



The Globe at Night program is an international citizen-science campaign to raise public awareness of the impact of light pollution by inviting citizen-scientists to measure their night sky brightness and submit their observations to a website from a computer or smart phone. It's easy to get involved - just [follow these 5 Simple Steps!](#)

Image courtesy Babak A. Tafreshi

<http://www.globeatnight.org/about.php>



2014

January 20 to 29

February 19 to 28

March 21 to 30

April 20 to 29

May 19 to 28

June 17 to 26

July 16 to 25

August 15 to 24

September 15 to 24

October 14 to 23

November 12 to 21

December 11 to 20

WWW.GLOBEATNIGHT.ORG

Get Out and Observe the Night Sky!

Engage people worldwide in observing the nighttime sky.

Encourage students and families to participate in citizen-science with a hands-on learning activity.

Gather light pollution data from an international perspective to monitor sky brightness and its effects.

Can you see the stars?



About Globe at Night

The Globe at Night program is an international citizen-science campaign to raise public awareness of the impact of light pollution by inviting citizen-scientists to measure their night sky brightness and [submit their observations](#) from a computer or smart phone. Light pollution threatens not only our “right to starlight”, but can affect energy consumption, wildlife and health. Nearly 100,000 measurements have been contributed from people in 115 countries during the campaigns each winter/spring over the last 8 years, making Globe at Night the most successful light pollution awareness campaign to date!

Explore the last 8 years of data in our [interactive data map](#), or see how your city did with our [regional map generator](#). The Globe at Night website is easy to use, comprehensive and holds an abundance of background information. The database is usable for comparisons with a variety of other databases, like how light pollution affects the foraging habits of bats.

Globe at Night 2014

For 2014 we are collecting your observations during all 12 months of the year! See the dates below and plan to get involved.

- January 20-29
- February 19-28
- March 21-30
- April 20-29
- May 19-28
- June 17-26
- July 16-25
- August 15-24
- September 15-24
- October 14-23
- November 12-21
- December 11-20

Northern Constellations



Orion

January 20-29, February 19-28, March 21-30, 2014



Leo

April 20-29, May 19-28, 2014



Hercules

June 17-26, July 16-25, August 15-24, 2014



Cygnus

September 15-24, 2014



Pegasus

October 14-23, 2014



Perseus

November 12-21, December 11-20, 2014

Southern Constellations



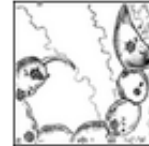
Orion

January 20-29, February 19-28, March 21-30, 2014



Crux

March 25-30, April 20-29, May 19-28, 2014



Scorpius

June 17-26, July 16-25, 2014



Sagittarius

August 15-24, September 15-24, October 14-23, 2014



Cetus

November 12-21, December 11-20, 2014



Contribute to a world-wide citizen science project." (The Guardian)

"Find out exactly how bad the light pollution is." (Chandra Clarke, citizensciencecenter.com)

"The app couldn't be easier to use, and you can even learn different constellations along the way." (Nicholas Fordes, plos.org)

UPDATE: You can get more information about the project and first results at <http://lossofthenight.blogspot.com>

Take part in a world-wide citizen science project that measures star visibility and light pollution. Help create a database for research on health, environment and society by telling scientists which stars you can see at your location.

In many parts of the world, the night sky shines with waste artificial light from poorly designed street lamps. This light pollution spoils the beauty of the stars and changes the natural environment.

But light pollution is not only a problem for astronomy. Scientists all over the world are studying how light pollution affects health, society, and the environment. Based on the well-known Google Sky Map, this app is a tool to measure star visibility without expensive equipment. Just look up to the sky, find certain stars, and tell us whether you can see them or not!

Use this table to convert the faintest star you saw into an estimate of how many stars you can see at your location:

magnitude: stars in sky

0-1: 2-8

1-2: 8-25

2-3: 25-100

3-4: 100-250

4-5: 250-800

5: thousands

What is Light Pollution?

Light pollution is excessive, misdirected, or obtrusive artificial (usually outdoor) light. Too much light pollution has consequences: it washes out starlight in the night sky, interferes with astronomical research, disrupts ecosystems, has adverse health effects and wastes energy.

Introduction

A little more than 100 years ago, you could walk outside at night even in a city and see the Milky Way galaxy arch across the night sky. Being able to see thousands of stars was part of everyday life, inspiring artists like Van Gogh or musical composers like Holst or writers like Shakespeare. By allowing artificial lights to wash out our starry night skies, we are losing touch with our cultural heritage (e.g., what has made us who we are). We are also losing touch with what could inspire future generations.

With more than half of the world's population now living in cities, 3 out of every 4 people in cities have never experienced the wonderment of pristinely dark skies. How do you explain the importance of what they've lost to light pollution? How can you make them aware that light pollution is a concern on many fronts: safety, energy conservation, cost, health and effects on wildlife, as well as our ability to view the stars? Finally, how do you convince them that it's worthwhile to take even small steps, to help fix this problem?

Effects of Light Pollution

In **disrupting ecosystems**, light pollution poses a serious threat in particular to nocturnal wildlife, having negative impacts on plant and animal physiology. It can confuse the migratory patterns of animals, alter competitive interactions of animals, change predator-prey relations, and cause physiological harm. The rhythm of life is orchestrated by the natural diurnal patterns of light and dark; so disruption to these patterns impacts the ecological dynamics.

With respect to **adverse health effects**, many species, especially humans, are dependent on natural body cycles called circadian rhythms and the production of melatonin, which are regulated by light and dark (e.g., day and night). If humans are exposed to light while sleeping, melatonin production can be suppressed. This can lead to sleep disorders and other health problems such as increased headaches, worker fatigue, medically defined stress, some forms of obesity due to lack of sleep and increased anxiety. And ties are being found to a couple of types of cancer. There are also effects of glare on aging eyes. (See text below.) Health effects are not only due to over-illumination or excessive exposure of light over time, but also improper spectral composition of light (**e.g., certain colors of light**).

