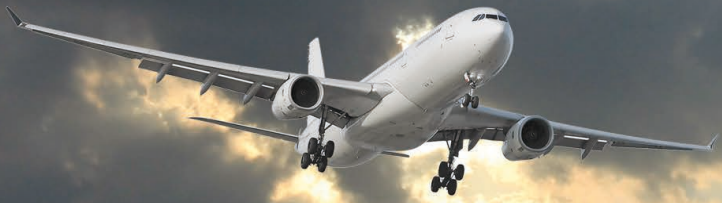
Research Workshop

Climate change and the role of air traffic control

22-23 September 2021 in Vilnius / Lithuania

Call for Papers



Baltic FAB
A PART OF SINGLE EUROPEAN SKY

VILNIUS TECH
Vilnius Gediminas Technical University

G.A.R.S.

FABEC



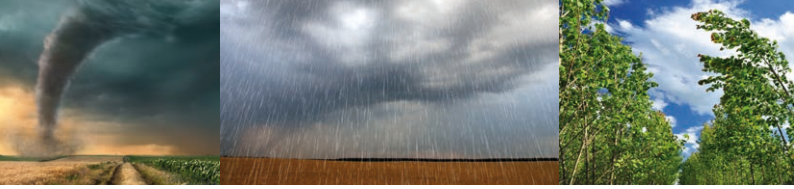
Baltic FAB and FABEC are continuing the series of successful annual research workshops with a forum in September 2021 dedicated to climate change and the role played by air navigation services in collaboration with industry partners to deliver sustainable aviation services for European citizens. The organisers welcome proposals from academics, scientists and industry experts to submit papers for consideration to participate as speakers. The event is organised in partnership with Vilnius Gedimino Technical University and the German Aviation Research Society (G.A.R.S.).

Aim of the workshop

Climate change is affecting all parts of the world, prompting every industry to examine how it can reduce its environmental footprint. Aviation faces challenges on many levels and is actively researching ways to realise carbon neutral growth. In addition to several initiatives to limit or even reduce gas emissions from burning fossil fuel, the industry is increasingly confronted with unforeseen weather events and less predictable traffic demand. On the one hand a temperature rise may reduce de-icing operations, however it also brings more intense rain and flooding, prolonged drought, increased wildfires and associated ash particles. Responding in a sustainable way to these challenges is the focus of the climate change forum.

Setting the scene

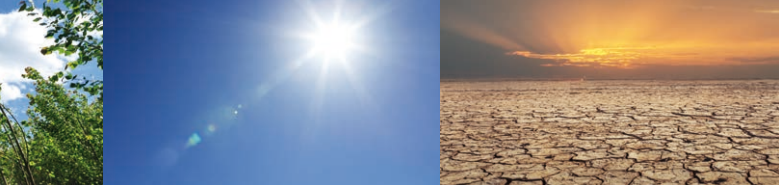
The European Union has committed to becoming the first climate-neutral block in the world by 2050, backed by the European Commission's Green Deal Investment Plan announced in 2019 which aims to mobilise EUR1 trillion in sustainable public and

private investments over the next decade. According to industry reports, air traffic management is on the one hand responsible for up to 10% of all aviation greenhouse gas emissions. On the other hand, European institutions acknowledge that air navigation service providers can influence only 5% of emissions, maybe 3% or less. In fact, currently there is no common agreement on the metrics used to measure the impact of aviation and herewith ATM in terms of CO_2 or other emissions.

Air navigation service providers face difficult choices in managing air traffic expeditiously between Europe's busy airport network in a sustainable way; balancing safety with cost, punctuality and environmental impact. Keeping aircraft in the air longer may reduce overall fuel burn if it means better operations on the ground, with more frequent take-offs and landings at busy hubs. Unexpected events such as severe weather – increasing as a result of climate change – or industrial action lead to lengthy diversions around impacted airspace and cause increases in aviation's environmental footprint. Analysing exactly how these measures affect emissions will help to determine future priorities and ease decision-making at a political level.

Airlines have introduced quieter aircraft, become more fuel-efficient and lowered carbon dioxide emissions per passenger, however aircraft emissions are still accountable for over 2% of global carbon emissions. A shift towards more sustainable operations needs to start with a better understanding of flight efficiency, as the impact of aircraft emissions on climate depends on the flight level where it occurs. Currently the measurement is limited to horizontal flight-efficiency, whereas knowledge on vertical flight efficiency – both in climb and descent – remains rather limited.



