

# CHANG CAI

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EDUCATION	<p>Ph.D., Agricultural and Applied Economics, University of Illinois at Urbana-Champaign, 2022 (expected)</p> <p>Dissertation Title: <i>Three Essays on Climate Change, Wildfires and Outdoor Recreation</i></p> <p>Dissertation Committee: Benjamin M. Gramig (Chair), Amy W. Ando, Peter Christensen, Carena J. van Riper</p> <p>M.S., Applied Statistics, University of Illinois at Urbana-Champaign, 2022 (expected)</p> <p>M.S., Policy Economics, University of Illinois at Urbana-Champaign, 2013</p> <p>B.A., International Business, Huazhong University of Science and Technology, 2012</p>
FIELDS OF INTEREST	Environmental and Natural Resource Economics, Regional Economics
PUBLICATIONS	Cai, C. and Dall’Erba, S. (2021). “On the Evaluation of Heterogeneous Climate Change Impacts on US Agriculture: Does Group Membership Matter?” <i>Climatic Change</i> , 167(1), 1-23.
MEDIA	“Study Proposes New Ways to Estimate Climate Change Impacts on Agriculture” in Phys.org, Herald News and Latestly, August 2021
WORKING PAPERS	<p>“Wildfire and Visitation in U.S. National Parks” [<b>Job Market Paper</b>]</p> <p>“Revisiting the Impact of Climate Change on Agriculture through Spatially-varying and Place-tailored Ricardian Estimates" (with Noe J Nava, Sandy Dall’Erba and Stewart Fotheringham)</p> <p>“Integrating social values with GPS tracks through Denali National Park and Preserve" (with Carena Van Riper, Dana Johnson, Christopher Raymond, William Stewart, Riley Andrade, and Devin Goodson)</p>
WORKS IN PROGRESS	"Temporal Disaggregation of Visitation Time Series in U.S. National Parks Using Mobile Phone GPS data" (with Zhangliang Chen)
RELEVANT EXPERIENCE	<p><b>Research Assistant</b> Jan 2016 - Aug 2018</p> <p>Department of Agricultural and Consumer Economics, UIUC</p>

- Tailored future climate predictions from multiple combinations of General Circulation Models and Regional Climate Models to evaluate climate change impact on agriculture productivity.
- Implemented a new variant of Lasso using MATLAB and R to quantify the regional differences in climate sensitivity of agriculture sector.
- Collaborated with a team of faculty and students, and presented findings at multiple conferences.

#### Teaching Assistant

- ACE 100: Introduction to Applied Microeconomics, UIUC, Fall 2018, Spring 2019, Fall 2019, Fall 2020, Fall 2021
- ACE 264: Applied Statistical Methods & Data Analytics 2, UIUC, Spring 2021
- ACE 449: Retirement & Benefit Planning, UIUC, Spring 2020

#### Actuarial Lead Intern

May 2020 - Aug 2020

Property and Casualty Actuarial Department, State Farm Research and Development Center

- Led a 4-member team of both undergrad and graduate students using R and Git.
- Implemented machine learning algorithms to select the most predictive driving variables on insurance premium.
- Developed an interactive Rshiny dashboard of Drive Safe & Save program to help users explore the spatial pattern of dangerous driving behaviors and loss experience.

#### OTHER EXPERIENCE

Research Assistant, National Center for Supercomputing Applications, Spring 2021 - Summer 2021

Organizational Assistant for the program in Environmental and Resource Economics Seminar (pERE), UIUC, Fall 2020 - Spring 2021

Audit Intern, Crowe Horwath Beijing, Spring 2014

#### SELECTED PRESENTATIONS

“Wildfire and Visitation in U.S. National Parks”

Southern Economic Association (SEA) Annual Meeting, Houston, TX, 2021 (*scheduled*).

Camp Resources XXVII, Asheville, NC, 2021.

Southern Economic Association (SEA) Annual Meeting, Virtual, 2020.

“On the Evaluation of Heterogeneous Climate Change Impacts on US Agriculture: Does Group Membership Matter?”

