

F4EClim

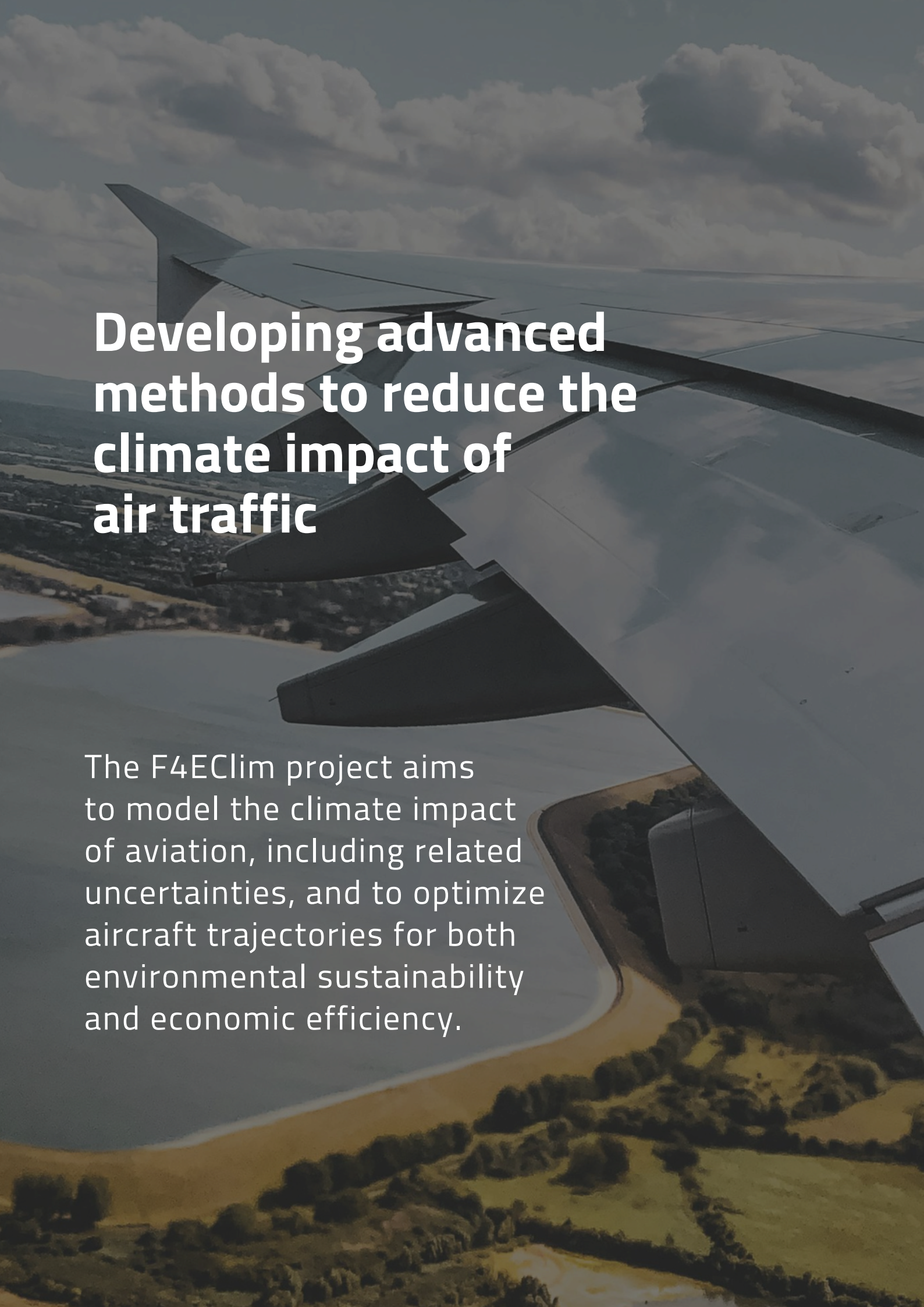
Flying ATM for Environment Climate

www.f4eclim.eu

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An aerial photograph of an aircraft's wing and tail section, viewed from above. The wing is dark and sleek, with a curved leading edge. Below the wing, a landscape is visible, featuring a large body of water (a lake or reservoir) and surrounding green fields with some trees. The sky is filled with soft, white clouds. The overall image has a slightly desaturated, muted color palette, giving it a professional and scientific feel.

Developing advanced methods to reduce the climate impact of air traffic

The F4EClim project aims to model the climate impact of aviation, including related uncertainties, and to optimize aircraft trajectories for both environmental sustainability and economic efficiency.

Research Objectives

1

Extend aCCFs of CO₂ and non-CO₂ climate effects to represent different seasons, different geographic regions and confidence intervals.

2

Explore the potential for mitigating aviation's climate impact considering its uncertainties by creating advanced flight planning algorithms to identify robust, climate-optimized trajectories.

3

Provide aviation stakeholders with recommendations and supportive measures to implement eco-efficient aircraft trajectories.



Towards greener air traffic operation

F4EClim aims to **address uncertainties** tied to contrails, NO_x induced changes in ozone/methane, and water vapor climate effects.

How? By **improving algorithmic climate change functions** (aCCFs) in terms of seasonal and geographical expansions, and incorporating representative climate metrics.

These advancements will feed into a **climate service** for the aviation community.

Additionally, the project will explore aviation's potential to reduce its climate impact through the **development of robust flight planning algorithms**.

These algorithms will identify eco-efficient aircraft trajectories, assessing the associated climate impact reduction and costs.

THE POTENTIAL OF ACCURATELY PREDICTING THE CLIMATE IMPACT OF NON-CO₂ EMISSIONS



The aviation industry will be able to implement mitigatory actions that could reduce the climate impact by 20-50% at costs that are relatively small ~1%.

Project Consortium



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Institut für Physik der Atmosphäre,
Oberpfaffenhofen (DLR-PA) and Institute of
Air Transport, Hamburg (DLR-LV).*



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