**ES322 Geomorphology Bierman and Montgomery Text Review Questions**

***Chapter 13 – Climate and Geomorphology***

Review read the textbook posted on moodle and answer the following questions. Use internet search tools (google, Wikipedia, etc.) as needed, include equations, sketches or image captures as required.

1. Provide a brief definition of “climate”, what types of geomorphic processes are controlled by climate over geologic time frames.

2. Define the term “relict landform” in the context of ancient climates, what types of features fall in this category?

3. When was the “Last Glacial Maximum” and what is the time range of the geologic epoch referred to as the “Holocene”.

4. Examine Figure 13.1; describe how ancient relict landforms can be used to reconstruct ancient climate conditions. Use 2 to 3 sentences to summarize the example provided in the Figure.

5. Explain the concept of “IRD” and how is it used to reconstruct climate records.

6. Examine Figure 13.2. Note geologic time is on the X-axis of the top graph, and interglacial-glacial climate conditions are depicted on the Y-axis. Interglacial climates are shown by reduced (negative) ice volume, glacial climates are shown by elevated (positive) ice volume.

1. How many major glacial deep-freeze events are recorded in the past 700,000 years?
2. Based on an average, what is the average time range between major glacial advances globally?
3. What is the general relationship between glacial-interglacial climates, and the relative positions of global sea level. Are they directly proportional or indirectly related? Describe the data you observe.
4. Provide a 2-3 sentence summary of how the climate record in Figure 13.2 is derived from the geologic record.

7. List and briefly describe three types of geologic data sources or geomorphic records that are used to decipher long-term, prehistoric climate records on planet Earth.

8. In terms of causal mechanisms for climate change, define / briefly explain the following terms:

A. eccentricity

B. obliquity

C. precession

D. Milankovitch Cycles

9. What is a “Heinrich event” and how is it recorded in the geomorphic record.

10. Briefly describe and identify the absolute time periods of these ancient climate events:

A. Holocene Altithermal

B. Holocene Neoglacial

C. Medieval Warm Period

D. Little Ice Age

11. Using 3-4 sentences, describe how long-term climate change influences wild fire cycles on the landscape.

12. Examine Figure 13.10, and read the box information. Distinguish and define the differences between the following three types of sea level fluctuations:

A. Eustatic

B. Isostatic

C. Tectonic

13. Explain how volcanic eruptions can influence climate.