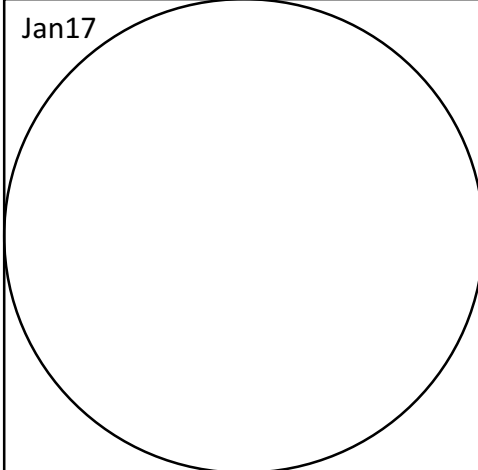
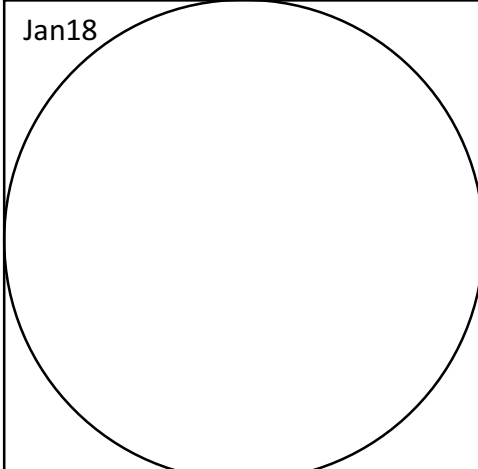
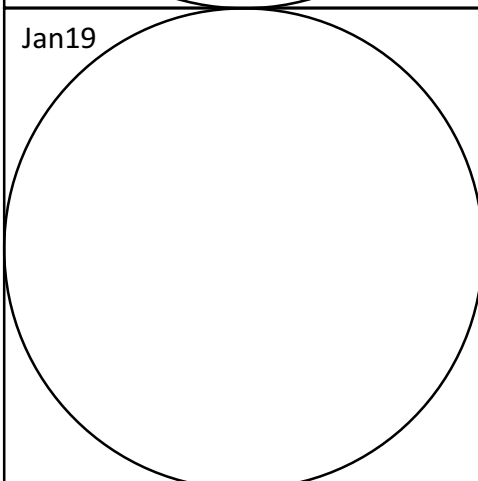


Astro 102 – Lab#1

Lab objectives

- 1) Track sunspots and their associated features on the solar atmosphere
- 2) Learn about auroras and the Kp index
- 3) Learn about solar storms and how these solar events can affect the earth

Jan17 	
Jan18 	
Jan19 	

1) Track sunspots and their associated atmospheric features

1a) At www.thesuntoday.org/the-sun-now/, click on the “**HMI Continuum Flattened**” image of the sun to see an enlarged image of the solar **photosphere**. Sketch out the sunspots.

1b) Click on the “**AIA 171**” image of the sun to see an enlarged image of the solar **atmosphere**. Sketch out the magnetic loops around the sunspots (do NOT sketch out the entire atmosphere of the sun, sketch just the region around the sunspots).

You can click on the “**48hr mp4**” link to see how these solar features have changed over the past 2 days.

1c) At www.spaceweather.com, click on the “**Daily Sun**” image to see an enlarged image of the sun. Label the active region numbers associated with the sunspots.

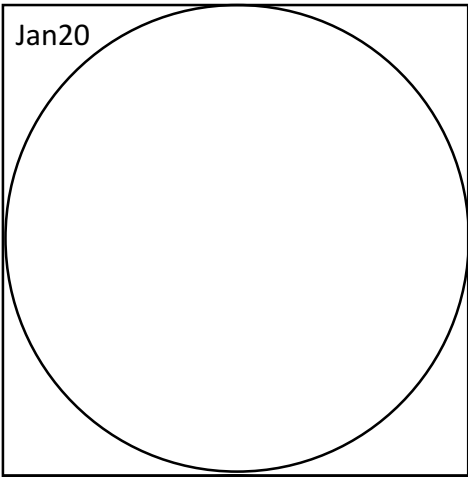
1d) Over the next week, continue sketching the sunspots/atmospheric features and label the active regions numbers.

