossain, F., A.T. Woldemichael, A. Degu, W. Yigzaw, **C. Mitra** and J.M. Shepherd. 2012. “Water resources vulnerability in the context of rapid urbanization of Dhaka City (A South Asian mega city). *Climate Vulnerability: Understanding and Addressing Threats to Essential Resources. Elsevier Sciences.* ISBN: 9780123847034.

**Mitra, C.**, M. Shepherd and T. Jordan, 2012. “On the relationship between the pre-monsoonal rainfall climatology and urban land cover dynamics in Kolkata city, India”. *International Journal of Climatology* (<http://onlinelibrary.wiley.com/doi/10.1002/joc.2366/full>, DOI: 10.1002/joc.2366)

**Mitra,** **C**., M. Shepherd, and T. Jordan. 2011. “The dynamics of urban growth in Kolkata, India and potential impacts on pre-monsoon precipitation”. “*Social Geography for the 21st century: Felicitation in honor of Dr Allen Noble*”, edited by A. K. Dutt, V. Wadhwa, B. Thakur and G. M. Pomeroy. ISBN: 978-8-175-969-360.

Mahmood, R., R. Pielke Sr., K. Hubbard, D. Niyogi, G. Bonan, P. Lawrence, B. Baker, R. McNider, C. McAlpine, A. Etter, S. Gameda, B. Qian, A. Carleton, A.B.-Przekurat, T. Chase, A. Quintanar, J. Adegoke, S. Vezhapparambu, G. Conner, S. Asefi, E. Sertel, D. Legates, Y. Wu, R. Hale, O. Frauenfeld, A. Watts,M. Shepherd, **C. Mitra**, V. Anantharajan, S. Fall, R. Lund, A. Nordfelt, P. Blanken, J. Du, H. Chang, R. Leeper, U. Nair, S. Dobler, R. Deo, and J. Syjtus, 2008:  “Impacts of land use land cover change on climate and future research priorities”. *Bulletin of the American Meteorological Society*. BAMS, Jan 2010. *DOI:*[*http://dx.doi.org/10.1175/2009BAMS2769.1*](http://dx.doi.org/10.1175/2009BAMS2769.1)

**Other Publications:**

**Featured** on **SciLine, an American Association of Advancement of Science (AAAS)** as a climate expert in September 2020<https://www.sciline.org/election/expert-quotes/climate-plan>

**C. Mitra** 2016. Geographers at Work’ Profile. 7th Edition of Rowntree’s *Diversity Amid Globalization.* Pg 495

**Mitra, C.** 2014. Climate Change and GIS: An Essay. *Our Changing Climates*. Kauffman, M. Chad. Published by American Meteorological Society (AMS). Essay inset in Chapter 3.

Shepherd, J.M., T. Anderson, L. Bounoua, A. Horst, **C. Mitra**, and C. Strother, 2013:  Urban Climate Archipelagos:  A new framework for urban-climate interactions. IEEE E*arthzine,* published online at[*http://www.earthzine.org/2013/11/29/urban-climate-archipelagos-a-new-framework-for-urban-impacts-on-climate/*](http://www.earthzine.org/2013/11/29/urban-climate-archipelagos-a-new-framework-for-urban-impacts-on-climate/).

**Mitra, C**., M. Shepherd, and T. Jordan, 2008: “The dynamics of urban growth in Kolkata, India and Potential impacts on pre-monsoon precipitation,” Urban Climate News: Quarterly Newsletter of IAUC (International Association of Urban Climate), Issue 28, Page 11, Available at <http://www.urban->climate.org/

**Papers & lectures presented (distinguish by type)**

**Invited Panels/ Lectures:**

**Invited panelist** for **SciLine (AAAS)** on ‘How rising temperatures affect U.S. Cities’. 22nd July 2021

**Invited talk** at an **International Webinar** on “Climate Change and Urban Environment: Patterns, Externalities and Mitigation” at Women’s Christian College, Kolkata, India. Sep 2020

**Invited talk** at **Global Passport Symposium**, Auburn University - Faculty International Scholarship, Aug 2020

**Invited talk** at **Cities, planning and climate change** class, Department of Political Science, Auburn University. Sep 2020

**Invited talk** at **Applications in Environmental Informatics** class, Forestry and Wildlife College, Auburn University. Oct 2020

**Invited lectures (2 lectures 2 hours each)** - Professional Development Course on ‘Sustainable Management of Groundwater Resources’. Patna, India. September 2019.

**Invited talk at Jawaharlal Nehru University, New Delhi** – Climate Impacts of Our Urbanizing Community, and What We Can Do About It. New Delhi, India. September 2019

**Invited talk at the forum** - Economic Opportunities in a changing climate – Presentation and panel discussion. Elected officials and mayoral candidates were invited. Auburn University. August 2018

**Invited talk** at Department of Political Science (Community Planning). Cities, Planning and Climate Change course at Auburn University on ‘Climate Impacts of Our Urbanizing Community, and What We Can Do about It’. Sep 2018.

**Invited talk** at Department of Forestry and Wildlife. Urban Ecology course at Auburn University on Transport and Sustainability course at Auburn University on ‘City impacting microclimate - Do’s and Don’ts’. Sep 2018.

**Invited talk** at Jadavpur University, Kolkata, India on ‘Urban Climate – its Different facets’. Jan 2017.

**Invited talk** at Jadavpur University, Kolkata, India on ‘Remote Sensing/GIS applications in research’. Jan 2017.

**Invited talk** for SUST 1000 core course at Auburn University on ‘Climate change – a myth or reality?’ Feb 2017.

**Invited talk** at Indo-US Summit, Kolkata, India on ‘Moving Towards Sustainability’. July 2017.

**Invited talk** at Department of Political Science (Community Planning), Urban Transport and Sustainability course at Auburn University on ‘Cities and Climate Change’. Sep 2017.

