

MR. RAJCZAK

## NATURAL DISASTERS - NUSTEP

- Use One-Line Resources

→ Complete CH. 10 Review Questions

- # 1-24 p. 298

- # 1-6 p. 298

→ Complete CH. 16 Review Questions

- # 1-18 p. 479

- # 1-4 p. 479



## Questions for Review

1. If a humid air mass has 100% relative humidity and is 20°C at sea level, what would the temperature of this same air package be if it were pushed over a 2000-m-high mountain range before returning again to sea level? Explain your answer and show your calculations.
2. Explain the orographic effect on weather.
3. An area of low atmospheric pressure is characterized by what kind of weather?
4. Why do the oceans circulate clockwise in the northern hemisphere?
5. Explain the right-hand rule as it applies to rotation of winds around a high- or low-pressure center.
6. What is the main distinction between a cold front and a warm front?
7. What main changes occur in an El Niño weather pattern?
8. Why does heavy snow fall so frequently near the southern or eastern sides of the Great Lakes? Explain how the process works.
9. Where and when are monsoons important in Asia? What processes bring such heavy rainfall?
10. What causes formation of the Santa Ana winds and where do they occur?
11. Why are Santa Ana winds so warm and dry?
12. How can a region that gets 50 cm of rain a year be in drought whereas one that gets 15 cm per year is not in drought?
13. What factors led to the Dust Bowl of the 1930s?
14. What activities of people in a region can lead to desertification?
15. What is the “heat island effect” and how is it caused?
16. When is the main tornado season?
17. What process permits hailstones to grow to a large size?
18. Why do you see lightning before you hear thunder?
19. List the most dangerous places to be in a lightning storm.
20. What should you do to avoid being struck by lightning if caught out in the open with no place to take cover?
21. In what direction do most midcontinent tornadoes travel along the ground?
22. Why does lying in a ditch provide some safety from a tornado?
23. How do weather forecasters watching weather radar identify an area that is likely to form tornadoes?
24. What is the greatest danger (what causes the most deaths) from a tornado?

## Critical Thinking Questions

1. Drought is often thought of as a weather phenomenon, over which we have no control. In what ways do humans sometimes contribute to development of drought in a region?
2. How might conditions similar to the Dust Bowl of the Great Plains happen again? What should be done to prevent that from happening again?
3. For centuries, governments in China tried to increase agricultural production in their northwestern regions by cultivating land that had not previously been used. What was involved in developing those new croplands and what were downsides of that new cultivation?
4. Explain why there are more tornadoes in the United States than in any other country. Be specific about the weather conditions that lead to tornado development and why.
5. Tornado experts say that if you encounter a tornado while in your car, you should get out and lie down in a ditch. Discuss the advantages and disadvantages of both locations in terms of your risk. Consider what about a tornado kills people.
6. How would you design a house to be safe from tornadoes, while keeping the cost to a minimum and having a design that would not look out of place in a typical residential neighborhood?



## Key Terms

extratropical cyclone, p.457  
eye, p.436  
hurricane, p.436

hurricane warning, p.452  
hurricane watch, p.452  
nor'easter, p.457

Saffir-Simpson Hurricane  
Wind Scale, p.436  
storm surge, p.441

tropical cyclone, p.436  
typhoon, p.436

## Questions for Review

1. What causes a hurricane? Where does a hurricane get its energy?
2. Where do hurricanes that strike North America originate? Why there? Why do they track toward North America?
3. Why are coastal populations so vulnerable to excessive damage (other than the fact that they live on the coast)?
4. Where in a hurricane is the atmospheric pressure lowest, and approximately how low might that be?
5. When is hurricane season (which months)? Why then?
6. What two main factors cause increased height of a storm surge? Which is more important?
7. What effects does the wind have on buildings during a hurricane?
8. How might you distinguish between storm surge damage and wind damage from a hurricane?
9. What effects do the higher waves of hurricanes have on a coast?
10. If the forward speed of a hurricane is greater, what negative effect does that have? What positive effect does it have?
11. If the eye of a west-moving hurricane were to go right over Charleston, South Carolina, where would the greatest damage be?
12. What is the difference in damage if a hurricane closely follows another hurricane—for example, a week later? Why?
13. Why is there more coastal damage during a hurricane if sand dunes are lower?
14. What shape of roof is most susceptible to being lifted off by a hurricane? Why?
15. Why is it so important to cover windows and doors with plywood or shutters?
16. What factors contribute to uncertainty in hurricane predictions?
17. What steps should you take to prepare for a hurricane?
18. Characterize the differences between a hurricane and a nor'easter.

## Critical Thinking Questions

1. How is climate change expected to affect hurricane damages? How should this play a role in the discussion of costs to reduce carbon emissions?
2. Examine Figure 16-4B and 16-7 and explain why the Atlantic coast of northern Florida and Georgia has fewer hurricane strikes than coastal areas farther north and south.
3. Why do developers, builders, local governments, and many members of the public oppose higher standards for stronger houses?
4. In 2011 Hurricane Irene swept up the East Coast of the United States and into eastern Canada. State governors, mayors of towns, and emergency managers declared states of emergency and evacuations. Were these wise choices given the outcome? What would you have done?