Globe at Night:
A Campaign for Preserving our Starry Skies

Connie Walker,
National Optical Astronomy Observatory
& ASP BOD

Photo credit for background slide images in this presentation: Babak Tafreshi (TWAN)

World Outdoor Lighting Facts

http://darksky.org/assets/2013/WorldwideEnergyWaste.jpg

Light Pollution affects…

Energy, Safety & Cost

Astronomical Research

Human Health

Wildlife

Introduction to Globe at Night

globeatnight.org

Five Easy Star Hunting Steps

globeatnight.org/5-steps.php

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!

Dates, Constellations & Mythologies

globeatnight.org/5-steps.php

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

Can you find Orion?

globeatnight.org/finding

Practice finding all the Globe at Night Constellations or review the Magnitude Charts.

Can you find Orion?

globeatnight.org/finding

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: Orion Latitude: 40N Read about the Mythology ofOrion, or review the Magnitude Charts for Orion.

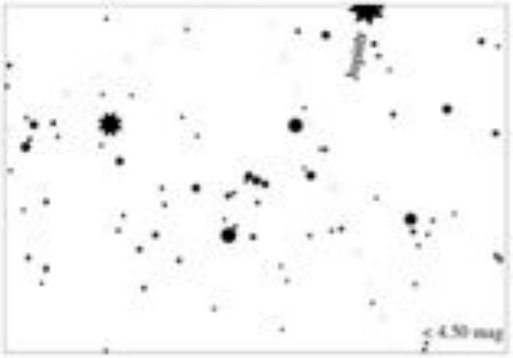
Constellation: Orion Latitude: 30N

Magnitude 0/Cloudy Sky

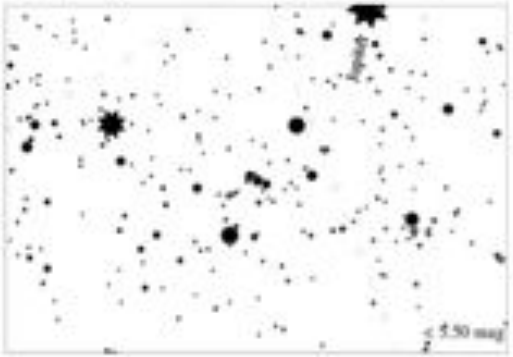
Magnitude 1 Chart

Magnitude 2 Chart

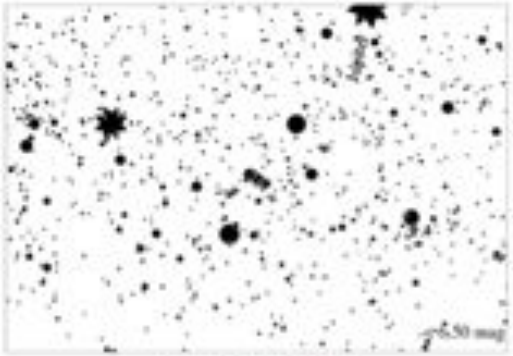
Magnitude 3 Chart



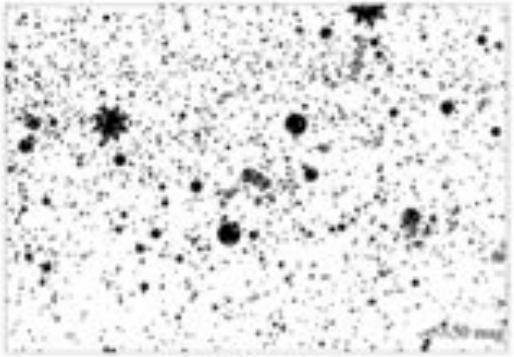
Magnitude 4 Chart



Magnitude 5 Chart



Magnitude 6 Chart



Magnitude 7 Chart

Magnitude Charts

globeatnight.org/magcharts

Data Reporting Webapp

globeatnight.org/webapp/

Globe at Night webapp

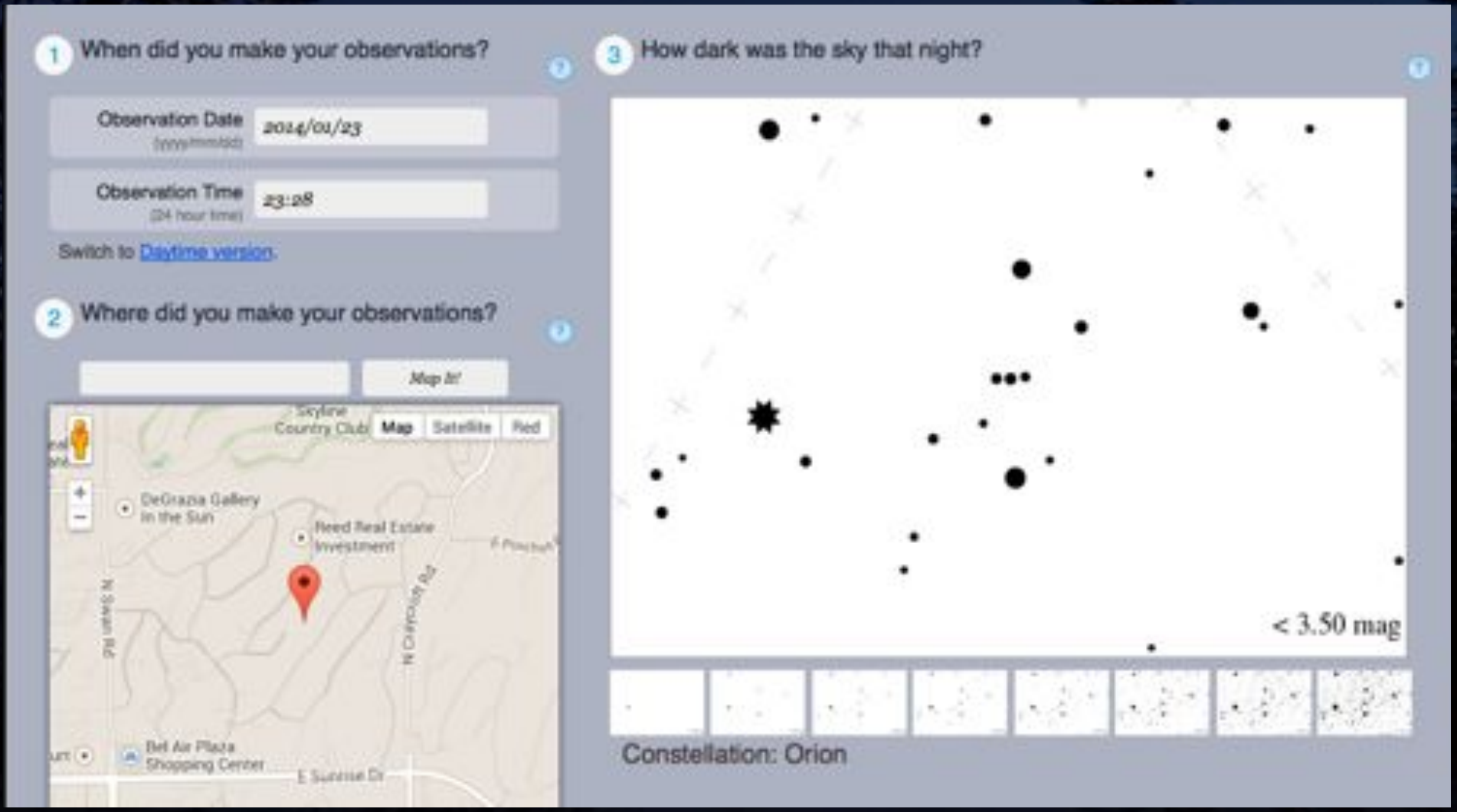
Our first campaign begins on January 20, 2014. Whether you use a smartphone, tablet or computer, get ready to submit your data in real time with our webapp! Now available in more than 20 languages.

