Family Activity Packet: Observation Guide

www.globeatnight.org

2013 Campaign Dates that use Leo: March 3 – 12, March 31 – April 9 & April 29 – May 8

Children and their families are encouraged to participate in a global campaign to observe and record the brightness of the faintest stars visible as a means of measuring light pollution in a given location. By locating and observing the constellation Leo in the night sky and comparing it to "magnitude" charts, children from around the world will learn how the lights in their community contribute to light pollution. Their contributions to the online database will document the visible nighttime sky.

Materials Needed:

- GLOBE at Night Teacher or Family Activity Packet
- Something to write on (clipboard or cardboard)
- Something to write with (pencil or pen)
- Red light to preserve night vision (A red light can be made by covering a flashlight with a brown paper bag or a red balloon with the neck cut off.)
- Optional: smart mobile device, GPS unit, or a topographic map to determine your latitude and longitude

Remember Safety First!

- Please use your judgment as to whether your child should be supervised outside after dark at your location. **We encourage you to do this activity with your child.**
- Be sure your child is wearing suitable clothing for the weather and for being outside at night (light colored and/or with reflective colors).
- When choosing the darkest area in your location, make sure your student is not close to traffic, the edge of a balcony, or near danger in any other way.

Multiple Observations:
You can enter more than one observation by moving to a new location at least 1 km away from your original location. Don't forget to get new latitude and longitude coordinates. This can be done on the same night or on another night any time during the dates of the campaign.

Charts in this document were prepared by Jan Hollan, CzechGlobe (http://amper.ped.muni.cz/jenik/astro/maps/GaNight/).

Five Easy Star-Hunting Steps:
(www.globeatnight.org/observe.html)

1) Find your latitude and longitude using any of the following:

a. Use the interactive tool in the web application at ***www.globeatnight.org/webapp/***. With a smart cell phone or tablet, the latitude and longitude are automatically determined as you report the observation. If you are reporting it later on your computer, input the address of the observation. Or input your city; zoom in/out and pan around until you find it. The latitude and longitude will be displayed.
b. Visit ***eo.ucar.edu/geocode*** online for a similar tool.
c. Use a GPS unit where you take a measurement. Report as many decimal places as the unit provides.
d. Use a topographic map of your area.

2) Find Leo by going outside at least an hour after sunset approximately between 8-10 pm local time. (**Note for latitudes >45 North:** due to twilight, you may need to do your observations after 8:15pm in April and 9pm in May.)

a. Determine the darkest area by moving to where the most stars are visible in the sky toward Leo. If you have outside lights, be sure they are all off.
b. Wait outside for at least 10 minutes for your eyes to adapt to the darkness. This is called becoming "dark-adapted."
c. Locate Leo in the sky. For help use the appropriate Leo Finder Chart for your latitude. See (***www.globeatnight.org/observe_finder.html***)

3) Match your nighttime sky to one of our magnitude charts (pp. 2-3 or ***www.globeatnight.org/observe_magnitude.html***).

a. Select the chart that most closely resembles what you are seeing.
b. Estimate the cloud cover in the sky.
c. Fill out the Observation Sheet (page 4).

4) Report your observation online (if not done already by smart mobile device) at: ***www.globeatnight.org/report.html***.

a. There are 3 sets of campaign dates in 2013 that use Leo: March 3 through 12, March 31 through April 9 & April 29 through May 8. During those dates, take observations from different locations!
b. Your observations can be reported online any time up to the 28th day of the campaign month (e.g., March 28, April 28 and May 28, respectively).

5) Compare your observation to thousands around the world at: ***www.globeatnight.org/analyze.html***

Family Activity Packet: Magnitude Charts

www.globeatnight.org

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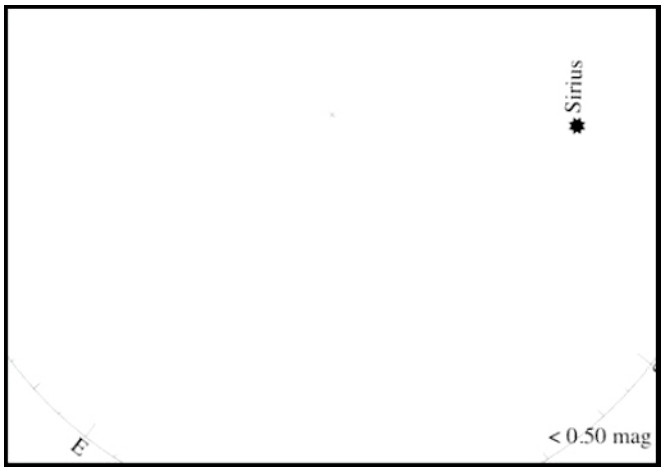
Please orient this page with the arrows up according to your location (e.g., in the Northern Hemisphere, near the equator or in the Southern Hemisphere).