With respect to energy wastage, lighting is responsible for at least one-fourth of all electricity consumption worldwide. Over illumination can constitute energy wastage, especially upward directed lighting at night. Energy wastage is also a waste in cost and carbon footprint.

The good news is that **light pollution can be reduced** fairly easily by shielding lights properly, by only using light when and where it is needed, by only using the amount that is needed, by using energy efficient bulbs, and by using bulbs with appropriate spectral power distributions for the task at hand.

Explore the effects of light pollution on the night sky with [Light Pollution Interactive](#).

Going further... Three Main Types of Light Pollution

Clinically speaking, ***three main types of light pollution** include glare, light trespass and skyglow (in addition to over-illumination and clutter). **Glare** from unshielded lighting is a public-health hazard—especially the older you become. Glare light scattering in the eye causes loss of contrast, sometimes blinds you temporarily and leads to unsafe driving conditions, for instance. **Light trespass** occurs when unwanted light enters one's property, for example, by shining unwanted light into a bedroom window of a person trying to sleep. **Skyglow** refers to the glow effect that can be seen over populated areas. Skyglow is the combination of all the reflected light and upward-directed (unshielded) light escaping up into the sky (and for the most part, unused). ... Shielding lights significantly reduces all three of these types of light pollution.

By participating in the citizen-science campaign, Globe at Night, and taking as many measurements as you can from different locations, you will be promoting awareness and helping to monitor light pollution levels locally. The worldwide database is used to compare trends over years and with other data sets (like on animals) to see what effects light pollution has on them. Thank-you for your interest and participation in Globe at Night.

The Mythology of Orion

The ancient Greeks saw in the nighttime sky the figure of the great hunter, Orion, from the Greek myth, which bears his name. There are several different stories about the birth of Orion. According to one version of the myth, Orion was the son of a poor shepherd called Hyrieus. Once, Zeus, Hermes, and Poseidon stopped by Hyrieus' house. Hyrieus was so generous with his guests that he killed the only animal he had - an ox.

Hyrieus was not aware that his guests were gods. The gods wanted to reward Hyrieus' generosity by granting him a wish. Hyrieus' biggest desire was to have a child. The gods told him to bury the hide of the bull he had sacrificed to them and to pee on it. After nine months, a boy was born in that place. The child became a very handsome and strong man.



He was such a good hunter that he was hired by the king Oenopion to kill the ferocious beasts that were terrifying the habitants of the island Chios. Happy for his success, Orion said he would kill all the wild animals on the earth. But, the earth goddess Gaia, who was the mother of all animals, was not pleased with Orion's intention.

Then, Gaia set an enormous scorpion on Orion. Orion soon realized that his strength and sword were useless against that mighty beast. He tried to escape, but the scorpion stung him to death. As a reward, Gaia placed the scorpion in the sky as a constellation which appears to be constantly chasing after Orion whose figure was also placed among the stars.

Practice [finding Orion](#) or review the [Magnitude Charts for Orion](#).

Five Easy Star Hunting Steps:

1. Use the Globe at Night website to help [find your constellation](#) in the night sky.
2. Use the Globe at Night website to find the [latitude and longitude](#) of the location where you are making your observation.
3. Go outside more than an hour after [sunset](#) (8-10 pm local time). The Moon should not be up. Let your eyes become used to the dark for 10 minutes before your first observation.
4. Match your observation to one of 7 [magnitude charts](#) and note the amount of cloud cover.
5. [Report](#) the date, time, location (latitude/longitude), the chart you chose, and the amount of cloud cover at the time of observation. Make more observations from other locations, if possible. [Compare your observation](#) to thousands around the world!

Finding your Latitude/ Longitude

In order to report your observation of the night sky, you will need to know the latitude and longitude (lat/long) of your location.

What are latitude and longitude?

Latitude is your distance North or South from Earth's equator, measured in degrees. 0° is the latitude at the equator, $+90^\circ$ is the latitude at the North Pole, and -90° is the latitude at the South Pole. Longitude is your distance East or West of the Prime Meridian, which runs from the North Pole to the South Pole through Greenwich, England. The Prime Meridian is at 0° . Moving East, longitude increases from 0° to $+180^\circ$. Moving West, longitude goes from 0° to -180° . (Note: $+180^\circ$ and 180° are the same longitude line).

General Location	Latitude	Longitude
Europe & Asia	North, +	East, +
North America	North, +	West, -
Australia & New Zealand	South, -	East, +
South America	South, -	West, -

There is an interactive latitude/longitude locator on the "Report" page (also known as the "Webapp") when you enter your observation. You can use it to manually enter your location or have it automatically use your smart device's current location.

If you want to determine your location before making your observations, you can also use a GPS unit or a smart phone at the observation site. Be sure to report as many decimal places as the unit provides.

Can you find Orion?

Orion looks very much like a person. First, you should spot Orion's Belt, which is made of three bright stars in a straight line. One of Orion's legs is represented by the bright star Rigel, one of the brightest stars in the night sky. His two shoulders are made of the stars Bellatrix and Betelgeuse. You can see Betelgeuse's reddish color without a telescope.

Constellation: Latitude: Read about the [Mythology of Orion](#), or review the [Magnitude Charts for Orion](#).





What are magnitudes?

In order to quantify a star's brightness, astronomers use a "stellar magnitude" system. The star's "magnitude" or brightness we observe depends both on the star's intrinsic brightness and its distance from Earth. Based on this, each star is assigned an apparent magnitude number. Because the magnitude scale is a relative scale, there is a "zero point magnitude" to which all other stars we see are compared. For example, the star Vega, found in the constellation Lyra, apparent magnitude of zero.

Objects brighter than Vega have *negative* magnitudes (for example, Sirius has a magnitude of -1.46 and the Sun's magnitude is -26.74). However, nearly every object in the sky is dimmer than Vega and will have magnitudes greater than zero. The dimmest objects we can see with the naked eye are magnitude 7, and with the aid of telescopes, we can measure up to 25th magnitude.

