



University of
Reading



PRESS RELEASE

Ukraine war forces planes to take longer routes, raising CO₂

Paris, February 13 2025,

According to a 2023 study, published yesterday in [Communications Earth & Environment](#), global aviation carbon dioxide emissions increased by 1% in 2023 because planes had to fly longer routes to avoid Russian airspace.

After Russia invaded Ukraine in February 2022, western airlines were banned from flying over Russia. This forced them to take much longer routes between Europe or North America and East Asia, burning more fuel in the process.

The study found that detours caused by the Ukraine war led to planes using 13% more fuel on average compared to their original routes. The impact was even greater for flights between Europe and Asia, which saw a 14.8% increase in fuel consumption. Flights between North America and Asia experienced a smaller but still significant 9.8% increase.

Professor Nicolas Bellouin, currently seconded to the Institut Pierre-Simon Laplace (Sorbonne University/École Polytechnique/UVSQ), co-authored the research from the University of Reading.

“After the invasion of Ukraine, there was a drop in flights between Western countries and East Asia as airlines adjusted their routes. Over time, flights resumed but had to take significant detours, either flying south of Russia or over the Arctic.

“The affected flights make up about 1,100 flights per day, but the extra distance they must fly has a notable impact on aviation's overall carbon footprint. These detours added 8.2 million tonnes of CO₂ to global aviation emissions in 2023.”

The research team used flight tracking data and sophisticated computer models to calculate how much extra fuel planes use on their new routes. Their analysis took into account factors like wind patterns, which can significantly affect fuel consumption.

Airspace restrictions over Libya, Syria, and Yemen were also considered by the research team. They found conflicts in each country affect between 60 and 100 flights per day. Planes avoiding Libyan airspace used 2.7% more fuel on average, while those avoiding Syria saw a 2.9% increase. The detours around Yemen had a slightly bigger impact, with planes using 4.3% more fuel. However, because these restrictions affect relatively few flights and require shorter detours, their impact on global aviation emissions was less than 0.2%.

About Sorbonne University:

[Sorbonne University](#) is a multidisciplinary, research-intensive university covering the humanities, health, science and engineering. Anchored in the heart of Paris and with a regional presence, Sorbonne University has 55,000 students, 4,000 teaching and research staff, 3,300 national researchers and 135 laboratories. Alongside its partners in the Sorbonne University Alliance, and via its institutes and multidisciplinary initiatives, it conducts research and educational activities to strengthen its contribution to the challenges of three major transitions: a global approach to health (One Health), resources for a sustainable planet (One Earth), and changing societies, languages and cultures (One Humanity). Sorbonne University is also a member of Alliance 4EU+, an innovative model for European universities that develops strategic international partnerships and promotes the openness of its community to the rest of the world.

About the University of Reading:

The University of Reading is a research-intensive university founded in 1926. Home to more than 23,000 students, the University is proud to welcome staff and students from all over the world at our award-winning campuses in Reading, Henley-upon-Thames, Johannesburg, and Iskandar. The University of Reading is home to one of the world's leading [centres for the study of meteorology](#) and was named [Sustainable University of the Year 2025](#) in The Times and The Sunday Times Good University Guide 2025.

About École Polytechnique:

École Polytechnique, also known as L'X, is the leading French institution combining top-level research, academics, and innovation at the cutting-edge of science and technology and cultivates multidisciplinary and scientific excellence. L'X combines research, education and innovation at the highest scientific and technological level. The Institution promotes a culture of excellence with a strong emphasis on science, anchored in humanist traditions. Through its range of training programs – Bachelor of Science, École Polytechnique engineering program, Masters of Science and Technology, Executive Masters, Continuing education - École Polytechnique trains leaders with a sound multidisciplinary scientific culture by exposing them to both the world of research and industry. With its 23 laboratories, including 22 joint research units with the CNRS, École Polytechnique works at the frontiers of knowledge on major interdisciplinary challenges in the scientific, technological and societal fields. École polytechnique is a founding member of Institut Polytechnique de Paris. www.polytechnique.edu

University of Versailles Saint-Quentin-en-Yvelines (UVSQ)

Located on 5 campuses in the Yvelines department and with nearly 20,000 students in initial and continuing education, the University of Versailles Saint-Quentin-en-Yvelines offers more than 200 multidisciplinary degree programs across its 10 components, ranging from Bachelor's to Doctorate, as well as health and engineering diplomas. UVSQ places pedagogical innovation, professionalization, and internationalization of its programs at the heart of its strategy, which is supported by high-potential research. This research is composed of 37 research structures, including 30 laboratories that excel in numerous scientific fields such as space, climate and environment, heritage, health, epidemiology, disability, sociology, materials, complex systems, and public policies. Its international positioning among the top 25 French universities is regularly confirmed by several rankings, such as Shanghai (ARWU), Times Higher Education (THE), QS, CWUR, and Leiden. As a founding member, UVSQ actively contributes to the establishment and success of the University of Paris-Saclay.

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