# MARCO MIOTTI

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## EDUCATION

**Massachusetts Institute of Technology (MIT)** 2014 – 2019
Ph.D. in Engineering Systems
Dissertation: *Variability in the emissions savings potential of battery electric vehicles across regions and individuals* [Link]
Committee: Jessika Trancik (chair, advisor), John Heywood, P. Christopher Zegras

**Swiss Federal Institute of Technology (ETH) Zurich** 2010 – 2013
S.M. in Environmental Engineering
Thesis: *Life cycle and cost assessment of current and future fuel cell vehicles*

**Swiss Federal Institute of Technology (ETH) Zurich** 2007 – 2010
B.S. in Environmental Sciences
Thesis: *Temporal turnover patterns of phytoplankton composition in Lake Zurich*

## RESEARCH EXPERIENCE

**Senior Researcher (Oberassistent)** February 2023 – present
Chair of Ecological Systems Design, ETH Zurich

**Postdoctoral Fellow** November 2019 – October 2022
Urban Informatics Lab, Stanford University

**Research Assistant** September 2014 – October 2019
Trancik Lab, MIT

**Research Assistant** November 2013 – February 2014
Laboratory for Energy Systems Analysis, Paul Scherrer Institute

**Research Assistant (part time)** July 2010 – July 2011
Applied Entomology Group, ETH Zurich

## PROFESSIONAL EXPERIENCE

**Centro Nacional de Producción Más Limpia** February 2014 – June 2014
Swiss Civilian Service | Bogotá, Colombia

**Global Risk Forum Davos** August 2013 – October 2013
Swiss Civilian Service | Davos, Switzerland

**Evonik Industries** March 2012 – September 2012
Intern | Marl, Germany & Shanghai, China

## PEER-REVIEWED ARTICLES

**Miotti**, Needell, and Jain. The impact of urban form on daily mobility demand and energy use: evidence from the United States. *Applied Energy,* 2023. [Link].

**Miotti** and Jain. A computationally efficient algorithm to enable privacy preserving urban energy data sharing under the "15/15" rule. *Energy Proceedings 2022.* [Link].

**Miotti** and Jain. Modeling aggregate human mobility patterns in cities based on the spatial distribution of local infrastructure. *2021 Hawaii International Conference on System Sciences.* [Link].

**Miotti**, Needell, Ramakrishnan, Heywood, and Trancik. Quantifying the impact of driving style changes on light-duty vehicle fuel consumption. *Transportation Research Part D: Transport and Environment*, 2021. [Link].

**Miotti**, Needell, and Trancik. Quantifying Reductions in Personal Vehicle Energy Consumption Due to Driving Style Changes. *Transportation Research Board 97th Annual Meeting*, 2018. [Link].

McNerney, Needell, Chang, **Miotti**, and Trancik. TripEnergy: Estimating personal vehicle energy consumption given limited travel survey data. *Transportation Research Record: Journal of the Transportation Research Board*, 2017. [Link].

Fletcher, **Miotti**, Swaminathan, Klemun, Strzepek, and Siddiqi. Water Supply Infrastructure Planning: Decision-Making Framework to Classify Multiple Uncertainties and Evaluate Flexible Design. *Journal of Water Resources Planning and Management*, 2017. [Link].

**Miotti***, Supran*, Kim, and Trancik. Personal vehicles evaluated against climate change mitigation targets. *Environmental Science & Technology*, 2016. [Link]. *authors contributed equally.

**Miotti**, Hofer, and Bauer. Integrated environmental and economic assessment of current and future fuel cell vehicles. *International Journal of Life Cycle Assessment*, 2015. [Link].

## OUTLOOK (articles in preparation or in review)

Ho, **Miotti**, and Jain. Exploring the Empirical Relationship Between Urban Form and Building Energy Use. *In review for the 2023 ASCE International Conference on Computing in Civil Engineering.*

**Miotti**, Ramakrishnan, and Trancik. Heterogeneity in emissions savings and costs of battery electric vehicles across regions and individuals. *In final preparation.*

**Miotti** and Jain. Predicting multi-scale urban mobility patterns from land use data. *In final prep.*

## SOFTWARE AND TOOLS

Carboncounter.com and Carboncounter.lu. Responsibilities: concept, design, programming, data collection, maintenance, server setup. 500,000+ unique visitors since September 2016.

