Pathways to Sustainable Aviation: An Interdisciplinary Research School

Rapport sur les contributions

ID de Contribution: **321** Type: **Non spécifié**

Welcome address

lundi 18 mai 2026 09:00 (10 minutes)

Orateur: LEFEBVRE DE PLINVAL SALGUES, Henry (ISAE-SUPAERO)

ID de Contribution: **322** Type: **Non spécifié**

Introduction

lundi 18 mai 2026 09:10 (10 minutes)

Orateur: JOLY, Laurent (Institute for Sustainable Aviation)

ID de Contribution: **323** Type: **Non spécifié**

Systemic approach to the transition of air travel

lundi 18 mai 2026 09:30 (35 minutes)

Orateur: JOLY, Laurent (Institute for Sustainable Aviation)

ID de Contribution: **324** Type: **Non spécifié**

Air transport and societies

lundi 18 mai 2026 10:05 (35 minutes)

Most stakeholders agree that air transport must respond to the growing challenge of climate change. The real question is not whether change is needed, but how it should happen and what kind of air transport we want for the future. These debates highlight the complex and sometimes contradictory role of air transport in our societies. In this presentation, we will explore how air transport both influences and is influenced by society, across social, cultural, territorial, economic, political, and geopolitical dimensions.

Orateur: LAPLACE, Isabelle (ENAC)

ID de Contribution: **325** Type: **Non spécifié**

Aviation environmental impacts and mitigation / adaptation levers

lundi 18 mai 2026 10:50 (35 minutes)

Aviation contributes to climate change through its CO2 emissions and other effects known as non-CO2 effects. This course will quickly describe these effects, as well as other environmental impacts such as land use or energy resources consumptions. A classification of mitigation levers to reduce these impacts will then be proposed. Finally, the concepts of physical and transition risks will be introduced to discuss adaptation levers.

Orateur: PLANES, Thomas

ID de Contribution: **326** Type: **Non spécifié**

Introduction to governance and legal levers

lundi 18 mai 2026 11:25 (35 minutes)

Orateur: GROSCLAUDE, Laurent (Université Toulouse Capitole)

ID de Contribution: **327** Type: **Non spécifié**

Workshop - Modelling aviation transition scenarios

lundi 18 mai 2026 13:00 (1 heure)

Modelling transition scenarios is a major challenge in evaluating decarbonisation strategies and proposing sectoral roadmaps. The aim of this workshop will be to use the AeroMAPS framework, a dedicated open-source research code, to simulate and evaluate illustrative scenarios. General results will be obtained concerning the most effective mitigation strategies, achievable environmental objectives or the effect of policies on demand.

Auteur: PLANES AND SCOTT DELBECQ, Thomas (ISAE-SUPAERO)

Orateur: PLANES AND SCOTT DELBECQ, Thomas (ISAE-SUPAERO)

ID de Contribution: **328** Type: **Non spécifié**

Plenary Session - LCA and its application to aviation

mardi 19 mai 2026 09:00 (1h 25m)

Life Cycle Assessment (LCA) is a scientific method to evaluate the total environmental impact of a product, process, or service. The approach includes resource use and emissions from raw material extraction, through manufacturing, use, and final disposal/recycling. It is an essential methodology to assess the full environmental impact of current and future technologies in aviation. This session provides an introduction to LCA, fundamentals of the theory and approaches behind it, and its relationship with other life cycle engineering methodologies. Then, applications of LCA to aviation use-cases are detailed. Last, an overview of challenges and opportunities for LCA in aviation are presented.

Orateur: ALBANO AND DANIEL KAN, Joana (NLR - DLR)

ID de Contribution: **329** Type: **Non spécifié**

Lecture STS 3 - The climate impact of aviation and its mitigation

jeudi 21 mai 2026 10:35 (1h 25m)

Aviation contributes to climate change by changing the composition of the atmosphere. Current aircraft engines emit carbon dioxide (CO2), a greenhouse gas, and also emit several non-CO2 compounds that impact climate. The perturbation of atmospheric chemistry by aviation emissions of nitrogen oxides and the formation of contrails are two examples of non-CO2 effects, which are currently much discussed among the aviation industry and European policymaking. This lecture will present the physical and chemical mechanisms by which aviation impacts climate, and review proposed solutions to reduce those impacts.

