

Stellarium Exercise (vers.1j) – 15%

“Stellarium” – free software to explore the night sky

- This is an **INDIVIDUAL assignment**. NOT a group assignment.
- Submit a single **PDF** document of your answers and screen captures.
- **You MUST include screen captures with each answer (except questions 4, 7, 10).**
- All screen captures must be **large enough to be readable** (take up the width of the page).
- **Always use the current year unless instructed to do otherwise.**
- Try and ensure that **“North” is up** in the sky orientation.

www.stellarium.org

Download and install this free open-source program onto **your desktop or laptop computer only**. This program runs under the PC, MAC, and Linux operating systems. (**NOTE: Do not** try this program on your phone. It is a different program that costs money).

Launch the program and set your location (if it hasn't already done so automatically).

To pull up the menus, move your mouse to the lower left hand side of the Stellarium window and menu icons will pop out of lower left corner. Similar if you move your mouse to the bottom section of the window over the lower toolbar that shows date/time/location and another menu will also pop up with a different set of buttons.

You can use the scroll wheel to zoom in/out. You can also hold down the mouse button and drag the sky around. You can also spin it around as you move and drag the sky in a circular motion.

The Stellarium User Guide is found at the top right on the Stellarium home page

www.stellarium.org

Read sections 3 (Interface Guide) & 4 (Configuration) to understand the software. Check out the “Time Travel” buttons that advance the motions of the sky. Its lots of fun.

There's also an older document that might be helpful.

http://sas-sky.org/wp-content/uploads/2013/02/Stellarium_Handbook.pdf

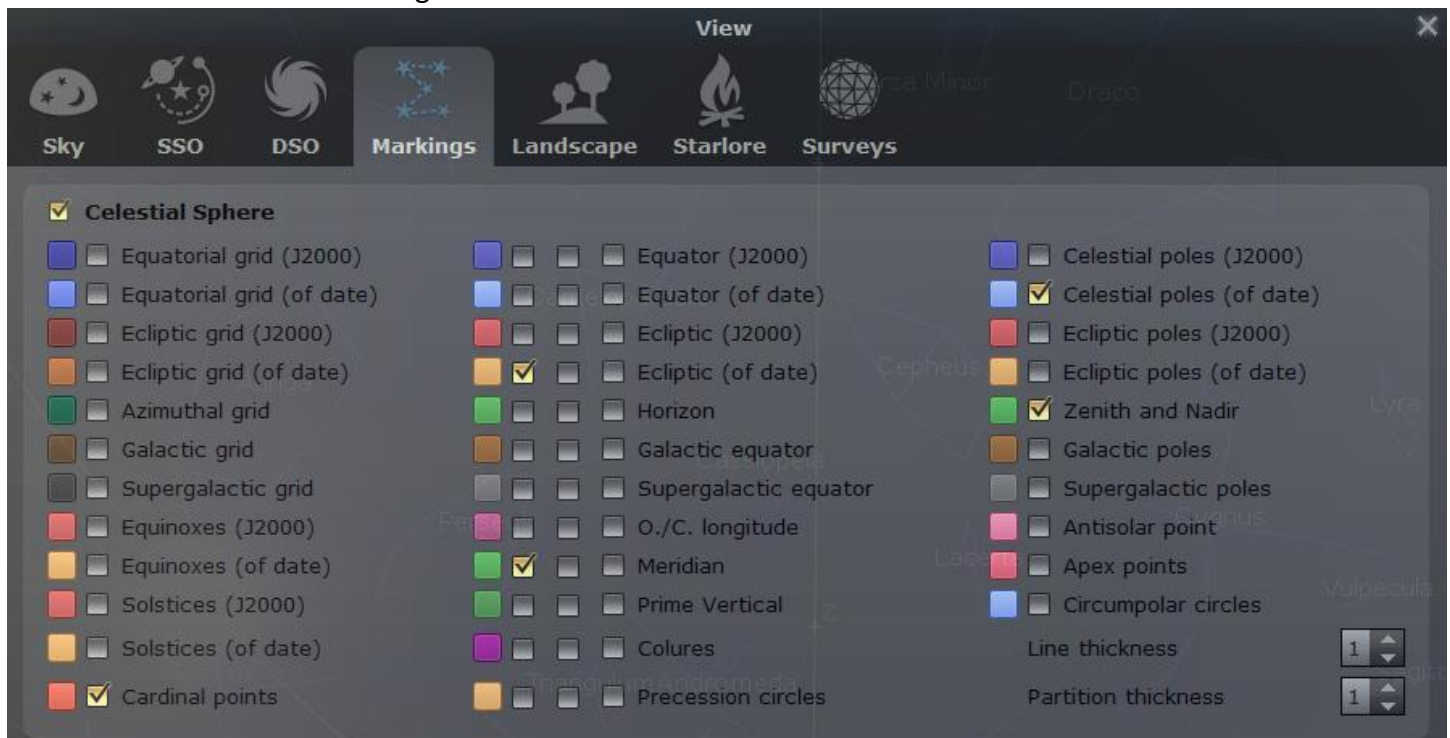
Please note: Some menu settings below, etc, were all captured on an earlier version of Stellarium. Most main controls have remained in the same locations, but with every release some menu options might have moved to a new location. Always check the current user guide which is found along the top right of the Stellarium.org home page.

