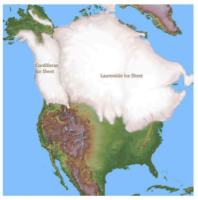
Written Homework – Module 5 Name:

1) Paleoclimate data reveal that ice ages in the Northern Hemisphere coincide with colder summers. Which orbital extremes would be most conductive in producing colder summers in the Northern Hemisphere?
   a) When obliquity is at its largest (24.5˚) or smallest value (22.1˚)?
   b) When aphelion or perihelion occurs during summer?
   c) When eccentricity is at its largest (0.058) or smallest (0.0034) value?

   Explain your answers in terms of radiative equilibrium and deviations from it. There is 600-character limit for each question.



Glacial maximum 15,000 years ago

2) Explain why periods of glacial advance in the higher latitudes of the Northern Hemisphere tend to occur with colder summers, but not necessarily with colder winters. (Hint: consider the impact of temperature on glacial melt during summer and on saturation vapor pressure during winter.)

3) Describe four meteorological factors that frequently occur together during summer and early fall over the Los Angeles Basin that set the stage from a major buildup of photochemical smog, being certain to explain how each factor would contribute to a buildup. You can neglect seasonal differences in the input of primary pollutants that are the ultimate cause of photochemical smog.

Los Angeles Basin shrouded by smog.
Photo: Robert S. Donovan