Orateur: BELLOUIN, Nicolas (University of Reading)

ID de Contribution: **330** Type: **Non spécifié**

Lecture HSS 1 - Impacts of sustainability oriented regulatory measures on air-rail modal shifts: the case of a kerosene tax

mardi 19 mai 2026 10:35 (1h 25m)

In today's context of increasing environmental consciousness, stricter regulations but also capacity constraints across different transport modes, and demand for smoother passenger experiences, optimizing and coordinating multimodal transport in Europe is vital for the overall effectiveness of the transport system, both now and in the future. Understanding the factors influencing passengers' transport choices is crucial. We examine the substitution patterns between air and rail travel for French city pairs where both options are available. We analyze the market share of various travel alternatives based on their service provider, quality, and pricing on the routes under study. Moreover, we assume price competition between service providers, given their ex-ante choice of quality and their marginal cost of production. The Bertrand-Nash equilibrium is derived from a structural model allowing to measure inter and intra-modal competition as well as marginal cost per service and operator. We closely examine the features of air and rail transport to gauge their impact on passengers' mode preferences. We can therefore conclude on the main efficient regulatory measures enabling the steering of passengers'choices, increasing quality of services, or implementing taxes on kerosene for instance.

Auteur: ROUCOLLE, Chantal (ENAC)

Co-auteurs: PAU, Annika (Bauhaus Lufthart); LAPLACE, Isabelle (ENAC); BOLIC, Tanja (University of Westminster)

Orateur: ROUCOLLE, Chantal (ENAC)

ID de Contribution: **333** Type: **Non spécifié**

Plenary Session - Modelling airline behaviour

mercredi 20 mai 2026 09:00 (1h 25m)

Competition between airlines affects their choices of networks and fleet, the itineraries and prices they offer, and how these respond to policy. Consequently, modelling airline behaviour can give insights into the effectiveness of different policy options and the potential markets for new aircraft technologies. This talk discusses factors that affect airline competition and how they can be simulated, using UCL's Airline Behaviour Model as an example, before giving recent examples of how such modelling can be used to assess policy outcomes.

Orateur: DRAY, Lynnette (University College London)

ID de Contribution: **334** Type: **Non spécifié**

Lecture STS 2 - Leveraging open data and models to reduce aviation's climate footprint

mercredi 20 mai 2026 10:35 (1h 25m)

This presentation explores how open data and open-source tools can help evaluate and reduce aviation climate impact. We introduce OpenSky data for flight tracking, aircraft performance models for emission estimation, and methods for predicting contrail formation using meteorological data. Finally, we demonstrate how these resources enable trajectory optimization for flight planning that minimizes both emissions and contrail-induced warming.

Orateur: SUN, Junzi (Delft University)

ID de Contribution: **336** Type: **Non spécifié**

Plenary Session - Why do we travel - and do we travel too much?

jeudi 21 mai 2026 09:00 (1h 25m)

The presentation covers why humans travel, and which implications in particular social media and travel influencers have for transport demand. Turning to a global climate justice perspective, the lecture then discusses distributions of global air travel, before turning to the question as to whether air transport demand is genuine or induced, and whether there are options to reduce emissions through behavioural change.

Orateur: GOSSLING, Stefan (Linnaeus University)

ID de Contribution: **337** Type: **Non spécifié**

Lecture STS 1 - Propulsion Systems - from physical basics to actual developments

mardi 19 mai 2026 10:35 (1h 25m)

This presentation covers the basics from fundamentals of thrust generation in propeller drives and gas turbines to current development trends and challenges.