Setup for our needs:

Move your mouse to the bottom of the window (left half), and bottom settings will appear. Do the following to turn on several and turn off several of these settings.



Select the "Sky Viewing Options" that pops up when you move your mouse to the left side edge of the window. Then click on "Markings".



(Figure 1: Markings)

Select "Celestial Sphere"

Select "Cardinal points"

select "Ecliptic (of date)"

select "Meridian"

select "Celestial poles (of date)"

select "Zenith and Nadir"

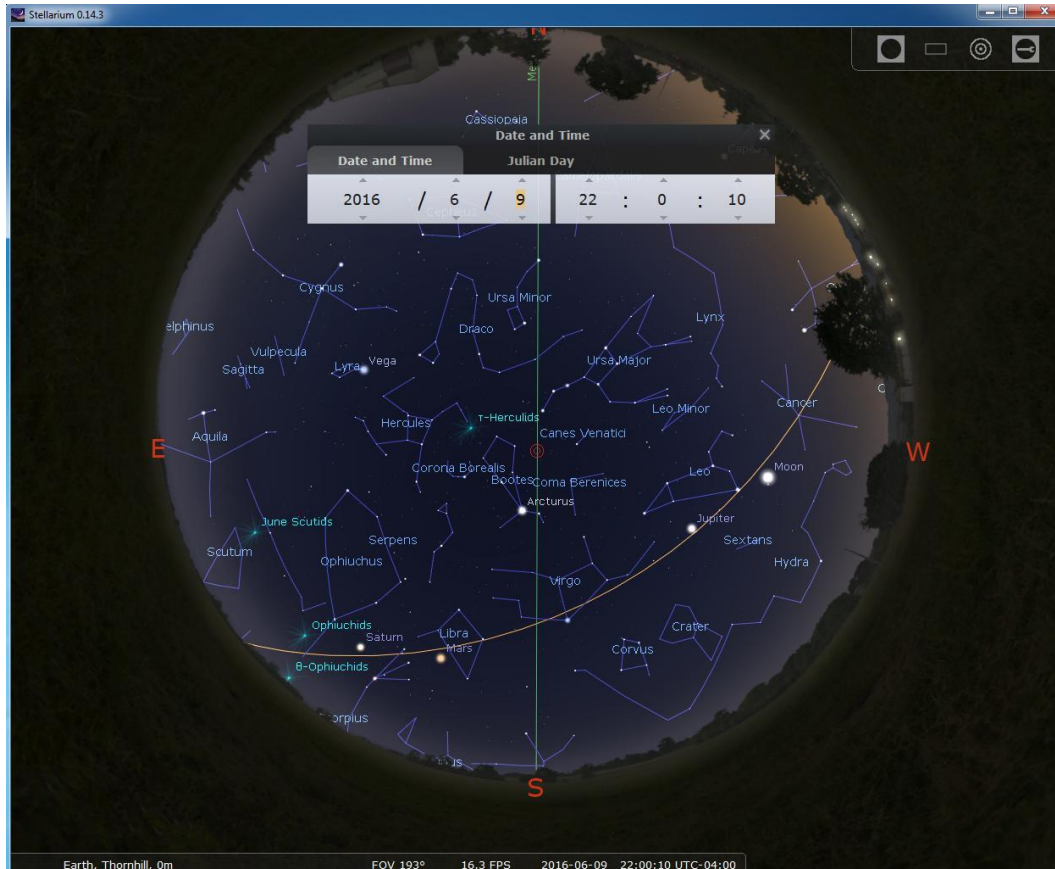
Exercise

Always using the current year, set the date and time for the date/time in Figure 2 below.

Hold the mouse down on the “up arrow” above the day and advance the time in days for at least 6 months. Notice the motions of the moon and planets.

Questions:

1. What path (line) in the sky do the moon and planets appear to be following?

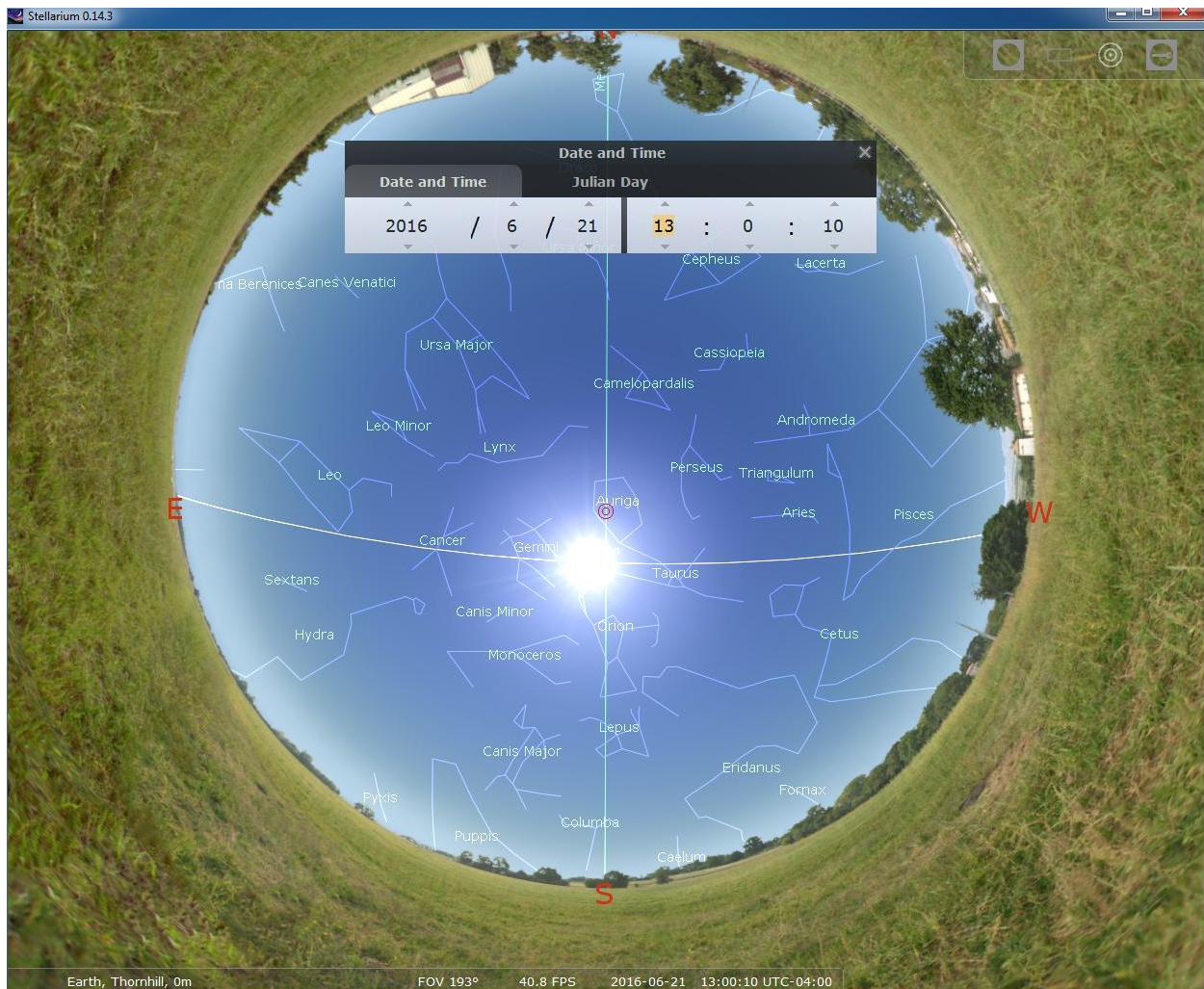


(Figure 2)

Using current year, set the date/time for the daytime shown in Figure 3 below. Hold the mouse down on the “up arrow” above the day and advance the time in days for at least 6 months. Notice the motions of the stars and the path of the sun.

Questions:

2. What path (line) does the sun appear to be following in the sky?
3. Set the time for Noon. Do you notice an odd jump in the **sideways position** of the sun at noon on March 1 versus March 15? (**yes or no**) Advance the date, one day at a time