Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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# Half Earth Model: Winds, Currents and Climate

**Purpose**

The purpose of this lab is to create a three dimensional model of half of the earth, applying what you know about winds, currents and climate. [[1]](#endnote-2)

**Procedure**

**Materials**

1. Paper mache, foam, cardboard, or any other material that is not food or perishable. (In other words, it won’t spoil, grow mold or get stinky!)
2. A piece of cardboard or other flat surface upon which you can attach your model.

**Sequence of Steps**

1. Construct a 3-D model of half of the earth, and attach your model to cardboard or a flat surface that you can easily carry.
2. At the top of the cardboard (or other backing) write an appropriate title for your project.
3. Paint or color your model showing the land and water.
   1. You may show either Eastern or Western Hemisphere.
   2. Make sure the land sticks up higher than the water.
4. Add a line, straw, skewer, etc. at a 23˚ angle to show the angle of the tilt of the earth.
   1. Make sure you lean the ½ earth one way of the other on the 23˚ angle away from vertical.
5. Add lines, yarn, string etc. to represent and label:
   1. The equator
   2. 30˚ North and 30˚ South Latitude
   3. 60˚ North and 60˚ South Latitude
6. Label 90˚ North Latitude and 90˚ South Latitude
7. On the cardboard (backing) to the left of the ½ earth,
   1. Add lines, yarn, string, skewers, etc. to show the rays from the sun striking the earth at:
      1. The equator, 30˚ North and 30˚ South Latitude, 60˚ North and 60˚ South Latitude, and 90˚ North and 90˚ South Latitude.
      2. Remember, because the sun is so far away, all rays strike the earth parallel to each other.
8. At the bottom of the cardboard (backing),
   1. Write whether it will be “summer” or “winter” in the Northern hemisphere
   2. Underneath where you have labeled the season, explain why it will be that season due to the angle of incoming solar radiation.
9. To the right of the ½ earth,
   1. Draw or construct red arrows showing where there will be warm, rising air.
   2. Draw or construct blue arrows showing where there will be cool, sinking air.
10. On the top of the latitude lines where there will be a lot of precipitation, add cotton (or some other material) to represent clouds and precipitation.
11. Between the latitude lines, label where appropriate:
    1. Tropical Rain Forest
    2. Subtropical Desert
    3. Temperate Rain Forest
    4. Polar Desert
    5. Hint: the climate zones are the same above and below the equator!
12. Between the latitude lines, label where appropriate:
    1. Warm
    2. Cold
    3. Dry
    4. Wet
    5. Hint: the climate zones are the same above and below the equator!
13. On the ½ earth, in the oceans,
    1. Draw or construct red arrows showing the movement of warm surface currents.
    2. Draw or construct blue arrows showing the movement of cold surface currents.
14. Place an “X” somewhere on the ½ earth model
    1. To the left of the ½ earth on the cardboard (backing):
       1. Explain in detail the climate in this area marked by an “X”, including latitude, angle of incoming solar radiation, movement of air, movement of ocean

water, the name of the climate zones, temperature and precipitation of the area, and at least 3 plants and 3 animals you might find living in this area.

1. Looper, Jim (2008).Unit 3 Project: ½ Earth, Winds, Currents and Climate. *Sheldon High School Science Dept.* [↑](#endnote-ref-2)