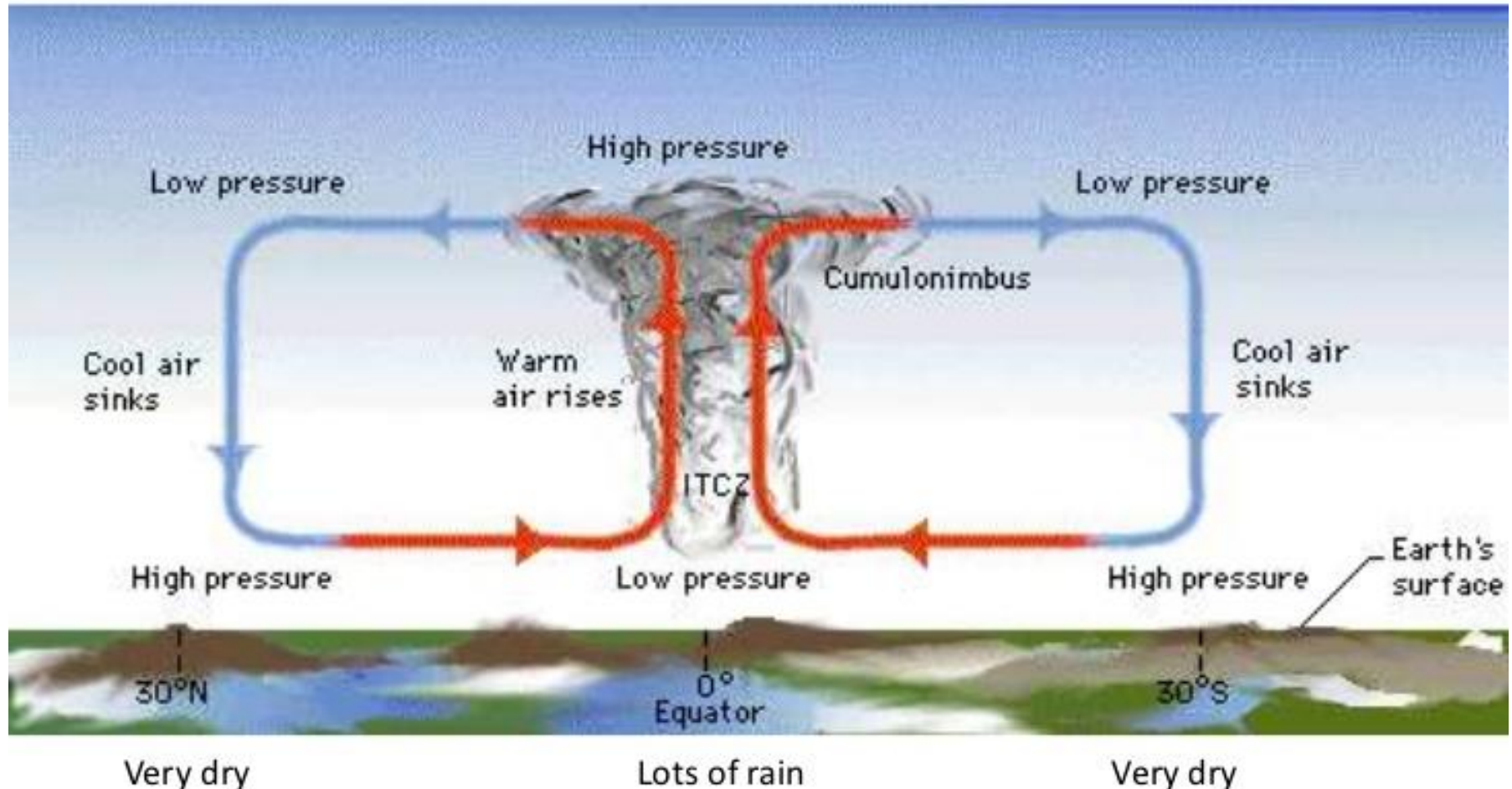


## The Pressure Gradient Force



Important points:

1. Air always moves from high pressure areas to low pressure areas
2. Low pressure areas are created at the ITCZ due to solar radiation causing evapotranspiration
3. Warming air can hold increasing amounts of water in vapor form and vice versa



# Warm waters fuel major hurricanes

Hurricanes act as massive release valves for warm, humid air. Deep water of at least 80 F (27 C) is needed to fuel the storms. If conditions are favorable, storms could rapidly intensify into major hurricanes.

