

# Katsutoshi Mizuta

Postdoctoral Researcher | Precision Agriculture Lab  
Department of Soil, Water, and Climate Department,  
University of Minnesota

## EDUCATION

### Degrees Awarded

2020	Ph.D.	Major: Soil and Water Sciences (Minor: Food and Resource Economics) University of Florida, Pedometrics, Landscape Analysis & GIS Laboratory (GPA: 3.74/4.00)
2016	M.s.	Major: Soil and Water Sciences, University of Florida, Pedometrics, Landscape Analysis & GIS Laboratory (GPA: 3.84/4.00)
2014	B.s.	Major: Environmental Engineering, Soka University (Japan), Geochemistry Lab (GPA: 3.86/4.00)

### Additional Training

2020	Certificate	Aerial Modeling and Mapping Workshop with UAV, DartDrones Inc.
2020	Certificate	Part 107 Remote Pilot for Unmanned Aerial Vehicle, Federal Aviation Administration
2015	Certificate	Benchmarking Infrastructure Operations, University of Florida, Warrington College of Business
2012	Certificate	Air Pollution Control Orientation Course, U.S. Environmental Protection Agency
2011	Certificates	International Business and Project Managements, University of Washington

## APPOINTMENTS

2020-Present	Director, NPO Worldwide Network of Japanese-researchers (U.S.)
2019-2020	Research Assistant, University of Florida, Soil and Water Sciences
2018-2020	Graduate Student Committee member, Soil Science Society of America
2017-2019	Director, NPO Worldwide Network of Japanese-researchers (Japan)
2015-2019	Teaching Assistant, University of Florida, Soil and Water Sciences

## FUNDED RESEARCH GRANTS

2016-2019 | \$39,900 | “Groundwork of pedo-econometric assessment for the efficiency of soil and ecological carbon functions at regional scale”, Japanese Student Services Organization Research Abroad Fellowship

PI: Katsutoshi Mizuta, CO-PI: Sabine Grunwald

2014-2016 | \$73,620 | “Prototype development of quantitative evaluation for soil functions and spectroscopy application”, Japanese Student Services Organization Research Abroad Fellowship

PI: Katsutoshi Mizuta, CO-PI: Sabine Grunwald

## PUBLICATIONS

### *In Process*

**Mizuta, K.**, Grunwald, S., Phillips, M.A., Moss, C.B., Bacon, A.R., Cropper Jr., W.P., Emergence of Pedo-Econometric Approach. (In preparation)

**Mizuta, K.**, Grunwald, Bacon, A.R., Cropper Jr., W.P., S., Phillips, M.A., Moss, C.B., Holistic Aboveground Ecological Productivity Efficiency Modeling Using Data Envelopment Analysis in the Southeastern U.S. (In preparation)

**Mizuta, K.**, Grunwald, S., Phillips, M.A., Moss, C.B., Bacon, A.R., Cropper Jr., W.P., Sensitivity Assessment of Metafrontier Data Envelopment Analysis for Soil Carbon Sequestration Efficiency. Ecological Indicator Journal (Submitted)

**Mizuta, K.**, Grunwald, S., Cropper Jr., W.P., Bacon, A.R., Developmental History of Soil Concepts from a Scientific Perspective. Geoderma Journal (Submitted)

### *Published (Peer-reviewed)*

**Mizuta, K.**, Grunwald, S., Phillips, M.A., Cropper Jr., W.P., Lee, W.S., and Vasques, G.M., 2019. [New Indication Method Using Pedo-Econometric Approach](#). Data Envelopment Analysis Journal 4, 207–241.

**Mizuta, K.**, Grunwald, S., and Phillips, M.A., 2018. [New soil index development and integration with econometric theory](#). Soil Science Society of America Journal 82, 1017–1032.

Grunwald, S., **Mizuta, K.**, Ceddia, M.B., Pinheiro, É.F.M., Wilcox, R.K.K., Gavilan, C.P., Ross, C.W., and Clingensmith, C.M., 2017b. [The Meta Soil Model: An Integrative Multi-model Framework for Soil Security](#), in: Field, D.J., Morgan, C.L.S., McBratney, A.B. (Eds.), Global Soil Security, Progress in Soil Science. Springer International Publishing, pp. 305–317.

Grunwald, S., Clingensmith, C.M., Gavilan, C.P., **Mizuta, K.**, Wilcox, R.K.K., Pinheiro, É.F.M., Ceddia, M.B., and Ross, C.W., 2017a. [Integrating New Perspectives to Address Global Soil Security: Ideas from Integral Ecology](#), in: Field, D.J., Morgan, C.L.S., McBratney, A.B. (Eds.), Global Soil Security, Progress in Soil Science. Springer International Publishing, pp. 319–329.