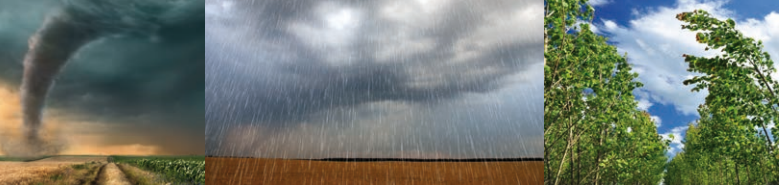
Questions to be answered

The workshop will consider the role of air traffic control and review opportunities for more sustainable operations. Topics will include current practises and procedures, new ideas and methodology, and the potential provided by digital technology to support more sustainable airspace management. Discussion topics will focus on prioritising climate change in air traffic control in two areas. Firstly, the impact of air navigation services on climate and how it can be reduced:

- What is aviation's precise contribution to climate change and what share is attributed to air traffic management?
- How can we measure the impact of aviation on climate change, especially in terms of vertical flight efficiency?
- How can air traffic management help to reduce the impact of aviation on climate change - in which areas and to what extent?
- How can we incorporate the relevance, for instance related to the cruising altitude of the flight, of CO_2 emissions into operational measures or the regulatory system?
- How can we find trade-offs between the different key performance areas – balancing the passenger view with the citizen view?

Secondly, the impact of changing climate on air navigation services and how the service can be adapted.

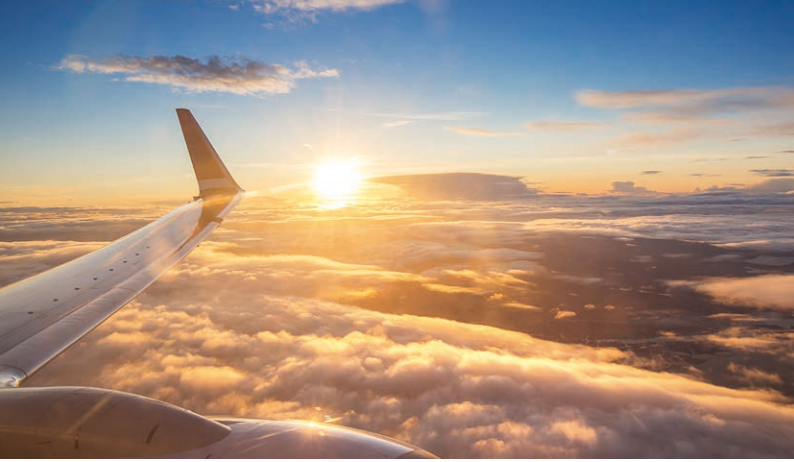
- How is climate change affecting aviation? Are patterns emerging?
- How have weather phenomena changed over the past decade and what is predicted for the future?



- What are the impact and the interdependencies of global phenomena (i.e jetstream etc) related to local phenomena towards air traffic control?
- What kind of information (scaling, prediction, probability etc.) is required to stabilize the network in case of adverse weather?
- Unpredictable weather severely affects traffic flow, distance flown, flight time and predictability. How can procedures reduce the negative effect of weather? What are the best practices?
- To what extent does adverse weather influence predictability for air traffic management and punctuality for the passenger?
- What level of network instability is acceptable to airspace users, passengers and air navigation service providers?

The workshop aims to bring together academics and practitioners, providing a forum for mutual exchange. We welcome theoretical and empirical papers as well as practical contributions such as case studies or best practice approaches (including from other industries). Moreover, we also invite Bachelor, Master, Diploma or PhD students to present their work. As research is always in progress, we encourage scholars to present their work at any stage.

In addition to the presentation of submitted papers, keynote speakers will lead with insights into the discussion topics. The workshop is free of charge to attend but the organisers will not be able to cover travel or accommodation costs of most attendees. In the case of students, some limited funding for travel may be available. Please indicate in your submission if you require assistance.



Call for Papers

You are invited to submit an abstract of not more than one page that contains author(s), research question, data gathering, analysis methodology and expected results as a word file or pdf to:
Matthias Whittome: Matthias.whittome@fabec.eu
Vidmantas Kairys: workshop@ans.lt and/or
Ignas Daugela: ignas.daugela@vgtu.lt

Further updates are to be found at balticfab.eu or www.fabec.eu

Important Dates

30.04.2021	Submission deadline for abstracts (max one page)
31.05.2021	Notification of acceptance
31.08.2021	Submission for full papers (max eight pages)
22/23.09.2021	Workshop

Contact

Matthias Whittome: Matthias.whittome@fabec.eu
Ignas Daugela: workshop@ans.lt

Baltic FAB A PART OF SINGLE EUROPEAN SKY · VILNIUS TECH Vilnius Gediminas Technical University · G.A.R.S. · FABEC