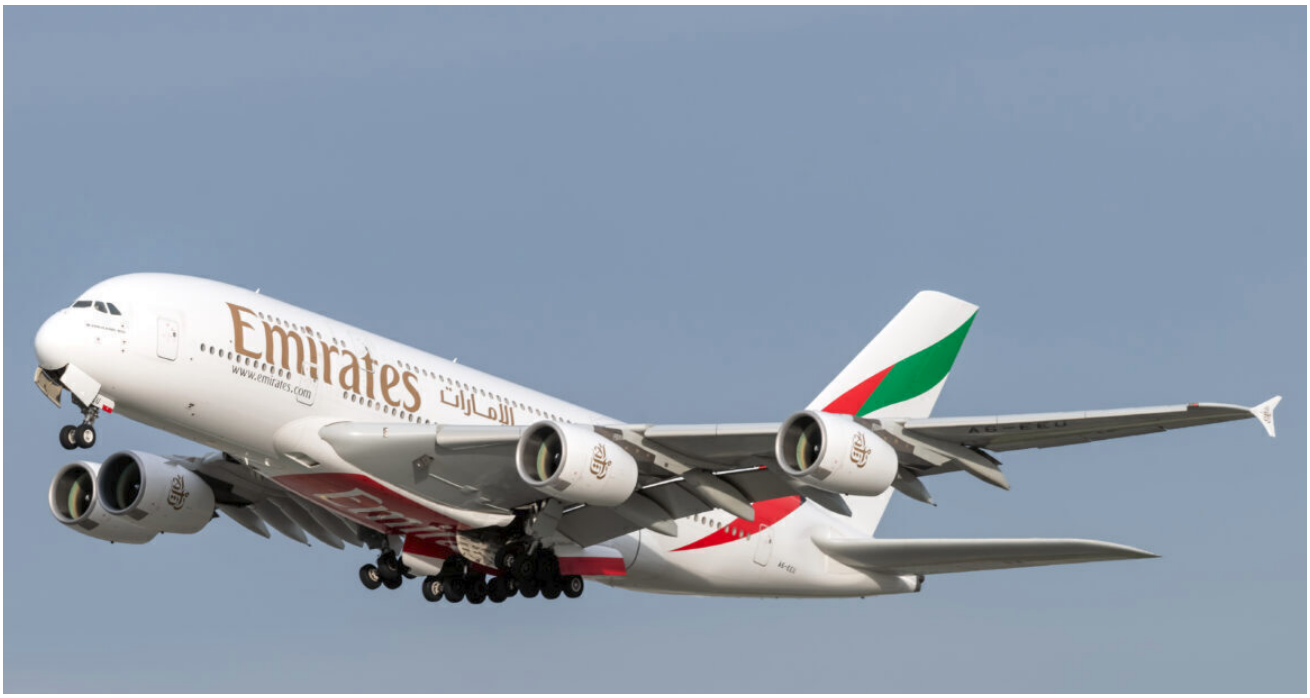
How Much Space Do You Need Behind An A380 To Prevent Wake Turbulence?

by **Jake Hardiman** · June 27, 2021 · 3 minute read

There is no hiding the fact that the Airbus A380 is an enormous plane. Its sheer size, which, to many, is its greatest appeal, means that, correspondingly, it generates more wake turbulence than smaller aircraft. This means that planes flying immediately after A380s must be carefully sequenced to avoid such turbulence. But how much space exactly is needed?



