



# GLOBE AT NIGHT

## Family Activity Packet: Observation Guide

[www.globeatnight.org](http://www.globeatnight.org)

March 22 - April 4, 2011

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

### 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 red cellophane and securing the covering with a rubber band to be sure it doesn't slip while making the observation.)
- Optional: GPS unit, Maporama Web site or topographic map to determine your latitude and longitude

### Remember Safety First!

- Please use your judgment as to whether your student should be supervised outside after dark in your location. **We encourage you to do this activity with your student.**
- Be sure your student 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 March 22 - April 4, 2011.

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

#### 1) Find your latitude and longitude

by using any of the following methods:

- a. Use a GPS unit where you take a measurement. Report as many decimal places as the unit provides.
- b. Visit <http://eo.ucar.edu/geocode/> on-line. Input your location. Or input your city; zoom in/out and pan around until you find your location. Double-click and the latitude and longitude will be displayed.
- c. Use topographic map of your area.
- d. Determine your latitude and longitude with the interactive tool when reporting observations on the GLOBE at Night Web site.

#### 2) Find Leo by going outside an hour after sunset (approximately between 8-10 pm local time)

- 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 ([www.globeatnight.org/observe\\_finder.html](http://www.globeatnight.org/observe_finder.html)) for your latitude.

#### 3) Match your nighttime sky to one of our magnitude charts (pages 2-3)

- 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 at:

[www.globeatnight.org/report.html](http://www.globeatnight.org/report.html)

- a. Your observation can be recorded any time between March 22-April 15, 2011.
- b. From March 22-April 4, feel free to do it again from a different location!

#### 5) Compare your observation to thousands around the world at:

[www.globeatnight.org/analyze.html](http://www.globeatnight.org/analyze.html)

**Note for higher latitudes (>45 N or S):** You need to do your observation closer to 9:00 pm rather than 8:00 pm or 10:00 pm.

The credit for all maps in this document go to Jan Hollan from the Ecol. Inst. Veronica and <http://www.astro.cz/darksky>.



# GLOBE AT NIGHT

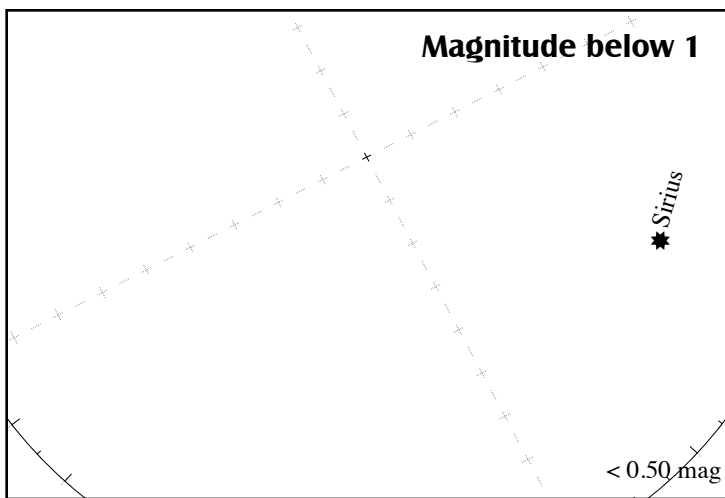
## Family Activity Packet: Magnitude Charts

[www.globeatnight.org](http://www.globeatnight.org)