**Invited talk** at Science Café (COSAM Outreach) on ‘Heat of the moment – Are cities getting hotter?’ October 2017.

**Invited talk** for SUST 1000 core course at Auburn University on ‘Climate change – a myth or reality?’ Sep 2016.

**Invited talk** at School of Forestry and Wildlife Sciences (SFWS), Urban Ecology course at Auburn University on ‘Urbanization and its impact of climate’. Sep 2016.

**Invited talk** at Presidency University, Kolkata, India on ‘Urban Climate – local to global scale’. July 2016.

**Invited talk** at Pandit Deendayal Petroleum University, Gandhinagar, Gujarat, India on ‘Climate Change and influence on urban climates’. July 2016.

**Invited talk** at the School of architecture, landscape and landscape architecture, Auburn University on ‘The changing dynamics of urban climates’, Cities, Planning and Climate Change class. Feb 2015.

**Invited talk** at the Honors College, Auburn University on ‘Climate change – Its different facets’, Honors Introductory Sustainability Symposium course. Mar 2014.

**Invited Keynote Speaker** at the SeCAPS Conference, University of South Alabama on ‘Multiple facets of changing climate – A global perspective’, Mobile Alabama. Feb 2014.

**Invited talk** at the School of architecture, landscape and landscape architecture, Auburn University on ‘The changing dynamics of urban climates’, Cities, Planning and Climate Change class (Feb 2014)

**Invited talk** at the Honors College, Auburn University on ‘Climate change impacts – Adaptations and mitigation techniques’, Honors Introductory Sustainability Symposium course. Apr 2013.

**Invited talk** at the School of architecture, landscape and landscape architecture, Auburn University on ‘The changing dynamics of urban climates’, Cities, Planning and Climate Change class. Feb 2013.

**Invited talk** at the Department of Geography, University of Calcutta, India on ‘Urban Growth and impact on hydroclimate’, Workshop on Tropical Climate. Jun 2012.

**Invited talk** at the 2nd Symposium on Integrated Regional Studies for Global Sustainability: Land Use – Climate Ecosystem Interactions, on ‘A synergistic study of urban land cover dynamics – premonsoonal rainfall relationships in Kolkata, India using climatologically, remotely-sensed and modeling methodologies’, School of Forestry and Wildlife Sciences, Auburn University. Apr 2012.

**International Paper Presentations:**

**Paper Presentation -** Mitra, C. and Nur, S.M.S. Historical Urban Growth and Multi-seasonal Land Cover Classification of Dhaka: An Approach Using Google Earth Engine. Presented at *15th International Asian Urbanization Conference,* Ho Chi Minh City, Vietnam. November 2019*.*

**\*Paper Presentation -** Nur., S.M.S. and Mitra, C. Cultural and Environmental Transition and Transformation of two South Asian Cities: Dhaka and Kolkata. Presented at *Annual Meeting of American Association of Geographers 2019*. Washington, DC. April 2019

**\*Poster Presentation -** Molla, A. and Mitra, C. Towards Urban Sustainability: Stormwater Management and Solar Power Potential of Auburn University campus. Graduate Research Symposium, Auburn University, April 2019.

**\*Poster Presentation -** Shrestha, M. and Mitra, C. Urban Vulnerabilities of Kathmandu Valley: A Case Study of Urban Flooding in the Most Populated City of Nepal. Research Student Symposium., Auburn University, April 2019.

**\*Paper Presentation -** Molla, A. and Mitra, C. Urban Sustainability: Stormwater Management and Solar Power Potentiality for Auburn University Campus. American Association of Geographers, Washington, DC. April 2019

**\*Paper Presentation** - Megha Shrestha, Chandana Mitra, Luke Marzen and Christopher Burton. *Urban Resiliency and Response to Disaster Events - A Case Study of Kathmandu Valley.* 10th International Conference on Urban Climate/14th Symposium on the Urban Environment. August 2018

**Paper Presentation** – Chandana Mitra, Austin Bush and Seth Greer. *Towards urban sustainability using remote sensing and GIS techniques – A case study of Auburn, Alabama*. 10th International Conference on Urban Climate/14th Symposium on the Urban Environment. August 2018

**Paper Presentation** – **Mitra, C**., Bush. A and Finley. T. ‘*Urban Sustainability Map – An innovative approach* ’. International Conference of Urban Climate 9, Toulouse, France, July 2015.

**Paper Presentation** – **Mitra, C**. and Rupsa Bhowmick. ‘*Urban heat island intensity of Kolkata City and methods to ameliorate its impacts*’. 2nd International Conference on urbanization and Global Environmental Change. Taipei, Taiwan, Nov 2014.

**Paper presentation - C. Mitra,** R. Bhowmick, D. Pradhan. *‘Urban Heat Island intensity of Kolkata city*’. 12th International Asian Urbanization Conference, Varanasi, India, Dec 2013.

**Paper presentation** - Alley, K., Hile, R., **Mitra, C**. ‘*Transparency, GIS and River Basin Management in the Ganges-Brahmaputra-Meghna River Basin*’. Paper presented at Water Resources in South Asia: Conflicts to Cooperation, Dhaka, January, 4-6 Jan 2013.

**Paper presentation, C. Mitra. T**itled “*Growth of Kolkata, India– Past, Present And Future: A Synergistic Analysis Using Cartographic, GIS, Remote Sensing, and Cellular Automata Modeling*” at the International Conference of Urban Climate (ICUC), Dublin, Ireland Aug 2012.

**Paper presentation, Mitra. C.** titled ***“****Remote Sensing of Water Cycle and Land Use Patters to Understand Water Resources Vulnerability of an Asian Mega City”* at the AGU Chapman Conference on Remote Sensing of the Terrestrial Water Cycle, Hawaii Feb 2012.