Data Reporting Webapp

globeatnight.org/downloads

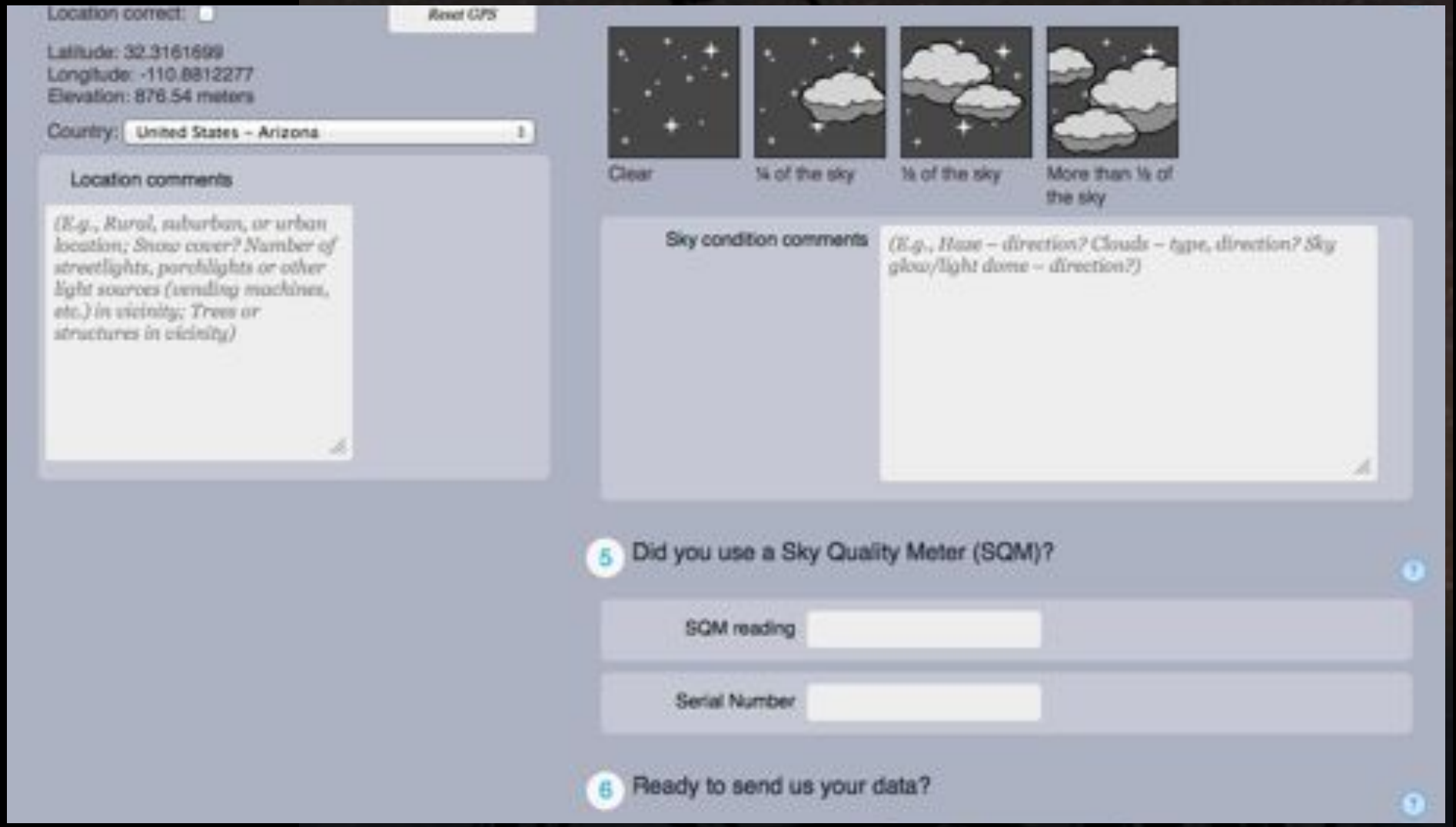
Data Reporting Webapp

globeatnight.org/webapp/



Data Reporting Webapp

globeatnight.org/webapp/



Maps & Data

globeatnight.org/maps.php

Globe at Night has been collecting data about the night sky since 2006. All of that data is available to download in a variety of formats, and also can be explored in our interactive map. Links to previous years' data is available below. We are just getting started with this year's campaign, but you can explore the data from 2014 as it comes in.

Previous Globe at Night Campaigns

2013 Results: 16,342 total observations

Download the 2013 GLOBE at Night data:

Full Dataset (.txt)
Full Dataset (.csv)
Full Dataset (Google Maps, .kmz)
SQM Dataset (Google Maps, .kmz)

2013 Results

Overall Numbers

2013 Observations. To explore the 2013 data in more detail, click the map below to launch the Map Viewer.

Interactive Data Map

January 2014 Globe at Night Campaign

globeatnight.org/map/

Regional Map Generator

globeatnight.org/mapapp/

This map application allows you to map Globe at Night data points within a distance you specify around a city or an area of your choice. The resulting maps are bookmarkable and shareable.

You can also download a CSV file of those data points that can be opened in Excel, or other spreadsheet. Find the download link in the generated map's Legend.

Input map center

The application asks first for the center of the map, which can be simply a city name or a common place name, or as specific as a mailing address or a latitude and longitude (in decimal degrees). Note: the map will plot up to 4000 data points.

Type the location of the map center into the text box and click **Map It!**

Map It!

Latitude: 32.3162119

Provide a radius

Provide a radius (in km) to define the area around the center of the map within which you want to show data points.

Radius

Data Year

Choose the year in which the data set was taken from the pull down menu. There is a data set for every year since 2006.

2014 Year

Generate the map

The map is now ready to be made. Click "Generate Map".

GENERATE MAP

Phone Apps

globeatnight.org (bottom right)

Related phone apps

Globe at Night is pleased that two native smartphone apps have become available that integrate well with our campaigns. If you have an Android phone, check out the Loss of the Night app. And if you have an iPhone, take a look at the Dark Sky Meter app.

New Phone Apps for Determining Night Sky Brightness

The Loss of the Night app

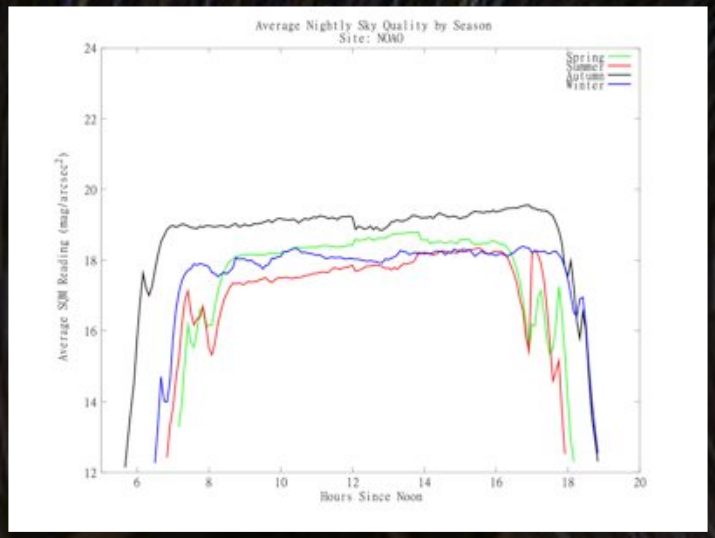
- Asks sequentially if you can see 7 stars
- Free app downloadable for Android phones

