

## TIA SCARPELLI

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(+1)734.945.3005

### EDUCATION

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**Harvard University**, Cambridge, MA (USA)

**PhD**, Earth & Planetary Sciences, expected May 2021.

Advisor: Prof. Daniel J. Jacob

**Michigan Technological University**, Houghton, MI (USA)

**MS**, Environmental Engineering, May 2016.

Thesis: The role of amino acids in the nitrogen cycle of peatlands

Advisor: Prof. Paul V. Doskey

**Michigan Technological University, USA**

**BS**, *summa cum laude*, Environmental Engineering, May 2015.

### RESEARCH AREAS

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Greenhouse gas emissions

Satellite observations of atmospheric pollutants

Data science

Climate policy

### RESEARCH APPOINTMENTS

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2016 - present Graduate Research Assistant and Teaching Fellow, Harvard University

2017 - present National Defense Science and Engineering Graduate (NDSEG) Fellow

2013 - 2014 U.S. Environmental Protection Agency (EPA) Graduate Research Opportunity (GRO) Fellow

2012 - 2014 Undergraduate Research Assistant, atmospheric science lab, Michigan Technological University

### FIRST-AUTHOR PUBLICATIONS

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**Scarpelli, T.R.**, D.J. Jacob, C.A. Octaviano Villasana, I.F. Ramirez Hernandez, P.R. Cardenas Moreno, E.A. Cortes Alfaro, M.A. Garcia Garcia, D. Zavala-Araiza, A gridded inventory of anthropogenic methane emissions from Mexico based on Mexico's national inventory of greenhouse gases and compounds, *Environ. Res. Lett.* 15, 105015, <https://doi.org/10.1088/1748-9326/abb42b>

**Scarpelli, T.R.**, D.J. Jacob, J.D. Maasackers, M.P. Sulprizio, J.X. Sheng, K. Rose, L. Romeo, J.R. Worden, G. Janssens-Maenhout, A global gridded (0.1° x 0.1°) inventory of methane emissions from oil, gas, and coal exploitation based on national reports to the United Nations Framework Convention on Climate Change, *Earth Syst. Sci. Data*, 12, 563–575, <https://doi.org/10.5194/essd-12-563-2020>

### INVITED PRESENTATIONS

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**Scarpelli, T.R.**, et al., Using Geospatial Data and Atmospheric Observations to Evaluate National Inventories of Methane Emissions from Oil, Gas, and Coal (Presentation). American Geophysical Union Fall Meeting, December 2020.

### PRESENTATIONS

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**Scarpelli, T.R.**, et al., Constructing a gridded inventory based on Mexico's National Inventory of Greenhouse Gases and Compounds for evaluation of Mexico's anthropogenic methane emissions (Poster). American Geophysical Union Fall Meeting, December 2020.

**Scarpelli, T.R.**, et al., A Global Gridded Inventory of Methane Emissions from Fuel Exploitation including Oil, Gas, and Coal (Presentation). American Geophysical Union Fall Meeting, December 2018.

## TEACHING AND MENTORING

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**Mentor** for undergraduate student research project, Harvard University, 2020-2021.

**Teaching Fellow** for Energy Resources and the Environment (undergraduate), Harvard University, 2020-2021.

**Teaching Fellow** for Atmospheric Chemistry (undergraduate), Harvard University, 2017.

## SERVICE

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**Diversity, Inclusion, and Belonging Graduate Student Recruitment Subgroup**, 2020 - present.

Planned events and engaged in dialog with Department administration with the goal of increasing recruitment and retention of a diverse group of individuals into the geoscience field (<https://eps.harvard.edu/graduate-student-recruitment>).

**Creator and organizer of AECS seminar**, Harvard University, 2020-present.

Created and organized the first bi-annual Atmospheric & Environmental Chemistry and Society (AECS) Seminar at Harvard University. The seminar invites distinguished speakers to introduce atmospheric chemists to the public health/policy aspects of their field with the goal of increasing community engagement of Harvard scientists and providing a networking event for early career scientists.

**Reviewer for Environmental Science & Technology**, 2020.

**Field Trip Leader**, Department of Earth and Planetary Sciences, Harvard University, 2019.

Co-organized and co-led the graduate student field trip to Washington State. Responsibilities included planning trip logistics, determining educational goals, and ensuring trip accessibility (physical, financial, etc.) for all department graduate students.