Remember, the *larger* the apparent magnitude, the *dimmer or fainter* the object!

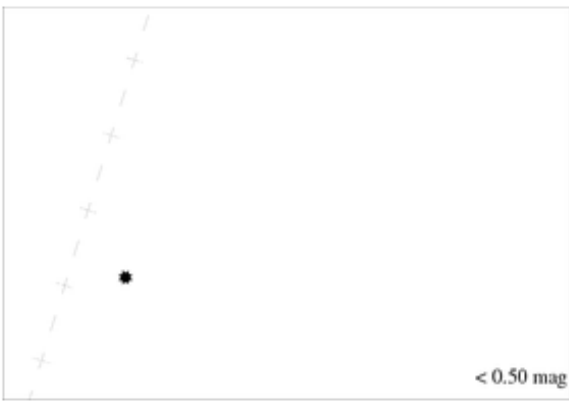
When looking at the sky, the darker the sky, the more faint stars you can see, hence the limiting magnitude is *greater*. And this indicates less light pollution!

If this confuses you, don't feel bad! It's confusing at first for many astronomers too!

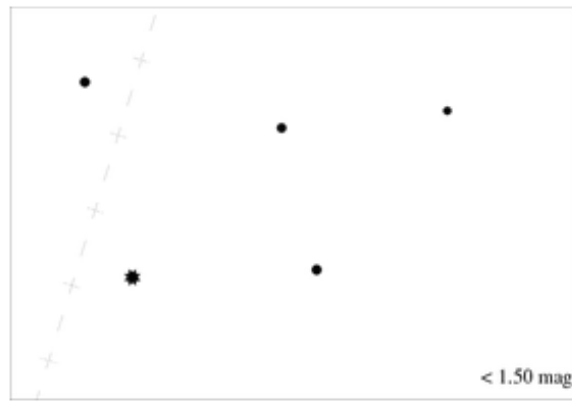


Globe at Night is a program of the **National Optical Astronomy Observatory**, the national center for ground-based nighttime astronomy in the United States, operated by the **Association of Universities for Research in Astronomy (AURA)**, under cooperative agreement with the **National Science Foundation**.