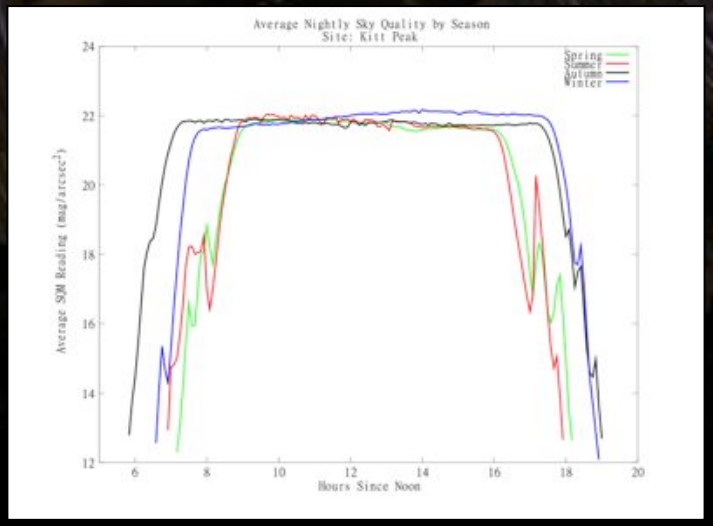
Dark Sky Meter app

- Free for “Lite” version or only $1.99 for the “Pro” version
- For iPhones 4 and 4S (and 5)

Data goes into Globe at Night database!

What is being done with the data?





Seasonal variations in light pollution in city & on mountaintops

Lesser Long Nosed bats avoid Tucson city center

Resources

globeatnight.org/downloads

Resources for 2014

Globe at Night is truly an international campaign, providing Activity Guides, Postcards, and the data reporting webapp in more than 20 languages. These are all available to download from our Resources page.

Northern Hemisphere Activity Guides

globeatnight.org/downloads

Activity Guide for Orion

Activity Guide: Introduction

www.globeatnight.org

2014 Campaign Dates that use Orion: January 20-29, February 19-28 & March 21-30

You are participating in a global campaign to observe and record the faintest stars visible as a means of measuring light pollution in a given location. By locating and observing the constellation Orion in the night sky and comparing it to stellar charts, people from around the world will learn how the lights in their community contribute to light pollution. Your contributions to the online database will document the visible nighttime sky.

Materials Needed:

- Globe at Night Activity Packet
- Something to write on
- Something to write with
- Red light to preserve night vision
- Optional: smart mobile device, GPS unit, or a topographic map to determine your latitude and longitude

Remember Safety First!

- **We encourage parents to do this activity with younger children.** Please use your judgment as to whether your child should be supervised outside after dark at your location.
- Be sure you are wearing suitable clothing for the weather and for being outside at night (light colored and/or reflective clothing).
- When choosing the darkest area in your location, make sure your child 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 Jenik Hollan, CzechGlobe
(http://amper.ped.muni.cz/jenik/astro/maps/GaNight/2014).

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

1) Find your latitude and longitude using any of the following:
a. 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 from your computer, input the address of the observation or input your city. Zoom in/out and pan around until you find the observation location. The latitude and longitude will be displayed.
b. the interactive tool at eo.ucar.edu/geocode.
c. a GPS unit where you take a measurement. Report as many decimal places as the unit provides.
d. a topographic map of your area.

2) Find your constellation by going outside at least an hour after sunset, approximately between 8-10 pm local time. **Note for latitudes >45 North or South:** during the summer, twilight may last beyond 10 pm. Once it's dark, take measurements if there's no moon.
a. Determine the darkest area by moving to where the most stars are visible in the sky toward your constellation. 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 your constellation in the sky. For help use the appropriate constellation Finder Chart for your latitude. See (www.globeatnight.org/learn.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. Your observations can be reported online anytime up to 2 weeks after the campaign dates for that month are over.
b. There is a campaign each month that is ten days long. To participate in more campaigns, see www.globeatnight.org.
c. Next time, consider taking observations from different locations!

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

Activity Guide for Orion

Activity Guide: Observation Sheet

www.globeatnight.org

2014 Campaign Dates that use Orion: January 20-29, February 19-28 & March 21-30

Only fields marked by * are required.

*Month:_____ *Day: _____ *Year:_____

*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:**

○ No stars 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 ¼ of sky ○ Clouds cover ½ of sky ○ 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

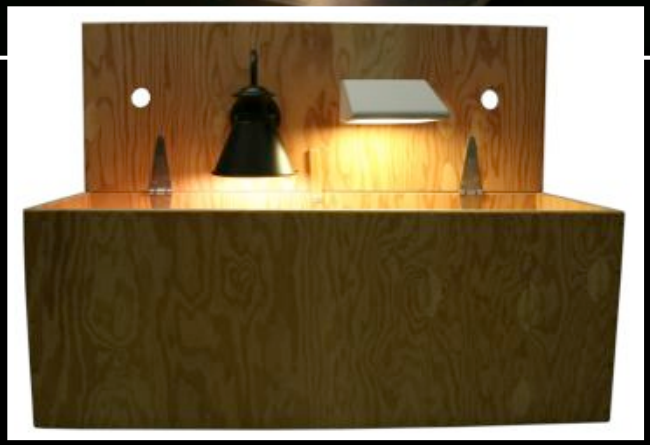
Dark Skies & Energy Education Activities

globeatnight.org/dsr/

- US Education Standards
- **Constellation at Your Fingertips**
  - Orion [261 KB PDF]
  - Cygnus [281 KB PDF]
  - Sagittarius [335 KB PDF]
- **Demonstrating Light Pollution and Shielding**
  - Activity Sheet [561 MB PDF]
  - Planetarium Box Construction [18.5 MB PDF]
  - City Mat Image [201 KB PNG]
- **How Light Pollution Affects the Stars** [426 KB PDF]
- **Outdoor Lighting Audit**
  - Teacher Guide [1.4 MB PDF]
  - Student Pages [624 KB PDF]
  - General Luxmeter Instructions [332 KB PDF]
  - General SQML Instruction Sheet [278 KB PDF]
  - Photographing Lights and Light Pollution [473 KB PDF]
- **Spectra of Lights** [600 KB PDF]
- **The Night You Hatched** [699 KB PDF]