Southern Economic Association (SEA) Annual Meeting, Fort Lauderdale, FL, 2019

North American Regional Science Council (NARSC) Annual Conference, San Antonio, TX, 2018

Agricultural and Applied Economics Association (AAEA) Annual Meeting, Chicago, IL, 2017

#### AFFILIATIONS

Agricultural and Applied Economics Association (AAEA), Association of Environmental and Resource Economists (AERE)

PROGRAMMING	<b>Proficient</b> <b>Familiar</b>	R, Python, Stata, ArcGIS, Geoda, $\text{\LaTeX}$ MATLAB, Mathematica, GAMS
LANGUAGES	English (fluent), Chinese (native)	
REFERENCES	<p><b>Benjamin M. Gramig, Ph.D</b>  Research Agricultural Economist  Conservation &amp; Environment Branch  Economic Research Service, USDA  E-mail: <a href="mailto:benjamin.gramig@usda.gov">benjamin.gramig@usda.gov</a></p> <p><b>Amy W. Ando, Ph.D</b>  Professor  Department of Agricultural and Consumer Economics  University of Illinois at Urbana-Champaign  E-mail: <a href="mailto:amyando@illinois.edu">amyando@illinois.edu</a></p> <p><b>Carena J. van Riper, Ph.D</b>  Associate Professor  Department of Natural Resources and Environmental Sciences  University of Illinois at Urbana-Champaign  E-mail: <a href="mailto:cvanripe@illinois.edu">cvanripe@illinois.edu</a></p> <p><b>Sandy Dall’Erba, Ph.D</b>  Professor  Department of Agricultural and Consumer Economics  University of Illinois at Urbana-Champaign  E-mail: <a href="mailto:dallerba@illinois.edu">dallerba@illinois.edu</a></p>	

“Wildfire and Visitation in U.S. National Parks.” Chang Cai. **[Job Market Paper]**

*Abstract:* Recent rapid increase in wildfire activity due to climate change poses unprecedented challenges to park managers working to mitigate fire risk using limited resources. This paper estimates the effect of wildfires on visitation to national parks across the western U.S. Using a detailed dataset on wildfire and smoke, I provide the first large-scale evidence of the negative relationship between wildfire activity and park visitation. The monthly visitation loss is up to 0.75% per thousand acres burned, and the impact carries over to the following month. The visitation impact is prominent for fires of large size and/or burning in the populated areas. These effects can be explained by a lack of access due to emergency closures over the course of the season. I also investigate the global externalities associated with wildfire smoke and find that travelers are not responsive to the smoke from distant sources to a significant degree.

“On the Evaluation of Heterogeneous Climate Change Impacts on US Agriculture: Does Group Membership Matter?” Chang Cai and Sandy Dall’Erba (2021). *Climatic Change*. <https://doi.org/10.1007/s10584-021-03154-5>

*Abstract:* The Ricardian literature has only a handful of contributions addressing the presence of spatial heterogeneity in the marginal effects of climate change on agriculture. Although the majority of these studies offer models with group-specific slope parameters to account for spatial heterogeneity, large discrepancies on which grouping should be preferred still exist. This paper evaluates the extent to which expected future agricultural profits is sensitive to the four pre-determined groupings currently used in the literature. The results indicate that accounting for grouping uncertainty greatly increases the confidence interval around projected climate impacts. In addition, we do not find that one type of grouping is superior to any other. We suggest two potential solutions and emphasize the importance of explicitly controlling for grouping uncertainty in future studies.

“Integrating social values with GPS tracks through Denali National Park and Preserve” Chang Cai, Carena Van Riper, Dana Johnson, Christopher Raymond, William Stewart, Riley Andrade, and Devin Goodson.

*Abstract:* This study advances knowledge of the relationship between social values elicited during a participatory mapping exercise and on-ground travel patterns understood through GPS tracking of visitors to a protected area in Alaska. As one of the first studies to combine perceived social values and real-time use of a protected area landscape, we also showed the spatial relationships between these data in relation to environmental conditions. Contrary to previous research our comparison between social value and GPS tracking data illustrated differences hotspots defined by an abundance of point data suggesting visitors value areas that are not experienced first-hand. These relationships were analyzed in relation to backcountry units within the protected area to direct managerial attention to high and low priorities in relation to where and how visitor use is allocated. Spatial data reflecting use patterns and preferences among visitors were considered across three layers of ecological data. First, similar distributions were observed for elevation but dispersion of social values was greater than for GPS tracks. Second, average slope associated with social value points were significantly higher than with GPS tracks. Areas were difficult to experience and therefore limited to more experienced recreationists. Finally,

an assessment of landcover showed broad similarities across the top 10 land cover types, but also important differences in snow-ice as well as bare ground.