Magnitude Charts for the Constellation Orion at 50N



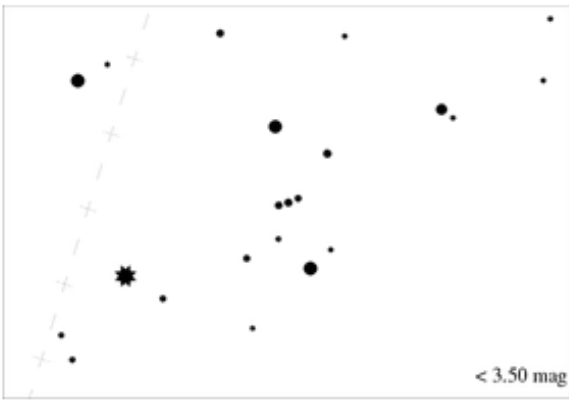
Magnitude 0/Cloudy Sky



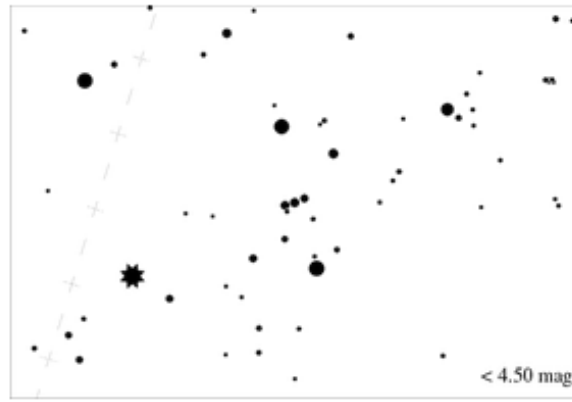
Magnitude 1 Chart



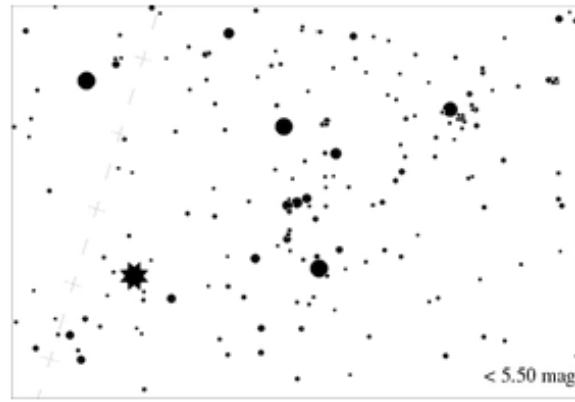
Magnitude 2 Chart



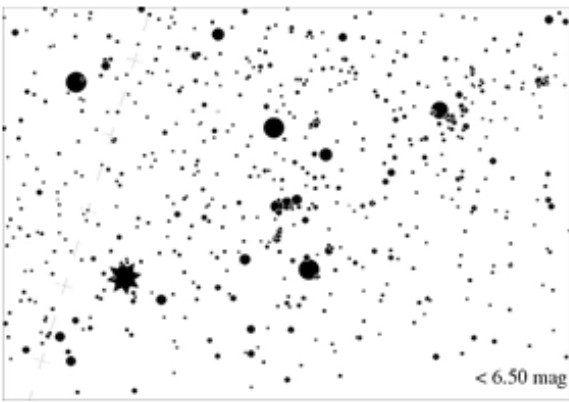
Magnitude 3 Chart



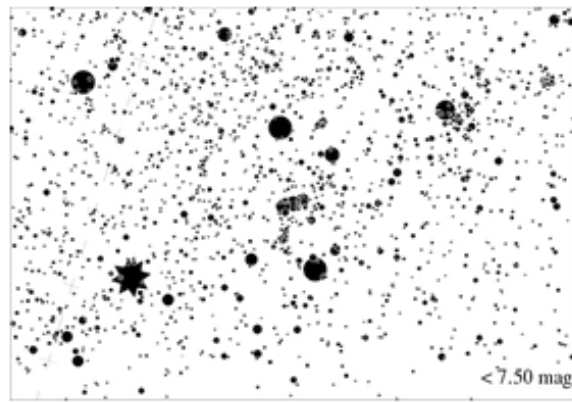
Magnitude 4 Chart



Magnitude 5 Chart



Magnitude 6 Chart



Magnitude 7 Chart

<http://www.globeatnight.org/magcharts/orion>

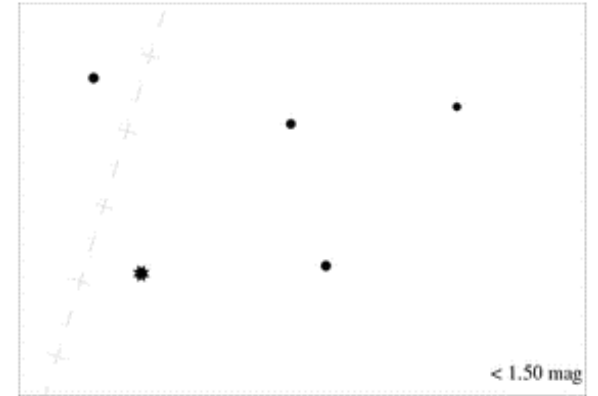
SHEET FOR OBSERVATIONS

Name of the student: _____

Longitude: _____ East

Latitude: _____ North

date	Magnitude 0, magnitude 1, magnitude 2....
20.02.2014.	Magnitude 1
21.02.2014.	
22.02.2014.	
23.02.2014.	
24.02.2014.	
25.02.2014.	
26.02.2014.	
27.02.2014.	
28.02.2014.	
29.02.2014.	



Magnitude 1 Chart

IF YOU SAW THIS ON THE SKY
YOU WILL WRITE IN TABLE:
„Magnitude 1”

GLOBE AT NIGHT

20. -29.I.2014.

21.-30.III.2014.

Orion

LOCIRANJEM I PROMATRANJEM ORIONA UČENICI MOGU NAUČITI
KOLIKO NJIHOVA LOKALNA ZAJEDNICA UPORABOM SVIJETLA
“ZAGAĐUJE” ATMOSFERU!!!

SW

WSW

West

WNW

NW

GLOBE AT NIGHT

20. -29.I.2014.

21.-30.III.2014.

Orion



MOŽDA U SKOROJ BUDUĆNOSTI VIŠE NEĆEMO VIDJETI
ZVJEZDANO NOĆNO NEBO!!!