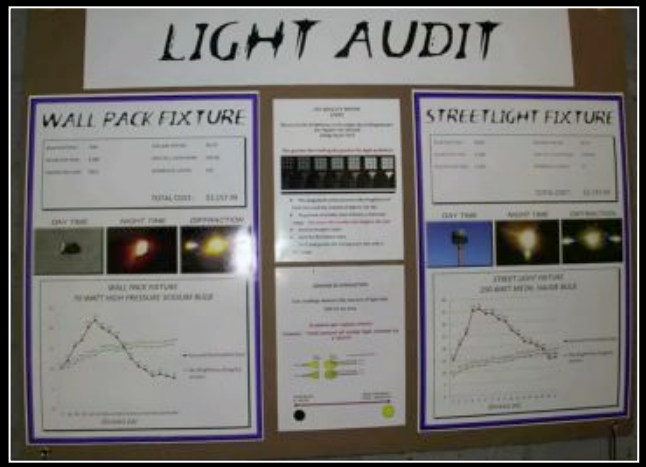
Dark Skies & Energy Education Kit

Light Shielding Demo from the Kit



Projects learning about energy consumption and preservation of dark skies

- 6th graders teachers & their students from a district in Yuma, Arizona
- 2 in-situ workshops, multiple Facetime sessions, light pollution activities, capstone project presentations



Dark Skies Africa project

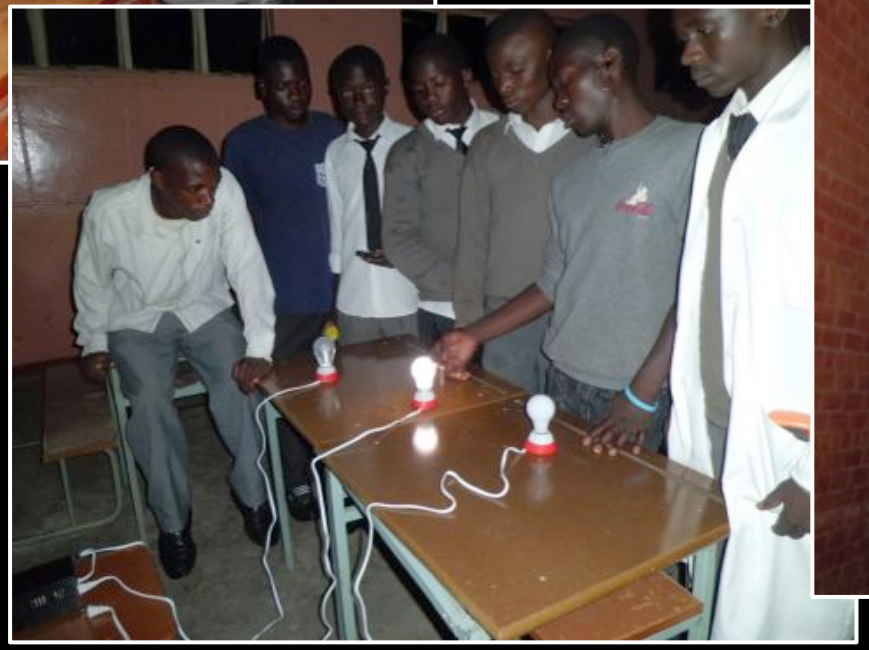
- IAU Office of Astronomy for Development grant to deliver “Dark Skies Outreach to Sub-Saharan Africa” in 2013.
- Coordinators from 12 African countries
- Trained them via Google+ Hangouts.
- They trained the MS/HS teachers.

The Group from Algeria

Jamal is the country coordinator.

The Group from Zambia

Prospery is the country coordinator.



