

Cosmic Light: Educating the Public about the Dark Side of IYL



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Introduction

- December 2013: the UN General Assembly proclaimed 2015 as the International Year of Light (IYL), the initiative of UNESCO and a consortium of many scientific bodies.
- IYL Steering Committee → IAU Executive Committee → IAU Commission 50 → IYL Cosmic Light Executive Committee Working Group (WG)
- Following a public call, the WG identified several key projects. The top 5 ranked were funded. Later other national and regional outreach efforts were endorsed.

Quality Lighting Teaching Kit

- Produced by the U.S. National Observatory's Education & Public Outreach group for IYL2015
- To be used in schools, museums & afterschool programs worldwide to increase awareness of light pollution issues. Being launched in September.
- Designed around problem-based learning scenarios, six activities allow students to address real lighting problems that relate to wildlife, the night sky, aging eyes, energy consumption, safety and light trespass.
- Explored at a GTTP teacher workshop yesterday.



AURA



The National Optical Astronomy Observatory (NOAO) is the U.S. national observatory operated by the Association of Universities for Research in Astronomy, Inc. (AURA) under cooperative agreement with the National Science Foundation (NSF).



OSA
Foundation

SPIE.

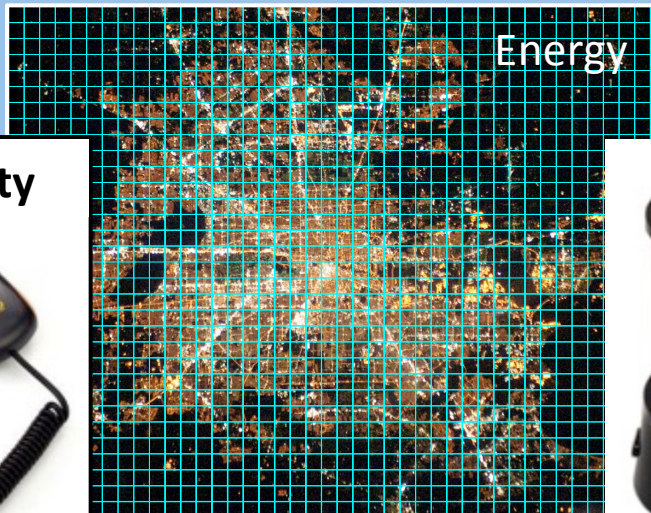
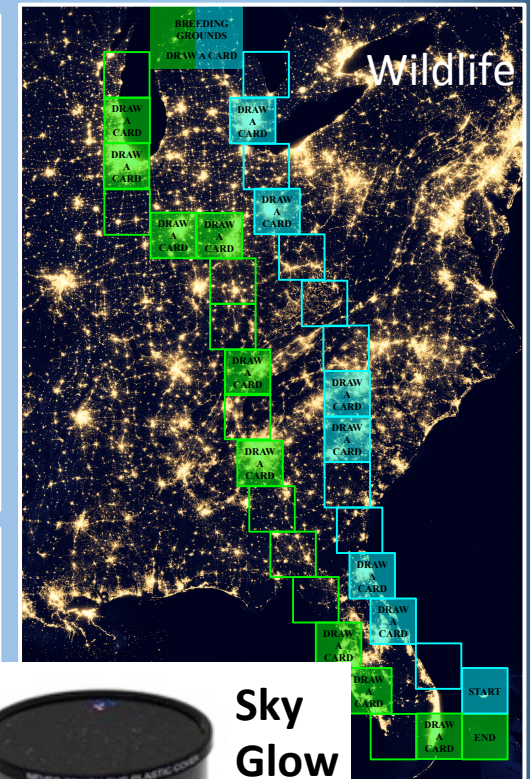
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ida
INTERNATIONAL
DARK SKY
ASSOCIATION

Quality Lighting Teaching Kit

Glare (Aging Eyes)

| | | |
|-------------|---|--------|
| E | | |
| F P | 2 | 20/100 |
| T O Z | 3 | 20/70 |
| L P E D | 4 | 20/50 |
| P E C F D | 5 | 20/40 |
| E D F C Z P | 6 | 20/30 |
| FELOPZD | 7 | 20/25 |
| DEFPOTEC | 8 | 20/20 |
| LEFODPCT | 9 | |



Cosmic Light EDU Kit

- A selection of tools & resources to support educators worldwide on the nature, impact and importance of light to us.
- 50 free light based educational resources online.
- 150 Cosmic Light EDU kit goodie packets for organisers.
- Monthly Newsletter with 4000+ subscribers
- Daily social media posts on Facebook, Twitter, and Google Plus with a 3-5k reach.



Cosmic Light EDU Kit



- 40+ countries using Cosmic Light EDU kit
- 120+ workshops between July 2015 – April 2016.
- nuclio.org/cosmiclightedukit/

Light: Beyond the Bulb

- A free international exhibition program showcasing light-based science: lightexhibit.org/
- ~200 LBTB locations in 35 countries: Bulgaria, Malta, China, Ireland, USA, etc.
- ~400 schools, science centers, libraries, parks, etc. hosting smaller LBTB exhibits
- Translations: Spanish, Portuguese, Brazilian Portuguese, French, etc



Light: Beyond the Bulb



April 2015: Displayed at main library at University of Puerto Rico; 1000s impacted, including students who took a field trip there.