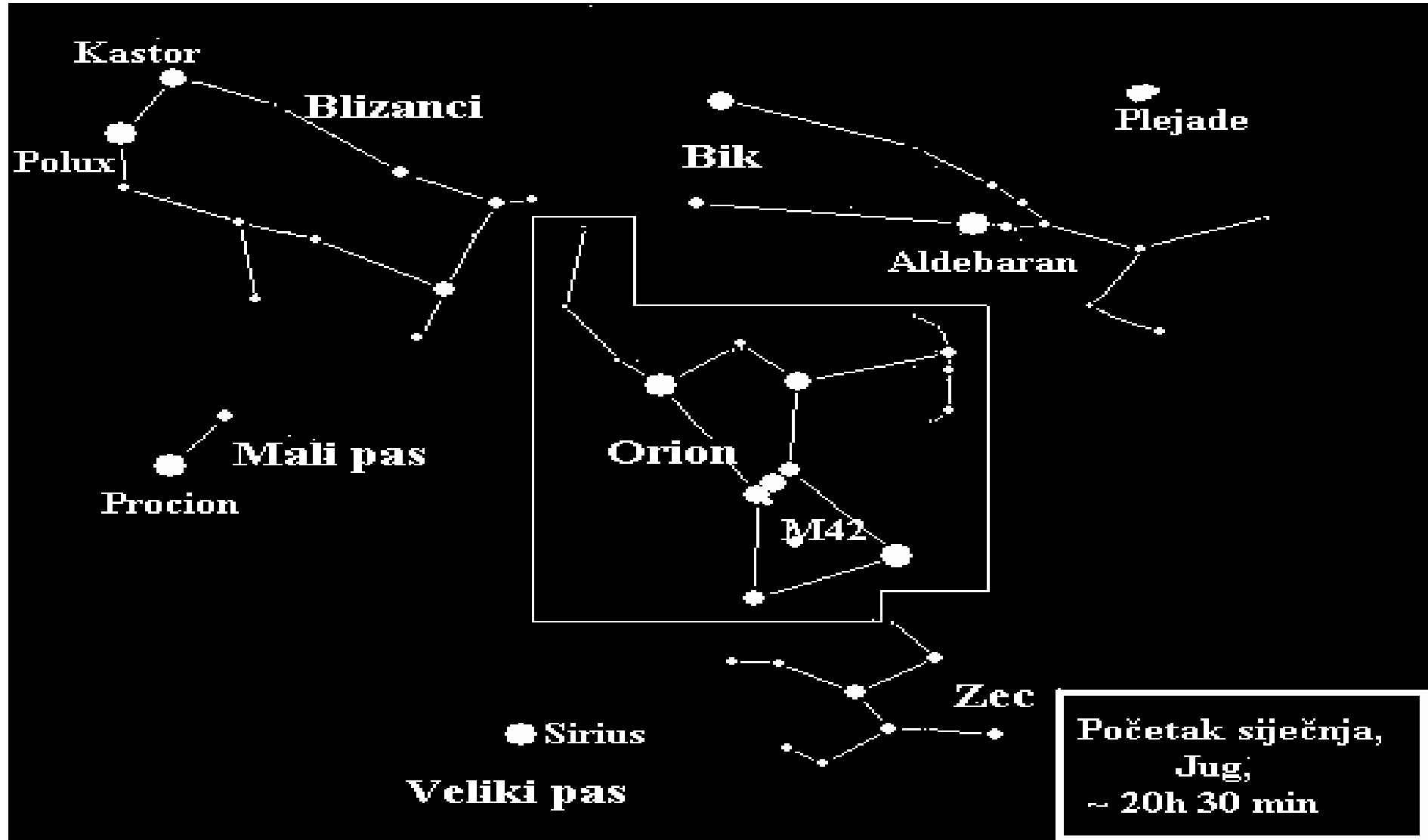
SW

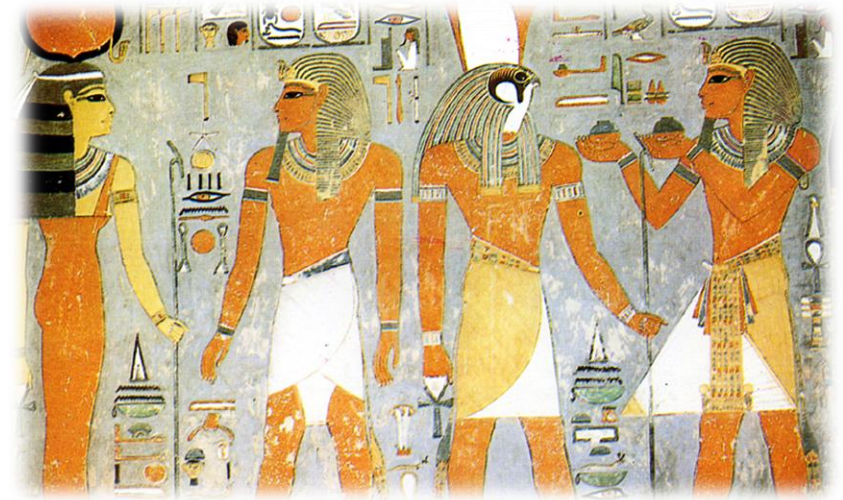
WSW

West

WNW

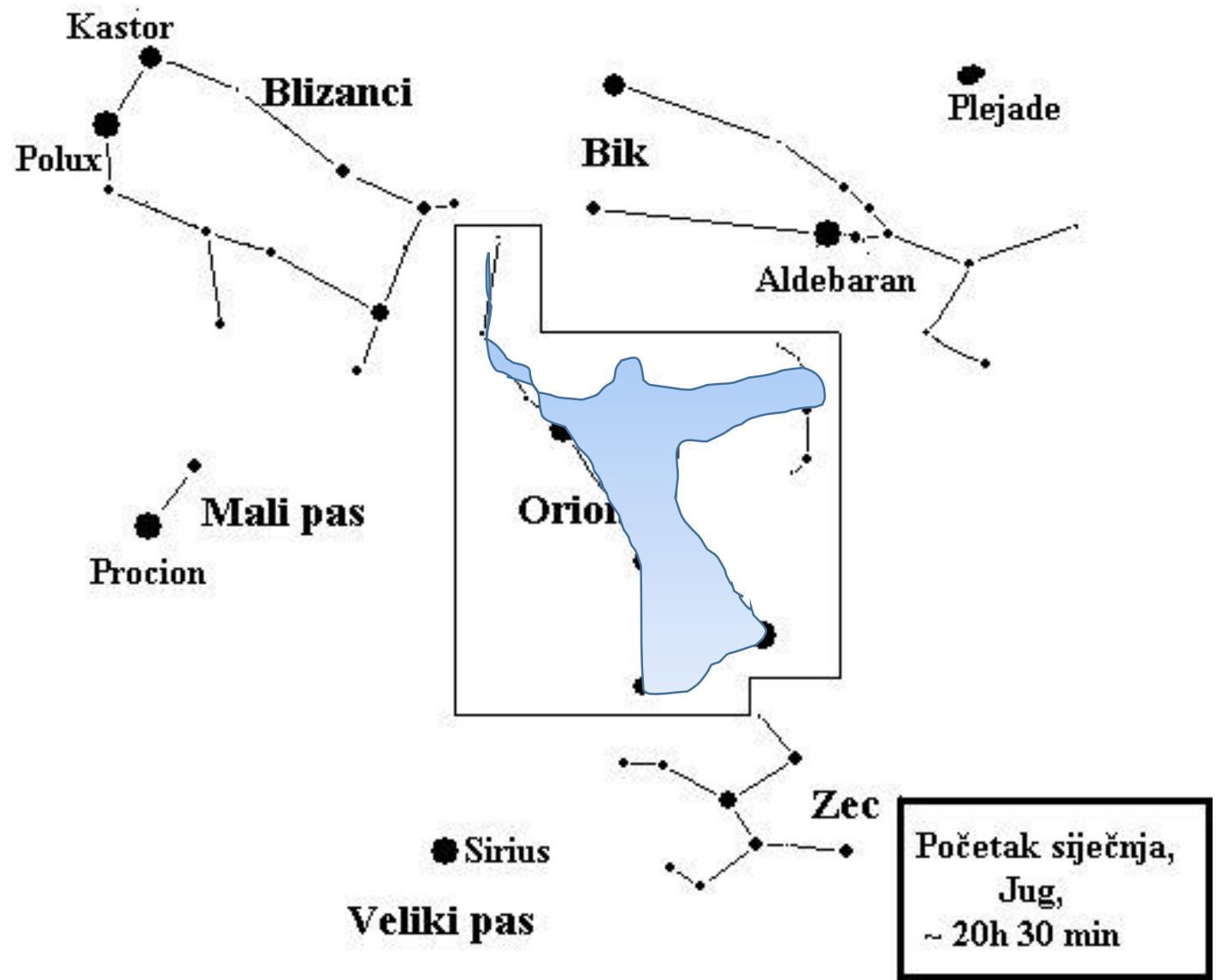
NW











A deep-sky photograph of a star field, likely the constellation Orion. The background is filled with numerous small, faint stars of various colors. Two main features are highlighted with white text labels. The first label, 'Alpha Ori', points to a single, prominent red star located in the upper-left quadrant. The second label, 'Delta Ori, Epsilon Ori i Zeta Ori', points to a cluster of several bright blue stars in the lower-center region. The overall scene is a rich field of stars against a dark, black background.

