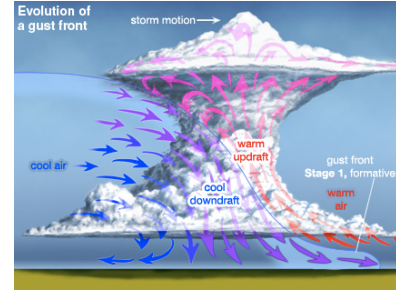


Homework–Module 4

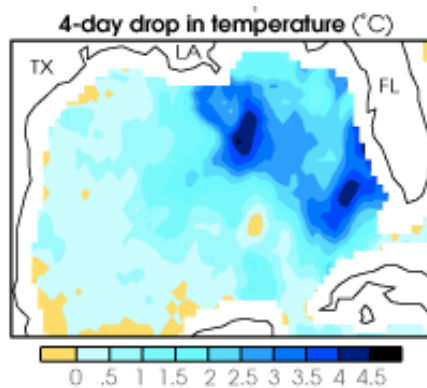
Name:

- 1) We learned in Module #3 that adiabatic compression always works to warm sinking air. Yet a thunderstorm downdraft 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 ocean surface water 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 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 relevant material in Chapter 7 on how sea temperatures vary with depth before answering the question. There is a 600-character limit.



Satellite measured change in the surface water temperature (the top few millimeter of the ocean) four days after the passage of Hurricane Katrina. A cooling up to 4°C occurred in regions where Katrina rapidly deepened.

Figure Credit: [NASA](#)