Ceddia, M.B., Grunwald, S., Pinheiro, É.F.M., **Mizuta, K.**, Clingensmith, C.M., and Fernandes, M.M., 2017. [Applying the Meta Soil Model: The Complexities of Soil and Water Security in a Permanent Protection Area in Brazil](#), in: Field, D.J., Morgan, C.L.S., McBratney, A.B. (Eds.), Global Soil Security, Progress in Soil Science. Springer International Publishing, pp. 331–340.

**Mizuta, K.**, Taguchi, S., and Sato, S., 2015. [Soil aggregate formation and stability induced by starch and cellulose](#). Soil Biology and Biochemistry 87, 90–96.

## PRESENTATIONS (\*=invited, p=poster, o=oral)

**Mizuta, K.**, S. Grunwald, M.A. Phillips, C. B. Moss, C. Wendell Jr., A. R. Bacon. 2020. Sensitivity Analysis of Metafrontier Data Envelopment Analysis for Assessing Soil Carbon Sequestration Efficiencies. North America Productivity Workshop XI. FL, USA (o)

- Mizuta, K.**, S. Grunwald, and M.A. Phillips. 2019. [Introduction to Pedo-Econometrics](#). Soil Science Society of America International Annual Meeting. CA, USA (o)
- Mizuta, K.**, S. Grunwald, and M.A. Phillips. 2019. [Econometric Case Study to Compute the Capability of Soil Carbon Sequestration in Florida](#). Soil Science Society of America International Annual Meeting. CA, USA (o)
- Mizuta, K.**, S. Grunwald, M.A. Phillips, W.P. Cropper, A. Bacon, C.B. Moss. 2019. [How to Make Sense of the Plurality of Soil Carbon Sequestration assessed within the Data Envelopment Analysis Indication System](#). 26<sup>th</sup> Pedometrics International Conference. Ontario, Canada (p)
- Grunwald, S., R.K. Kastner-Wilcox, C.M. Clingensmith, **K. Mizuta**, and C. Gavilan. 2018. The integral soil model to address local and global soil health and security. 21<sup>st</sup> World Congress of Soil Science, Rio de Janeiro. Brazil (o)
- Mizuta, K.**, S. Grunwald, 2018. The developmental history of soil concepts. Annual Soil and Water Sciences Research Forum. Gainesville, FL (p)
- Grunwald, S., R. Kastner-Wilcox, C. Gavilan, **K. Mizuta**, and C. M. Clingensmith. 2017. Facts, data and people's beliefs – An integral model to address soil health and security. Soil Science Society International Annual Meeting. FL, USA (o)
- Grunwald, S., C. M. Clingensmith, R. Kastner-Wilcox, **K. Mizuta**, and C. Gavilan. 2017. The integral soil model in support of global soil health and security. Soil Science Society International Annual Meeting. FL, USA (o)
- Mizuta, K.**, S. Grunwald, W.P. Cropper, W. Lee, G.M. Vasques, M.A. Phillips, W.G. Harris, D., B. Myers, and X. Xiong. 2017. A novel pedometrics-econometrics approach to assess soil carbon capability. 25<sup>th</sup> anniversary Pedometrics International Conference. Wageningen, Netherland (o)
- Mizuta, K.**, S. Grunwald, G.M.Vasques, W.Lee, M.A.Phillips, W.P. Cropper, X, Xiong, W.G.Harris,B.Myers. 2017. [Modelling Pedo-Econometric carbon scores with VNIR spectroscopy](#). 25<sup>th</sup> anniversary Pedometrics International Conference. Wageningen, Netherland (p)
- Mizuta, K.** 2017. Climate change, soil carbon, and environmental security. Invited by Dr. Michelle Phillips, Warrington College, University of Florida. (\*)
- Mizuta, K.** and S. Grunwald. 2016. Lessons from Econometric Theory to develop novel indication systems for soil quality, soil health and soil security. Soil Science Society International Annual Meeting. AZ, USA (o)
- Mizuta, K.** 2016. Science and soil. Japanese Association of Integral Studies. FL, USA (o)
- Mizuta, K.**, Grunwald, S., Cropper, W.P. Lee, W.S., Vasques G.M. Phillips, M.A. 2016. [Prototype development of a new soil index using the econometric method Data Envelopment Analysis](#). Annual Soil and Water Sciences Research Forum, Gainesville, FL (**selected as the BEST poster**) (p)
- Mizuta, K.** 2016. Alumnus talk-career path to graduate schools in the U.S. Invited by Soka University, Japan. (\*)
- Mizuta, K.** 2016. Index study for soil science and pedo-metrics. Invited by Soka University, Japan. (\*)

