

Climate Crisis

Daniel Munarriz

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Climate change could lead to noisier planes at your local airport, study finds

Warmer air temperatures will mean louder take offs in the future



Residents of areas such as Myrtle Avenue near London Heathrow Airport would be amongst the affected. Photograph: Doug Seeburg

A new scientific study has found that with climate change, the number of people affected by noise pollution in the vicinity of airports could increase by up to 4% in the future.

The [study](#) led by Dr Johnny Williams – a Postdoctoral Research Assistant at the University of Reading, focused on 30 European airports in the summer period and looked at how future warming scenarios change the level of aircraft noise that affects the surrounding areas.

Williams and his scientific colleagues decided to focus on the Airbus A320 aircraft. They calculated the historical area (1985–2014) affected by >50 decibel aircraft noise across their chosen airports, then used temperature and pressure data from state-of-the-art climate models to predict how take-off angle of planes will change in the future (2035–2064) and consequently, the effect this will have on aircraft noise and on residents in the area around each airport.

Initially, the study found that across the 10 climate models, the median angle at which planes take off is set to decrease by around 1–3% in the future. However, some models suggested decreases as high as 7.5% under the most extreme warming scenarios.

How does this decrease in climb angle arise? Air temperatures are increasing due to climate change, which in turn leads to a reduction in air density. Therefore, aircraft will need to use more thrust to take off, leading to shallower climb angles and an increased noise pollution footprint.

By considering both this decrease in climb angle and engine noise at 10m from aircraft, Williams and his colleagues found that the fractional changes to low frequency noise would be broadly uniform across the 30 sites, and changes to noise of the highest frequencies would be negligible.

However, when population density increase was considered alongside these factors, they found that there could be up to a 4% increase in the lowest frequencies.

This may seem small, but some airports, such as London City Airport, can be in densely populated areas – sometimes exceeding 10000 people per square km. “This increase in the number of people affected could be as many as 2500 in the most densely populated areas, such as central London” Williams says.

The most noteworthy aspect of the results of Williams and his colleagues, however, is the predicted increase in low frequency noise. Recent scientific work has shown that [it has a greater impact on human health than high frequency noise](#), leading to discomfort, annoyance, hearing loss and even causing sleep disorders and cardiovascular diseases in some instances.

If climate change increases the risk of this in populated areas around airports, do governments need to begin to mitigate not just the causes of noise pollution, but the health impacts it creates? Do planning decisions around housing and how the space around airports is used need to be modified to prioritise the health of individuals?

Even at current aircraft noise levels, the UK Government has pledged to commit to “limit, and where possible, reduce the number of people in the UK significantly affected by aircraft noise”. [They aim to do this](#) through planning decisions, working with the aviation industry to develop quieter aircraft and working with the CAA to manage airspace. However, will recent findings pressure policymakers into introducing new legislation?

“This (research) should be considered as part of the package of measures taken into account by stakeholders going forward”, Williams says. “The results related to the number of people affected by noise pollution are of clear socioeconomic importance”.