

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 Zengras

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 and Jain. Predicting multi-scale urban mobility patterns from land use data. In preparation.
- Miotti, Ramakrishnan, and Trancik. Heterogeneity in emissions savings and costs of battery electric vehicles across regions and individuals. In submission.
- Ho, Miotti, and Jain. Exploring the Empirical Relationship Between Urban Form and Building Energy Use. 2023 ASCE International Conference on Computing in Civil Engineering. In press.
- 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](#)].

DATASETS

- Miotti, Needell, and Jain. Measures of urban form and mobility energy use indices for each census tract in the United States. Data Dryad. [[Link](#)].

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 evolution pathways against climate goals: the case of light-duty vehicles" (Sustainability Graduate Fellowship); 2018.

AWARDS & HONORS

Best Paper Award nominee, 2021 Hawaii International Conference on System Sciences	2021
Best Paper Award, Transportation Research Board Energy Subcommittee (4 th author)	2018
Editor's Choice Paper, Journal of Water Resources Planning and Management (2 nd 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, Jain.** A computationally efficient algorithm to enable privacy preserving urban energy data sharing under the “15/15” rule. International Conference on Applied Energy, Bochum, DE, 2022.
- Miotti, Jain.** Path to zero-carbon mobility: The role of urban planning and the built environment. Gordon Research Seminar (GRS) on Industrial Ecology, Newry, USA, 2022.
- 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

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

Kaufman Teaching Certificate Program (KTCP), MIT	Summer 2018
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Guest Lecturer

Introduction to Life Cycle Assessment, MIT	Fall 2017
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Teaching Assistant

Mapping and Evaluating New Energy Technologies, MIT	Fall 2017
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SELECTED MEDIA COVERAGE

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

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 | 20,000+ lines written

Python, Javascript, HTML/CSS.

Programming and markup languages | 2,000+ lines written

R, SQL, LaTeX.

Software

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

PERSONAL INTERESTS

Sports (running, hiking, mountaineering, ice hockey), photography & graphic design, cooking.