**Graduate Student-Postdoc Seminar organizer**, Harvard University, 2019 - 2020.

**Co-lead for Group Climate Survey**, Atmospheric Chemistry and Modeling Group (Harvard), 2019 - 2020.

**Climate Change and Urban Planning podcast**, Harvard University, *Sit 'N Listen*, 2016.

## PROFESSIONAL EXPERIENCE

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- Lab Technician for the U.S. Forest Service Northern Research Station, Summer 2015.
- Internship with the U.S. EPA's Region 8 Office (air pollutant emissions from oil/gas), Summer 2014.
- Internship with the U.S. EPA's National Vehicle Fuel Emissions Laboratory, Summer 2012.

## AWARDS AND RECOGNITION

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- First-author paper highlighted in North American Carbon Program's "What we are reading", October 2020.
- Certificate of Distinction in Teaching, Harvard Bok Center, Spring 2019.
- Stonington Endowment Graduate Fellowship of Environmental Science and Engineering, 2016-2017.
- Nicole Bloom Award for Environmental Sustainability, Michigan Technological University, 2014.
- Environmental Engineering Departmental Scholar Award, Michigan Technological University, 2014.

## SKILLS

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- Python
- GIS tools
- HTML
- R
- MATLAB
- Git

## ADDITIONAL PUBLICATIONS

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Zhang, Y., D. Jacob, X. Lu, J. Maasackers, **T. Scarpelli**, J. Sheng, L. Shen, Z. Qu, M. Sulprizio, J. Chang, A. Bloom, S. Ma, J. Worden, R. Parker, H. Boesch. Attribution of the accelerating increase in atmospheric methane during 2010–2018 by inverse analysis of GOSAT observations. *Atmos. Chem. Phys.*, 2021, 21, 3643–3666, <https://doi.org/10.5194/acp-21-3643-2021>

Zavala-Araiza, D., M. Omara, R. Gautam, M. Smith, S. Pandey, I. Aben, V. Almanza-Veloz, S. Conley, S. Houweling, E. Kort, J. Maasackers, L. Molina, A. Pusuluri, **T. Scarpelli**, S. Schwietzke, L. Shen, M. Zavala, S. Hamburg. A tale of two regions: methane emissions from oil and gas production in offshore/onshore Mexico. *Environ. Res. Lett.*, 2021, 16(2), 024019, <http://dx.doi.org/10.1088/1748-9326/abceeb>

Maasackers, J., D. Jacob, M. Sulprizio, **T. Scarpelli**, H. Nesser, J. Sheng, Y. Zhang, X. Lu, A. Bloom, K. Bowman, J. Worden, R. Parker. 2010–2015 North American methane emissions, sectoral contributions, and

- trends: a high-resolution inversion of GOSAT satellite observations of atmospheric methane. *Atmos. Chem. Phys. Discuss.*, 2020, 1-28, <https://doi.org/10.5194/acp-2020-915>
- Lu, X., D. Jacob, Y. Zhang, J. Maasakkers, M. Sulprizio, L. Shen, Z. Qu, **T. Scarpelli**, H. Nesser, R. Yantosca, J. Sheng, A. Andrews, R. Parker, H. Boech, A. Bloom, S. Ma. Global methane budget and trend, 2010-2017: complementarity of inverse analyses using in situ (GLOBALVIEWplus CH4 ObsPack) and satellite (GOSAT) observations. *Atmos. Chem. Phys. Discuss.*, 2020, 1-39, <https://doi.org/10.5194/acp-2020-775>
- Varon, D.J., J. McKeever, D. Jervis, J.D. Maasakkers, S. Pandey, S. Houweling, I. Aben, **T.R. Scarpelli**, D.J. Jacob, Satellite discovery of anomalously large methane point sources from oil/gas production, *Geophys. Res. Lett.*, 46, <https://doi.org/10.1029/2019GL083798>
- Maasakkers, J.D., D.J. Jacob, M.P. Sulprizio, **T.R. Scarpelli**, H. Nesser, J. Sheng, Y. Zhang, M. Hersher, A.A. Bloom, K.W. Bowman, J.R. Worden, G. Janssens-Maenhout, R.J. Parker, Global distribution of methane emissions, emission trends, and OH concentrations and trends inferred from an inversion of GOSAT satellite data for 2010-2015, *Atmos. Chem. Phys.*, 19, 7859-7881, <https://doi.org/10.5194/acp-19-7859-2019>
- Zhang, Y., R. Gautam, D. Zavala-Araiza, D.J. Jacob, R. Zhang, L. Zhu, J. Sheng, **T.R. Scarpelli**, Satellite-observed changes in Mexico's offshore gas flaring activity linked to oil/gas regulations, *Geophys. Res. Lett.*, 46, 1879-1888, <https://doi.org/10.1029/2018GL081145>