Alpha Ori

Delta Ori, Epsilon Ori i Zeta Ori

1) LOCIRANJE PROMATRAČA
GEOGRAFSKA širina i dužina – pomoću Google Eartha

2) SVAKI DAN IZMEĐU 19,00 I 22,00 SATA
POGLED PREMA NEBU U SMJERU JZ

3) USPOREDBA S GLOBE KARTOM - MAGNITUDAMA SA SITUACIJOM NA NEBU

Family Activity Packet: Observation Sheet

www.globeatnight.org

February 21 - March 6, 2011

Only fields marked by * are required.

*Date: February / March (circle month) _____, 2011

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

*Country: _____

*Latitude (in deg/min/sec _____ deg ____min____sec
or decimal degrees): _____ decimal degrees

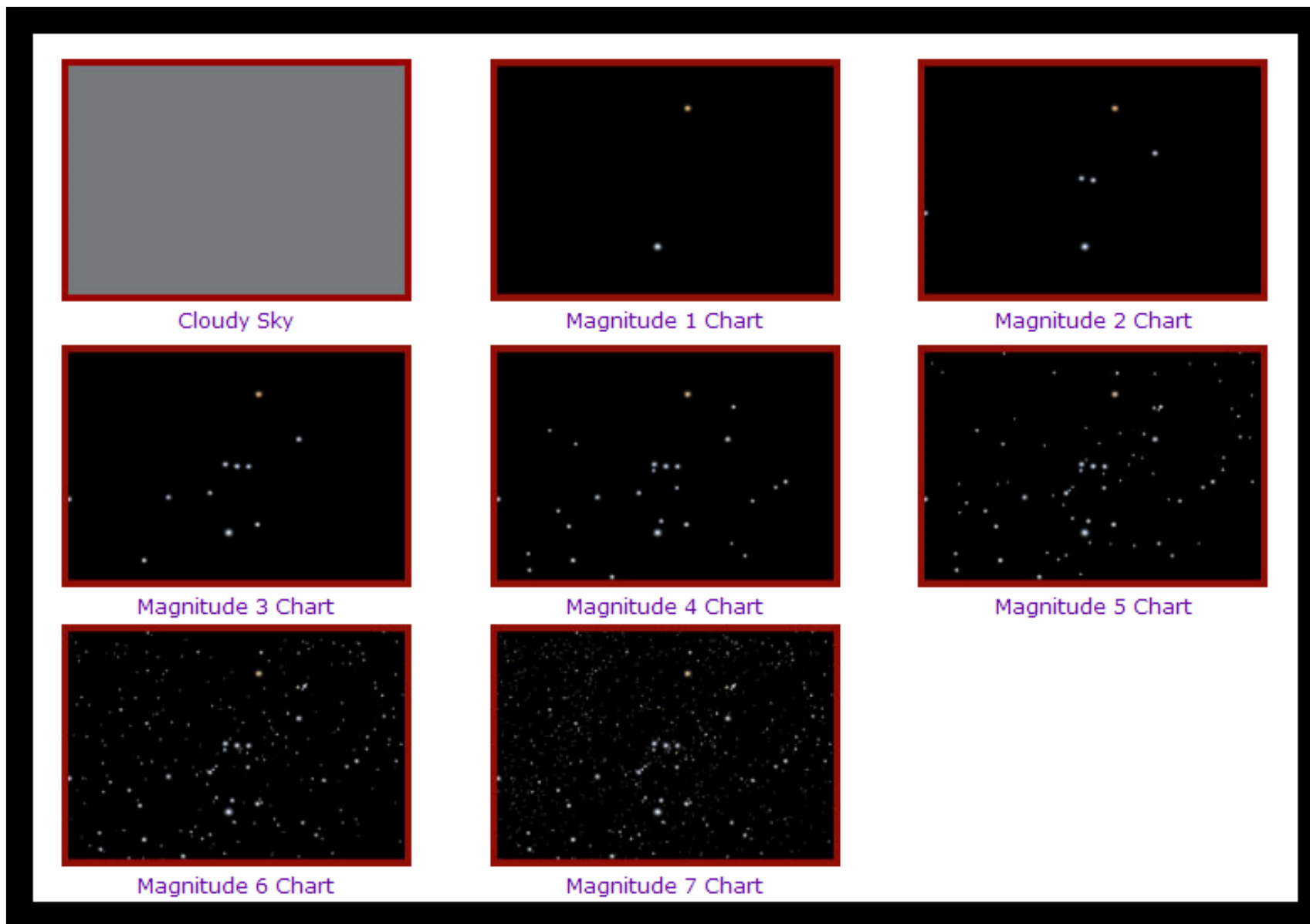
(North / South)
circle direction

*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.)

Što je magnituda veća to je vidljivost zvijezda bolje, a što je magnituda manja to je vidljivost slabija (raspon magnituda 1 do 7)



REPORT ON WEB PAGE

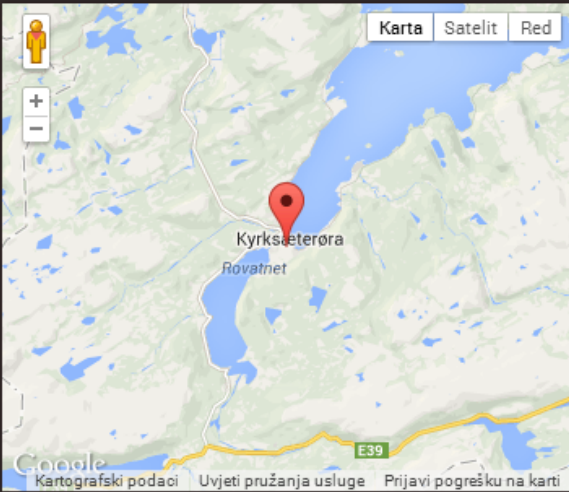
1 When did you make your observations? ?

