

Newton Huy Nguyen

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EDUCATION

- Ph.D., California Institute of Technology** | Environmental Engineering Science 2019-2023
Thesis: From Source to Sink: Measuring and Modeling Methane Emissions and Loss.
Supervisor: Christian Frankenberg
- M.S., California Institute of Technology** | Environmental Engineering Science 2017-2019
Thesis: Effects of Coupled Chemistry on Methane Emissions Estimates.
Supervisors: Tapio Schneider & Christian Frankenberg
- B.A., University of California at Berkeley** | Geophysics, Highest Honors 2012-2016
Thesis: Neural Networks to Model Fluid Flows.
Supervisor: Bruce Buffett.

POSITIONS

- Stanford Science Fellow Postdoctoral Scholar**, Stanford University Sep 2023 - Present
Supervisors: Alison Hoyt & Leo Hollberg
 - Co-leading group to develop greenhouse gas measurements at ecosystem scale with long-range lasers
 - Quantifying sensitivity of soil carbon sequestration to environmental change
- Data & Algorithms Consultant**, Puloli, Inc. Dec 2022 - Present
 - Algorithm & data pipeline development for continuous methane monitoring for oil and gas
- Ph.D. Candidate**, Caltech Sep 2017-Jul 2023
Supervisor: Christian Frankenberg
- Research Assistant**, Lawrence Berkeley National Laboratory June 2016 - July 2017
Supervisors: Daniel Feldman & William D Collins
 - Team member on NASA's CIARReO Science Team
 - Investigated cloud-climate feedback using NASA satellite products.
 - Parallelized numerical radiative transfer model for super-computing (MPI & Fortran).
- Summer Research Fellow**, UC Santa Barbara Summer 2015
Supervisors: Ferederick Gibou
 - Computational & Applied Sciences Lab
- Summer Research Intern**, UC Berkeley Hydro-seismology Lab Summer 2014
Supervisor: Chi Wang

HONORS & AWARDS

Stanford University Science Fellowship	2023-2026
Caltech Engineering Division New Horizons Prize for Excellence in Mentorship & Service	2023
Research University Alliance	2022
National Science Foundation Graduate Research Fellowship for Scientific Merit <i>NSF</i>	2018
Boston Marathon Qualifier	2019, 2020
3rd Place, US Blind Athletes National Championships in the Marathon	2019
1st Place, Collegiate Triathlon National Championships in Para-athlete division	2016
"UC Leads" Fellowship & Best Presentation Award	2014-2016
Albert Newman Fellowship	2014
Berkeley Academic Merit Scholarship	2013-2016

PUBLICATIONS

Google Scholar: <https://scholar.google.com/citations?user=AziOzdwAAAAJhl=enoi=sr>
Orcid ID: 0000-0002-9118-8672

5. H Dion-Kirschner, **N.H. Nguyen**, C Frankenberg , W.W. Fischer.(Accepted) Evaluating the contribution of methanotrophy kinetics to uncertainty in the soil methane sink. *Environmental Research Letters*.
4. Cole, R. K., Fredrick, C., **Nguyen, N. H.**, & Diddams, S. A. (2023). Precision Doppler Shift Measurements with a Frequency Comb Calibrated Laser Heterodyne Radiometer. *Optics Letters*. <https://arxiv.org/abs/2307.07441>
3. **N.H. Nguyen**, A.J. Turner, Y Yin, M.J. Prather, C. Frankenberg. (2020) Effects of Chemical Feedbacks on Decadal Methane Emissions Estimates. *Geophysical Research Letters*. <https://doi.org/10.1029/2019GL085706>.
2. W.D. Collins, D.R. Feldman, **N.H. Nguyen**. (2018) Large regional shortwave forcing by anthropogenic methane informed by Jovian observations. *Science Advances*. <https://doi.org/10.1126/sciadv.aba0000>
1. D.R. Feldman, W.D. Collins, Y Shea, **N.H. Nguyen**, X Liu, B Wielicki. (2016) Observing Climate Change With Both Shortwave and Longwave Hyperspectral Satellite Instrumentation. *Light, Energy & the Environment*. <https://doi.org/10.1364/HISE.2016.HW2F.1>.

