DANIEL J. VARON

Curriculum Vitae | 12 August 2021
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EXPERIENCE

2020–	**Postdoctoral Research Fellow** *Faculty mentor: Daniel Jacob*	Harvard University
2020–	**Postdoctoral Research Fellow** *Analytics team*	GHGSat Inc.

EDUCATION

2020	**PhD in Environmental Science & Engineering** Secondary field in Computational Science & Engineering *Faculty mentor: Daniel Jacob*	Harvard University
2018	**MSc in Applied Mathematics** *Faculty mentor: Daniel Jacob*	Harvard University
2014	**BSc in Physics** First Class Honours *Faculty mentors: Shaun Lovejoy, Tracy Webb*	McGill University
2014	**BA in English Literature** First Class Honours *Faculty mentor: David Hensley*	McGill University

PUBLICATIONS

Manuscripts under review

1. Sànchez-García, E., J. Gorroño, I. Irakulis-Loitxate, **D. J. Varon**, and L. Guanter: Mapping methane plumes at very high spatial resolution with the WorldView-3 satellite, *Atmos. Meas. Tech.*, submitted, 2021.

2. Guanter, L., I. Irakulis-Loitxate, J. Gorroño, E. Sánchez-García, D. H. Cusworth, **D. J. Varon**, S. Cogliati, and R. Colombo: Mapping methane point emissions with the PRISMA spaceborne imaging spectrometer, *Rem. Sens. Env.*, submitted, 2021.

Selected publications

3. **Varon, D. J.**, D. Jervis, J. McKeever, I. Spence, D. Gains, and D. J. Jacob: High-frequency monitoring of anomalous methane point sources with multispectral Sentinel-2 satellite observations. *Atmos. Meas. Tech.*, doi:10.5194/amt-14-2771-2021, 2021.

4. **Varon, D. J.**, D. J. Jacob, J. McKeever, and D. Jervis: Quantifying time-averaged methane emissions from individual coal mine vents with GHGSat-D satellite observations. *Environ. Sci. Tech.*, doi:10.1021/acs.est.0c01213, 2020.

5. **Varon, D. J.**, J. McKeever, D. Jervis, J. D. Maasakkers, S. Pandey, S. Houweling, I. Aben, T. Scarpelli, and D. J. Jacob: Satellite discovery of anomalously large methane point sources from oil/gas production. *Geophys. Res. Lett.*, doi:10.1029/2019GL083798, 2019.

6. **Varon, D. J.**, D. J. Jacob, J. McKeever, D. Jervis, B. O. A. Durak, Y. Xia, Y. Huang: Quantifying methane point sources from fine-scale satellite observations of atmospheric methane plumes. *Atmos. Meas. Tech.*, doi:10.5194/amt-11-5673-2018, 2018.

Additional published research

7. Irakulis, I., L. Guanter, Y. Liu, **D. J. Varon**, J. D. Maasakkers, Y. Zhang, A. K. Thorpe, R. M. Duren, C. Frankenberg, D. Lyon, D. H. Cusworth, Y. Zhang, K. Seg, J. Gorroño, E. Sánchez-Garcia, M. P. Sulprizio, K. Cao, H. Zhu, J. Liang, X. Li, I. Aben, and D. J. Jacob: Satellite-based Survey of Extreme Methane Emissions in the Permian Basin, *Sci. Adv.*, doi:10.1126/sciadv.abf4507, 2021.

8. Lyon, D. R., B. Hmiel, R. Gautam, M. Omara, K. Roberts, Z. R. Barkley, K. J. David, N. L. Miles, V. C. Monteiro, S. J. Richardson, S. Conley, M. L. Smith, D. J. Jacob, L. Shen, **D. J. Varon**, A. Deng, X. Rudelis, N. Sharma, K. T. Story, A. R. Brandt, M. Kang, E. A. Kort, A. J. Marchese, and S. P. Hamburg: Concurrent variation in oil and gas methane emissions and oil price during the COVID-19 pandemic. *Atmos. Chem. Phys.*, doi:10.5194/acp-21-6605-2021, 2021.

9. Jervis, D., J. McKeever, B. O. A. Durak, J. J. Sloan, D. Gains, **D. J. Varon**, A. Ramier, M. Strupler, and E. Tarrant: The GHGSat-D Imaging Spectrometer. *Atmos. Meas. Tech. Discuss.*, doi:10.5194/amt-2020-301, 2021.

10. Cusworth, D. H., R. M. Duren, A. K. Thorpe, S. Pandey, J. D. Maasakkers, I. Aben, D. Jervis, **D. J. Varon**, D. J. Jacob, C. A. Randles, M. Smith, R. Gautam, M. Omara, G. Schade, P. E. Dennison, C. Frankenberg, D. Gordon, E. Lopinto, and C. E. Miller: Multi-satellite imaging of a gas well blowout enables quantification of total methane emissions. *Geophys. Res. Lett.*, doi:10.1029/2020GL090864, 2020.