1e) Roughly, how long will it take a sunspot to travel from the eastern edge to western edge of the sun?

About _____ days

Draw the sunspot locations accurately

Jan20

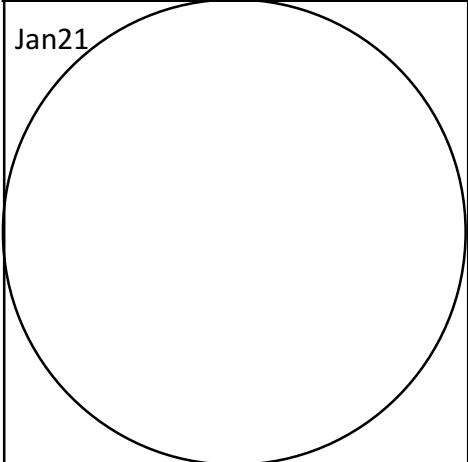


2) Auroras and the Kp index

2a) At www.spaceweather.com, track the Kp index over the week and write down the highest measured value for each day by using the Kp index bar chart from the "**more data**" link under the Planetary K-index sidebar.

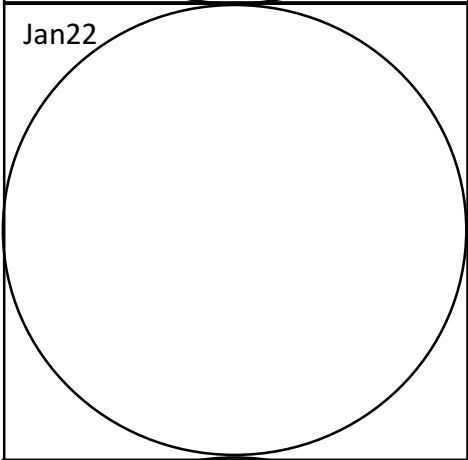
Date	Kp maximum
Jan 17	
Jan 18	
Jan 19	
Jan 20	
Jan 21	
Jan 22	
Jan 23	

Jan21

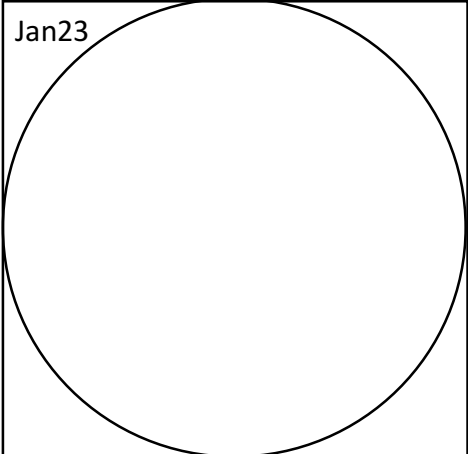


2b) What is the Kp index a measurement of?

Jan22



Jan23



2c) A Kp index above _____ indicates a solar storm.

2d) To see auroras in WA state, the Kp index needs to be higher than about _____

2e) Did the Aurora Oval (red view line) cross into WA state over the past week? _____

Name: _____

3) Solar storms and their effects on the earth

Click on the "**more data**" link under the Planetary K-index sidebar. Next, click on the "**NOAA Scales**" link next to CURRENT SPACE WEATHER CONDITIONS at the top of the page.

3a) A Kp index of 9 is equivalent to what value on the Geomagnetic Storms scale? G ____

3b) During the most extreme **Geomagnetic Storms**, what effects do they have on power systems? _____

3c) During the most extreme **Solar Radiation Storms**, what effects do they have on humans and satellites? _____

3d) During the most extreme **Radio Blackout**, what effects do they have on radio communications and navigation? _____
