

**Group Names:** Campos, Wong, Stephen, Willging, Voss

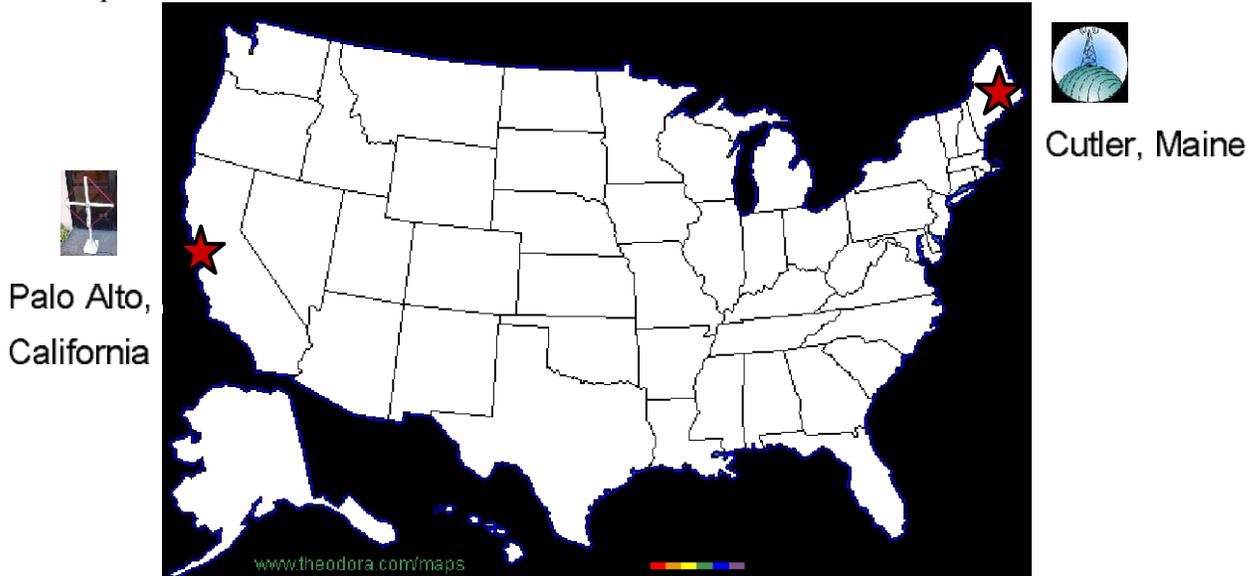
Add the last name of one of your group members to the beginning of the file  
“rodriguezpreSIDSunriseActivity.doc”

## 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?  
[Cincinnati, Ohio \(45255\)](#)
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?  
[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:*



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: 39°N -84°W  
Your transmitter: 44°N -67°W  
Distance: approx. 1518 km, 5° longitude, 17° latitude

- 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?



It bounces off of the layers of the ionosphere, then back to earth.

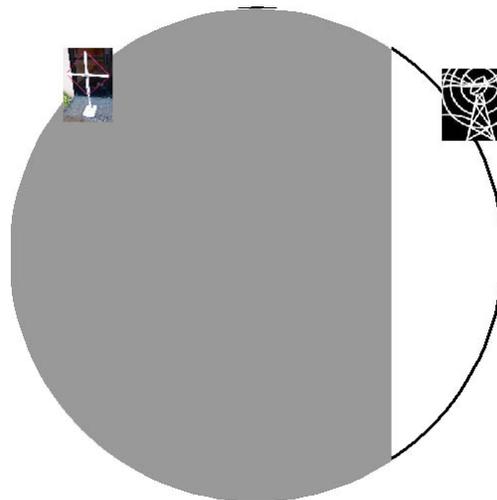
- Your monitor measures the strength of a radio signal sent from the transmitter. Would you expect the radio signal strength to be different during the day and the night? If so, what do you think could cause this.

We would expect it to be stronger at night, because at night the lower layers of the ionosphere (D and E) disappear, and so they will not absorb the radio signal, while the F layer still reflects it.

- 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?

It would pick up the sunrise and the sunset at the site of the transmitter, because that is where the signal is originating from, and the receiver is just picking up that signal, rather than generating its own set of data.

*Nighttime*



*Daylight*