11. Zhang, Y., R. Gautam, S. Pandey, M. Omara, J. D. Maasakkers, P. Sadavarte, D. Lyon, H. Nesser, M. P. Sulprizio, **D. J. Varon**, R. Zhang, D. Houweling, D. Zavala-Araiza, R. A. Alvarez, A. Lorente, S. P. Hamburg, I. Aben, & D. J. Jacob: Quantifying methane emissions from the largest oil producing basin in the U.S. from space. *Science Advances*, doi:10.1126/sciadv.aaz5120, 2020.

12. Cusworth, D. H., D. J. Jacob, **D. J. Varon**, C. Chan Miller, X. Liu, K. Chance, A. K. Thorpe, R. M. Duren, C. E. Miller, D. R. Thompson, C. Frankenberg, L. Guanter, and C. A. Randles: Potential of next-generation imaging spectrometers to detect and quantify methane point sources from space. *Atmos. Meas. Tech.*, doi:10.5194/amt2019-202, 2019.

13. Lovejoy, S., D. Schertzer, **D. J. Varon**: Do GCMs predict the climate... or macro-weather? *Earth System Dynamics* 4, 439-454. doi:10.5194/esd-4-439-2013, 2013.

PRESENTATIONS

Invited talks

2021 Quantifying individual methane point sources in oil and gas fields using high-resolution satellite observations. NASA Jet Propulsion Laboratory Carbon Club seminar, 8 July.

2021 Quantifying individual methane point sources in oil and gas fields using high-resolution satellite observations. University of Washington Department of Atmospheric Sciences seminar, 26 April.

2021 Quantifying individual methane point sources in oil and gas fields using high-resolution satellite observations. Stanford University Energy Resources Engineering (ERE) seminar series, 5 April.

2019 Satellite discovery of anomalously large methane point sources from oil/gas production. (U14C-10) American Geophysical Union Fall Meeting, San Francisco, CA, 9-13 December.

2019 Quantifying methane point sources with fine-scale satellite observations. SRON Netherlands Institute for Space Research, Utrecht, Netherlands, 24 May.

Conference presentations

2020 Satellite Discovery of Anomalously Large Methane Point Sources from Oil/Gas Production. MIT A+B Applied Energy Symposium, Cambridge, MA, 12-14 August.

2019 Quantifying methane emissions from individual point sources with the GHGSat-D satellite instrument. (A53F-03) American Geophysical Fall Meeting, San Francisco, CA, 9-13 December.

2019 Quantifying methane emissions from individual coal mine vents with GHGSat-D satellite observations. 15th International Workshop on Greenhouse Gas Measurements from Space, Sapporo, JP, 3-5 June.

2019 Quantifying methane emissions from individual coal mine vents with GHGSat-D satellite observations. Industrial Methane Measurements Conference, Rotterdam, NL, 22-23 May.

2018 Quantifying methane point sources from fine-scale (GHGSat) satellite observations of atmospheric methane plumes. 14th International Workshop on Greenhouse Gas Measurements from Space, Toronto, ON, 8-10 May.

2017 Quantifying methane point sources from fine-scale (GHGSat) satellite observations of atmospheric methane plumes. (A32D-07) American Geophysical Union Fall Meeting, New Orleans, LA, 11-15 December.

Selected poster presentations

2018 Quantifying methane emissions from individual coal mine vents with GHGSat-D satellite observations. (A43R-3443) American Geophysical Union Fall Meeting, Washington, DC, 10-14 December.

TEACHING EXPERIENCE

Teaching assistant
Responsibilities included developing new class materials, leading class discussions, writing and grading all assignments, and meeting with students individually.

2017 *Atmospheric Chemistry* Harvard University
Overall teaching score of 4.7/5.0 based on student reviews
Awarded Harvard Certificate of Distinction in Teaching

HONORS & AWARDS

2019 Member of the Sigma Xi Honor Society
2018 AGU Outstanding Student Presentation Award
2017 Harvard University Certificate of Distinction in Teaching
2015 Stonington Graduate Fellowship of Environmental Science and Engineering
2014 McGill University Dean's Honour List

SERVICE

Convener International Measurements of Methane Emissions from the Fossil Fuel Industries, (A015) AGU Fall Meeting 2020.

Reviewer	*Atmospheric Measurement Techniques*, *Environmental Science & Technology*, *Remote Sensing of Environment*, *Geophysical Research Letters*
Member	American Geophysical Union
Leader	Machine Learning & Data Science subgroup. Subgroup of the Harvard Atmospheric Chemistry Modeling Group (ACMG)
Organizer	Building an inclusive community in EPS/ESE: Addressing gender-based discrimination and harassment. Department-wide event, February 2018.

SELECTED PRESS

The Economist	Using satellites to spot industry's methane leaks
New York Times	A methane leak, seen from space, proves to be far larger than thought
Forbes	Detection of methane leak from space could herald a revolution
Bloomberg	Satellite studying volcanoes finds giant oilfield methane plume