

Let me explain why you hear so much about "Wall Clouds" during severe weather:

A wall cloud occurs only with strong thunderstorms and appears as a lowering cloud that extends out of the main large thunderstorm. An important quality of a wall cloud is that it is always rain free, meaning no rain falls from this lowering cloud.

The reason a wall cloud has a rain free base is because the air is actually moving upward into the wall cloud. Because of this upward motion, rain cannot fall down through the wall cloud. This is a great benefit to storm chasers because it makes this wall cloud, and the possible tornado, rain free and thus visible.

The air moving up into the storm is called inflow, and it's important to understand what that means because it is the key to why a tornado might form from the wall cloud.



What is happening is that humid air from near the ground is being drawn up into the storm cloud. As that humid air ascends toward the main thunderstorms cloud, the moisture condenses forming the wall cloud. So, in reality a wall cloud forms from air near the surface moving upward, and yet to our eyes it appears that the cloud has formed by lowering from the large storm cloud above. What you see is not always what you get when it comes to weather, so it's always important to understand the physics behind the phenomenon.

Also, wall clouds often have a very noticeable rotation. And it's for that reason that a wall cloud can be (not always) a precursor to a tornado. So a rotating wall cloud means air is twisting as it rushes up into the storm.

Just as an ice skater will pull her arms in to spin faster, if the storm can focus that large rotating energy in a much smaller area, the winds will become very very fast. Air will flow up into the storm so fast, that as it does it will pick up anything in it's path, dirt, water, houses, cars, cows, corn etc... and thus a tornado is born.



A tornado can form without a wall cloud. Also, not all wall clouds produce a tornado. A wall cloud can form and rotate for 30 minutes before the storm dissipates, never developing a tornado. On the other hand, a wall cloud could produce a tornado at any moment and for that reason it is an exciting cloud formation and possible omen for storm chasers.



In this picture above, the wall cloud is HUGE and part of a supercell thunderstorm. A wall cloud's size can range from several hundred yards to several miles wide. Just as it is with tornadoes, size does not indicate strength of winds.

-From weathersavvy.com

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