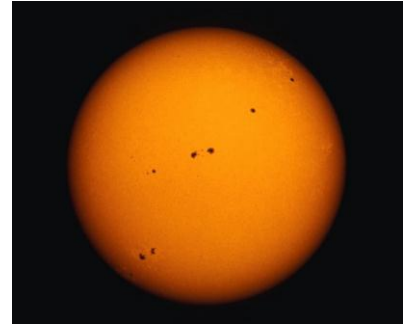


Student Worksheet for Ep. 7: Solar Astronomy

Overview: Sunspots are dark, cool areas with highly active magnetic fields on the Sun's surface that last from hours to months. They are dark because they aren't as bright as the areas around them, and they extend down into the Sun as well as up into the magnetic loops.



What to Learn: The Sun rotates, but because it's not a solid body but a big ball of gas, different parts of the Sun rotate at different speeds. The equator (once every 27 days) spins faster than the poles (once every 31 days). Sunspots are a great way to estimate the rotation speed.

Lab Time:

We are going to use images from a satellite that's pointed right at the Sun while orbiting around the Earth called Solar and Heliospheric Observatory, or "SOHO." SOHO gets clear, unobstructed views of the Sun 24 hours a day, since it's above the atmosphere of the Earth.

1. Visit the SOHO webpage to get a real-time snapshot of the sun at:
<http://sohowww.nascom.nasa.gov/data/realtime/realtime-update.html>
2. Look at the SDO/HMI Continuum Image. It's the one that looks like the image above.
3. You will track the sunspot activity using the mapping grid (see next page). You will be charting the Sun for two weeks using this mapping grid.
4. Each day, print out a real-time snapshot of the sun at the above website.
5. Draw what you see on the mapping grid, or trace the grid over your printout.
6. Draw the sunspot(s) with the date of the month next to it. For example, on March 13, write a "13" right next to the sunspot picture you drew. If there's more than one sunspot, pick the largest one to track. If you'd like to track *all* of them, label them A-13, B-13, C-13...etc. The next day, label the set A-14, B-14, C-14. For multiple sunspots, use one mapping grid per day.

After you complete the mapping grid, answer the questions below.

Questions:

1. How many longitude degrees per day does one of the sunspots move?
2. Do all sunspots move at the same rate?
3. Did some of the sunspots change size or shape, appear or disappear?

Mapping Grid

Images courtesy of NASA