Aircraft following A380s need extra space to avoid their turbulence. Photo: Vincenzo Pace | Simple Flying

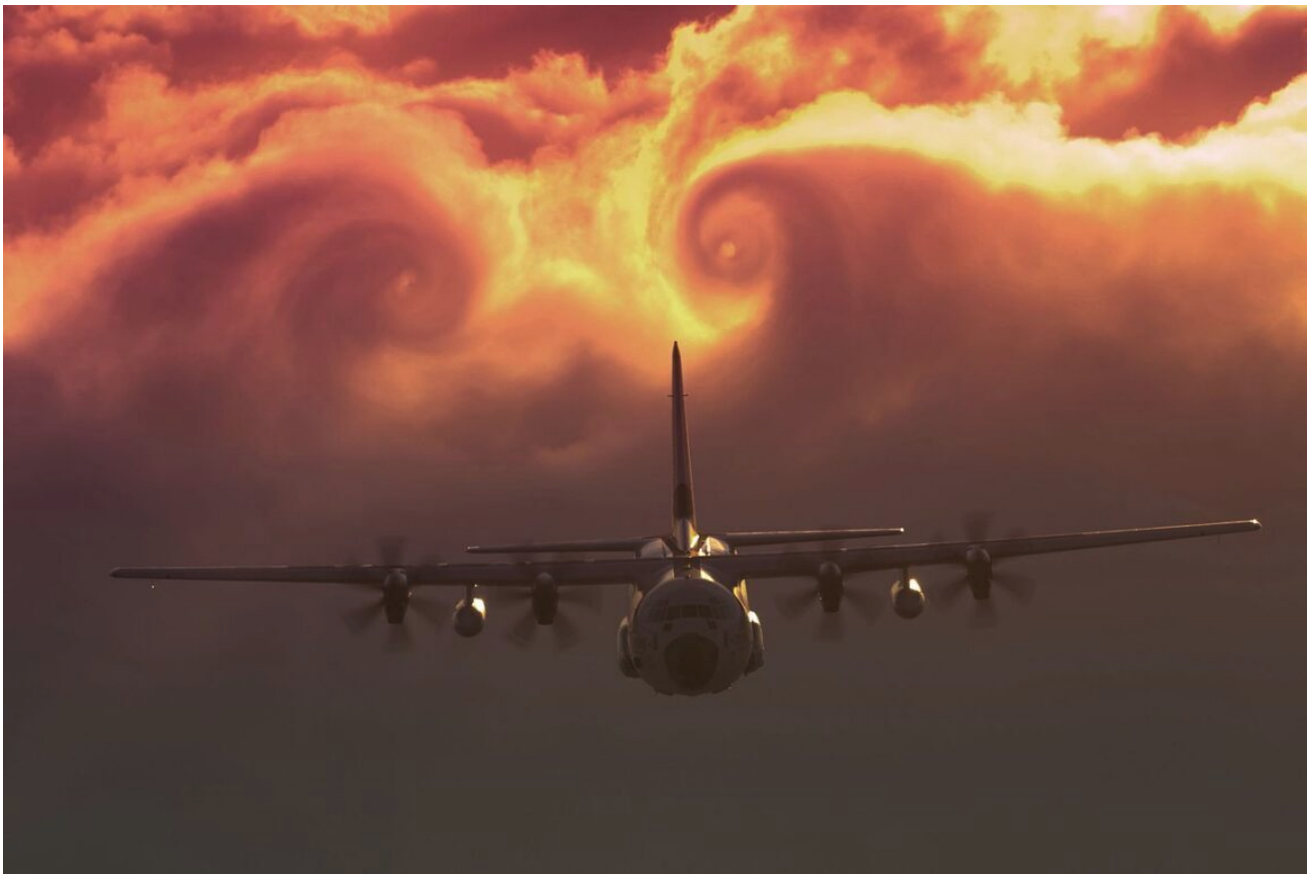
What is wake turbulence?

Planes disturb the air as they fly through it, owing to their size and speed. Their presence causes turbulent air to form behind them, which can become dangerous for other aircraft if they are caught up in it. Multiple components make up the phenomenon as a whole.

One such component is known as *jetwash*, and is a more immediate aspect of the phenomenon. The term refers to the gases themselves that collect in the area behind an aircraft having been propelled from its engine(s). This tends to occur on a more short-term basis, although the turbulence itself that arises as a result can be more violent.

Meanwhile, *wingtip vortices* tend to remain present for a longer time, which can last for several minutes after the aircraft passes. These arise when a wing

be a rather more visible phenomenon.