between these dates and you will most likely see a horizontal shift between two specific dates. (Or try between October 30th and November 15th)
4. (no screen capture required) If you notice a jump, explain why there is a jump? (Hint: look at the position of the sun with respect to the MERIDIAN line at **Noon** in winter versus Noon in summer)



(Figure 3)

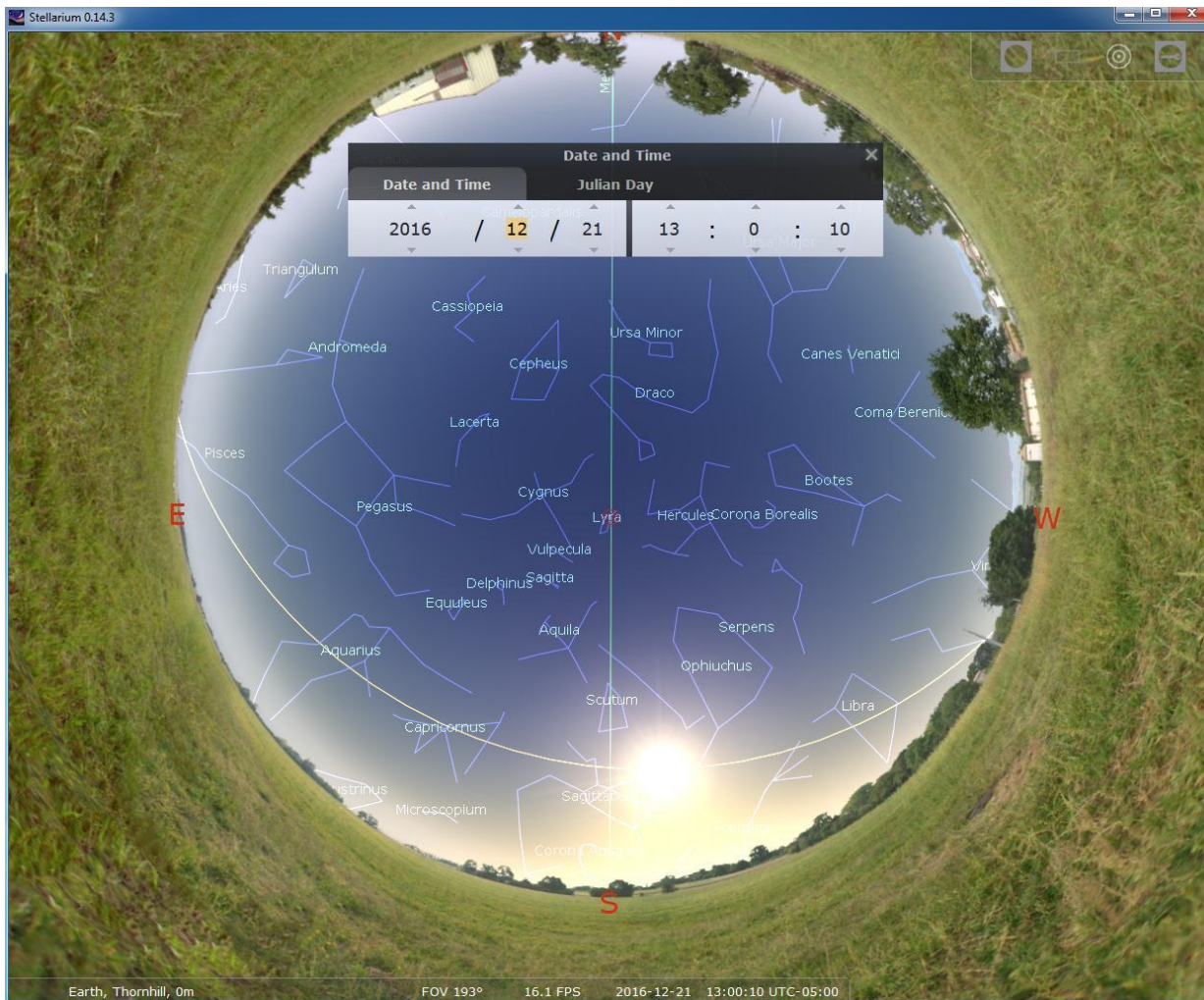
Set the date/time (summer solstice) for the daytime view shown in Figure 3 and measure the sunrise and sunset times. Then set the date/time (winter solstice) for the daytime view shown in Figure 4 and measure the sunrise and sunset times.