Dark Sky Meter

- Leiden Observatory launched the citizen-science program iPhone app, Dark Sky Meter.
- Co-developed with the Dutch company, DDQ.
- App measures the quality of the night sky.
- More than 2800 downloads worldwide
- Available at Apple App Store:
www.darkskymeter.com/



Galileoscopes

- A high-quality, low-cost telescope kit: galileoscope.org
- About 240,000 kits in use by students in 106 countries.
- Goal is to distribute 100,000 telescopes during IYL2015.
- Jean and Ric Edelman of Virginia donated 10,000 kits (1,667 cases) to U.S. K-12 teachers in June.
- Galileoscopes were given to 200 kids at the IAU student outreach event last Wednesday.



List of IYL Endorsed Projects

- NASE 2015 Especial Edition The International Year of Light (Dr. Rosa Ros)
- SkyLight - a Global Science Opera (Dr. Oded Ben-Horin)
- Sun|trek Here Comes the Sun (Dr. Helen Mansion)
- Infrared Light: Hanging Out in the Stratosphere (Nicholas Veronico)
- The GalileoMobile Constellation Project: A network of schools lights up across South America (Dr. Fabio Del Sordo)
- Promoting light pollution education & research worldwide (Dr. Jason Pun)
- Light Work – A Journey Through the Spectrum (Gary Evans)
- Cultures of Naked-Eye Astronomy: international comparative studies (Prof. Martin Ward)
- Global Astronomical Symbols for Sign Language (Dr. Dominique Proust)
- Heavenly Ali: The Sky on the Roof of the World (Prof. Yongqiang Yao)
- The IYL Lightmeter – measuring from the Sun to the Starshine of Vega (Dr. Günther Wuchterl)

List of IYL Endorsed Projects

- 2015 : A Light Odyssey (Dr. Jean-Marc Bonnet-Bidaud)
- International Astronomy Trail (Dr. Roger Ferlet)
- Arduro and the Photons The Amazing Universe of Light (Samuel Gibbs)
- ERATOSTHENES 2015 GLOBAL (Dr. Beatriz García)
- The Sun: the Earth light Source (Prof. Francesco Berrilli)
- Showing polar lights and auroras to the people in Maghreb (Prof. Mourad Djebli)
- Educational Astronomy for Central and Eastern European Countries (Ovidiu Tercu)
- AstroBaja, taking the stars to small communities (Fernando Avila-Castro)
- Light & Astronomy Education for Schools in Nepal (Dr. Jayanta Acharya)
- Effect of Light Pollution on Astronomical Development and Research (Dr. Solomon Belay Tessema)
- A Sky Full Of Star: Exploring the Light of the Stars with Eyes on the Sky (Cristian Góez Therán)

Global Outreach Events

- Einstein's birthday celebration (using hashtag #31415)
- Super Pi Day (14 March)
- International Night of Sky Glow Observations (14 March & 12 September)
- Earth Hour (28 March)
- International Dark-Sky Week (13-18 April)
- Earth and Sky Photo Contest (deadline: 22 April)
- Global Open Lab Days (9-25 May)
- Eratosthenes Project 2015 (measurements 21 June & 21 Sept)
- 100 Hours of Light (25-28 September)
- International Einstein Centenary Day for General Relativity & Gravitation (25 November)
- XPhoton Challenge on quality lighting and dark skies preservation
- Globe at Night citizen-science campaign (10-days each month)

Globe at Night



GLOBE AT NIGHT 2015

January 11 to 20 July 7 to 16
February 9 to 18 August 5 to 14
March 11 to 20 September 3 to 12
April 9 to 18 October 3 to 12
May 9 to 18 November 2 to 11
June 8 to 17 December 2 to 11

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?

Logos for IAU, GLOBE AT NIGHT, IAGLR, and IAGLR/ESO.



Legend
2012 GLOBE at Night
Magnitude

- Limiting Magnitude 1
- Limiting Magnitude 2
- Limiting Magnitude 3
- Limiting Magnitude 4
- Limiting Magnitude 5
- Limiting Magnitude 6
- Limiting Magnitude 7

Report Stars + Dark Sites

Shown above are the 18,500 observations from 97 countries during the 2014 campaign. Help us exceed these numbers in 2015!

What: Invites citizen-scientists to measure their night sky brightness and submit their observations to a website from a computer or smart phone: www.globeatnight.org

Who: people aged 8 and up

When: 10-day campaigns each month (no Moon in late evening)

Where: Anywhere; everywhere!

Numbers: 17,160 measurements from 95 countries during IYL2015. Over 137,000 measurements from 115 countries in the last 10 years.

Globe at Night

Citizen-scientists can choose from 4 methods to take observations:

- Observe visually
- Observe with a Sky Quality Meter
- Make measurements with Dark Sky Meter app
- Make measurements with the Loss of the Night app



The 1st two measurements are submitted via www.globeatnight.org/webapp/.

The last two are automatically registered nightly into the Globe at Night database.

Summary

Through this set of programs, the IAU intends to reach and engage a large number of communities worldwide, to raise awareness of the need to minimize light pollution and to have a better understanding of the universe through light.

Join us in
enLIGHTening
the future!

www.iau.org/iyl/



Contact Info

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Other websites of interest

- 1st version Quality Lighting Teaching Kit (14-18 yrs):
www.noao.edu/education/iyl-focus/
- 2nd version QLT kit (11-14 yrs): *coming soon!*
- Dark Skies Rangers activities (8-11 yrs):
www.globeatnight.org/dsr/
- The International Dark-Sky Association: www.darksky.org