**National: *Papers and Posters Presented at Professional Meetings with Published Abstracts*** (\*student contribution)

**\*Poster presentation** – \*Ethan Burt, Chandana Mitra, Luke Marzen. Environmental Justice for All: GIS Analysis to Assess the Accessibility of Public Parks - a Case Study of Auburn, AL. Presentation at American Association of Geographers (AAG) Annual Meeting, April 2018

**Paper Presentation** - Chandana Mitra, Al Emran, Megha Shrestha. *Landuse landcover changes, variable temperature patterns and associated health impacts in megacities of South Asia.* Paper presentation at American Association of Geographers (AAG) Annual Meeting, April 2018

**\*Paper Presentation** - Megha Shrestha and Chandana Mitra. *Impact of natural disasters on rapid urban change in Kathmandu, Nepal.* Paper presentation at American Association of Geographers (AAG) Annual Meeting, April 2018

**Panel Discussant** - *Transforming Spaces and Spatial Practices* (Sponsored by Regional Development and Planning Specialty Group). Panel discussant at American Association of Geographers (AAG) Annual Meeting, April 2018

**Discussant of a paper session** - *South Asian Cities: Challenges, potentials and solutions of the 21st century***.** American Association of Geographers (AAG) Annual Meeting, April 2018

**Paper Presentation** - Burton, C.G., Lee, M-K, Marzen, L., and Mitra C. *A Holistic Assessment of Resilience to Climate Change Hazards Along the Mississippi and Alabama Gulf Coast, USA.* Mobile, AL: Bays and Bayous Symposium, November 2018

**Poster presentation** - **Mitra. C.** and Bush. A, "Urban Sustainability Maps: Determining Urban Rooftop Dimensions for use in Regional Sustainability Assessments in Auburn, AL". Presentation at American Meteorological Society (AMS) Annual Meeting, Seattle, Jan 2017.

**Poster presentation** - **Mitra. C**., S. Greer, L. Dong and E. Burt. "Land Surface Temperature Analysis to Determine Urban Heat Island Intensification Caused by Atmospheric Blocking-Associated Drought and Heat Waves" Presentation at American Association of Geographers (AAG) Annual Meeting, April 2017.

**\* Poster presentation** – Bush. A. and **Mitra. C**. “The effects of urbanization on local water quality: An impervious surface analysis of the locust watershed in Birmingham, Alabama” Presentation at Alabama Storm water Symposium, May 2017.

**\*Poster presentation** – Greer. S. and **Mitra. C.** "Urban Sustainability Map: An innovative experiment with geospatial techniques’. Presentation at Alabama Storm water Symposium, May 2017.

**\* Poster presentation** - Bowen, T. and **C. Mitra**. “The effects of urbanization on local water quality: An impervious surface analysis of the Locust Watershed, Birmingham, Alabama.” Presentation at Auburn Research: Student Symposium, Auburn, AL, April 13, 2016.

**\* Poster presentation** - Torres. J.; Chaney, P.; **Mitra. C**. and L. Marzen. “Detecting a Subsurface Smoldering Event Using Landsat Thermal Imaging: Bridgeton Landfill Case Study. Presentation at Auburn Research: Student Symposium, Auburn, AL, April 13, 2016.

**\* Poster presentation** - Bush. A. and **Mitra. C.** "Urban Sustainability Maps: An Assessment of Rainwater Harvesting Potential in Auburn-Opelika, AL". Presentation at Alabama Storm water Symposium, May 2016.

**\* Poster presentation** - Bush. A.’ Greer. S. and **Mitra. C**. "Assessing Stream access for Rural Communities within the Republic of Panama" Presentation at Alabama Storm water Symposium, May 2016.

**\* Poster presentation** – Bowen. T. and **Mitra. C**. “The effects of urbanization on local water quality: An impervious surface analysis of the locust watershed in Birmingham, Alabama” Presentation at Alabama Storm water Symposium, May 2016.

**Invited Panel Discussant – ‘Asia Calling: Will you answer’.** Association of American Geographers Annual Meeting, Chicago, Illinois. April 2015.

**\*Paper Presentation** – Michael Waldrop and **C. Mitra**. The influence of Christianity on views of environmental care in the southeastern United States. Auburn University Student Symposium. April 2015.

**Paper Presentation** – **Mitra, C.** ‘Cities and influence on microclimate’. Auburn University Faculty Symposium. September 2015.

**\*Paper Presentation** - Li, X., **C. Mitra** and Marzen. L.‘*Spatial and Temporal Patterns of Wetland Cover changes in East Kolkata Wetlands, India from 1972 to 2011*’. Applied Geography Conference, Atlanta GA. Nov 2014.

**\*Paper Presentation** - Shakya, S., L. Marzen, **C. Mitra**, and Sam Fowler. *Correcting Wrongly Classified Isolated Wetlands using LIDAR data in GEOBIA*. Alabama Water Resources Conference, Orange Beach, AL. Sep 2014

**\*Paper Presentation** - Li, X., and **C. Mitra.** ‘*Decreasing wetland areas in Kolkata, India from 1972 to 2011 as detected by object-based classification of Landsat imagery*’. Association of American Geographers Conference, Tampa. Florida. April 2014.

**\*Paper Presentation** - Hug, A., **Mitra, C**., Marzen, L. J., and Li, Y.  ‘*The Study of Urban Heat Islands in Birmingham and Auburn-Opelika, Alabama Urban Areas, Using Satellite and Observational Techniques*’. Association of American Geographers Annual Meeting, Tampa, Florida. April 2014.

**\*Paper Presentation** - Rahman. M., **Mitra, C**., Marzen, L. J., Byahut, S. and Li, Y.  ‘*Determining the relationship between urban growth in Alabama cities and changing environmental dynamics*’. Association of American Geographers Annual Meeting, Tampa, Florida. April 2014.

**Paper Presentation** – **Mitra, C**. and Rupsa Bhowmick. ‘*A pilot study to measure urban heat island magnitude of Kolkata City*’. Association of American Geographers Conference, Tampa, Florida. April 2014.

