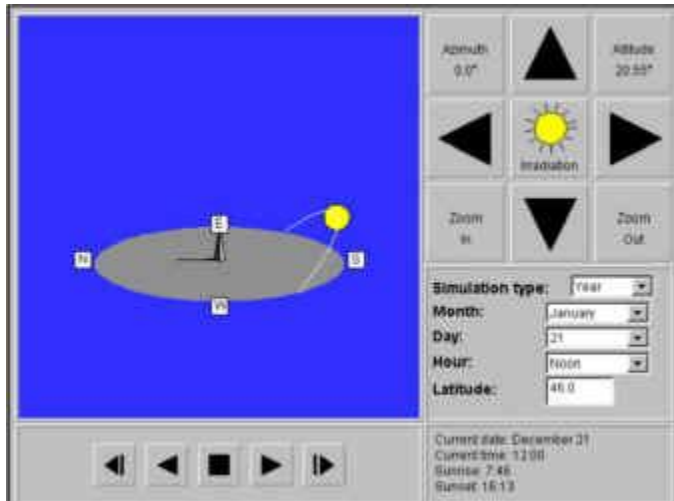


# Sun Path Activity

Use the Sun Path JAVA applet at <http://engnet.anu.edu.au/DEpeople/Andres.Cuevas/Sun/SunPath/SunPath.html> to visualize the apparent position of the sun as seen by an observer on Earth, to find sunrise and sunset times, the length of day, and the altitude of the noon sun at different times of year.



Enter the Latitude for your city, select yearly simulation type, month January, day 15, Hour (noon). You may have to do a web search to find our precise Latitude.

Run the yearly simulation by clicking on the forward play button.

In your own words describe how the sun's position at noon changes over the course of a year. In the figure above there is a chime tower in the middle and the east direction is behind the chime tower not on top.

In January the sun rises in the \_\_\_\_\_ and sets in the \_\_\_\_\_.

- a. E, W   b. SE, SW   c. NE, NW   d. NE, SW   e. SE, NW

In June the sun rises in the \_\_\_\_\_ and sets in the \_\_\_\_\_.

- a. E, W   b. SE, SW   c. NE, NW   d. NE, SW   e. SE, NW

In March the sun rises in the \_\_\_\_\_ and sets in the \_\_\_\_\_.

- a. E, W   b. SE, SW   c. NE, NW   d. NE, SW   e. SE, NW

Fill in the table below for sun-rise and sunset times, the length of day between sunrise and sunset, and the altitude at noon (sun angle above horizon). If you need help calculating the length of day here is a [length of day calculator](#). Hint: Use the forward play to scan through for sunrise times and the backward play to scan back for sunset times or use the step play buttons.

15th of Month	sunrise (hr:min)	sunset (hr:min)	length of day (hr:min)	Altitude Deg
Jan				
Feb				
Mar				
Apr				
May				
Jun				
Jul				
Aug				
Sep				
Oct				
Nov				
Dec				

Use a graphing program to graph:

- 1) the length of day on the y-axis versus month on the x-axis.
- 2) the sun's altitude on the y-axis versus month on the x-axis.

If you'd like you can also use the blank graph provided at [BlankGraph](#)

In the Northern hemisphere the shortest day of the year is near December 21(winter solstice) and the longest day is near June 21 (summer solstice).

What is the length of day for Dec 21?

Does the length of day vary much between Dec 15 and Jan 15?

What is the length of day for June 21?

Does the length of day vary much between Jun 15 and Jul 15?

Between what two months does the length of day increase most rapidly?

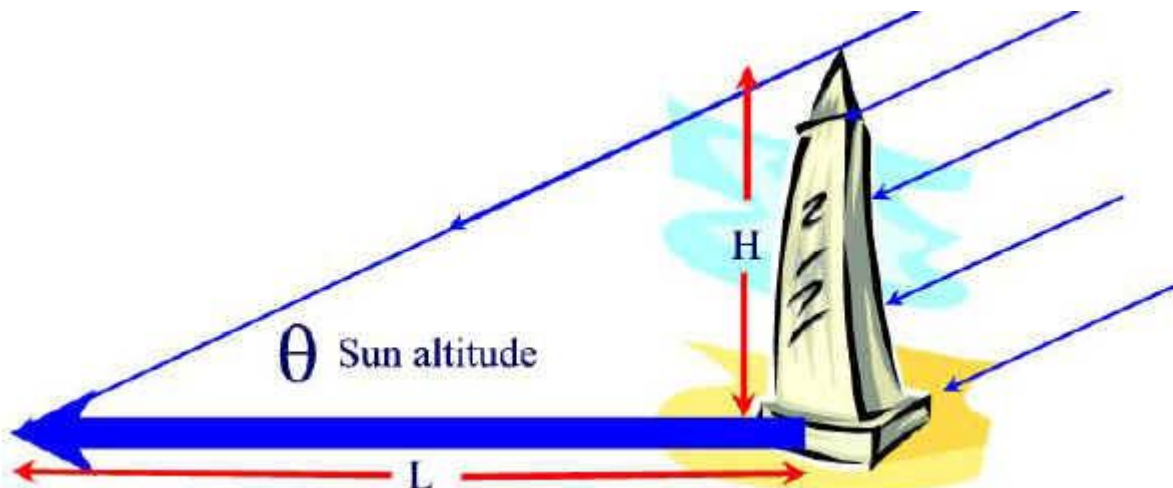
Between what two months does the length of day decrease most rapidly?

When is the sun highest sky?

When is the sun lowest in the sky?

***If you have already worked through the solar zenith lab stop here. That could be the case for most meteorology students.***

What is your Height? Use a protractor and a careful drawing to accurately estimate your shadow length on Dec 15, Mar 15, Jun 15, and Sept 15. In the sketch below the relationship between Height (H), shadow length (L), and sun altitude ( $\theta$ ) is shown.



There are a variety of ways to do this; here's one way.

Draw a vertical line to scale representing you. Say you are 5 ft tall you may want to draw your line 5.0 cm high.

Draw a horizontal line from the base of "your" feet outward in the direction of your shadow.

Place a straight edge on the protractor so that it passes through both the "Bulls-Eye" and the angle mark representing the altitude angle.

Now slide the "Bulls-Eye" of the protractor along the horizontal line until the straight edge grazes the tip on your head. Mark the position where the "Bulls-Eye" intersects the horizontal line. The distance from your feet to this intersection point is your shadow length.

Students familiar with trig or students with access to calculators with Trig functions can use  **$\tan\theta = H/L$**  to check their graphical answers.

Also see the original page

<http://engnet.anu.edu.au/DEpeople/Andres.Cuevas/Sun/Sun.html>