Questions:

- Approximately how many hours of daylight (sunrise to sunset) do you measure at the summer and winter solstice dates for Toronto? Measure it using Stellarium.
 Summer solstice daylight hours = _____ Winter solstice daylight hours = _____

Notice the elevation of the sun in the sky at noon-ish on those dates. You might need to flip back and forth several times between those two solstice dates.

- Do you think the difference in daylight hours might relate to the elevation of the sun? If so, explain Why? (Ignore the tilt of the Earth, instead think about the position of the Sun in the sky during the day. You might try to advance it hour by hour to see its motion at the Winter solstice date versus the summer solstice date)



(Figure 4)

Set the date/time for the daytime shown in Figure 3. Single click the “up arrow” above the “month” number. Write down the name of the constellation that the sun is in each month as you click through an entire year.

Question:

7. (no screen capture required) Do you notice any familiarity of these constellation names? Do they relate to something you’ve seen or heard of before? If so, what?

Set the date/time to Noon on your birthday **this year**.

Questions:

8. What constellation is the sun located in? **(turn off daylight to see it clearly)**

Now keep the date set to your birthday, but **change the year to 0001**. (ie, over 2000 years ago)

Questions:

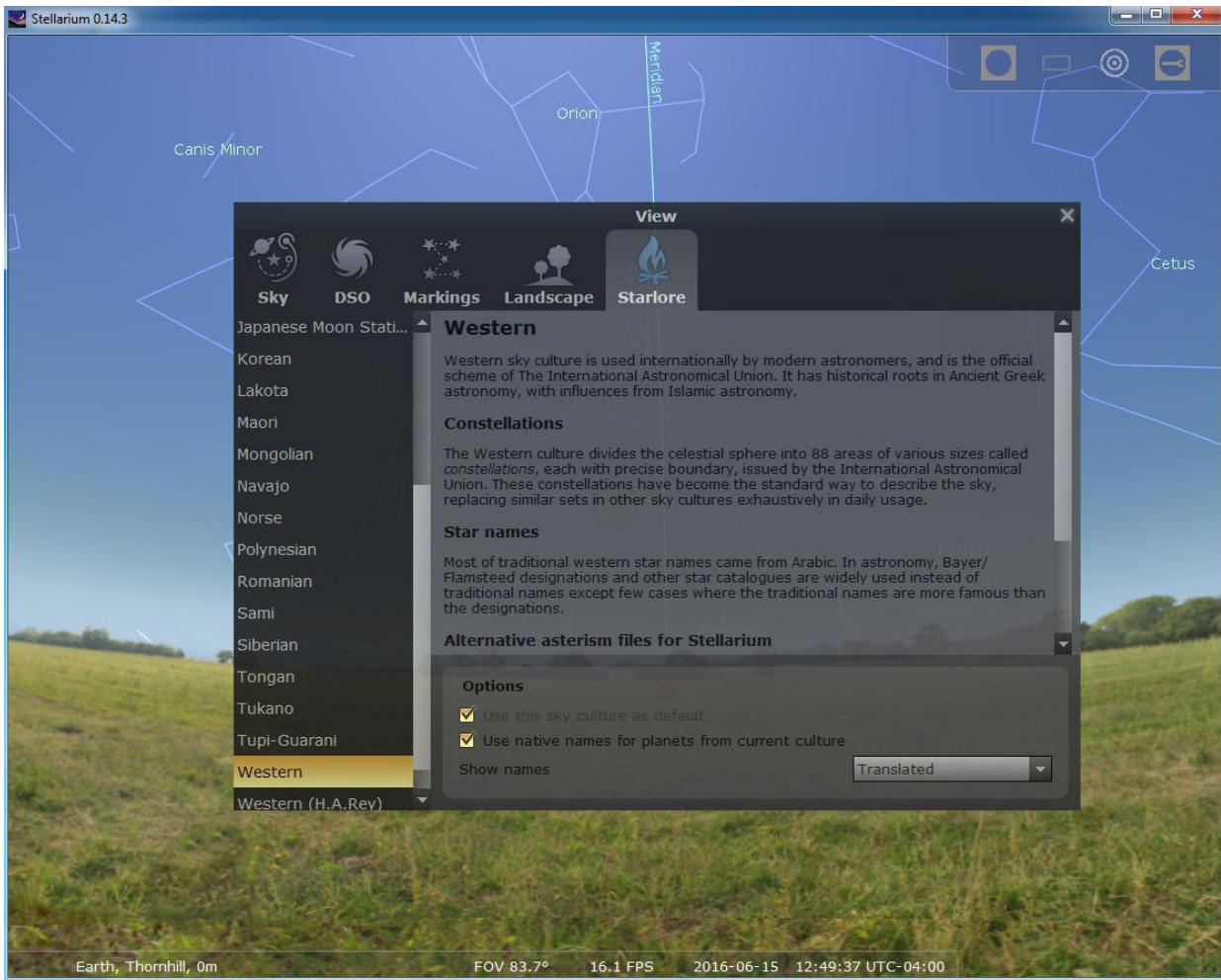
9. Which constellation is the Sun located in on your birthday in the year 0001?
10. (no screen capture required) Is there a difference regarding which constellation the sun is in our current year versus 2000 years ago? Explain why there is a difference?

11. Do you think you can see your constellation at midnight on your birthday in our current year or in the year 0001?

The Sky as seen by different Cultures

Ensure Stellarium is setup for you home location. **Using the current year, month, day**, set the time for midnight.

Select the “Sky Viewing Options” click on “Starlore” in Figure 6.



(Figure 6)

Click on one of the listed cultures and notice the different constellations. Single click the “up arrow” above the “month” number to go through the entire year so you see all the constellations defined by that culture that would be visible from the northern hemisphere. Try out the other cultures for their different constellations.

Questions:

12. Look at 2-3 different cultures. Do you notice any similar constellations used by different cultures? Which ones and which cultures?
13. Which culture did you find had the most interesting constellations? Why?