**\*Paper Presentation -** Xia Li, **Mitra. C.** ‘*Decreasing wetland areas in Kolkata, India from 1972 to 2011 as detected by object-based classification of Landsat imagery*’. Graduate Scholars Forum, Auburn University. Mar 2014.

**Poster Presentation** – Marzen. L., **Mitra. C.** (presenter) and Jones, T. ‘*An interagency partnership with Alabama View for sharing LiDar data products and high-resolution orthoimagery with the public: A 2014 update*.’ America View Fall Technical Meeting, Washington D.C. Feb 2014.

**Poster Presentation - Mitra. C,** Lee. MK., Percival. E., ThomasA., LucyT., Elizabeth Hickman. E., Cox. J., Chaudhury. S. R., Rodger. C. ‘*Bringing Global Climate Change Education (GCCE) to Alabama Middle and High School Classrooms*’ American Meteorological Society Conference, Atlanta. Feb 2014.

**\*Paper presentation** - Rahman, M., **Mitra, C**.  Marzen, L. J., and Li, Y. ‘*Urban Expansion and Environmental Parameters- A Case Study of Huntsville, Alabama’*. Applied Geography Conference, Annapolis, MD. Oct 2013.

**\*Paper presentation** - Hug, A., **Mitra, C**.  Marzen, L. J., and Li, Y. ‘*The Relationship between Land Cover and Temperature in the Auburn–   Opelika, Alabama Urban Area’*. Applied Geography Conference, Annapolis, MD. Oct 2013.

**Poster presentation - C. Mitra,** Ming-Kuo Lee, Erin Percival, Amy Thomas, Tyaunnaka Lucy, Elizabeth Hickman, Jennifer Cox, Shiladitya Raj Chaudhury, Chris Rodger. . ‘*Bringing Global Climate Change Education (GCCE) to Alabama Classrooms*’. Arlington VA. Oct 2013.

**\*Paper presentation** - Rahman, M., and **Mitra, C.** 2013.  ‘*Determining the Relationship between Alabama Cities and Changing Environmental Dynamics’*. Association of American Geographers (AAG) Annual Meeting, Los Angeles, CA. Apr 2013.

**Poster presentation** - Chakraborty P **and Mitra C. ‘***Urban agglomeration and overweight/obesity issues in India-Is there a link?*’ The Experimental Biology Meeting. Boston, MA. Apr 2013.

**Paper presentation** - Alley, K., Hile, R., **Mitra, C**. ‘*Transparency, GIS and River Basin Management in the Ganges-Brahmaputra-Meghna River Basin’*. Paper presented at the Research Week, Auburn University. Apr 2013.

**\*Poster presentation** - Rahman, M., and **Mitra, C**. ‘*Urban Growth of Alabama Cities and Changing Environmental Dynamics*’. 23rd Auburn University Graduate Scholars forum, Auburn University Student Center, Auburn, AL. Feb 2013.

**Paper presentation,** Lee. M.K., **Mitra, C**. and others. Titled “*Development, Implementation, And Evaluation of Climate Change Education Modules for K-12 Students in Alabama*” at the Geological Society of America (GSA), Charlotte, NC Nov 2012.

**Poster presentation**, Marzen. L., **Mitra. C.** (presenter) and Jones, T. Titled “*An Interagency partnership with AlabamaView for sharing LiDAR data products and high-resolution orthoimagery with the public*” at the AmericaView Fall Technical Meeting, Sioux Falls, SD. Sep 2012.

**Poster presentation**, **C. Mitra**. Titled “*The dynamics of urban growth of Kolkata and its influence on precipitation*” at the South Eastern Climate Consortium (SECC), Auburn, AL. Apr 2012.

**Paper presentation, C. Mitra.** Titled “*Growth of Kolkata, India– Past, Present And Future: A Synergistic Analysis Using Cartographic, GIS, Remote Sensing, and Cellular Automata Modeling*” at the Fall Meeting of America View, Cleveland, Ohio. Oct 2011.

**Other research/creative contributions**

**Organized** a workshop to understand Alabama environmental issues, gaps and solutions at Auburn University. May 2019

**Organized** a workshop to understand on South Asia environmental issues, gaps and solutions at Auburn University. May 2019

**Won** - Megha Shrestha won the Best Poster Award in COSAM at the Graduate Research Symposium. April 2019

**Nominated** by the World Meteorological Organization (WMO) Technical Commissions and different programs for the WMO expert team on Urban Cross-Cutting Focus, in particular, for work with the Integrated Urban Guide. - Writing team for Urban Guide Part 2 (Demonstration cities) - Oct 2018

**Invited to serve as external reviewer** for ‘The American Association of the Advancement of Sciences - AAAS’, National Transformation Program for Saudi Arabia proposals**,** Dec 2017

**Participated in a panel session** at the AAG annual conference at New York, on “[Barriers and Opportunities for women in the Geography STEM subdisciplines](http://meridian.aag.org/callforpapers/program/SessionDetail.cfm?SessionID=28073)”. April 2017.

**Invited to serve as external reviewer of** a CAREER proposal received for consideration by the Geography and Spatial Sciences (GSS) Program at the U.S. National Science Foundation (NSF) - Oct 2016

**Invited to serve as judge in** Urban Transitions Scientific Review Committee for the ‘Urban Transitions 2016’ Conference, Beijing, China. Sep 2016

**Invited to serve on the editorial board** for ‘Southeastern Geographer’ journal. Nov 2015.

**Invited as a Board Member –** Sustainability Office Advisory Council board member. Oct 2015.

**Organized three paper sessions** at the AAG annual conference at Chicago, on “South Asia”. April 2015.

**Participated in panel session - Asia Calling: Will you answer?** Association of American Geographers Annual Meeting, Chicago, Illinois. April 2015.

**Invited and funded to attend the WUDAPT workshop at Dublin, Ireland** as a team member and researcher on the urban global project July 2014.

