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'Severe turbulence' on Singapore Airlines flight leaves 1 dead: When can turbulence become dangerous?

Turbulence means a disruption of airflow over the wings of an airplane, which causes it to enter irregular vertical motion. What must passengers do when they face turbulence?

By: [Explained Desk](#)

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 **NewsGuard**



Singapore Airlines planes sit on the tarmac at Changi Airport in Singapore November 16, 2021.
(REUTERS/Caroline Chia/File Photo)

One person died and some injuries were reported after a Singapore Airlines flight (SQ321) operating from London to Singapore on Monday (May 20) encountered “severe turbulence” en-route. The flight was diverted and landed in Bangkok on Tuesday.

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Singapore Airlines flight [#SQ321](#), operating from London (Heathrow) to Singapore on 20 May 2024, encountered severe turbulence en-route. The aircraft diverted to Bangkok and landed at 1545hrs local time on 21 May 2024.

We can confirm that there are injuries and one fatality on... [Show more](#)

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Reuters cited Thai media reports as saying [there were around 30 injuries](#). The exact cause of death and the nature of the injuries was unclear.

What factors cause turbulence on flights, and how can turbulence lead to significant injuries at times? What should passengers do in such situations? We explain.

What happens when a flight encounters turbulence?

As a bare concept, turbulence means disruption of airflow over the wings of an airplane, which causes it to enter irregular vertical motion.



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There are at least seven kinds of turbulence that an aircraft can run into:

WIND SHEAR: Happens when there is a sudden change in wind direction, whether vertically or horizontally. Typically occurs close to thunderstorms, jet streams, etc.; tricky for pilots as tailwinds suddenly change to headwinds or vice versa.



FRONTAL: Created in the frontal zone when warm air is lifted by sloping frontal surface and friction between opposing air masses. Most palpable when warm air is moist; intensity increases with thunderstorms. Most common close to thunderstorms.

CONVECTIVE: When land surface temperature rises, the air above the ground heats up and rises, creating air pockets around it. Convection currents cause difficulties during approach as they tend to affect the rate of descent.

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WAKE: Forms behind an aircraft when it flies through air-creating wingtip vortices. Can be dangerous for small aircraft following bigger ones, which tend to disrupt the airflow more strongly in their wake.

MECHANICAL: This type of turbulence occurs when tall solid objects such as mountains or highrise constructions disrupt the normal airflow, causing the air for planes to fly through to become dirty.

CLEAR AIR: Occurs when an aircraft crosses from one air mass to another, which has a different direction. Clear air turbulence could also happen when an aircraft moves out of a jet stream. Clear air turbulence is mainly caused by wind or jet streams.

perpendicular fashion. Aircraft tracking perpendicularly across, or downwind of a mountain, may experience sudden loss of altitude followed by a sudden reduction in airspeed.

Are turbulence incidents dangerous?

It depends on their nature and intensity. Aircraft undergo some form of turbulence on a regular basis and pilots are trained to deal with these. However, there have been several instances when turbulence has brought down modern jetliners.

Even in these cases, while intense turbulence has been the main cause of an accident, several other factors — such as lack of proper training, poor dissemination of weather or wind related information — have contributed to the accident.

In 2022, a SpiceJet-operated Boeing 737-800 aircraft with 189 passengers encountered “severe turbulence”. On its descent, it flew into bad weather that caused the turbulence. The airspeed suddenly dropped by around 100 knots, before rising again. This caused passengers and crew to rise up almost as if in a zero-gravity situation and then get slammed back down, all in a matter of minutes.

Two people were admitted to intensive care units and were treated for head and spine injuries.

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What must passengers do when an aircraft encounters turbulence?

prevent injuries from unexpected turbulence by keeping their seat belt buckled at all times”.

It suggests passengers should listen to instructions from flight attendants; pay attention to the safety briefing at the beginning of the flight; wear a seat belt at all times; use an approved child safety seat or device if a child is under two; and adhere to carry-on restrictions.

How can airlines avoid turbulence?

The FAA recommends that carriers improve dispatch procedures by **keeping communication channels open full-time; include turbulence in weather briefings; promote real-time information sharing between pilot and dispatcher; reinforce the carrier's turbulence avoidance policy through dispatcher training; consider rerouting using atmospheric modelling, and data displays; and use all applicable weather data.**

It also suggests using operating procedures and training to prevent turbulence injuries, emphasising the importance of flight attendant's personal safety, promoting communication and coordination, and gathering data and reviewing the air carrier's history of turbulence encounters and injuries.

This is an edited version of an [explainer first published in 2021](#).

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