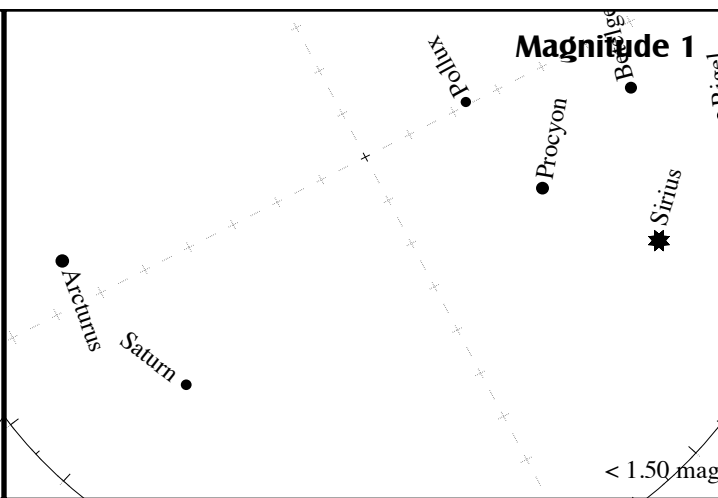
March 22 - April 4, 2011

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). The vertical size of the maps on this page are 100 degrees which is the same in length as 10 closed fists at arm's length in the direction of Leo.

↑ Northern Hemisphere View ↑

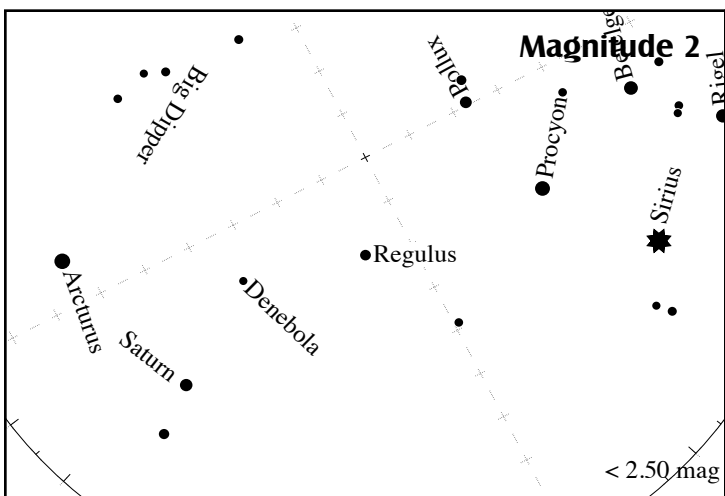


Hint: You can't see the stars in Leo because the sky is too bright. The only nearby star you might see is Sirius, the Dog Star.

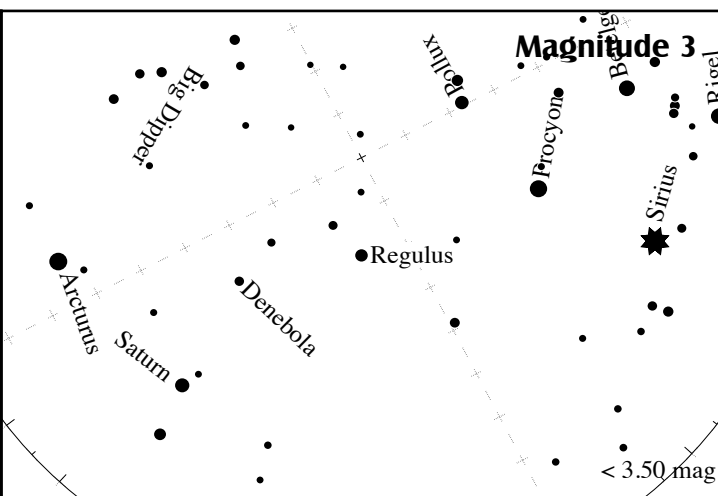


Hint: The stars in Leo should be between Arcturus (alongside planet Saturn) and the Dog stars, Procyon and Sirius, but the sky is still too bright.

↘ Near Equator View ↘



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.



