

## BY ANY OTHER NAME...

Turbulence in the atmosphere can take many forms. Its intensity varies, as does its direction. It can be caused by variations in temperature, causing columns of air to rise or descend, by air flowing over or around a prominent object, be associated with a thunderstorm or other phenomenon, or appear without warning at high altitude. It also



can be generated by the wing of the airplane preceding us. Here are a few types of turbulence we might encounter on a given flight.

## CLEAR AIR TURBULENCE (CAT)

Caused when two or more bodies of air moving at different speeds meet without any visual cues (clouds). CAT occurs mostly between altitudes of 23,000 to 39,000 feet msl, when the high troposphere meets the tropopause.

## WIND SHEAR

Wind shear can be defined as a difference in wind speed and direction over a relatively short distance. It has vertical and horizontal components and is associated with the microbursts and downbursts generated by thunderstorms and/or frontal activity.

## WAKE TURBULENCE

Wake turbulence is caused by the passage of an aircraft through the air and generated in two ways. First is the air movement created by the aircraft's propulsion system—propwash or jetwash. Second is the wingtip vortices generated whenever the wing is producing lift.

## MOUNTAIN WAVES

A wave can be formed whenever air flows over a relatively prominent object, like a mountain, tall building or row of trees. The action generally creates a series of waves downwind of the object, which dissipate over time and distance. When downwind and relatively close to the generating object, the mountain wave action can be quite enthusiastic and downdrafts can easily exceed an aircraft's climb capability.