Submitted, in review, in revision, or in prep

3. **N.H. Nguyen**, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg. (submitted) Towards Laboratory-level Accuracy in the Field: Environmental Impacts on Greenhouse Gas Observations and Spectroscopy Measured by Laser Frequency Combs. *Atmospheric Measurement Techniques*.
2. **N.H. Nguyen**, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg.(In Prep) Next-Generation Ground-Based Measurements of Vertical Greenhouse Gas Gradients with Laser Frequency Combs. *Atmospheric Measurement Techniques*.

1. **N.H. Nguyen**, Y Yin, A J Turner, C Frankenberg.(In Prep) Global Methane Emissions Trends and Atmospheric Oxidation are Modulated by Stratospheric Transport and ENSO. (in prep)

Other publications

3. **Caltech** (2021) | Report of the committee on student admissions and recruitment [\[pdf\]](#)
2. **American Association of Physics Teachers** (2021) | Increase investment in accessible physics labs: a call to action for the physics education community [\[pdf\]](#)
1. **Glass Door** (2017) | A Triathlete Shares His 5 Secrets to Success [\[link\]](#)

TECHNICAL PROJECTS

SpectralFits.jl, Julia & Python June 2020-Present

- Designed & implemented flexible interface for retrieving GHG concentrations and vertical profile from multiple spectroscopic products (e.g., TCCON, OCO2, dual-comb spectroscopy, etc.)
- Resulted in 2 invited talks and 1 peer-reviewed publication.

OHMethane, Julia & MATLAB Jan 2018-Present

- Developed 4-box model to simulate atmospheric methane chemistry & infer global emissions given chemical constraints using Bayesian optimization.
- Resulted in 2 conference presentations and 2 peer-reviewed publications (1 under revision).

INVITED PRESENTATIONS

Technical Talks

University of Washington, Atmospheric Science Dept Seminar (2022) | "Towards Continuous, 3-D Observation of Greenhouse Gas Concentrations Directly in the Field"

University of Texas, Austin, Dept Seminar (2022) | "From source to sink: constraining past & present methane emissions"

Harvard, Atmospheric Chemistry Group (2021) | "Biological, dynamic, and chemical drivers of methane destruction"

Caltech, Environmental Science Dept Seminar (2021) | "Destructive interference: frequency combs for greenhouse gas remote sensing"

Caltech, Astronomy Division (2019) | "Monitoring climate change from space"

Invited Outreach Talks

Stanford d.School (2023) | "Panel on accessibility for engineering education"

Coca-Cola Headquarters (2022) | "Activism and perseverance in the Asian Community"

Reclaiming STEM (2021) | "Disability in Science"

Communication Science Conference (ComSciCom) (2021) | "DEI in STEM"

National Assoc. of Blind Students (2021) | "Communicating as a blind presenter"
National Federation of the Blind (2021) | "Designing your environment: how to succeed as a blind scientist"
National Federation of the Blind (2019) | "Developing tools for blind scientists"
Aira Corporation (2018) | "Being a blind scientist"

CONFERENCE PRESENTATIONS

N.H. Nguyen, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg. (2022) Bridging the Gap: Frequency Combs for a Next-Generation GHG Monitoring Network. Poster Presentation, AGU.

N.H. Nguyen, K Cossel, E Waxman, N Newbury, I Coddington, C Frankenberg. (2021) Destructive Interference: Future Long-term Greenhouse Gas Monitoring with Dual-Comb Spectroscopy Needs More Accurate Spectroscopic Parameters. Poster Presentation, AGU.

