

PHILIPPINE BURDEAU

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EDUCATION

- Stanford University, Doerr School of Sustainability** 2022 – 2026
PhD in Energy Science and Engineering under the supervision of Prof. Adam Brandt
Stanford, California
- Statistical methods for quantifying methane emissions from measurement data
 - Areas: geostatistics, bayesian inference, emission inventory reconciliation, remote sensing
- Università Bocconi** 2020 – 2022
MSc in Politics and Policy Analysis
Milan, Italy
- Master thesis: determining optimal conditions for a CCS network in Italy using a cooperative game theory model
 - Areas: game theory, public economics, social and economic networks
- École Polytechnique** 2017 – 2021
MSc in Science and Engineering - Grandes Ecoles / Ingénieur Polytechnicien Program
Palaiseau, France
- Areas: applied mathematics, modern physics
- Lycée Sainte-Geneviève** 2015 – 2017
Preparatory school for the French Grandes Ecoles (MPSI - MP*)
Versailles, France
- Areas: mathematics, physics

RESEARCH AND WORK EXPERIENCE

- Environmental Assessment and Optimization Group - Research Assistant** Sept 2022 - Now
Prof. Adam Brandt's research group
Stanford, California
- Working on statistical methods for quantifying methane leaks and estimating their impact, and on the design, implementation and analysis of data from controlled release experiments
- Insight M - Research Intern** Jun - Aug 2024
Methane emissions management company
Sunnyvale, California
- Updating and improving a stochastic bottom-up model for predicting methane emissions
- Kearney - Business Analyst Intern** May - Nov 2021
Global consulting firm
Paris, France
- Within the Kearney's Energy Transition Institute, drafted a techno-economic report on Carbon Emissions Management
 - Supported due diligence for a car insurer evaluating startup partnerships and acquisitions
- France Stratégie Economics department - Research Intern** Apr - Aug 2020
Policy advisory agency to the French Prime Minister
Paris, France
- Defined a socio-economic formula of the costs of greenhouse gas abatements in the French building sector
 - Built and programmed a physics-based model to assess the efficiency of thermal renovations
- École Polytechnique – Scientific Group Project** Sep 2018 – Jun 2019
Student-led research project supervised by Prof. Emmanuel Joffre and Prof. Daniel Suchet
Palaiseau, France
- Built a quantum remote laboratory in a group of 5 students
 - `quantum-physics.polytechnique.fr`
- Systra - Assistant Manager Intern** June - Aug 2019
Leading engineering group in transportation solutions (6,700 people, €380m turnover)
Paris, France
- Supported the manager of a team of 20 railway project managers and assisted them on their worksites
- French Navy - Officer** Sept 2017 - May 2018
Human and military training on a military base
Noumea, New-Caledonia
- Worked as an advisor to the Naval Base Commander and integrated a navy crew for a mission in the Pacific Ocean

