Climatology Assignment Name:

46 points total

1. Briefly describe how the sun's energy heats the earth and its atmosphere. [3 points]

2. What is meant by the so-called “constant gases” in our atmosphere? [2 points]

3. Explain (giving details) why the ozone (O3) in our atmosphere is both beneficial and harmful to life on Earth. [3 points]

4. Revisit the video link on The Earth’s Atmosphere <https://www.youtube.com/watch?v=1YAOT92wuD8>

a. The atmosphere exerts pressure on our bodies. Explain what it is and how our bodies have adapted to it. [2 points]

b. What atmospheric property is the “sky boarder” illustrating in the video? [1 point]

5. The average amount of ozone in the atmosphere is roughly 300 Dobson Units (DU), equivalent to a layer 3 millimetres thick. What scientists call the Antarctic Ozone “Hole” is an area where the ozone concentration drops to an average of about 100 DU. One hundred DU of ozone would form a layer only 1 millimetre thick if it were compressed into a single layer. Revisit the “Antarctic Ozone Hole” website (<http://earthobservatory.nasa.gov/Features/WorldOfChange/ozone.php> ). Describe the changes in the size of the Antarctic ozone hole between 1979 and 2011. [3 points]

6. Why is radiation and energy balance so important on Earth? [2 points]

7. When this dog sits in the sun, which parts of her get the warmest? Explain your answer and include a definition of "albedo." [2 points]



8. Explain the “greenhouse effect” and “global warming” using easily understandable words (no chemical formulas ϑ). What is the effect on the solar radiation balance? [4 points]

9. Describe the main origins of Canada’s GHGs. [2 points] (see: <http://www.conferenceboard.ca/hcp/details/environment/greenhouse-gas-emissions.aspx>)

10. Why are most of the world's deserts found at latitudes of 30º N and 30º S? [2 points]

11. What accounts for the wet, cool conditions of the coniferous forests of the world? [2 points]

12. Name and describe the two main ocean currents that flow along Atlantic Canada. Where do they meet and what effect do they have on the environment? [6 points]

13. The snow-capped Mount Kilimanjaro is the highest mountain on the African continent, located at 3° S of the equator. How is it possible for there to be snow at the equator? [2 points]

14. Explain and provide two examples of a “microclimate”. [4 points]

15. Why are there differences in opinion about what the future holds in terms of climate changes? [2 points]

16. Review <http://www.blueplanetbiomes.org/climate.htm> , the second link on the “Classifying World Climate Patterns” page. Describe which Koppen-Geiger climate type(s) are found in Atlantic Canada. [4 points]