Northern Hemisphere View

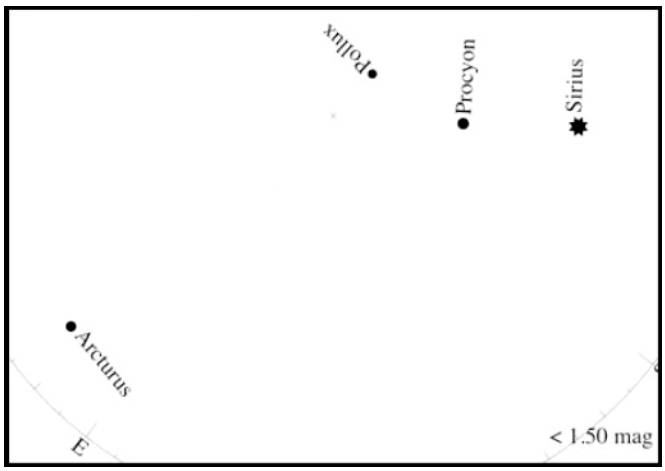
April 29 – May 8 | March 31 – April 9 | March 3 – March 12

Magnitude Below 1



Hint: You can't see the stars in Leo because the sky is too bright. The only nearby star you might see is Sirius, the Dog Star.

Magnitude 1

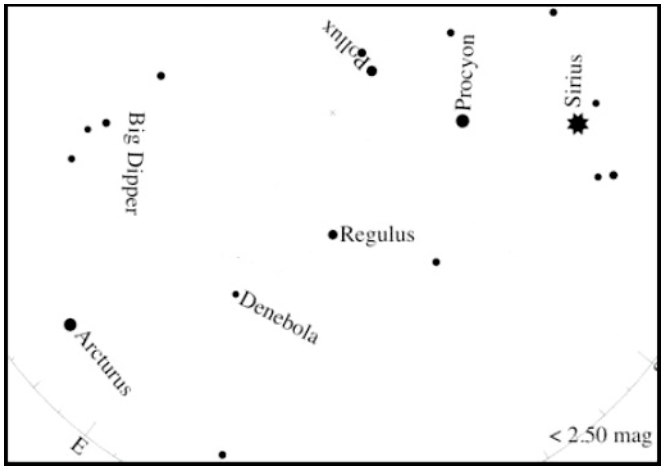


Hint: The stars in Leo should be between Arcturus and the Dog stars, Procyon and Sirius, but the sky is still too bright.

Near Equator View

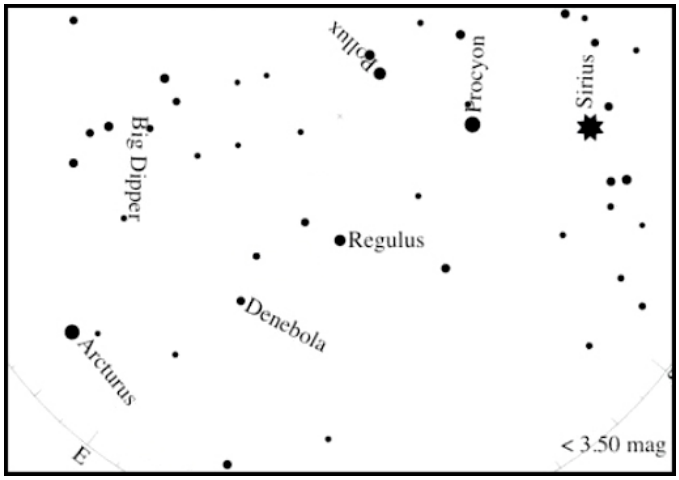
April 29 – May 8 | March 31 – April 9 | March 3 – March 12

Magnitude 2



Hint: You can see Regulus and Denebola (the 2 brightest stars in Leo). Regulus is part of the "Sickle" of Leo, the Lion's mane. Denebola is part of Leo's back end.

