



Severe Weather Phenomena

Everybody knows what a thunderstorm is, however things are trickier when it comes to other forms of severe weather. Do you know the difference between a hurricane and a typhoon? Do you know the definition of a tornado, a waterspout, or a gustnado? Let's find out.

What is the difference between a hurricane, a cyclone, and a typhoon?

It all begins with a **tropical depression**, a depression pretty much as we see at home, except that it originates over a tropical ocean area: a large body of warm water. Then, given the right conditions of water temperature, moisture, and winds, it evolves into a **tropical storm** and later into a **hurricane**. They are then classified according to their sustained wind speed. A tropical depression becomes a tropical storm when its winds reach 34 knots. A hurricane has a minimum wind speed of 64 knots, and is rated from category 1 (winds up to 82 knots) to 5 (winds 137 knots or higher) on the Saffir-Simpson Hurricane Wind Scale. The only difference between a hurricane, a cyclone, and a typhoon is the location where the storm occurs. If it originates in the **Atlantic or Northeast Pacific**, it is a **hurricane**; in the **Northwest Pacific**, it is a **typhoon**; and in the **South Pacific or in the Indian ocean** it is a **cyclone**.

What are tornadoes, waterspouts, gustnadoes?

A **tornado** is a vertical rotating column of air that forms over land from the base of a cumulonimbus. It often begins as a funnel cloud. A funnel cloud is not in contact with the ground, when it reaches the ground, it becomes a tornado. Tornadoes can have wind speeds of up to 260 knots and are characterized by the swirl of dust and debris they generate, and by the well-defined path of destruction they leave behind. In the US tornadoes are also called twisters.



A funnel cloud

A tornado

A waterspout

A **Waterspout** is a column of rotating air, connected to a cumulonimbus cloud, that forms over water. It becomes a tornado once it reaches land.

A **gustnado** is a short-lived, generally weak, whirlwind that forms along the gust front of a severe thunderstorm. A gust front appears at the leading edge of a thunderstorm where the cold air flow, descending from the cumulonimbus, hits the ground and moves outward into warmer air. Gustnadoes are not tornadoes as they do not connect with any cloud-base rotation.

Learn more about:

- the Saffir-Simpson Hurricane Wind Scale at: <http://www.nhc.noaa.gov/aboutsshws.php>

- different weather phenomena and their impact on aviation on Eurocontrol's Skybrary weather portal at:

<http://www.skybrary.aero/index.php/Portal:Weather>

