The supercell thunderstorm rotates slowly in the horizontal plane (i.e., about a vertical axis, sort of like the Earth itself). An ominous sight is provided when a portion of its cloud base starts to lower, forming the *wall cloud*, as depicted in the figure below. The storm rotation is becoming concentrated in that portion of the storm. This is where the condensation funnel, the visual signature of a tornado, would appear.

So why does the cloud base lower? It might be partly due to the vigorous rotation (spin). Why? Which approach to saturation would that be?

**Ans:** The process hinted at above is *spin lowering the pressure*, bringing air to saturation via **adiabatic expansion**. Atkins et al. (2014) provide evidence from observations that the pressure drop near cloud base owing to rotation can help lower the cloud base via adiabatic cooling. They also provide evidence from trajectories that air cooled by evaporation of rainwater can become recycled into the thunderstorm updraft, within which the wall cloud is forming. That component would represent the **wet bulb approach** as air is assisted to saturation by evaporation. Markowski et al. (2015) disputed Atkins et al.’s calculations of the pressure drop, believing the values reported to be too large, but it remains possible spin-induced adiabatic expansion (and the rising motion it can induce) is supporting the descent of the wall cloud. Adiabatic expansion cooling from the rotationally-induced pressure drop is considered an important contributor to the formation of the tornado’s condensation funnel.