**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Introduction to Meteorology**

**Homework #6 (Chapters 11 and 13)**

**Due: Friday, December 12**

1. What is a hurricane?

2. a)What are hurricanes called in the western North Pacific Ocean?

b) In the Indian Ocean?

c) What is the category of storms they fall into (what are they all called)?

3. What is the weather like in the “eye” of a hurricane?

4. Where in a hurricane is the wind and rainfall most intense?

5. The enormous amount of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that is released in the

eyewall creates a “warm core” in the center of the storm that results in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pressure at the surface but \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ pressure aloft

6. What are the three ingredients required for hurricane formation?

7. When is Atlantic hurricane season?

8. Hurricanes develop from \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ within

the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

9. What type of equatorial “waves” are responsible for the development of the

majority of hurricanes in the Atlantic Ocean basin?

10. What does a hurricane derive its “energy” from?

11. What are the three mechanisms responsible for weakening and demise of

hurricanes?

12. a) In regard to the life cycle of a tropical cyclone, what is it called when it

develops a low pressure center and cyclonic circulation?

b) During which stage of its life cycle is it given a name?

13. The movement of tropical cyclones is initially directed westward by

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but eventually its motion is directed in a clockwise motion by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

14. a) How many hurricanes are there, on average, in the Atlantic Ocean basin every

year?

b)What percentage of Atlantic hurricanes make landfall?

15. a) Where in regard to the path of the hurricane are the strongest winds?

b) The greatest storm surge?

16. What is responsible for 90% of all hurricane deaths?

17. a) What is the scale called that is used to categorize hurricane intensity?

b) What is the scale based upon?

18. a) From where do we receive most of the information regarding past climates

and atmospheric composition (what method is used)?

b) Is this information likely most accurate in regard to the composition of the

atmosphere at any given time in the past or the global temperatures at that

time?

c) What has this method told us about the composition of the atmosphere for the

last 100 years compared with the previous 650,000 years?

19. It can be determined with a fairly high degree of certainty that temperatures

now are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

20. The Intergovernmental Panel on Climate Change (IPCC) is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

21. What are the four general causes (both external and internal) of climate change?

22. Why is it unlikely that “Plate Tectonics” or changes in life on earth are

responsible for earth’s recent “abrupt” warming?

23. a) What is the most likely cause of the 100,000 year cycles in earth’s atmosphere

that is responsible for our glacial (Ice Age) and interglacial periods?

b) Are we presently in a glacial or interglacial period?

c) Why is it unlikely that this is the cause of earth’s recent abrupt warming?

24. a) Why is it unlikely that variations in solar output (sunspots) or volcanic

eruptions are responsible for earth’s recent “abrupt” warming?

b) Why is it unlikely that it is due to “natural” oscillations (natural [internal]

variability)?

25. Due primarily to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ the concentration

of several greenhouse gases (e.g. carbon dioxide, methane, nitrous oxide) have increased to unprecedented levels over the past century.

26. What are two reasons that the observed warming of the atmosphere over the

last century is less than would be expected from the increase in the concentration of greenhouse gases alone?

27. Taking into account all of the scientific evidence, the IPCC states that: “Most of

the observed increase in globally-averaged temperatures since the mid-20th century is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_due to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.”

28. a) What are three positive feedback mechanisms in regard to global warming

that are likely occurring presently within earth’s climate system?

b) What is a possible negative feedback mechanism?

c) Which type, positive or negative, will increase the likelihood of ***greater*** than

expected global warming?

29. a) In regard to global warming, is there ***greater warming*** over high or low

latitudes?

b) Continents or oceans?

30. Why is a rise in sea-level probably the most feared consequence of global

warming?