The Group from Rwanda

Pheneas is the country coordinator…

The Group from Tanzania

Noorali is the country coordinator

Jonas group - Filbert Bayi Sec School
LIGHT AT NIGHT ATTRACTS INSECTS

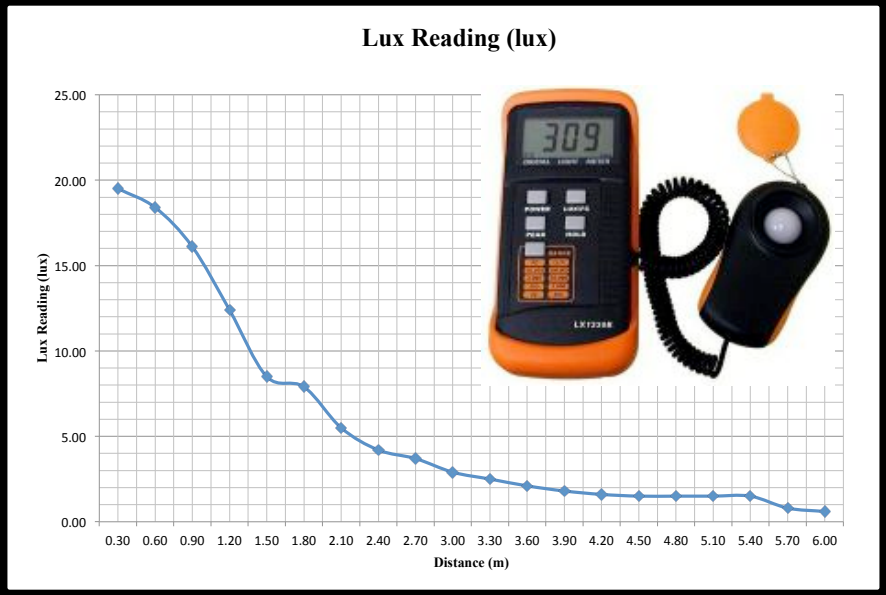
Jonas g
- Jonas
(Form 1

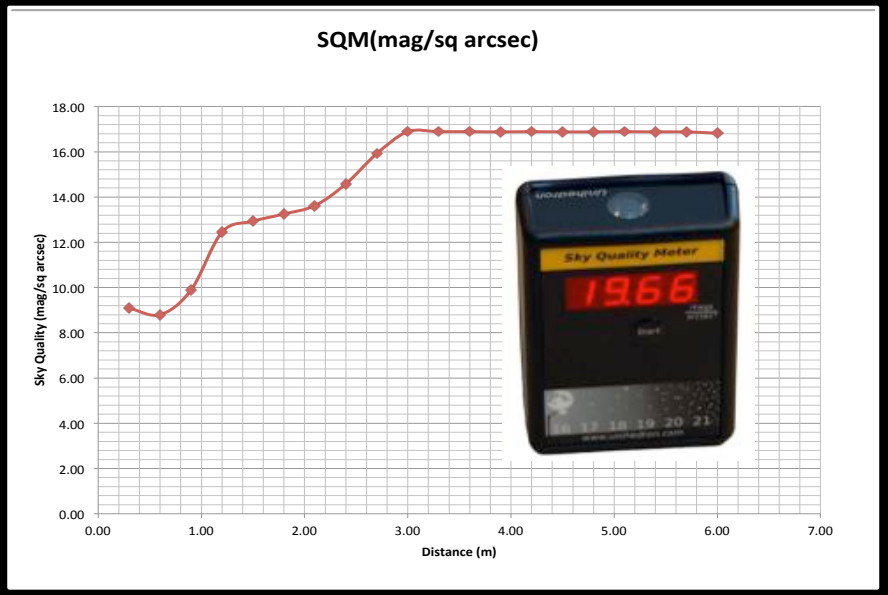
The Ghana Group

The Ashongs are the country coordinators.

The Group from Nigeria

Bonaventure is the country coordinator.



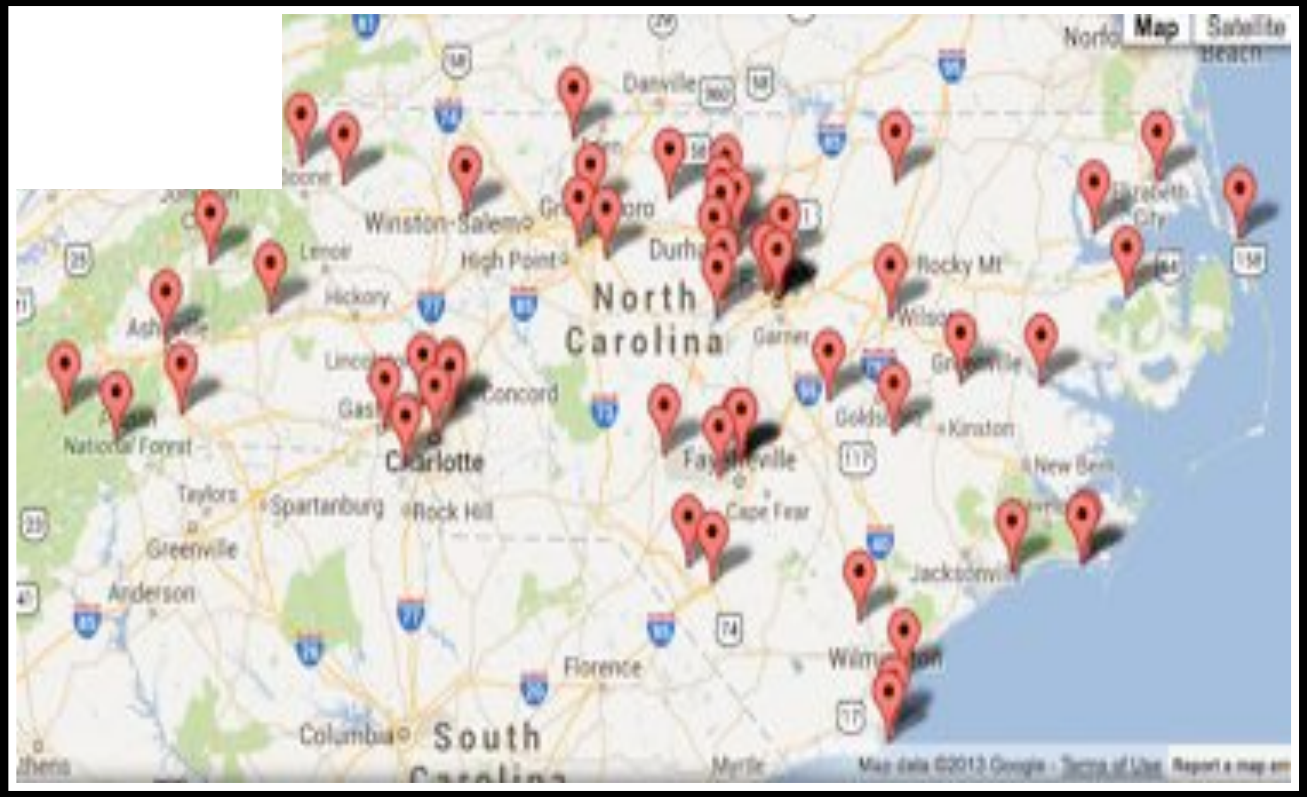


Compact Fluorescent Light (35W)