**Invited to serve on the editorial board** for ‘International Journal of Earth and Atmospheric Science’ journal. April 2014.

**Invited to serve as a member of the Executive Committee and also Board Member,** Asian Urban Research Association. Nov 2013.

**Invited to the ‘The Urban Heat Island Network workshop’,** as partof an NSF-funded Research Coordination Network grant. Saint Paul, Minnesota. July 2013.

**Invited to join Environmental Steering Committee** to advise the Auburn University Council for Energy, Environment, and Economic Research (CEEER). Apr 2013.

**Organized four paper sessions** for the AAG Annual Conference 2013 to be held in Los Angeles. April 2013.

**Organized a panel sessions** for the AAG Annual Conference 2013 to be held in Los Angeles. April 2013.

**Organized 'Research Awareness Program' for COSAM, Auburn University** – Invited guest Dr. Marshall Shepherd, President of American Meteorological Society and Professor of University of Georgia. October 2012.

**Selected to participate** in the **Research Proposal Writing Workshop**, Auburn University, as part of the Research Week. Apr 2012.

**Organized three paper sessions** at the AAG annual conference at New York, on “Urban areas and environmental impacts”. Feb 2012.

**Participated in a panel session** at the AAG annual conference at New York, on “Urban Climate: Local, regional and global impacts”. Feb 2012.

**Organized two paper sessions** at the AAG annual conference at Washington, DC, on “Urban Climate: Local, regional and global impacts”. Apr 2010.

**Organized a panel session** at AAG annual conference at Washington, DC, on “Urban Climate: Global Impact and Mitigation Techniques”. Apr 2010.

**Organized a panel discussion** at the AAG annual conference at Washington, DC, on the “The changing face of contemporary geography in India”. Apr 2010.

**Organized a paper session** at the AAG annual conference at Las Vegas, NV on “Urban Energy and Sustainability in Emerging Economies”. Mar 2009.

**Organized a panel session** at the AAG annual conference at Las Vegas, NV on “The changing face of contemporary geography in India”. Mar 2009.

**Organized three paper sessions** at the AAG annual conference at Boston, MA on *“Urban growth and its impacts on the environment*”. Apr 2008.

**Co-organized** the “International Cartographic Association (ICA) workshop on geospatial Analysis and Modeling 2007” at the University of Georgia. Jul 2007.

**Undergraduate Research Advising (students who did research projects):**

**Austin Barnard:** Spring, summer, fall 2020 – AlabamaView remote sensing video creation

**Katherine Koons:** Fall 2020 - AlabamaView remote sensing video creation

**Brooke Strickland**: Summer 2019 - Mentor and guide for Environmental Science course - IDSC thesis.

**Ethan Burt**: Spring & Fall 2017 – Blocking highs and drought effect on cities (IGP funded). One paper published and a poster presented at American Association of Geographers (AAG), Boston, April 2017

**Michael Waldrop**: Spring 2015 – Research on - The Influence of Christianity on Views of Environmental Care and Climate Change in the Southeastern United States. (Submitted to paper to undergraduate journal and also presented at Auburn University Student Symposium 2015).

**Austin Bush** – Summer 2015 – Research on – Urban Heat Island of Auburn and creating an Urban Sustainability Map using GIS techniques (This topic became Austin’s Master of Science thesis topic, advisor **C. Mitra**).

**Ethan Burt**: Fall 2015 – Basics of atmospheric science (Will join the Accelerated Master’s program in Geography). Presently working on a project with **C. Mitra** on ‘heat wave and atmospheric blocking’.

**Jarrett Roland** – Summer/Fall 2015 – Researched on ‘Sustainability on earth related to cities on Mars’. Applied for ‘Undergraduate research fellowship 2015-2016’.

**Grants & contract**

**External – Funded**

L. Marzen (Co-PI) and **C. Mitra (Co-PI)**. ‘StateView Program Development and Operations for the State of Alabama’. AmericaView Inc./USGS – 2012 and ongoing, renewed annually.

M. Shepherd (PI), **C. Mitra (Co-I),** B. Johnson (Co-I) and others – NASA IDS - Toward Conceptualization and Predictability: A Multi-scalar Analysis of Urban-Influenced Hydrometeorological Processes. *Date submitted:* June 2019. G*rant period:* May 2020 – May 2023

K. McNeal (PI), C. Burton; **C. Mitra** and others - Received NSF NRT grant; Title - Addressing resiliency to climate related hazards and disasters through data informed decision making. *Grant period:* Sep 2019 – Aug 2023.

C. Burton (PI), L. Marzen (Co-I), **C. Mitra (Co-I)** and Ming-Kuo Lee (Co-I). ‘A Holistic Assessment of Resilience to Climate Change Hazards along the Mississippi and Alabama Gulf Coast, USA’. NOAA Mississippi-Alabama Sea Grant Consortium. Fundingperiod*:* February 2018 – January 2020.

J. Gonzalez (CUNY City College - PI), **C. Mitra (Co-PI)** and 5 others from different universities. ‘Urban Climate and Resiliency – Working Group’. NSF CBET – Environmental Sustainability.. Fundingperiod: October 2017 – September 2018.

**C. Mitra (PI)** and C. Brysch (Co-PI). AmericaView 2015 Membership Mini-Grants. ‘Proposal to evaluate America View educational activities Phase 1’. AmericaView Inc./USGS. Funding period: September 2015 – December 2015. [survey questions to evaluate all AmericView activities were prepared to be used by all members]

S. Fowler (PI), **C. Mitra (Co-I)** and R. Rodekehr. ‘Estimates of future Agricultural Water Use in Alabama: Phase 2. Office of water resources, Alabama’. Funding period: December 2013 – September 2014.

