

Sunspot Data Collection – Teacher Sheet

Sunspots are the most tangible and easily observable of the sun's many phenomena. Believe it or not, there are many ways for students to actually observe these spots. Some involve expensive equipment, while others are fairly straightforward and require very little equipment. Using the Internet, the sunspots can even be recorded on a cloudy day. Below are suggestions on how students can gather sunspot data on a daily basis:

- A Sunspotter Telescope is an easy-to-use solar viewer that provides safe images of even small sunspots, as well as the occasional solar eclipse. They cost about \$300 and are very durable. The scope also comes with a series of lessons. Made by Learning Technologies, Inc. of Somerville, MA. www.starlab.com
- If your school already owns a telescope, you can make a safe solar filter using filter material from Rainbow Symphony. www.rainbowsymphonystore.com. They also sell pre-made filters as well as solar viewing glasses and other devices for safe solar viewing.
- Another option is to use a pair of binoculars to make an indirect image of the sun. **DO NOT LOOK AT THE SUN THROUGH BINOCULARS !!!** Hold the binoculars out in front of you and adjust them until the large lenses are in line with the sun's rays. The image can be projected onto a paper plate or paper on the ground. Adjust the focal length (distance from binoculars to image) until you get a size you like. Also adjust the focus knob on the binoculars and if there are any sunspots up there, they will eventually come in to view. Be patient, this is not easy for one person to do. Pairs of students should work together to get an image at least the size of a quarter. The bigger the better.
- Before you go looking for sunspots, you want to be sure there are some to be seen. The easiest resource for sunspot images is www.spaceweather.com. They have a daily sun image on their homepage that is easy to reproduce as an overhead or incorporate into a Powerpoint presentation. If you would like to plot a group of days all in one class period, you could use the archive feature on the site to collect images from the previous several days. This is also helpful on days with inclement weather, or to plot what has happened over the weekend.
- The following pages contain a series of Powerpoint images that can be used to model the motion and development of sunspots. All images were taken from the archives of spaceweather.com. Also included are some worksheets that can be used for recording sunspot data by any of the methods described above.

Recording Sunspots using the Sunspotter Telescope

The circles below were drawn to match the image created by the Sunspotter. By holding the paper at the right angle, you should be able to fit it on to the viewing screen and draw in today's sunspots. Draw quickly, as the Earth rotates right in front of your eyes!!!! Be sure to include all parts and details of each sunspot. Don't forget to date the image for later comparison.