Based on fundamental design principles, the specific advantages and disadvantages of technologies, as well as the limits of what is feasible, will be highlighted and discussed. In addition to the propulsor as a thrust-generating component, the presentation also addresses new energy sources (SAF and LH2) and fuel cell systems. At the same time, important aspects of integrating the propulsion system into the aircraft are addressed. Examples from current research results on the respective topics will be presented and discussed.

Orateur: FRIEDRICHS, Jens (TU Braunschweig)

ID de Contribution: **338** Type: **Non spécifié**

Lecture HSS 3

jeudi 21 mai 2026 10:35 (1h 25m)

Orateur: GONZALEZ MARIN, Camila (AIRBUS)

ID de Contribution: **340** Type: **Non spécifié**

Lecture HSS 2 - Understanding consumer acceptance of green innovations

mercredi 20 mai 2026 10:35 (1h 25m)

Research examines how psychological and behavioral variables influence the acceptance of green innovations in contexts where environmental responsibility conflicts with established consumption practices. It highlights the role of values and air travel behavior in shaping individuals'willingness to support sustainable technologies, extending existing research beyond purely economic or technological determinants.

Orateur: LAURENT, Sara (Montpellier Business School)

ID de Contribution: **342** Type: **Non spécifié**

Presentation of the week's programme

lundi 18 mai 2026 09:20 (10 minutes)

Orateur: CALMELS-LAVERGNE, Laurence (Institute for Sustainable Aviation)

ID de Contribution: **344** Type: **Non spécifié**

Projects: introduction to projects

lundi 18 mai 2026 16:20 (1h 40m)

The group projects are conceived as focused interdisciplinary explorations of aviation sustainability challenges. Given the limited time frame, each group will address one specific nexus of the systemic map, building on preparatory material synthesizing relevant state-of-the-art research. Participants will engage in cross-disciplinary dialogue, including preliminary runs of disciplinary or coupled models, to uncover both the challenges and potential of interdisciplinary research. The outcome will be concise systemic insights, formalized in a two-pager and a targeted contribution to the collective gigamap.

ID de Contribution: **346** Type: **Non spécifié**

PhD candidate

Auteur: M. BÉTOUS, Thomas (ISAE-SUPAERO)

ID de Contribution: **347** Type: **Non spécifié**

Curriculum Vitae

Auteur: COSTA ALVES, Ian (ISA / ISAE-SUPAERO)

ID de Contribution: **350** Type: **Non spécifié**

post-doc

Auteur: Dr SIRTORI, Gabriele (ISA)

ID de Contribution: **351** Type: **Non spécifié**

CV Clémentin Léron

Auteur: M. LÉRON, Clémentin (TU Delft)

ID de Contribution: **353** Type: **Non spécifié**

PhD candidate

Auteur: M. PASQUALIN, Luca

ID de Contribution: **354** Type: **Non spécifié**

PhD candidate

Auteur: M. WOLDHUIS, Thymen (Delft University of Technology)

ID de Contribution: **355** Type: **Non spécifié**

CV Gnaccarini Sara

Auteur: GNACCARINI, Sara

ID de Contribution: **357** Type: **Non spécifié**

Romain JAN, CV

Auteur: JAN, Romain

ID de Contribution: **358** Type: **Non spécifié**

PhD candidate

Auteur: VIRY, Paco (ISAE SUPAERO)

ID de Contribution: **359** Type: **Non spécifié**

PhD Candidate

Auteur: M. PRASHANT, Prashant (TU Delft)

ID de Contribution: **360** Type: **Non spécifié**

post-doc

Auteur: Mme LECOUFFE, Audrey (IPSL, Sorbonne Université)

ID de Contribution: **362** Type: **Non spécifié**

Candidature Reasearch School ISA - Félix POLLET

Auteur: POLLET, Félix (ISAE-SUPAERO / ISA)

ID de Contribution: **363** Type: **Non spécifié**

N/A

Auteur: SALGAS, Antoine (ISAE-ISA)

ID de Contribution: **364** Type: **Non spécifié**

Pre-registration request

Auteur: CORTEZ BARAUNA, Juliana