Observation Date (yyyy/mm/dd)

Observation Time (24 hour time)

Switch to [Daytime version](#).

2 Where did you make your observations? ?



Karta Satelit Red

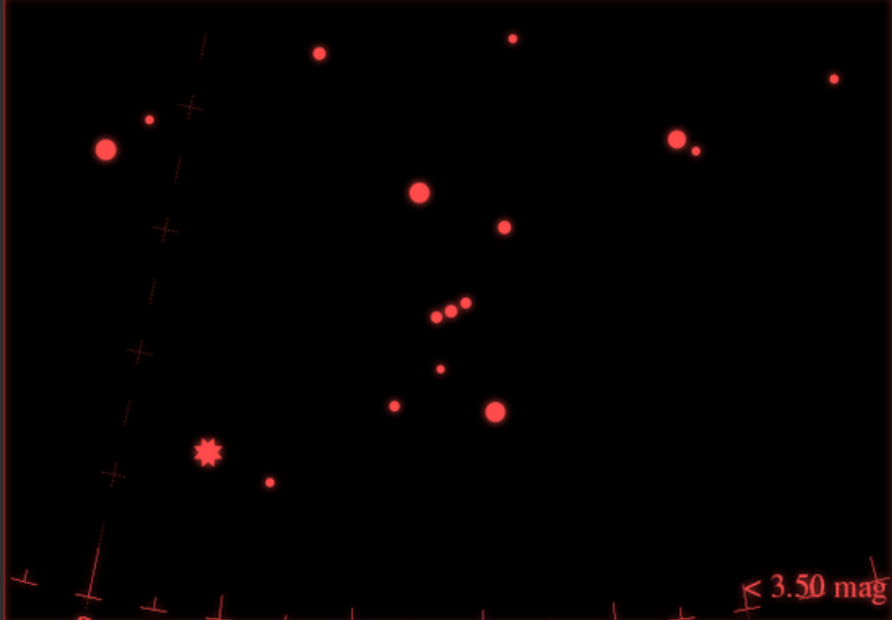
Kyrksæterøra
Rovatnet

Google Kartografski podaci Uvjeti pružanja usluge Prijavi pogrešku na karti

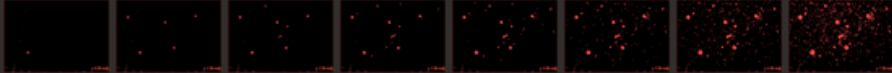
Location correct:

Latitude: 63.287383936049316
Longitude: 9.085693359375
Elevation: 20.08 meters
Country:

3 How dark was the sky that night? ?

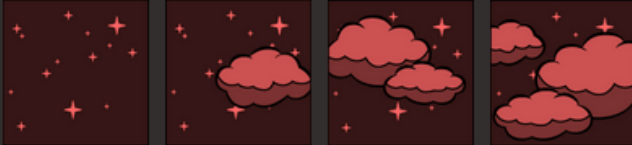


$\le 3.50 \text{ mag}$



Constellation: Orion

4 What were sky conditions like that night? ?



Clear $\frac{1}{4}$ of the sky $\frac{1}{2}$ of the sky More than $\frac{1}{2}$ of

Location
comments

(E.g., Rural, suburban, or urban location; Snow cover? Number of streetlights, porchlights or other light sources (vending machines, etc.) in vicinity; Trees or structures in vicinity)

the sky

Sky condition comments

(E.g., Haze – direction? Clouds – type, direction? Sky glow/light dome – direction?)

5 Did you use a Sky Quality Meter (SQM)?

?

SQM reading

Serial Number

6 Ready to send us your data?

?

SUBMIT DATA

EVERYTHING YOU CAN DO WITH APP ON THE iPhone OR ANDROID



Name of app

Loss of the night

Cosalux GmbH - 6. siječnja 2014.
Obrazovanje

Instaliraj



Dodaj na popis želja

★★★★★ (111)