**Description of scholarly program:**

I am a climatologist and physical geographer by training looking into the dynamics of land and atmospheric interactions. More specifically, my research can be categorized into three main complementary areas: 1. Landuse and landcover change (LULCC), 2. Urban impact on temperature, and 3. Urbanization and influence on precipitation. I use Geographical Information Systems (GIS), remote sensing, mesoscale climate models, and growth models to quantify, measure, plot, compare, and contrast the various implications of LULUC on climatic parameters.

The process of urbanization entails the transformation of natural surfaces to paved surface. In my research, quantifying LULCC forms the base to understand its impact on environment. I have found that Auburn city has grown around 360% from 1982 to 2010, and Madison, the satellite town for Huntsville, has grown around 650% in those 28 years. Birmingham and Montgomery, on the other hand, have shown minimal growth. It is important to understand that we now have to focus on these fast growing smaller cities as they may have similar adverse impact on the environment than the traditionally large cities. I have published two journal papers, one in Bulletin of American Meteorological Society (IF 11.08; multiple authors) and the other in the International Journal of Climatology (IF 3.609) which are related to LULCC. Other papers are in the process of being submitted to various highly ranked geoscience journals.

The Intergovernmental Panel on Climate Change says that the number and intensity of heat waves will rise. Thus, it has become all the more important to measure the urban heat island intensity (UHII, the temperature difference between rural and urban surfaces), implement different measures to ameliorate the UHII and reach out to the vulnerable populations. In a study conducted by my Master’s student Andy Hug and me, we find that on an average Birmingham and Auburn-Opelika have an UHII of 3-4⁰F daily. One paper from this research is in revision in ‘Southeastern Geographer’ journal and another has been submitted to ‘International Journal of Climatology’ (IF 3.609). Another recent research project also on UHII enhancement during atmospheric blocking-drought-heat wave climatic conditions shows an UHII of 26⁰F on one particular day in Birmingham AL. This could be detrimental for human health and the economy.

Researching urbanization impact on precipitation is an extension of my Ph.D. research. Xia Li, my third graduate student (won the Auburn University Graduate School’s 2015 Master’s Thesis Awards) worked on urbanization and its impact on precipitation using the WRF model. We find that rainfall has an increasing trend with increasing LULCC. This research resonates with popular literature. We have submitted a paper titled “Impact of wetland area decrease on microclimate as detected by Weather Research and Forecasting (WRF) Model” to ‘Physics and Chemistry of the Earth” Journal, We are also working on another paper with Dr. Hiroyuku Kusaka, University of Tsukuba, Japan using our own LULCC classified image for Kolkata wetlands for WRF model. I plan to continue working on the topic looking into climatological variability of precipitation patterns in cities in USA and South Asia using observational and/or modeling techniques.

Besides the three core research areas, I have incorporated dissemination of knowledge and climate change education (CCE) as an integral component of my research agenda. I felt the importance of CCE after I was involved in a NASA grant with other COSAM faculty members. Hundreds of students and teachers working on/researching climate change through interactive modules created an awareness in me of the importance of educating future generations. Recently I have submitted a grant to the American Center, Kolkata India which entails creating online modules for high school students on water and air pollution and their societal impacts. I am planning to submit many more proposals on climate change and environmental education in collaboration with Dr. Karen McNeal who is joining COSAM this fall.

My research has always had the international connection. Besides Alabama and the SE USA, presently the other foci areas are South Asia and the Republic of Panama. I have researched LULCC in India and found linkages with precipitation and UHHI. This summer I participated in a workshop on “Urban Sustainability” in India. There I met with university faculty and officials interested in collaborating with Auburn University. We are in the process of signing MOUs with two universities (Shiv Nader University in New Delhi and Pant Deendayal Petroleum University in Ahmedabad, India). This will help in research collaboration, online teaching and student exchanges. I led a study abroad program on ‘Climate Change and Environmental Management’ in spring 2016 to Republic of Panama which was a great success. The plan is to offer the course again, as well as to start research collaboration with CATHALAC (Water Institute in Panama).

As part of my long-term plans, I envision conducting research on climate change and health, green and sustainable cities, and develop tools and teaching material to educate school children and masses about climate change.

**OUTREACH**:

**1. Commentary**

**Program Topic: Earth Day Extravaganza**

Description: This activity was to celebrate Earth Day. It is led by the Department of Geosciences along with Office of Sustainability and University Program Council. Numerous sustainability related organizations and clubs join the extravaganza highlighting the benefits of saving the Earth from the brunt of climate change.

**Program Topic: Understanding urban climate using GIS techniques**

Description:This activity was part of the Summer Science Institute (SSI) program organized by COSAM for 11th---12th grade students with a high aptitude and interest in the fields of science and math. The activity introduced the basic knowledge about urbanization and what the impacts are of rapid urbanization on our environment. Students used infra-red thermometers and hygrometers to measure the differences in temperature and moisture for different materials/surfaces. They also learned how to bring temperature data points into GIS (Geographical Information System) and plot them (June 2015).

**Program Topic: Sensing the beautiful, blue earth**

Description: This activity was a part of the Science Expo (AU Explore) under ‘Science is fun’ organized by COSAM. School kids are taught what remote sensing is, how the earth looks from space, use infrared thermometer to measure temperature differences. Along with that they learn how to access Google Earth and expose them to places far and near, learn how to navigate around the world. (Apr 2015, 2016)

**Program Topic: Global climate change education in K 12 schools**

In 2014 Ming-Kuo and I worked with COSAM faculty, AMSTII officials and middle school teachers as part of an ongoing NASA grant on ‘Global Climate Change Education’. We, as a team, have developed modules for standards 6 through 8 involving activities pertaining to climate change related to earth sciences. **This summer training brought to DGG an ICRE of $ 2,272.42**. [Letter from Dr. Chris Rodger’s included in appendices] (Cross referenced in teaching grants)

**Program Topic: Fly Over Alabama**

Description: This activity was a part of the Science Expo (AU Explore) under ‘Science is fun’ organized by COSAM. School kids are taught how to access Google Earth and expose them to places far and near, learn how to navigate around the world. (Apr 2013, 2014)

**SERVICE:**  University service (distinguish by levels) University, College, Department

**University Service**

**Invited talk** at **Global Passport Symposium**, Auburn University - Faculty International Scholarship, Aug 2020

**University Reader** - Benjamin Bermester - Civil engineering, Auburn University

**University Reader** – Baris Kopruluoglu – Department of Mathematics and Statistics, Auburn University

**University Reader** – Gopal Nath – Department of Mathematics and Statistics, Auburn University

**Member** of COSAM outreach advisory committee (since 2020)

**Member** of Stormwater Management Committee, Auburn University (2016 till date)

**Representative** on the sustainability team for the University Strategic Planning committee – 2018

**Invited** – Panelist on a program ‘Pathways to Full Professor and Beyond Initiative’, organized by the Women in Science and Engineering (WISE) Institute. Feb 2019.