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

↘ Southern Hemisphere View ↘



# GLOBE AT NIGHT

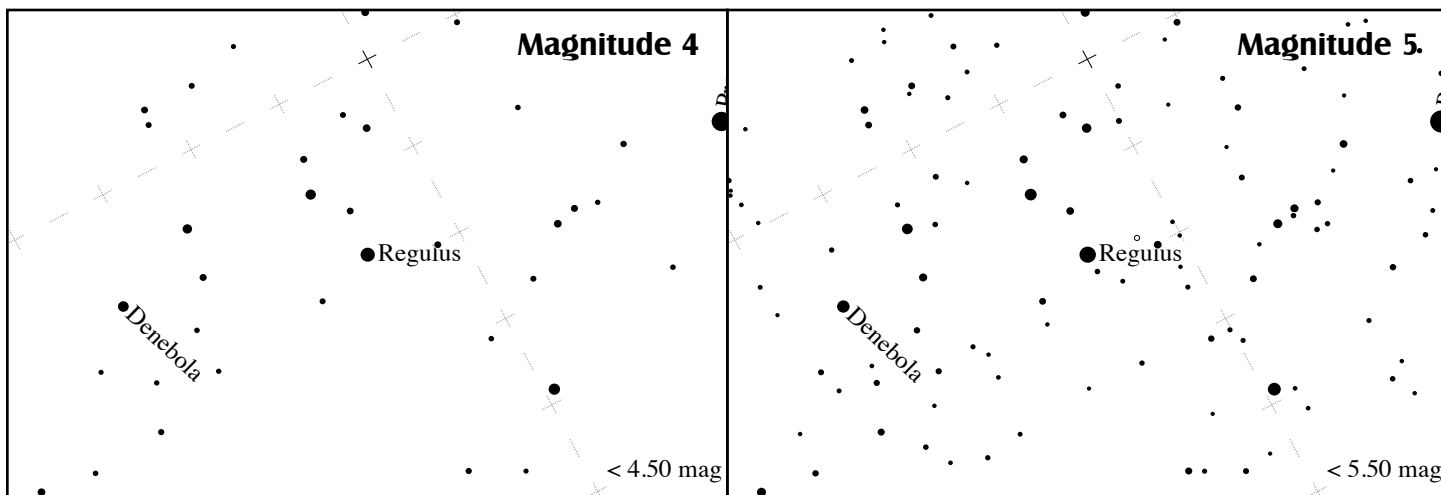
## Family Activity Packet: Magnitude Charts

[www.globeatnight.org](http://www.globeatnight.org)

March 22 - April 4, 2011

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). The vertical size of the maps on this page are 50 degrees which is the same in length as 5 closed fists at arm's length in the direction of Leo.