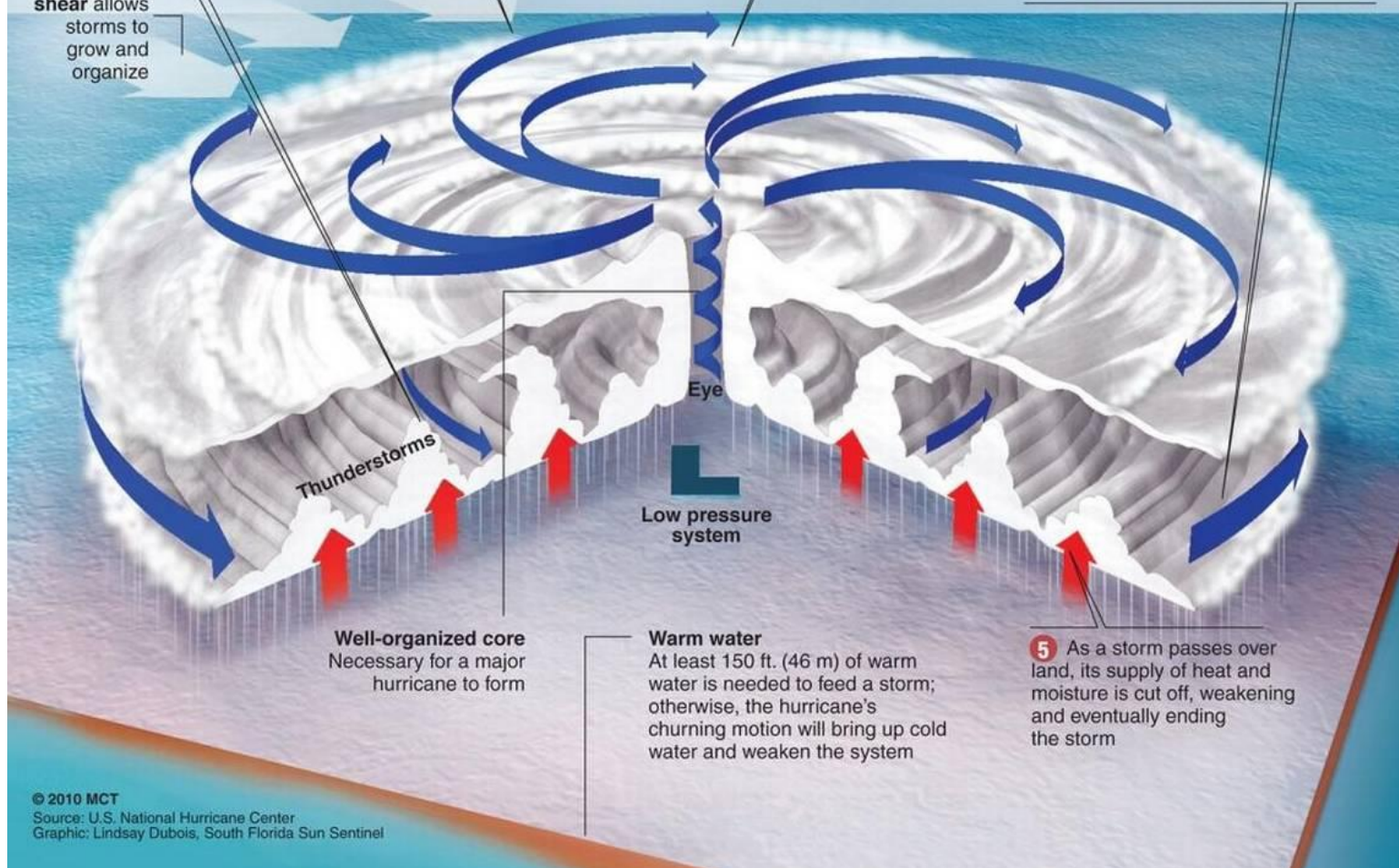
**1** Warm water evaporates, creating a cluster of thunderstorms that release heat

**2** Winds spiral up and outward; a low pressure system develops on the ocean surface

**3** Clouds form and begin to organize in the upper atmosphere as warm air condenses

**4** The entire system spins (surface winds counter clockwise, high altitude winds clockwise) as air rushes to the center to fill the low pressure void; at 74 mph (119 kph), a hurricane is born; most major hurricanes rapidly intensify, increasing winds by 35 mph (56 kph) or more within 24 hours

Low wind shear allows storms to grow and organize



Thunderstorms

Eye

Low pressure system

Well-organized core  
Necessary for a major hurricane to form

**Warm water**  
At least 150 ft. (46 m) of warm water is needed to feed a storm; otherwise, the hurricane's churning motion will bring up cold water and weaken the system

**5** As a storm passes over land, its supply of heat and moisture is cut off, weakening and eventually ending the storm