**Nominated** - Commission on Women Faculty, Auburn University. Part of the Together Inspiring Gender Equity Readiness (TIGER) Advocates and Allies Program.

**Board Member –** Sustainability Office Advisory Council board member (Oct 2015 till date)

**Committee Member –** UniversityGraduation Committee (from fall 2018)

**Committee Member** – Search Committee for SFWS (GIS position)

**Cuba Roundtable –** Attended Cuba research roundtable (May 2017)

**Committee Member –** Evaluation Committee Member for Dr. Nanette Chadwick (April 2017)

**Committee Member -** Core Curriculum General Education Committee (CCGEC) - invitation to join a working group of content experts who will explore SLO 9 related to Diversity

**Committee Member -** Paleoclimatology position for Geosciences (CHESS)

**Committee Member -** College of Agriculture **–** Post Doctoral candidate hire for Dr. Brenda Ortiz (Oct 2014)

**Liaison representing American View, Alabama** to meet Alabama Senators and Representatives and showcase what Alabama View does to disseminate GIScience knowledge to Alabama citizenry**. (**Mar 2014, Feb 2015, March 2017).

**University External Evaluator – PhD Committee** of Golbahar Mirhosseini. Department of BioSystems Engineering (May 2013)

**College service**

**Member** - COSAM Outreach Advisory Council Member. Nov 2020

**Judge** for Graduate Student Symposium representing COSAM. April 2019

**Member** of COSAM’s Strategic Plan committee – April 2019

GEARSEF **Senior judge** - Greater East Alabama Regional Science and Engineering Fair (an affiliate fair of the well-known Intel ISEF program) - March 2018

**COSAM representative –** College representative at Office of Sustainability (2016 onwards)

**COSAM faculty Service** – Fall 2016 Graduation Ceremony

**COSAM faculty Service** – **Summer Science Institute** ‘Understanding urban climate using GIS techniques’ (June 2015)

**COSAM faculty Service** – **AU Explore** ‘Sensing our beautiful, blue earth’ (April 2015)

**Committee Member -** Department Head Review Committee, Geology and Geography (Nov 2014)

**COSAM Hiring Committee** – Li dong for the position of Assistant Research Professor (Apr 2014)

**COSAM faculty Service** – Judge for senior group projects - ***Greater East Alabama Regional Science and Engineering Fair***(an affiliate fair of the well-known Intel ISEF program). (Mar 2014)

**COSAM faculty Service** – AU Explore ‘Fly over Alabama’ (April 2013, April 2012, April 2014)

**COSAM faculty Service** – Spring 2012 Graduation Ceremony

**Departmental service**

**Search Chair –** Geography Lecturer Position, Department of Geosciences, fall 2020

**Lead Course Developer –** Global Systems I & II, Science Core Course, summer & fall 2020

**Committee Chair** – Colloquium Committee, Department of Geosciences fall 2020

**Participated** inCOSAMresearch undergrad Research Opportunities Fair, Feb 2020

**Participate** in Talons – (January 2019)

**Task Force** in Geosciences for **Peer Teaching Evaluation** – Luke (Chair), Carmen, Chandana, and Karen

**Task Force** in Geosciences for **Faculty Search Process** – Karen (Chair), Chandana, David, and Chris

**Committee Member** – Lecturer search committee, Geography (Nov 2017)

**Committee Member** – Curriculum Committee,Department of Geosciences (2015, 2017, 2018)

**Committee Member** – Awards Committee,Department of Geosciences (2014, 2015, 2017, 2018)

**Committee Member** – Seminar Committee, Department of Geosciences (July 2014-2017, continuing partially in 2018)

**Committee Member** – Assessment Committee, Geography Undergraduate exit exam (2017 onwards)

**Committee Member** – Lecturer search committee, Geography (Nov 2016)

**Participating** in TALONS (2015 and 2016)

**Committee Member** – Curriculum Committee,Department of Geosciences (2015, 2016)

**Committee Member** – Awards Committee,Department of Geosciences (2014, 2015, 2016)

**Committee Member** – Seminar Committee, Department of Geosciences (July 2014 – 2016 continuing)

**Chairperson**, Department of Geology and Geography, Seminar Series Committee, Aug 2012 to July 2014. [Began a popular seminar for the first time in the department – “What you did this summer”?]

