Physical Geography 110

Name:

Assignment #2 – The Earth in Space

Guide to the Universe

Create a tourists' guide to the universe by answering the questions below:

1. You want to send an intergalactic postcard to friends in a distant supergalaxy. What is Earth's “address” in the universe? Give as many details as possible!

2. Earth is uniquely suited to support life. Use this site to help you answer the following questions: <http://solarsystem.nasa.gov/planets/profile.cfm?Object=SolarSys> [6 points]

a. Give at least three reasons why Earth is suitable for supporting life.

b. For each of the other seven planets, give one reason why it would not be suitable for a populated planetary outpost.

c. Would any of the planet's moons be more suitable? Explain your reasoning. <https://www.wired.com/2009/01/et-life/>

3. "When you gaze up at objects in the night sky, you are really looking back in time." Choose a familiar star and do your own research to discover how far back in time we are looking when viewing that star. [3 points]

4. Here we sit, practically motionless at our seats. Considering that we are on a spinning planet orbiting the Sun, which itself orbits a galaxy, how fast are we travelling, and in which direction(s)? There are several answers, depending on the scale you're considering.

Explore <http://www.astrosociety.org/edu/publications/tnl/71/howfast.html> , then report the speed and direction of four of Earth's constant movements. Is your head spinning yet?

5. Compare and contrast three theories: Nebular Hypothesis, Big Bang Theory, Steady State theory

6. Check out NASA's Mars rover Curiosity <https://eyes.nasa.gov/curiosity/> . Should we send rovers to

other planets? Explain your reasoning.

7. Do you think we will ever find a "Plan B" planet for re-starting civilization? Why or why not?

Time and Space on Earth

8. You're in a plane that just took off from Moncton airport headed for Toronto. What adjustments must the pilot make along the way to ensure you actually land in Toronto? Why?

9. Using any international time zone map, and assuming standard time, answer the following [2 points]: a. If it is Thursday, 6:30pm in Halifax, Nova Scotia, what day and time is it in Tokyo, Japan?

b. If it is 7:30 in the morning on Sunday in Anchorage, Alaska, what time and day is it in Auckland, New Zealand?

10. Tropical and equatorial countries generally don't observe daylight saving time (DST), the practice of setting clocks forward and back each year. Why not? Include a diagram of the earth and sun in your explanation.

11. A friend casually states that "summers are hot because the sun is closer to the earth." What's wrong with this statement? Provide a detailed correction.

12. Prior to any standardized time system, the explorer Ferdinand Magellan and his crew set out in 1519 on their westward journey from Spain to circumnavigate the Earth. Upon their return three years later, they discovered that their meticulously kept logs were off by one day. Explain why.

13. Ready to interpret some satellite images? View the 12 satellite image segments referred to here: <http://www.nrcan.gc.ca/earth-sciences/geography-boundary/remote-sensing/kids/1310> .

\_\_\_\_\_Two race tracks, a smaller one inside a larger one. Some roads and two golf courses are also visible in the image.

\_\_\_\_\_An airport at the edge of a city. You can also see a smaller river joining a larger river in the image.

\_\_\_\_\_The effect of a cyclone on the surface of ocean waters.

\_\_\_\_\_A smooth coastline showing a coastal town and its breakwater which creates a safe harbour for boats.

\_\_\_\_\_5 bridges across a river. Three of the bridges also pass over islands in the river.

\_\_\_\_\_A coastal area showing ice flows in the largest of the inlets. The land area is studded with lakes and there are many islands offshore.

\_\_\_\_\_A hook-shaped peninsula ending in a point.

\_\_\_\_\_A rugged coastline showing many sharp coves and inlets.