- Mizuta, K.** 2016. Up-to-date research flow of soil science - soil security and pedo-metrics. Invited by Kyoto University, Japan. (\*)
- Mizuta, K.** 2016. Application processes for scholarships and graduate schools in the U.S. Invited by Kyoto University, Japan (\*)
- Ceddia, M.B., É.F.M. Pinheiro, K. **Mizuta**, S. Grunwald, C. M. Clingensmith, and B. Cao 2015. Applying the Meta Soil Model: the connections between Soil Security and water security in a permanent protection area in Brazil. The Global Soil Security Symposium, TX, USA (o)
- Grunwald, S., B. Cao, M.B. Ceddia, C.M. Clingensmith, **K. Mizuta**, and É.F.M. Pinheiro. 2015. The Meta Soil Model: An Integrative Multi-Model Framework for Soil Security. The Global Soil Security Symposium. TX, USA (o)
- Mizuta. K.** 2015. Alumnus talk –pathway to the U.S. graduate schools. Invited by Soka University. (\*)
- Mizuta. K.** 2014. How to prepare applications for U.S. graduate school admissions and scholarships? Invited by International Cross-Cultural Committee Co. (Seattle Office, WA, USA). (\*)
- Mizuta, K.** and S. Sato. 2014. [Soil aggregate formation and stability induced by starch and cellulose](#). 20<sup>th</sup> World Congress of Soil Science. Jeju, Korea (o)
- Mizuta, K.**, Taguchi, S. and Sato, S. 2014. [CO<sub>2</sub> flux from a Japanese tropical soil applied with glucose and starch](#). Soil Science Society International Annual Meeting. CA, USA (p)

## TEACHING

- |                      |   |
|----------------------|---|
| 15', 18', 19' Fall   | Grader for GIS in Land Resource Management (Graduate), University of Florida                              |
| 17' Spring, 18' Fall | In-class and field instructor and grader for Introduction to Soils (Undergraduate) in the Environment Lab |

## PERSONAL SKILLS

- Computer excellence: ArcGIS, Statistics software (R, Python, Statistica), IBM Lotus Communications, Microsoft Office software
- Experimental experience: Soil sampling kit, VNIR and MIR Spectroscopy, Flame atomic absorption spectroscopy, ICP, AutoAnalyzer
- Language excellence: English, Japanese (native), Korean (introductory)

## EXTRACURRICULUM ACTIVITIES (INTERNSHIP & VOLUNTEER)

### Professional internship & volunteer

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|--|--------------------|--|
| 2021- Present  | Research Associate | Univ. of Minnesota, Dept of Soil, Water, Climate |
| <ul style="list-style-type: none"> <li>○ Work in a multi-institute team and farmers working to establish the noble precision nitrogen management (PNM) system for corn fields using high resolution images from satellite, aerial, and UAV remote sensing and develop various stochastic-based models to predict crop growth,</li> </ul> |                    |  |

evaluate economic and environmental benefits of the PNM technology under diverse on-farm conditions.