The turbulence thrown up by aircraft can cause swirling patterns to appear in the clouds behind them. Photo: US Coast Guard via Wikimedia Commons

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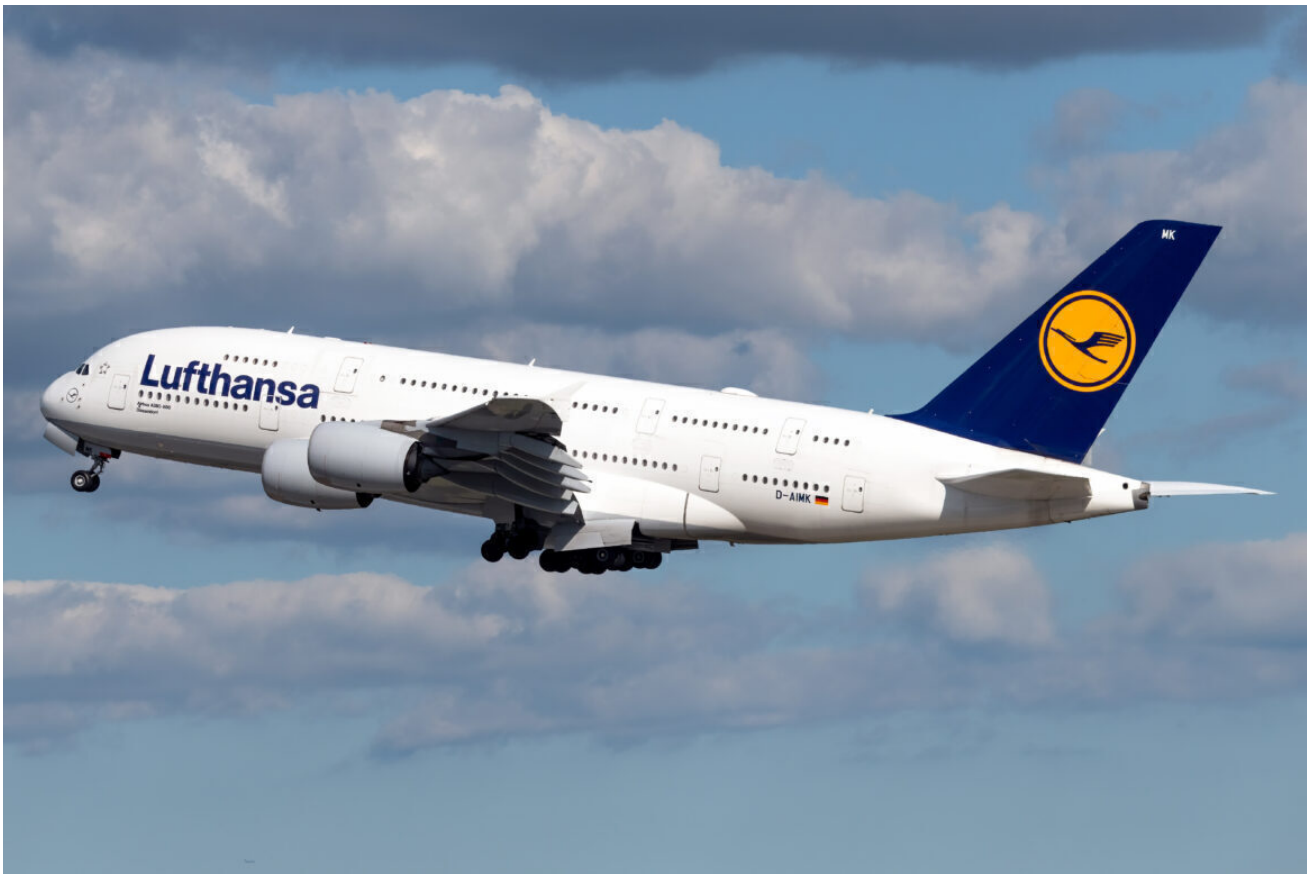
How much space is needed behind A380s?