Magnitude 3



Hint: You can see the brightest 3 stars in the "Sickle" and the 2 brightest stars in Leo's back end.

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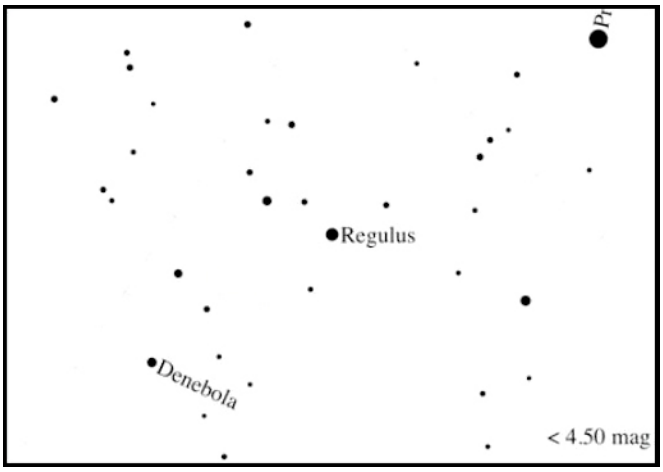
Northern Hemisphere View

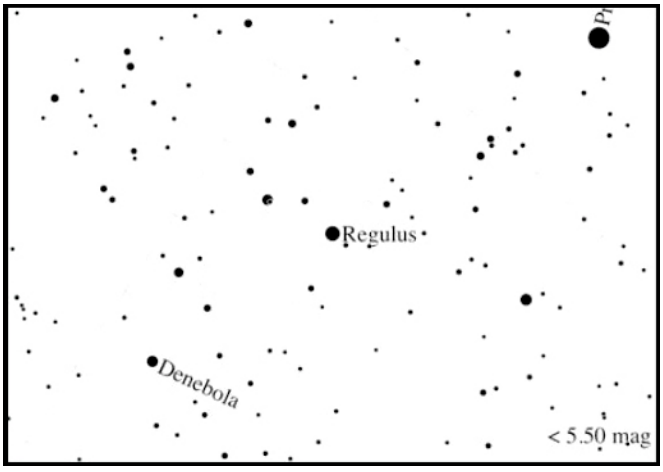
April 29 – May 8 | March 31 – April 9 | March 3 – March 12

Magnitude 4



Hint: You can see the brightest 6 stars in the "Sickle" or the mane of Leo plus the triangle of stars representing his back end.

Magnitude 5

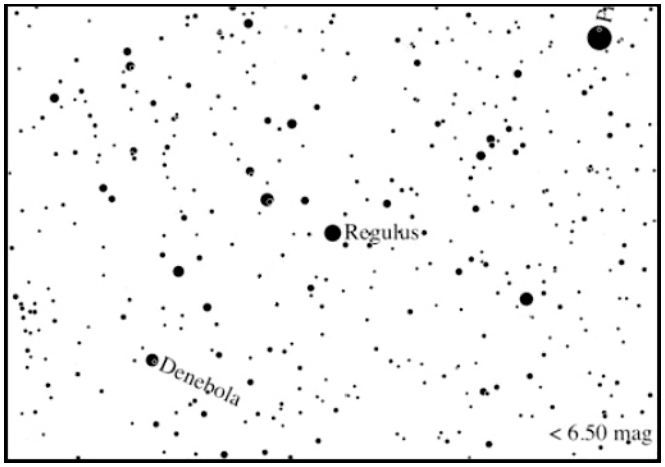


Hint: You can see more stars between the "Sickle" and Leo's back end.

