

# PHILIPPINE BURDEAU

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## EDUCATION

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- 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

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- 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

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- 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., Juárez, C., Blandin, V., France, J.L., Burdeau P., Brandt, A.*  
Atmospheric Measurement Techniques (in review) - [preprint](#)
- 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 in principle) - [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

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- 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

## HONORS AND AWARDS

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<b>First place in the Stanford ESE in 2050</b> poster contest (awarded to 1 poster out of 33)	2025
<b>Best Scientific Group Project Prize</b> (awarded to 3 groups out of 120)	2019

## ACADEMIC SERVICE

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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

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<b>Course Assistant - Optimization</b> Instructor: Prof. Adam Brandt (Stanford University)	Apr – Jun 2024
<b>Teaching Assistant in Preparatory School - Physics</b> Instructor: Prof. Niels Vandecasteele (Lycée Sainte-Genevieve) <ul style="list-style-type: none"><li>Prepared students for a nationwide ranked exam (X/ENS/Centrale/Mines)</li></ul>	Sept 2018 – May 2019

## SOFTWARE

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<b>Code for: High-resolution national mapping of natural gas composition substantially updates methane leakage impacts</b> - <code>github.com/pburdeau/us-gas-composition</code> - <code>doi:10.5281/zenodo.17246906</code>	2025
<b>Interactive U.S. map of produced gas composition</b> - <code>pburdeau.github.io/us-map-gas-composition</code> - <code>doi:10.5281/zenodo.17246945</code>	2025
<b>BU_methane_model</b> - <code>github.com/JSRuthe/BU_methane_model</code> (python version)	2024

## SKILLS

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<b>Languages</b> English (TOEFL 110, professional proficiency), French (Native), Italian, German
<b>Programming</b> Python; C++; Matlab; proficiency in Julia, R, Stata, VBA and Java

## EXTRACURRICULARS

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<b>Writing &amp; Journalism</b> École Polytechnique alumni network's journal (20k circulation) <ul style="list-style-type: none"><li>Core member of the journal's editorial committee</li><li>Wrote articles for the 50th anniversary of the school opening to women - <a href="#">Read article</a></li></ul>
<b>Music</b> Piano (19 years, baroque music)