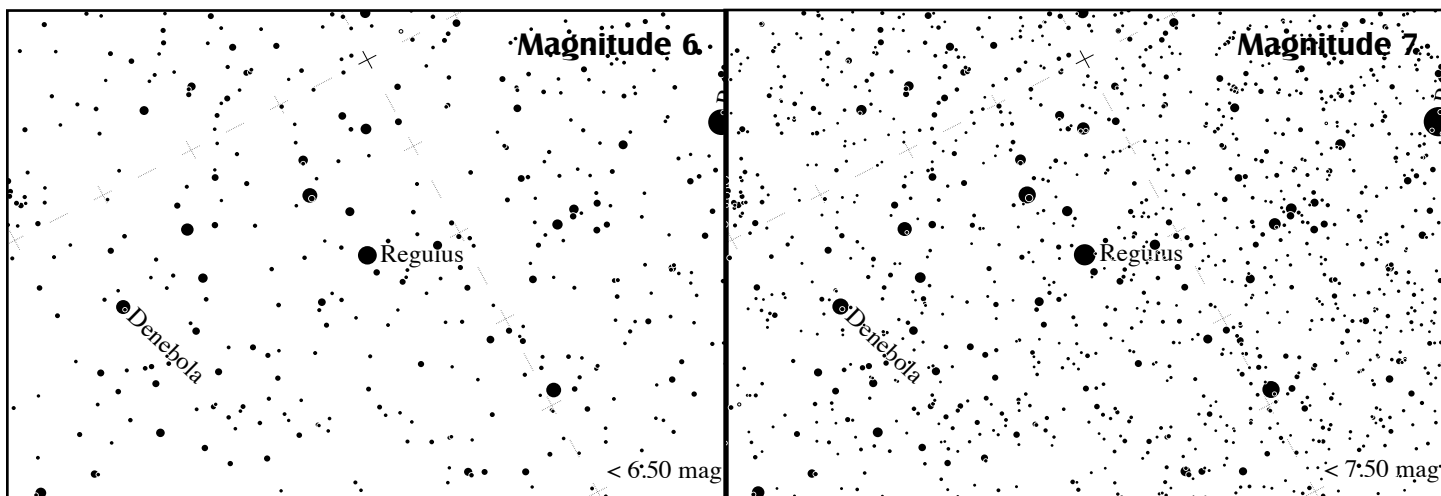
↑ Northern Hemisphere View ↑



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.

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

↘ Near Equator View ↘



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

Hint: You can't count that many stars!

↘ Southern Hemisphere View ↘



# GLOBE AT NIGHT

## Family Activity Packet: Observation Sheet

[www.globeatnight.org](http://www.globeatnight.org)

March 22 - April 4, 2011

Only fields marked by \* are required.

\*Date: March / April (circle month) \_\_\_\_\_, 2011

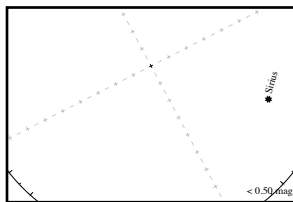
\*Observation Time: \_\_\_\_:\_\_\_\_ PM local time (HH:MM)      \*Country: \_\_\_\_\_

\*Latitude (in deg/min/sec \_\_\_\_ deg \_\_\_\_ min \_\_\_\_ sec  
or decimal degrees): \_\_\_\_\_ decimal degrees      (North / South)  
circle direction

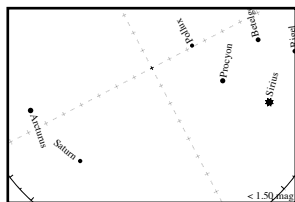
\*Longitude (in deg/min/sec \_\_\_\_ deg \_\_\_\_ min \_\_\_\_ sec  
or decimal degrees): \_\_\_\_\_ decimal degrees      (East / West)  
circle direction

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

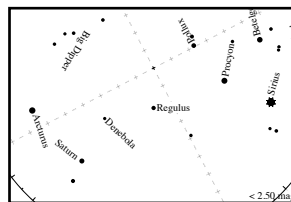
### \*Match your nighttime sky to one of our magnitude charts :



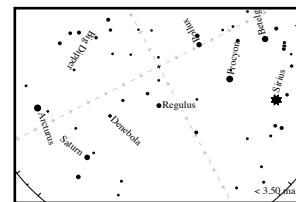
Stars in Leo not visible



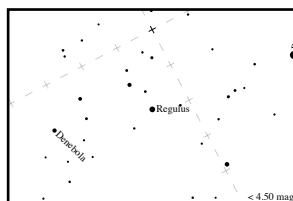
Magnitude 1 Chart



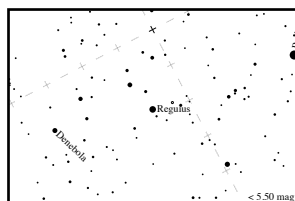
Magnitude 2 Chart



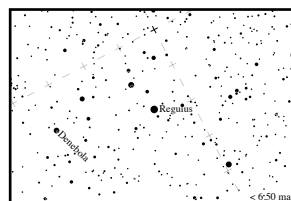
Magnitude 3 Chart



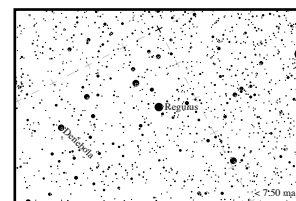
Magnitude 4 Chart



Magnitude 5 Chart



Magnitude 6 Chart



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:

Clear       Clouds cover 1/4 of sky       Clouds cover 1/2 of sky       Clouds cover > 1/2 of sky

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

Report online at [www.globeatnight.org/report.html](http://www.globeatnight.org/report.html)