N.H. Nguyen, C Frankenberg, A.J. Turner, Y Yin, M.J. Prather. (2019) Quantifying the Effect of Neglecting Variable Methane Lifetime on Methane Emissions Estimates, Poster Presentation, AGU.

N.H. Nguyen, C Frankenberg, Y Yin, A.J. Turner. (2018) Effects of Methane and Hydroxyl Radical Chemistry on Decadal Methane Emissions Estimates, Poster Presentation, AGU.

D Feldman, W.D. Collins, B.A. Wielicki, Y Shea, M.G. Mylnczak, C Kuo, **N.H. Nguyen**. (2017) How Continuous Observations of Shortwave Reflectance Spectra Can Narrow the Range of Shortwave Climate Feedbacks, Poster Presentation, AGU.

LEADERSHIP & SERVICE

Co-founder, Systemic Access Mentorship Program Aug 2020-Present

- Organized & coordinated national mentorship program for blind students in STEM globally (40 participants)
- Conduct virtual meetings 2x a month and meet with mentees regularly.

Co-founder, President, & Treasurer of Caltech Disability Coalition 2020-2022

Caltech Graduate Admissions Policy Committee Sep 2020 - March 2021

- Selected by the President of Caltech to be student representative for the faculty committee tasked with increasing student body diversity & rewriting graduate admissions policies
- Proposed 3 policies for reducing admissions biased, which were implemented by the university

American Association of Physics Teachers Committee for Accessible Labs 2019-2021

- Member of committee tasked with improving disability access in K-12 and University physics labs.
- Committee resulted in white paper on best practices & a conference presentation.

- Caltech Graduate Student Council** 2018 - 2020
- Representative for Engineering & Applied Sciences
 - Member of the Advocacy & Diversity Sub-committee
- Founder & President, Caltech Triathlon Club** Sept 2019-Present
- Coached track and biking practices for more than 20 athletes
 - Organized and coordinated a 3-race series involving 100 participants from 11 schools
- Lawrence Berkeley National Lab** 2016-2017
- Member of lab-wide Employee Accessibility Committee
 - Climate & Ecosystem Science Division Representative for Diversity & Inclusion
 - DEI Representative for the Dept of Energy External Review Committee
- President, UC Berkeley Atmospheric Science Association** 2015-2016

PRESS

- [SoCaltech: #SoCaltech: Newton Nguyen](#) March 2022
- [Runners' World Magazine: How Running Has Helped Newton Nguyen Navigate Life as a Blind Man](#) Oct 2021
- [Ally Commercial: We're All Better Off With An Ally](#) Jul 2021
- [Mini-Documentary: Marathoning Through Life with Vision Loss](#) Oct 2021
- [Careers for the Blind Podcast: Episode 35 - Climate Scientist Newton Nguyen](#) Oct 2021
- [Caltech Magazine: Creating a More Inclusive Caltech](#) Fall 2020
- [ScienceDaily: By Jove! Methane's effects on sunlight vary by region](#) Sept 2018
- [Berkeley National Lab News: Newton Nguyen's Vision Loss Doesn't Slow Him Down](#) Oct 2016
- [KTVU News: 98 percent blind Cal Berkeley student competes as triathlete](#) March 2015

TEACHING EXPERIENCE

- ESE103 Biogeochemistry | TA S2019; Christian Frankenberg; Rating: 5/5
- ESE156 Remote Sensing of the Atmosphere & Biosphere | TA F2019; Christian Frankenberg; Rating: 5/5
- Scientific Writing & Communication at UCLA | TA Summer 2019

TECHNICAL SKILLS & EXPERTISE

- Skills:** Python | Julia | R | Matlab | Fortran | Git | Bash | Numpy/Scipy | SKLearn/Pytorch
- Expertise:** Numerical computing | Probability | Bayesian statistics | High-performance computing | Greenhouse gas emissions | Remote sensing | Satellite spectroscopy | Machine learning
- Memberships:** American Geophysical Society (2014 - Present) | American Meteorological Society (2017 - Present)