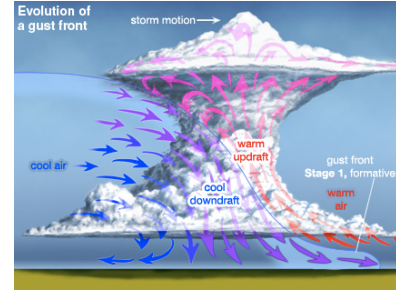


## Homework–Module 4

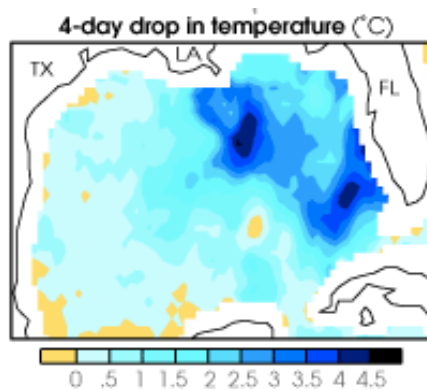
Name:

- 1) We learned in Module #3 that adiabatic compression always works to warm sinking air. Yet a thunderstorm downdraft beneath the base of the cloud is usually colder than the air surrounding it. Explain the apparent paradox using concepts that are discussed in Chapter 10. There is a 600-character limit.

*Cool downdraft in a severe thunderstorm.*  
Figure Credit: [Encyclopedia Britannica, Inc.](#)



- 2) Explain why the surface ocean temperatures are usually significantly cooler after the passage of an intense hurricane. The answer is not because the hurricane extracts heat from the water, a process that accounts for a smaller portion of the cooling. Think in terms of what the wind does to the surface water and water a few tens of meters below the surface. You may want to revisit material in Chapter 3 on how wind affects the formation of the nighttime surface inversion and in Chapter 7 on how ocean temperatures vary with depth before answering the question. There is a 600-character limit.



*Change in surface water temperature four days after the passage of Hurricane Katrina. A cooling up to 4°C occurred in regions where Katrina rapidly deepened.*

Figure Credit: [NASA](#)