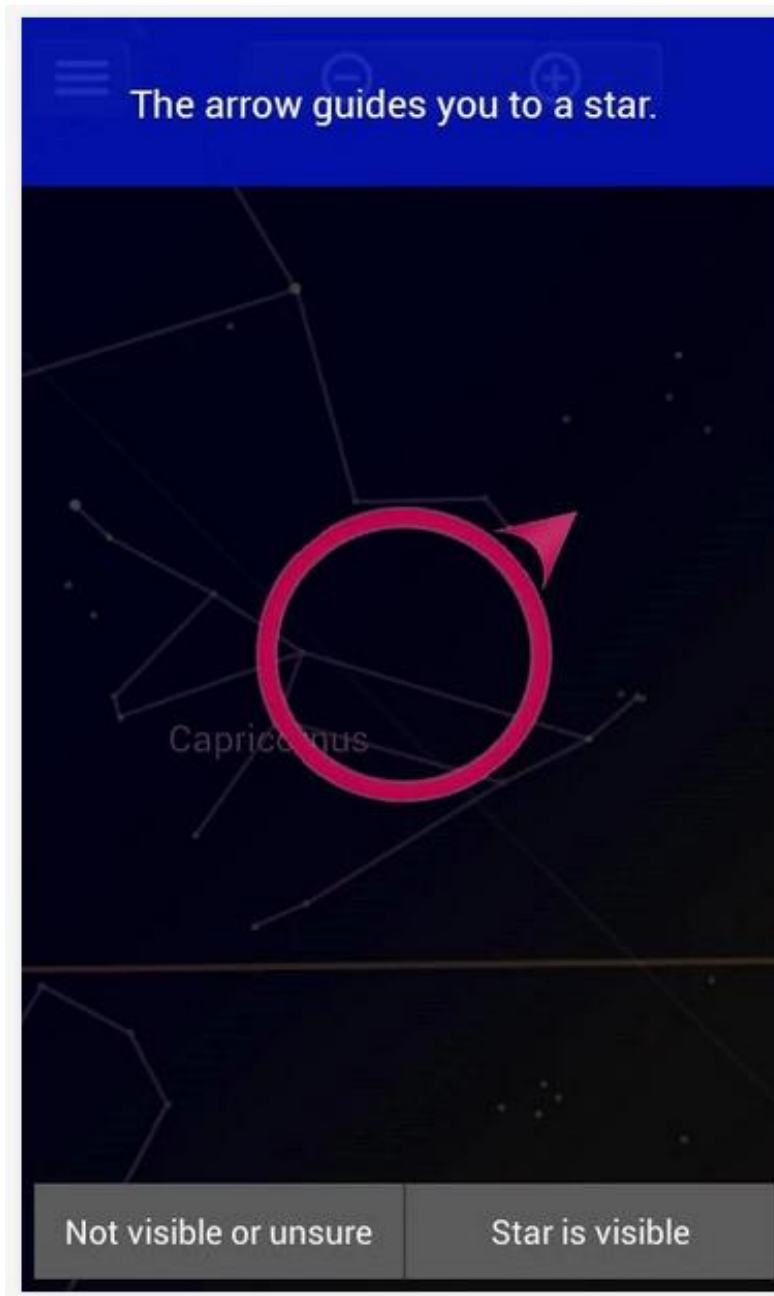
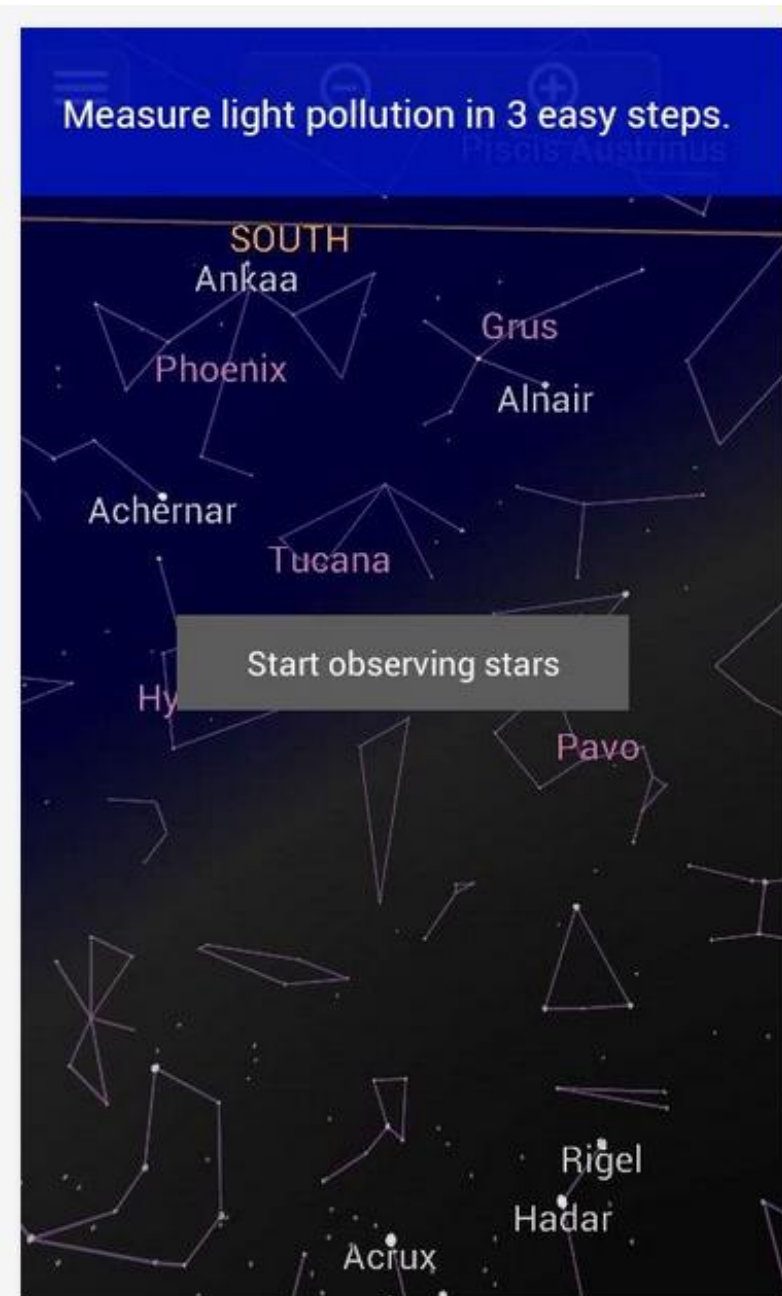


+242 Preporučite to na Googleu



LOSS
of the 
NIGHT

Be a part of a worldwide science project that measures light pollution.



The Loss of the Night app allows students to measure light pollution and star visibility for their own science projects, and at the same time become part of a global citizen science network.

Select if you can see it.



Not visible or unsure

Star is visible

Submit your data.

Measurement complete

You have performed 7 observations and your data will be submitted. This is enough to give us a rough estimate of how bright it is in your location. It would now be very helpful if you provide us with information about your vision by registering.

Each additional observation improves the accuracy of your measurements, so it would be great if you measure more stars. You can also measure at another time from a different location, or on a different day from this same location.

Send data

Register now

Continue observing

Measurements are sent anonymously to the GLOBE at Night database (www.GLOBEatNight.org)



GLOBE AT NIGHT

WWW.GLOBEATNIGHT.ORG



Shown above are the 16,324 observations from 89 countries during the 2013 campaign. Help us exceed these numbers in 2014!

