Internship – Summer 2024 (CUSRA, USRA or Coop)

Quantifying the non-CO2 climate impacts of aviation

This internship contributes to the collaborative research project **EAP** (Exploration and modeling of alternative propulsion technologies for business jets) between Concordia University, University de Sherbrooke, Ecole Polytechnique de Montreal, Bombardier, Pratt& Whitney, and Calogy Solutions

This project will take place in the Aircraft Systems Lab and will be supervised by Dr. S. Liscouët-Hanke and Dr. S. Lloyd (JMSB)

Context

While the combustion of fuel in aircraft directly contributes to climate change through the production of greenhouse gas emissions, primarily carbon dioxide (CO_2), other aircraft emissions, including nitrogen oxides (NOx), soot particles, sulphur oxides (SOx), and water vapour. While the approach for characterizing the climate impact of GHG emissions, methods for characterizing non-CO2 impacts of aviation or less well established. This research will focus on the emerging methods that have been proposed for estimating the non-CO2 climate impacts from aircraft. The student will support an ongoing research effort to identify proposed methods, operationalize their mathematical methods, and develop characterization factors that can be used in life cycle assessment of aircraft.

Objectives

This research project aims to support the development of the first set of characterization factors for assessing the non-CO2 climate impacts from aircraft in life cycle assessment. In particular, the students will:

- Conduct a literature review of methods for estimating the non-CO2 climate impacts of aviation
- Develop input-output tables for all unit processes in identified business aircraft life cycle
- Support life cycle assessment (LCA)

Qualifications & Skills

- Basic knowledge of aircraft combustion engines
- Interest in learning about Life Cycle Analysis (LCA)
- Capability to synthesize information from various sources

As part of the project, the student is expected to participate in regular project reviews with the partners and to prepare required documentation (deliverables, project presentation, tool documentation and user guide).

Eligibility

- Please check the criteria to apply for the CUSRA or NSERC USRA research award
- In exceptional cases, this project can also be offered as a paid Coop internship

How to apply

Qualified and highly motivated candidates are invited to send their application via email to susan.liscouet-hanke@concordia.ca using the subject ***" Summer Internship 2025 - LCA"*** with the following elements:

• Email with your motivation and relevant experience
• Complete and up-to-date CV
• Up-to-date transcript

For the CUSRA, interviews will be done until Feb 21, 2025. For NSERC USRA or Coop, Until Feb 28, 2025.