- 2021(2mo)                      Research Associate                      UF, School of Forest Resources and Conservation
- Developed research proposals, soil sample preparation and scanning with spectroscopy, machine learning applications to predict soil carbon under forests influenced by wild fire/prescribed fire management.
- 2019 (1d)                      Organizer/Moderator                      Soil Science Society of America
- Proposed and organized/moderated a conference session under Pedology Division at an annual conference
- 2018-2020 (2yrs)                      [Graduate Student Committee member](#)                      Soil Science Society of America
- Coordinated a mentorship program with division chairs in U.S. soil science community to foster future soil science to the forefront of global consciousness.
- 2016- Present (4+years)                      Reviewer (*ad hoc*)
- Guest editor for Choices Journal by the Agricultural & Applied Economics Association in 2016
  - Science of the Total Environment, Soil Use and Management, Journal of Geophysical Research: Biogeosciences, Soil Science Society of America, Plant and Soil, Soil Systems.
- 2015-Present (5+years)                      Graduate Assistant                      UF
- Conducted diverse activities, including scanning of soil samples by spectroscopy, data compilations, soil spectral data analysis, GIS and geospatial modeling, and wrote meeting minutes
- 2015-2018 (3yrs)                      President                      [Japanese Association for Integral Studies in Florida](#)
- Invited over 35 visiting scholars and other professionals, including business sectors at University of Florida, to present lectures on their research or projects once a month
- 2014 (4mo)                      Laboratory Manager                      Soka University Soil and Biochar Lab
- Developed experimental protocols of soil analyses in chemical, physical, and biological aspects.
  - Managed and maintained installations of chemical substance and laboratory instruments
- 2011 (3mo)                      Policy Intern                      U.S. Environmental Protection Agency Region 10
- Received EPA Certificate of Completion on Air Pollution Control Orientation Course.
  - Made and engaged in lists of facility located in four states (Washington, Oregon, Alaska and Idaho) that may interfere with amendments of engine and incinerator rules, and sent them official letters on those appropriate uses based on the Clean Air Act.
- 2011 (2wk)                      Agribusiness volunteer                      Nippon Biodiesel Fuel Co., Ltd (Mozambique)
- Attended negotiation with the local government officers about land acquisition for plantation of biofuel plant *Jatropha Curcas*, and surveyed the land use for the plantation and scaled the area with GPS recorder

### Service

2020-Present                      Director                      NPO Worldwide Network of Japanese-researchers (U.S.)

- Work closely with a president to organize networking events for Japanese scientists in the U.S., including Cross-disciplinary Best Paper Award ceremony invited with Noble Prize Winners.
- 2018 (4mo)                      Seminar Coordinator                      University of Florida
- Assisted to communicate with a seminar instructor for each week and all participants from all colleges across the campus and handle technical issues on room settings for presentations.
- 2017-2019 (2yrs)              Director                                      NPO Worldwide Network of Japanese-researchers (Japan)
- Hosted and organized various meetings by making agenda, announcements/reminders, and setting up conference rooms (e.g., general assemblies, executive board meetings, operation committee meetings, UJA supporter meeting).
  - Assisted to turn the institution into public benefit corporation by writing a by-law and organization chart, and managing memberships.
  - Published articles related to volunteers, internships, and study/research abroad.
- 2016-2018 (2yrs)              Youth event coordinator              [50,000 Lions of Justice Festival](#) (U.S.)
- Coordinated with over 250 festival registrants and minor guardians in cities of North Florida (e.g., Jacksonville, St. Augustine, Tallahassee, Valdosta, Gainesville, and Marion-Citrus) for managing registration processes, minor consent forms, bus transportation, and festival performances.
- 2015-2018 (3yrs)              Japanese tutor                              Local private language school
- Taught Japanese language to 3 middle school students once in a month
- 2013 (1wk)              Mentor for high school students              Global Fund for Education Assistance (Japan)
- Coordinated the program for high school students who experienced the Great East Japanese Earthquake in 2011 to discuss and think globally, cooperating with employees from the Bank of America
  - Translated the words of students into English for guests such as the CEO of Bank of America (Tokyo branch) and the CEO of the Generic Electric Company (Japan branch)

## HONORS & AWARDS

- 2019    Travel Grant, University of Florida (UF), Institute of Food and Agricultural Sciences (IFAS)
- 2018    James Davidson Travel Grant, UF, College of Agriculture and Life Science (CALS)
- 2018    William Robertson Fellowship, UF, Soil and Water Sciences Department (SWSD)
- 2018    Doris Lowe and Earl and Verna Lowe Scholarship, UF, CALS
- 2017    Excellence in Graduate Research-M.S. Level, UF, CALS
- 2017    Quantitative Environmental Soil Science Pedometrics Award, UF, SWSD
- 2017    Doris and Earl and Verna Lowe Scholarship, UF, CALS
- 2017    Year of 2016 Best Thesis by Major, UF, CALS
- 2016    Travel Award, UF, IFAS
- 2016    Outstanding International Student Awards, UF
- 2016    William Robertson Fellowship, UF, SWSD
- 2016    Best Poster Presentation Award, UF SWSD Research Forum
- 2016    Travel Grant, UF, Graduate Student Council
- 2016    Honor Society of Agriculture-Gamma Sigma Delta
- 2016    Certificate of Appreciation, Japanese Association of Integral Study

- 2015 Ben Skulnick Fellowship, UF, SWSD
- 2015 Travel Award, Japan Society for the Promotion of Science
- 2014 Alumni Scholarship for graduate school studies in overseas, Soka University (SU)
- 2011 Outstanding Student Award, SU
- 2011 Outstanding international student award, University of Washington