Being the largest passenger-carrying aircraft in the world, the Airbus A380 generates more wake turbulence than other, smaller designs. As a result, this must be factored in by air traffic controllers when they are sequencing aircraft flying immediately behind it.

According to Skybrary, there are various time and distance requirements depending on the size of the aircraft following the A380. In terms of time, it states that 'medium' aircraft must land at least three minutes behind the double-decker, with 'light' models requiring four. Meanwhile, light and medium planes must take off at least three or four minutes (runway-dependent) after an A380 has departed. For 'heavy' aircraft, this is two minutes.



Controllers must leave sufficient space behind A380s to allow following aircraft to avoid its strong wake. Photo: Vincenzo Pace | Simple Flying.

In terms of distance, Skybrary lists the minimum required separation between an A380 and a following light aircraft to be as much as 14.8 km (8 NM). Meanwhile, medium aircraft require 13 km (7 NM) of separation, and heavies need 11.1km (6 NM). These distances are reportedly required in both the departure and approach phases of a given flight.

Affects on airport capacity

For airports where the A380 is a common fixture, the required distances can impact their capacity. This is because they can limit the number of aircraft that can arrive and depart over a given period if several A380s pass through during this time. Of course, with Emirates being the largest A380 operator, its Dubai International (DXB) hub is at risk of this.

With Emirates operating so many A380s, controllers at Dubai must sequence following aircraft carefully. Photo: Getty Images

However, the airport has recently been able to increase its capacity by implementing new separation procedures. Eurocontrol, Emirates, and flydubai have partaken in an Enhanced Wake-Turbulence Separation program, with studies dating back as far as 2013.

departures every hour during peak periods. As traffic increases with the industry looking to recover from the effects of the ongoing coronavirus pandemic, this extra capacity will be very useful indeed.

Have you ever been on a flight that has taken off straight after an A380 and subsequently needed to wait a little longer? Let us know your thoughts and experiences in the comments.

Jake Hardiman

Journalist - A recent graduate in German, Jake has a passion for air travel on a student-friendly budget that extends beyond the realms of the usual suspects of low-cost-carriers. A keen amateur photographer, he is also currently one flight away from reaching his 100th sector flown as a passenger. Based in Oxfordshire, UK.

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M3 **Mr 388**
28 June, 2021
I was on an Embraer E190 of Jet Blue and it had to wait for almost 3 mins after an Etihad A380 took off.
This happened at JFK airport.

Reply

MM **Mr MR**
28 June, 2021
Happened to Quantas 380 20 nautical miles behind another Quantas 380 and 1,000 feet apart in altitude in June 2018. 10 seconds nosedive.

Reply 1

SA **S Robert, ATC** › Mr MR
28 June, 2021
We were in a A320 1000 feet below and crossing an Emirates A380. There was sudden

Reply

M **Mike**
27 June, 2021
The title is really a bit off: "How Much Space Do You Need Behind An A380 To Prevent Wake Turbulence?" ... you cannot "prevent" turbulence, you can only avoid it.

Reply 1

Aesir Sky Horton 230 Points › Mike
27 June, 2021
Agreed.

Reply 1

P **piloon** 90 Points
27 June, 2021
As a former owner of a light Cessna operating from YUL (Montreal) I was well aware of wake turbulence and avoided it like a plaque. Tower was very proactive warning light aircraft of that danger,

Reply 1

Aman Juthani 60 Points
27 June, 2021
This is where having airports with more than 2 runways is useful, as it allows for one runway to be kept especially for aircraft like the A380 and the 747-8, though I suspect with those aircraft being phased out this won't be as much of a need going forward.

Reply 1

J **JungleJonnie** › Aman Juthani
27 June, 2021
Smaller airliners can also generate dangerous wingtip vortices. In and Out Burger execs died in a Westwind following a 757 too close and below the flight path while landing at Orange County airport. I was stood on my side following a DC-10 into SFO in a bonanza many years ago. Serious hazards.

Reply 2

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