Near Equator View

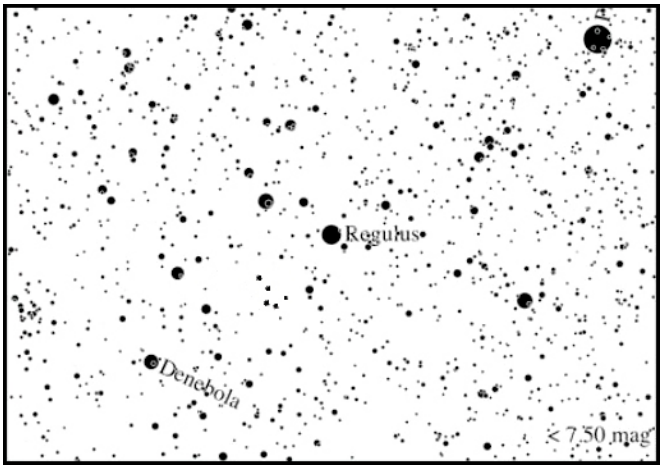
April 29 – May 8 | March 31 – April 9 | March 3 – March 12

Magnitude 6



Hint: You can see many more stars within and between the "Sickle" and Leo's back end.

Magnitude 7



Hint: You can't count that many stars!

Southern Hemisphere View

April 29 – May 8 | March 31 – April 9 | March 3 – March 12

Family Activity Packet: Observation Sheet

www.globeatnight.org

2013 Campaign Dates that use Leo: March 3 – 12, March 31 – April 9 & April 29 – May 8

Only fields marked by * are required.

*Date: March / April / May (circle month) _____, 2013

*Observation Time: ____:____ PM local time (HH:MM) *Country: _____

*Latitude (in deg/min/sec _____ deg ____min_____sec (North / South) circle direction

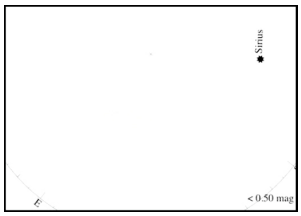
or decimal degrees): _____ decimal degrees

*Longitude (in deg/min/sec _____ deg ____min_____sec (East / West) circle direction

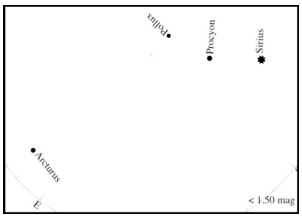
or decimal degrees): _____ decimal degrees

Comments on location: (e.g. There is one street light within 50 m that is shielded from my view.)

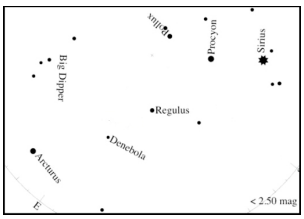
***Match your nighttime sky to one of our magnitude charts :**



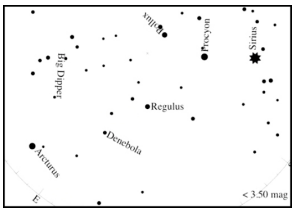
O Stars in Leo not visible



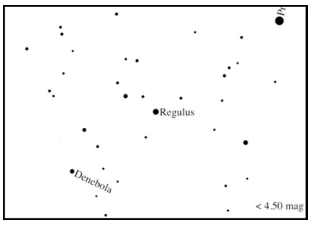
O Magnitude 1 Chart



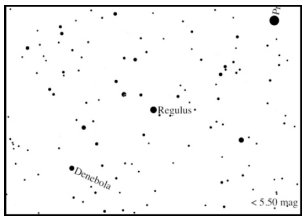
O Magnitude 2 Chart



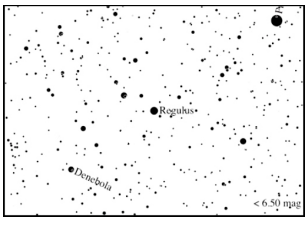
O Magnitude 3 Chart



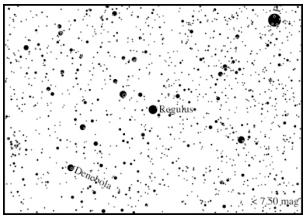
O Magnitude 4 Chart



O Magnitude 5 Chart



O Magnitude 6 Chart



O Magnitude 7 Chart

Reading from the Unihedron Sky Quality Meter (if applicable): _____

Serial number from the Unihedron Sky Quality Meter (if applicable): _____

*Estimate the cloud cover in the sky:

O Clear O Clouds cover ¼ of sky O Clouds cover ½ of sky O Clouds cover > ½ of sky

Comments on sky conditions: (e.g. a little haze to the north)

Report online at www.globeatnight.org/report.html