PUBLICATIONS

- High-resolution national mapping of natural gas composition substantially updates methane leakage impacts** 2025
Burdeau P., Sherwin E., Berman E., Biraud S., Brandt, A.
[Nature Communications](#) (accepted) - [preprint](#)
- Statistical inference of intermittent methane emissions from heterogeneous measurements** 2025
Burdeau, P., McManemin, A., Sherwin, E., Wetherley, E., Berman, E., Brandt, A.
[AGU Fall Meeting Abstracts](#), SY41C
- Carbon Intensity of United States Natural Gas Supply** 2025
Zhang, Z., Rutherford, J., Littlefield, J., Ramadan, F., Ali Saafi, M., Ren, B., Y Jabbar, M., Saad, D., Burdeau P., Masnadi, M., Brandt, A.
[Environmental Science & Technology](#) (in review)
- Controlled release testing of commercially available methane emission measurement technologies at the TADI facility** 2025
McManemin, A., Juéry, C., Blandin, V., France, J.L., Burdeau P., Brandt, A.
[Atmospheric Measurement Techniques](#) (in review) - [preprint](#)
- Creating accurate methane emission inventories through data-driven airborne survey strategies: methods and results from the Anadarko and Haynesville basins, USA** 2024
Yakovlev, P.V., Sherwin, E.D., Burdeau, P., Brandt, A.R., Kruguer, J., Berman, E.S.F., Kamdar, H.
[AGU Fall Meeting Abstracts](#), A13N-01
- Single-blind test of nine methane-sensing satellite systems from three continents** 2024
Sherwin, E., El Abbadi, S., Burdeau, P., Zhang, Z., Chen, Z., Rutherford, J., Chen, Y., Brandt, A.
[Atmospheric Measurement Techniques](#) - [link](#)
- Technological maturity of aircraft-based methane sensing for greenhouse gas mitigation** 2024
El Abbadi, S., Chen, Z., Burdeau, P., Rutherford, J., Chen, Y., Zhang, Z., Sherwin, E., Brandt, A.
[Environmental Science & Technology](#) - [link](#)
- Comparing continuous methane monitoring technologies for high-volume emissions: a single-blind controlled release study** 2024
Chen, Z., El Abbadi, S., Sherwin, E., Burdeau, P., Rutherford, J., Chen, Y., Zhang, Z., Brandt, A.
[ACS ES&T Air](#) - [link](#)
- Comprehensive evaluation of aircraft-based methane sensing for greenhouse gas mitigation** 2023
El Abbadi, S., Chen, Z., Burdeau, P., Rutherford, J., Chen, Y., Zhang, Z., Sherwin, E., Brandt, A.
[EarthArXiv preprint](#) - [link](#)
- Independent evaluation of methane sensing satellites, airplanes, and continuous monitoring ground sensors** 2023
El Abbadi, S., Chen, Z., Burdeau, P., Rutherford, J., Chen, Y., Sherwin, E., Zhang, Z., Brandt, A.
[AGU Fall Meeting Abstracts](#) - [link](#)
- Carbon emissions assessment: towards accurate control** 2022
Burdeau, P., Debarre, R., Gahlot P., Grillet, C.
[Kearney Energy Transition Institute Report](#) - [link](#)

TALKS

- AGU25 poster session SY41C: Statistical inference of intermittent methane emissions from heterogeneous measurements** 2025
- Stanford ESE in 2050 poster session: High-resolution national mapping of natural gas composition substantially updates methane leakage impacts - Best Poster Award** 2025
- Methane Emissions Technology Alliance (META) Seminar (Stanford University & LBNL) - recorded** 2024
- CEOS side meeting at IWGGMS (CNES, Paris)** 2023

PROFESSIONAL ENGAGEMENT

Core Member, **Methane Technology Alliance** seminar series

2024 – Present

HONORS AND AWARDS

First place in the Stanford ESE in 2050 poster contest (awarded to 1 poster out of 33) 2025

Fulbright grant from Fondation Monahan 2022

Ecole Polytechnique Best Scientific Group Project Prize (awarded to 3 groups out of 120) 2019

ACADEMIC SERVICE

Reviewer, ACS ES&T Air 2024, 2025

Reviewer, Tackling Climate Change with Machine Learning at ICLR 2025

Reviewer, Climate Change AI Innovation Grants Program 2024

TEACHING EXPERIENCE

Course Assistant - Optimization Apr – Jun 2024
Instructor: Prof. Adam Brandt (Stanford University)

Teaching Assistant in Preparatory School - Physics Sept 2018 – May 2019
Instructor: Prof. Niels Vandecasteele (Lycée Sainte-Genevieve)

- Prepared students for a nationwide ranked exam (X/ENS/Centrale/Mines)

SOFTWARE

Code for: High-resolution national mapping of natural gas composition substantially updates methane leakage impacts - github.com/pburdeau/us_gas_composition - 2025
doi:10.5281/zenodo.17246906

Interactive U.S. map of produced gas composition - pburdeau.github.io/us_map_gas_composition 2025
- doi:10.5281/zenodo.17246945

BU_methane_model - github.com/JSRuthe/BU_methane_model (python version) 2024

SKILLS

Languages

English (TOEFL 110, professional proficiency), French (Native), Italian, German

Programming

Python; C++; Matlab; proficiency in Julia, R, Stata, VBA and Java

EXTRACURRICULARS

Writing & Journalism

École Polytechnique alumni network's journal (20k circulation)

- Core member of the journal's editorial committee
- Wrote articles for the 50th anniversary of the school opening to women - [Read article](#)

Music

Piano (19 years, baroque music)