FM Sensing (Android app; discontinued). Responsibilities: helped to integrate TripEnergy (a model to estimate vehicle trip fuel consumption) into server-side framework; developed a server-side module in Python to measure the eco-driving performance of a car drivers.

## OTHER PUBLICATIONS

Trancik, Edwards, Kavlak, Klemun, McNerney, **Miotti**, Needell, Pereira, Supran, and Wei. "Notes on scale: Why U.S. states can make a significant contribution to the Paris Agreement." Press release, 2017. [Link].

Trancik, Supran, and **Miotti**. "Reality is that most EVs emit less CO2 than petrol cars over their lifetimes." Letter, The Financial Times, Nov. 20 2017. [Link].
*Most read letter of the week in The Financial Times online.*

Trancik, Brown, Jean, Kavlak, Klemun, Edwards, McNervey, **Miotti**, Mueller, and Needell. Technology improvement and emissions reductions as mutually reinforcing efforts: Observations from the global development of solar and wind energy. Technical report, 2015. [Link].

Treyer, Oshikawa, Bauer, and **Miotti**. Work Package 4: Environment. In *Energy from the Earth: Deep Geothermal as a Resource for the Future?* Hirschberg, Wiemer, and Burgherr (eds). VDF Hochschulverlag, Zurich, 2015. [Link].

## RESEARCH GRANTS AND FELLOWSHIPS (as primary proposal author)

Stanford Center for Integrated Facility Engineering. "A big data modeling framework for evaluating the impact of urban design and constructability on multi-scale city energy usage"; 2021.

Stanford TomKat Center for Sustainable Energy. "A coupled urban mobility and building energy model to inform emission reduction strategies of cities" (Postdoctoral Fellowship); 2019.

Swiss National Science Foundation (SNSF). "Developing a coupled urban mobility and building energy model to inform energy consumption reduction strategies of cities" (Early Postdoc.Mobility Fellowship); 2019.

MyEnergy Luxembourg. "Adaptation of the tool 'carboncounter.com' for the context of Luxembourg"; 2019.

Toyota Motor Company. "An integrated, parametrized emissions model for light-duty vehicles"; 2018.

MIT Martin Family. "Evaluating technology evoluation pathways against climate goals: the case of light-duty vehicles" (Sustainability Graduate Fellowship); 2018.

## AWARDS & HONORS

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| Best Paper Award nominee, 2021 Hawaii International Conference on System Sciences | 2021 |
| Best Paper Award, Transportation Research Board Energy Subcommittee (4th author) | 2018 |
| Editor's Choice Paper, Journal of Water Resources Planning and Management (2nd author) | 2018 |
| Siebel Scholarship | 2017 |
| Society of Industrial Ecology Young Professionals Scholarship | 2017 |
| Willi-Studer Prize (for best GPA in master's program), ETH Zurich | 2013 |
| Unitech Fellowship, ETH Zurich | 2012 |

## INVITED TALKS

2022 Swiss-US Energy Innovation Days, Bern, Switzerland.

2019 Hitachi-University of Tokyo Forum on Society 5.0, Tokyo, Japan.

2018 Urban Informatics Seminar, Stanford University, Stanford CA

2018 Electromobility in Latin America and the Caribbean, Inter-American Development Bank (IDB), Washington DC

2018 LCA XVIII special session: LCA on mobility, Fort Collins CO

2018 Swiss-US Energy Innovation Days, Lausanne, Switzerland.

## SELECTED CONFERENCE PRESENTATIONS

**Miotti**, Trancik. Path to zero-carbon mobility: The role of urban planning and the built environment. Gordon Research Seminar (GRS) on Industrial Ecology, Newry ME, USA, 2022.

