Group Names: Matthew Rasfeld, Jon Thompson, Chris Anderson, Rex Brown
Add the last name of one of your group members to the beginning of the file "rodriguezpreSIDSunriseActivity.doc"

What Do You Think?

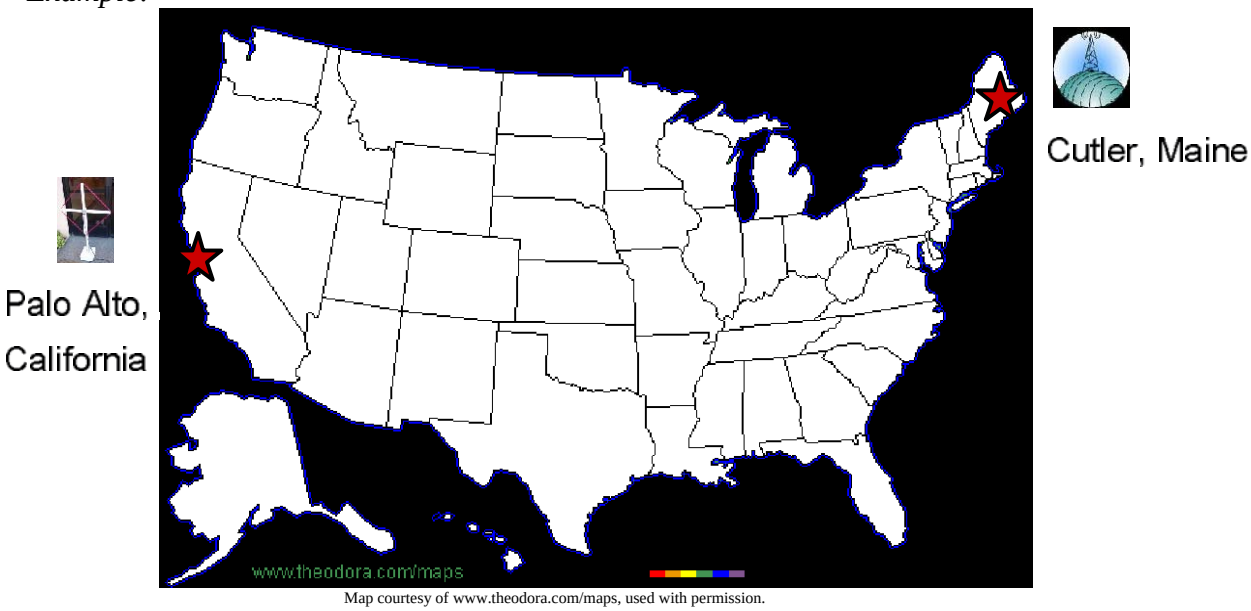
Pre-activity Survey Sheet

1. You will be using either your own monitor data or the samples provided. In what city and state is your (or the sample) monitor set up? *Our monitor is located in Cincinnati, Ohio (39.04°N -84.21°W)*

2. Your monitor picks up very low frequency radio waves from a transmitter. In which city and state is the transmitter you are monitoring located? *Our transmitter is located in Cutler, Maine.*

3. Find both your monitor site and the transmitter site on a map or globe. Estimate how far apart these are in kilometers/miles, in longitude, in latitude. (There is a freeware computer program which will help you draw "great circle routes" between your sites: http://tonnesoftware.com/pizza.html).

Example:



Map courtesy of www.theodora.com/maps, used with permission.

Receiver: Palo Alto, California 38°N -122°W
Transmitter: Cutler, Maine 44°N -67°W
About 4900 kilometers, 55° longitude, 6°latitude apart

Your receiver: *Cincinnati, Ohio 39.04°N -84.21°W*

Your transmitter: *Cutler, Maine 44.65°N -67.28°W*
Distance: *1532 km (952 mi)*

4. Radio waves travel only in straight lines. If your monitor is far from the transmitter, how do you think the radio waves get "around" the curved Earth to your site? *To get the radio waves around the curved Earth, you can reflect the radio waves off of the Ionosphere. You can angle the signal so that the signal will undergo total internal reflection when it encounters the atmosphere, and thus the signal will be sent back to the earth towards the target.*

5. Your monitor measures the strength of a radio signal sent from the transmitter. Would you expect the radio signal strength to be different during the day and the night? If so, what do you think could cause this? *The signal strength would be stronger because there is less interference by the Ionosphere. At night, the ionosphere is less dense, so the signal travels further into the ionosphere before it is reflected back to earth, thus the signal travels a greater horizontal distance and is stronger.*

6. After you look at your data, you'll see that the monitor picks up indications of sunrise and sunset. If your monitor and the transmitter are at different longitudes, do you think your monitor will pick up the sunrise and sunset at your site, or at the transmitter site, or elsewhere? *Since our monitor displays the information that is received from the transmitter, then sunrise and sunset will be picked up by the transmitter and sent to our monitor as will any other event. In other words, the monitor only acts as a display for the data gathered by the transmitter, so when the transmitter records a sunrise, the monitor will display a sunrise, even though there isn't a sunrise occurring at the monitor's location at that time.*

Nighttime *Daylight*