

Climate change will delay transatlantic flights

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Flight time infographic. Credit: University of Reading

Planes flying between Europe and North America will be spending more time in the air due to the effects of climate change, a new study has

shown.

By accelerating the jet stream—a high-altitude wind blowing from west to east across the Atlantic—[climate change](#) will speed up eastbound [flights](#) but slow down westbound flights, the study found. The findings could have implications for airlines, passengers, and airports.

The study, led by Dr Paul Williams, an atmospheric scientist at the University of Reading, calculates that transatlantic aircraft will spend an extra 2,000 hours in the air every year, adding millions of dollars to airline fuel costs and increasing the risk of delays."The aviation industry is facing pressure to reduce its environmental impacts, but this study shows a new way in which aviation is itself susceptible to the effects of climate change," Dr Williams said.

"The bad news for passengers is that westbound flights will be battling against stronger headwinds. The good news is that eastbound flights will be boosted by stronger tailwinds, but not enough to compensate for the longer westbound journeys. The net result is that roundtrip journeys will significantly lengthen.

"This effect will increase the fuel costs to airlines, potentially raising ticket prices, and it will worsen the environmental impacts of aviation."

Record-breaking flights

The study, published today (Feb. 10, 2016) in the IOP journal *Environmental Research Letters*, looked at the effects of doubling the amount of CO₂ in the atmosphere, which will occur within the next few decades unless emissions are cut quickly.

The average jet-stream winds along the flight route between London's Heathrow airport and New York's John F. Kennedy International airport

are predicted to become 15% faster in winter, increasing from 77 to 89 km/hr (48 to 55 mph), with similar increases in the other seasons.

As a result, London-bound flights will become twice as likely to take under 5h 20m, implying that record-breaking crossing times will occur with increasing frequency in future. On the other hand, New York-bound flights will become twice as likely to take over 7h 00m, suggesting that delayed arrivals will become increasingly common.

Due to the extra time spent in the air, transatlantic flights will burn an extra \$22 million worth of fuel annually, and will emit an extra 70 million kg of CO₂—equivalent to the annual emissions of 7,100 British homes. And this might only be the tip of the iceberg. "The jet stream encircles the globe, and there is one in the southern hemisphere too. It is possible that flights elsewhere in the world will also suffer from a similar jet stream effect," Dr Williams said.

The latest findings are further evidence of how climate change will affect aviation in the future. A previous University of Reading study, also led by Dr Williams, found that clear-air turbulence will become stronger and more frequent as a result of global warming.

More information: Paul D Williams. Transatlantic flight times and climate change, *Environmental Research Letters* (2016). [DOI: 10.1088/1748-9326/11/2/024008](https://doi.org/10.1088/1748-9326/11/2/024008)

Provided by University of Reading

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