**Chapter 19**

1. Define *weather and climate.* Describe how the climate has been altered by natural events. How do scientists determine these changes?
2. Describe the greenhouse effect and what the Earth would be like without a greenhouse effect.  List two predominant greenhouse gases. List four greenhouse gases that have risen in the last few decades.  List four human activities that contribute greenhouse gases to the atmosphere. Distinguish between *Greenhouse effect* and *global warming*
3. Describe the general trend of mean global temperature since 1860.  List two factors other than then greenhouse effect that may have contributed to the general temperature change
4. List the top three counties for CO2 emissions and the percent per person.
5. What role does the sun play?  What role does the ocean play? Do clouds play a role?  Explain. Do airplane condensation trails ( contrails) play a role in atmospheric warming?
6. We have reached a rapid projected increase in the average temperature of the troposphere during this century. What is Climate change tipping point?  What are the identified *tipping elements?*
7. What is happening to our Arctic and Antarctic ice?  How is the melting of the ice a positive feedback loop? How has the melting of the arctic ice changed the flow of the *jetstream?*  What is permafrost?  What is happening to it?  Why is this a problem?
8. Why are the oceans becoming acidified?  How is this a problem?
9. If water is considered a greenhouse gas how could the addition of more water in the atmosphere lead to drought?  What effect will this have on trees and other plant? Farming and agriculture?
10. How does Climate disruption threaten biodiversity? Food production? Human health and Economics?
11. Is capturing and storing CO2 the answer?