**Miotti**, Trancik. Leveraging data to estimate localized emissions and costs of personal vehicles. Gordon Research Seminar (GRS) on Industrial Ecology, Les Diablerets, Switzerland, 2018.

**Miotti**, Needell, Trancik. Quantifying reductions in personal vehicle energy consumption due to driving style changes. Transportation Research Board 97th Annual Meeting, Washington DC, USA, 2018.

**Miotti**, Trancik. Evaluating the emissions and costs of light-duty vehicles. International Society for Industrial Ecology/International Symposium on Sustainable Systems and Technologies (ISIE-ISSST) Joint Conference, Chicago, USA, 2017

**Miotti**, Supran, Kim, Trancik. Using a parameterized LCA to evaluate over 120 current passenger vehicle models against climate change mitigation targets. American Center for Life Cycle Assessment Conference (LCA XV), Vancouver, CA, 2015.

## TEACHING AND MENTORSHIP EXPERIENCE

### Student Supervision

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|---|---|
| Eleanor Ho (PhD Research Project) | 2021 – 2023 |
| Triana Hernandez Hasselkus (Undergraduate Research Project) | Summers 2021 and 2022 |
| Samantha Yi-Shuen Liu (Master's Research Project in Sustainable Urban Systems) | 2020 – 2021 |
| Full supervision of 3 graduate students during lab director's parental leave | Summer 2020 |
| Sai Sameer Pusapaty (Undergraduate Research Project) | Fall 2017 |
| Christiane Adcock (Undergraduate Thesis in Mechanical Engineering) | Spring 2017 |

### Teaching Education

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| Kaufman Teaching Certificate Program (KTCP), MIT | Summer 2018 |

### Guest Lecturer

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| Introduction to Life Cycle Assessment, MIT | Fall 2017 |

### Teaching Assistant

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| Mapping and Evaluating New Energy Technologies, MIT | Fall 2017 |

## SELECTED MEDIA COVERAGE

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| The New York Times. "Just How Good for the Planet Is That Big Electric Pickup Truck?" | 2023-02-17 |
| USA Today. "Fact check: Lifetime carbon emissions lower for electric vehicles than gas-powered cars." | 2022-06-09 |
| The New York Times. "Electric Cars Are Better for the Planet – and Often Your Budget, Too." | 2021-01-15 |
| Quartz. "Electric cars claim to be cheaper and greener. But are they?" | 2018-12-12 |
| The Guardian. "New MIT app: check if your car meets climate targets." | 2016-09-28 |
| The New York Times. "An App to Help Save Emissions (and Maybe Money) When Buying a Car." | 2016-09-27 |
| NPR. "It May Not Cost You More To Drive Home In A Climate-Friendly Car." | 2016-09-27 |

## SERVICE

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| President, MIT IDSS Student Council | 2018 – 2019 |
| Captain, MIT IDSS Ice Hockey Team | 2017 – 2019 |
| Co-Organizer, MIT Policy Hackathon: From Data to Decisions | 2018 |
| Team Lead, MIT Climate CoLab | 2015 – 2017 |
| Co-President, MIT Engineering Systems Student Society | 2016 – 2017 |
| Co-President and Graphic Design Lead, FFP Music Festival, Riniken, Switzerland | 2006 – 2012 |
| Military (completed regular service / training school), Swiss Air Force | 2006 |

**Manuscript reviewer**
Environmental Science & Technology; Environmental Science & Policy; Transportation Research Record; Transportation Research Part D: Transport & Environment; Journal of Industrial Ecology; Frontiers in Energy Research.

## SKILLS

**Spoken languages**
German (native), English (fluent), Spanish (proficient), French (basic with potential for recovery), Swedish (basic).

**Programming and markup languages** | 10,000+ lines written
Python, Javascript, HTML/CSS.

**Programming and markup languages** | 1,000+ lines written
R, SQL, LaTeX.

**Software**
Adobe Photoshop/Illustrator/InDesign, version control (Git), GIS/ArcGIS.