**Co-Chair**, Department of Geology and Geography, Seminar Series Committee, Aug 2011 to July 2012.

Member of Climate Change cluster hire team

Member of Geospatial and environmental research teams of DGG

**Committee Member** – Lecturer search committee, Geography (Oct 2014)

**Ad-hoc Awards Committee,** Geology-Geography Scholarship Awards 2012

**Committee Member**, Faculty Search Committee, Economic Geography Position, Fall 2011.

**Committee Member**, Writing Plan Development for undergraduate degree in Geography, Fall 2011 onwards.

**Professional Service**

**Service to Academic Institutions, Government, or Business**

**Invited as a panelist** for urban heat discussion for SciLine based at American Association of Advancement

of Science (AAAS). July 2021

**Invited** to be a member of **Union of Concerned Scientists,** December 2020[**https://www.ucsusa.org/**](https://www.ucsusa.org/)

**Invited to review** theOxford Bibliographies in Geographies article on ‘Urban Climatology review by Author Tony Brazel

**Chair sessions** at American Association of Geographers. April 2019

**Invited** to serve on the **scientific committee** of the next International Conference on Urban Climate (ICUC-11) in Sydney, Australia - August 2021

**Nominated** by the World Meteorological Organization (WMO) Technical Commissions and different programs for the WMO expert team on Urban Cross-Cutting Focus, in particular, for work with the Integrated Urban Guide. - Writing team for Urban Guide Part 2 (Demonstration cities) - Oct 2018

**Invited to review and serve** on PhD committee of Ms. Lopita Pal, Chennai University, India.

**Participated** in Mid-Career retreat (for Associate Professors) – organized by Biggio Center 12th Oct 2018

**Chair sessions** at 10th International Conference on Urban Climate/14th Symposium on the Urban Environment. New York City. August 2018

**Elected member of ‘Bureau of Urban Environment’,** American Meteorological Society (AMS). 3-year term. (Dec 2017, effective through 2020)

**Chair sessions** at American Meteorological Society Annual Meeting (AMS), Seattle (January 2017)

**Invited to serve on the editorial board** for ‘Southeastern Geographer’ journal (2nd term from 2017)

**Organized three papers sessions** atAmerican Association of Geographers (AAG), Boston, April 2017

**Invited to serve as proposal reviewer** for ‘The American Association of the Advancement of Sciences - AAAS’, National Transformation Program for Saudi Arabia– (Dec 2017)

**Invited to serve as reviewer of** a CAREER proposal received for consideration by the Geography and Spatial Sciences (GSS) Program at the U.S. National Science Foundation (NSF) - Oct 2016

**Invited to serve as lead editor in special issue** for ‘Advances in Meteorology’ journal (July 2016)

**Elected as ‘Co-chair of South Asia’,** Asian Geography Specialty Group, American Association of Geographers (AAG) for 2015-2017 terms (2016)

**Chairperson** of the Helmut E. Landsberg Award’s committee, American Meteorological Society (May 2016)

**Invited to serve** on theUrban Transitions Scientific Review Committee as IAUC member (International Association on Urban Climate) March 2016

**Invited to serve on the editorial board** for ‘Southeastern Geographer’ Journal (Oct 2015)

**External panelist for proposal review** - Georgia Sea Grant (Aug 2015)

**Travel Award** from COSAM to travel to the ‘International Conference on Urban Climate’, Toulouse France (July 2015)

**Organized 3 papers sessions** atAmerican Association of Geographers (AAG) April 2015

**Elected member of ‘Bureau of Urban Environment’,** American Meteorological Society (AMS). 3 year term. (Declared Dec 2014, effective 2015)

**Serving as the COSAM representative** at the Office of Sustainability (Oct 2014)

**Invited to serve on the editorial board** for ‘International Journal of Earth and Atmospheric Science’ journal (April 2014)

**Invited to join Environmental Steering Committee** to advise the Auburn University Council for Energy, Environment, and Economic Research (CEEER) (April 2013)

**Invited to serve as a member of the Executive Committee and also Board Member,** Asian Urban Research Association (November 2013).

**Elected as ‘Director of South Asia’,** Asian Geography Specialty Group, American Association of Geographers for 2013-2014 term (Jan 2013)

**Serving** as Proposal Reviewer for **‘**Natural Sciences and Engineering Research Council of Canada’ NSERC Canada (Nov 2012)

**Travel Award** from COSAM to travel to the ‘International Conference on Urban Climate’, Dublin Ireland (Aug 2012)

**Served** the RDPSG (AAG) specialty group, American Association of Geographers, as the **Chairperson** (2012-2013).

**Served** as a **judge** for student paper competition for the Climate Specialty Group at AAG, New York City (Feb 2012).

**Served** as a **judge** for student paper competition for the Climate Specialty Group at AAG, Seattle, WA (Apr 2011).

**Serving** the RDPSG (AAG) specialty group as the **Vice Chair and also the web-editor** (2011-2012).

**Served** the RDPSG (AAG) specialty group as the **member-at-large and also the web-editor** (2010-2011).

**Serving** as Manuscript Reviewer (2020)

Urban Science

Remote Sensing Applications: Society and Environment

Urban Climate

**Serving** as Manuscript Reviewer (2019)

Sustainability

Urban Climate

**Serving** as Manuscript Reviewer (2018)

Earth Interactions

Theoretical and Applied Climatology (2 paper reviews)

**Serving** as Manuscript Reviewer (2017)

Earth Interactions

Theoretical and Applied Climatology (2 paper reviews)

**Serving** as Manuscript Reviewer (2017)

*Sustainable Cities and Society*

*International Journal of Global Environmental Issues (IJGENVI)*

*Environment Systems and Decisions*

*Geophysical Research Letters*

**Serving** as Manuscript Reviewer (2016)

*Sustainability*

 *International Journal of Climatology*

 *Hydrology*

 *Urban Climate*

**Serving** as Manuscript Reviewer (2015)

*International Journal of Climatology*

 *Journal of Urban Ecology*

 *Earthzine*

 *Urban Climate*

**Serving** as Manuscript Reviewer (2014)

*Climate Change*

 *Urban Climate*

 *Theoretical and Applied Climatology*

**Serving** as Manuscript Reviewer (2013)

*Journal of the American Water Resources Association*

*Journal of Applied Meteorology and Climatology*

*Physical Geography*

*Earth Interactions*

*Applied Geography Papers*

*The Science of the Total Environment*

**Serving** as Manuscript Reviewer (2011-2012)

 *International Journal of Climatology*

 *Earth Interactions*

 *Applied Geography*

 *Auburn University Journal of Undergraduate Scholarship*