Support Dark Skies Bylaws

- Roland Dechesne in his car (with sunroof)
- 394 measurements in & around Calgary (400 km)
- Used GLOBE at Night data to create dark skies bylaws

Hold Globe at Night Starparties



- 40+ statewide star parties in NC in April
- Morehead Planetarium (Amy Sayle)

Promote the Adopt-a-Street Program

globeatnight.org/aas2014.php

Globe at Night offers a "Call to Action" for those who want to take more measurements during the campaigns. Children and adults can "Adopt a Street" in their town to take visual and possibly sky-brightness meter measurements during the Globe at Night campaigns. (For information on sky brightness meters, see "SQM-L" at www.unihedron.com.) The Girl Scouts as well as a few schools and the amateur astronomy association in Tucson will be undertaking the "Adopt a Street" project. The aim is for people to adopt a different major or semi-major street and take measurements every mile or so for the length of the street (or for as long as they can). The grid of measurements will canvas the town, allowing for research later in comparison to wildlife, health, energy consumption and cost, among other things.

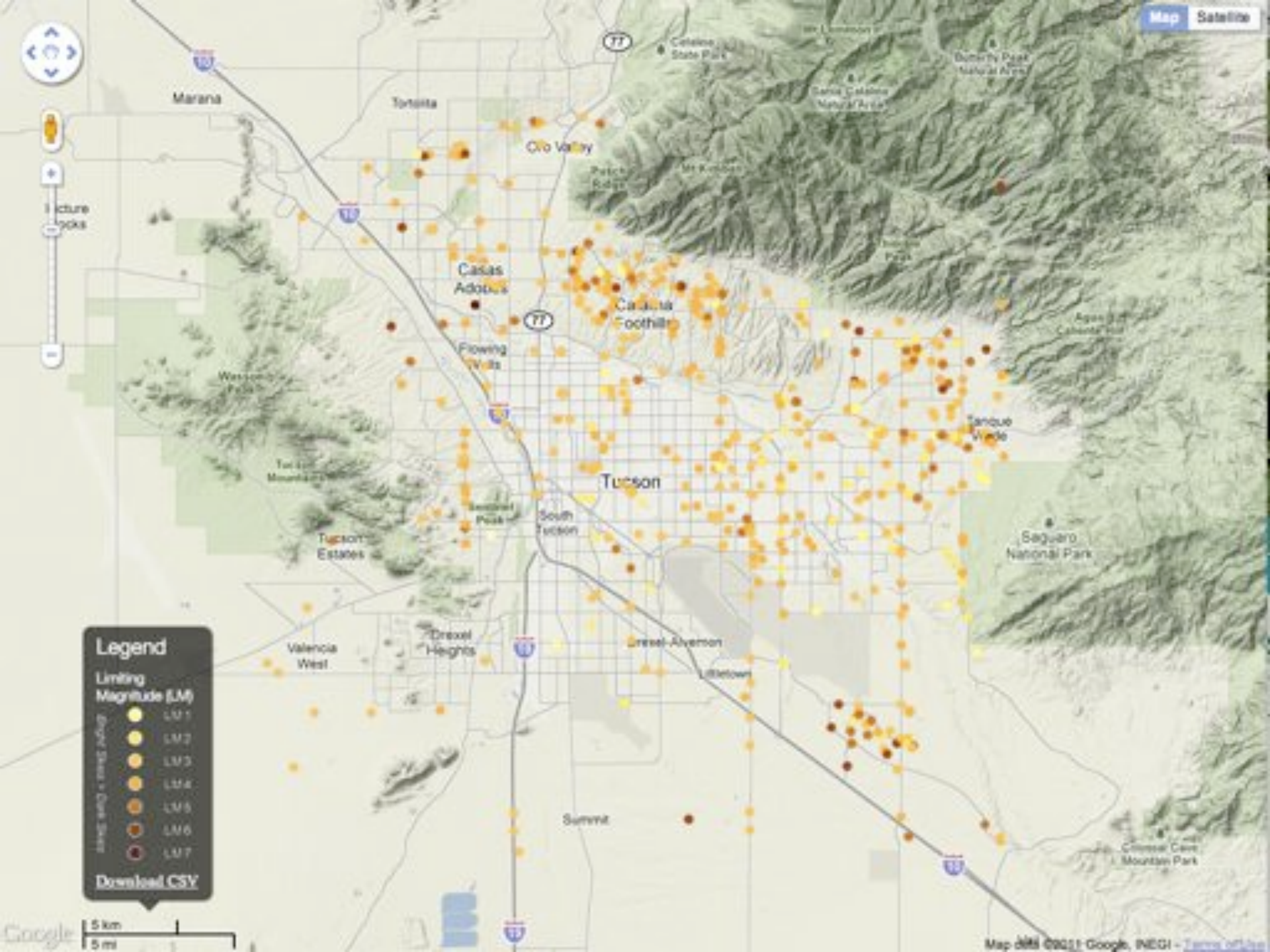
Below, type your email address into the box next to the street you are adopting. Click the Submit button and you will be signed up. Your email address will not be shared on this site or with any other parties. Once a street has been signed up for, it will be stamped "ADOPTED." Once you have signed up for a particular road:

1. Try to measure sky brightness every mile along the road you chose.
2. To measure sky brightness, observe Orion in January through March and Leo in April and May and match what you see to the charts. (charts and overall directions) Make sure to record the chart selected, your location, date, time and cloud cover. Location can be the intersection at which you take the measurement, even though latitude and longitude are preferred.
3. You may also use a Sky Quality Meter (SQM) to measure sky brightness, in addition to observing Orion in January through March and Leo in April. To use an SQM, be as far away (as possible) from a light or structure as it is high. Hold the SQM at arms length straight up above your head. Press the start button once. Record the number on the meter. (SQM instructions [781 KB PDF])
4. If you need to borrow a Sky Quality Meter during the campaign, you may sign one out with Maria at NOAO Headquarters (950 N. Cherry Ave., across the street from Steward Observatory on the UA campus.) She is there Monday through Friday from 8:15am til 4:15pm except during 12:30-1pm. Her phone number is 318-8000. You must return them to her by the end of May.
5. Submit your measurements via the web app. If you have a smartphone or tablet, you can submit your measurements as you take them. (Your latitude, longitude, date and time are automatically recorded by the smartphone or tablet.)
6. Try to do the entire length of the street as specified (typically 7 miles plus or minus 2 miles).

Thank-you!

STREETS IN TUCSON for the Globe at Night "Adopt a Street" program 2014

Email Address	Street Name
	Avra Valley Rd
	1st Ave
	6th Ave
	Ajo Way (Kinney to Sandario)
	Ajo Way (East of Kinney)


Map
Satellite
Marana
Tortolita
Oro Valley
Casas Adobes
Catalina Foothills
Flowing Wells
Tucson
South Tucson
Tucson Estates
Saguaro National Park
Tanque Verde
Valencia West
Drexel Heights
Drexel-Alvernon
Summit
Legend
Limiting Magnitude (LM)
LM 1
LM 2
LM 3
LM 4
LM 5
LM 6
LM 7
Bright Stars + Dark Skies
Download CSV
5 km
5 mi
Google
Map data ©2011 Google, INEGI

Eyes on the Sky Video Podcast

http://youtu.be/QXKezZMyJoU

Globe at Night is a campaign to measure light pollution across the world. What other way is there to know the extent of the problem without measuring it? Learn how to take measurements where you live and submit that data. Even if you only submit one time, it helps assessing the extent of light pollution. Also, learn where every naked eye planet can be seen. See what's up in the night sky every week with "Eyes on the Sky" videos, astronomy made easy.

Latest Audio Podcast

cosmoquest.org/x/365daysofastronomy/2014/01/16/our-dark-night-rises/


Globe at Night
Timeline
Recent
Admin Panel
Non-Profit Organization
Less of our light for more starlight!
//www.globeatnight.org/ Twitter: http://twitter.com
/GLOBEatNight Facebook: http://www.facebook.com
4,948
Facebook and Twitter
https://www.facebook.com/GLOBEatNight
https://twitter.com/GLOBEatNight
Globe at Night shared Jason Brownlee Photography & Design's photo.
about an hour ago
There's nothing quite like catching the aurora borealis, no? This photo is from Jason Brownlee Photography & Design.
Last night I was lucky enough to be out under the stars and away from light pollution and got to watch a rare show for those of us living in Oregon.
The Aurora Borealis from Sparks Lake in the Central Oregon Cascade Mountains - 5/31/2013.
Please feel free to share! — with Bestof Bend and 2 others.
Invite Your Friends to Like This Page
See All
Type a friend's name...
Invite
Rick Flenberg
Donna Smith
Jim Pass
Recent Posts by Others on Globe at Night
See All
Acadiana Dark Sky
The Globe at Night is mapping light pollution aroun...
January 23 at 11:44am
International Dark-Sky Association
Don't forget, tonight is the first night of Globe at Ni...
January 20 at 4:40pm
Fernando Avila-Castro
Hoy inicia la primera temporada de observación de ...
January 20 at 1:02pm
Maria Cirano Elorrieta
Faltan sólo 3 días para que comience el monitoreo ...
January 17 at 12:48pm

Worldwide Contest

http://dsr.nuclio.pt/contest/

Worldwide Contest

The Dark Skies Rangers Contest invites students and teacher from around the world to come up with innovative ideas to fight light pollution and to propose innovative ideas to local communities. The prize will be a trip to the Dark Skies Alqueva reserve, the first night sky tourism destination endorsed by Starlight Tourist Destination.

Losing the Dark Video & Planetarium Show

http://youtu.be/dd82jaztFlo


GLOBE AT NIGHT
Globe at Night:
a Campaign for Preserving our Starry Skies
globeatnight.org
Questions?
DARK SKIES RANGERS
NOAO
AURA
NSF

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