Ethan Manninen

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Education

Harvard University   Expected 2021

M.A. in Earth and Planetary Sciences (Atmospheric Chemistry)

Relevant Courses: Atmospheric Chemistry, Physics of Climate, Climate Dynamics, Biogeochemistry of Cryptic Cycles, Ordinary & Partial Differential Equations, Inverse Problems in Science

Harvard College   Expected 2021

A.B. in Earth and Planetary Sciences

Thesis: *Cluster Analysis of N_2O Enhancements Observed by ATom* - **Advisor:**   Steven Wofsy

Relevant Courses: Nonlinear Dynamical Systems, Discrete Mathematics, Honors Linear Algebra & Real Analysis, Environmental Modeling, Machine Learning in Earth Sciences, Organic Chemistry, Atmospheric Chemistry, Physical Oceanography & Climate, Water Weather & Climate, Electromagnetism & Quantum Physics, Mechanics, Intro Probability, Intro Statistical Modeling, Space Science Engineering.
Major GPA 3.468 GRE: Verbal Reasoning 170, Quantitative Reasoning 167, Analytical Writing 5.0

Research Experience

Harvard University, Wofsy-Munger Group on Biosphere Atmosphere Exchange
Research Assistant   June 2019 - Present

Clustered chemical data using statistical techniques including PCA, t-SNE, DBSCAN
Improved regional understanding of natural and anthropogenic CO and N_2O sources

Publications and Presentations

- Gonzalez, Y., Commane, R., Daube, B. C., **Manninen, E.**, Wofsy, S. C. (In preparation for submission December 2020 to *Atmospheric Chemistry & Physics*). Impact of stratospheric influx and N2O emissions on tropospheric N2O from ATom mission.

- **Manninen, E.**, Gonzalez, Y., Commane, R., Daube, B. C., McManus, J. B., McKain, K., Elkins, J. W., Moore, F., Sweeney, C., Wennberg, P. O., Froyd, K., Jimenez, J.-L., Campuzano-Jost, P., Ray, E., Wofsy, S. C. (2020). Cluster analysis of CO enhancements observed by ATom. Poster presentation at AMS 101st Annual Meeting, January 2021, Virtual & New Orleans, LA.

- Commane, R., **Manninen, E.**, Gonzalez, Y., Ray, E., Schiferl, L., Wofsy, S., and the ATom Science Team (2020). Characterizing air masses in the remote troposphere using in situ observations. Submitted for presentation at AMS 101st Annual Meeting, January 2021, Virtual & New Orleans, LA.

- **Manninen, E.**, Gonzalez, Y., Commane, R., Daube, B. C., McManus, J. B., McKain, K., Elkins, J. W., Moore, F., Sweeney, C., Wennberg, P. O., Froyd, K., Jimenez, J.-L., Ray, E., Wofsy, S. C. (2020). Cluster analysis of N2O enhancements observed by ATom. Poster presentation at AGU Fall Meeting, December 2020, Online & San Francisco, CA.

- Gonzalez, Y., Commane, R., Daube, B. C., **Manninen, E.**, McManus, J. B., McKain, K., Brock, C., Elkins, J. W., Montzka, S., Sweeney, C., Wennberg, P. O., Froyd, K., Jimenez, J.-L.,, Wofsy, S. C.

(2020). Origin and fluxes of nitrous oxide during ATom. Poster presentation at AGU Fall Meeting, December 2020, Online & San Francisco, CA.

- **Manninen, E.**, Wofsy, S. C. (2019). Clustering analysis of Atlantic ATom observations, presented at Harvard thesis class mid-year poster session, Cambridge, MA.

Teaching and Mentoring

- **Harvard College**   August 2020 - Present
  Peer Advisor: Advise two sophomore prospective concentrators about courses, research, departmental community
- **Math Tutor** Tucson, AZ   May 2020 - August 2020
  Tutor: Tutored middle school student in algebra
- **Neighborhood Hebrew School** Cambridge, MA   February 2018 - May 2019
  Teacher: Instructed elementary and middle school students in Hebrew reading and writing
- **Harvard Summer School**   June 2016 - August 2016
  Proctor: Collaborated with Co-proctor to ensure the safety and well being of 19 high school students

Skills

- **Technical:** R, Python, SQL, LaTeX, Excel, Vim, Harvard Odyssey Computing Cluster
- **Foreign Languages:** Hebrew (Intermediate) German (Beginner)
- **Workshops:** AGU Tutorial on Machine Learning (December, 2020), Harvard EPS field trip to Iceland
- **Society Memberships:** American Geophysical Union, American Meteorological Society
- **Interests:** Harvard Mountaineering Club, climbing, hiking, Geosoc, skiing, reading, writing fiction

Other Experience

- **Pfoho Pfiction Writing Group at Pforzheimer House, Harvard College**   January 2020 - Present
  Founder: Started club for students to share and critique each others works of fiction & poetry
- **PredictionHealth** Cambridge, MA, (Remote, Head Office Nashville, TN)   September 2018 - December 2018
  Programmer: Developed topic models and classifiers in Python on content specific to medicine
- **Harvard Open Data Project**   September 2016 - February 2018
  Student Analyst: Examined Harvard data to improve campus life
- **Matt Heinz for Congress** Tucson, AZ   June 2018 - August 2018
  Campaign Volunteer: Cleaned and analyzed political donation data to focus fundraising efforts
- **The Princeton Review** New York, NY   July 2017 - December 2017
  Data Intern: Researched, analyzed and prepared an interactive visualization of a key publishing contract • Analyzed SAT, PSAT, MCAT practice test score data to suggest best practices to maximize score gains
- **Harvard University**   January 2016 - May 2017
  Climbing Wall Staff: Monitored climbers for safety while using bouldering wall
- **Harvard University Library**   September 2016 - December 2016
  Library Assistant Judaica Division Reconciliation of Hebrew language materials acquired, invoice payments, catalogue

Scholarships and Awards

- Harvard University Center for the Environment Summer Research Award   2019
- Harvard Earth and Planetary Sciences Research Fellowship   2019
- National Merit Scholar and National AP Scholar   2015