The International Year of Light & Light-based Technologies 2015

United Nations Educational, Scientific and Cultural Organization

International Year of Light 2015

John Dudley

International Year of Light Steering Committee

www.light2015.org

Context

The General Assembly of the United Nations declared 2015 the International Year of Light and Light-based Technologies

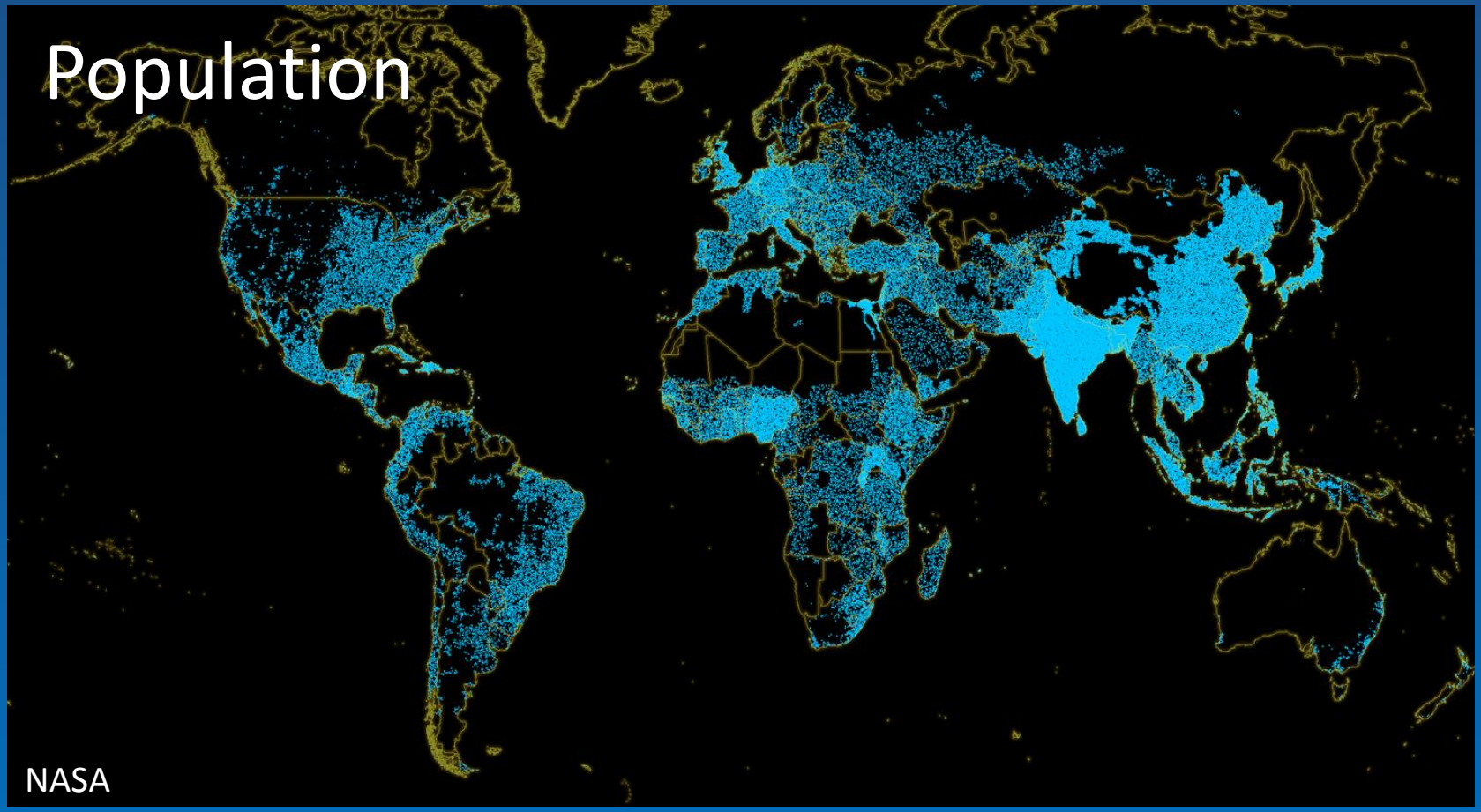
Missions & Themes

Provide technological solutions to global problems

Promote education in science, engineering, mathematics …

Improve links between science & society

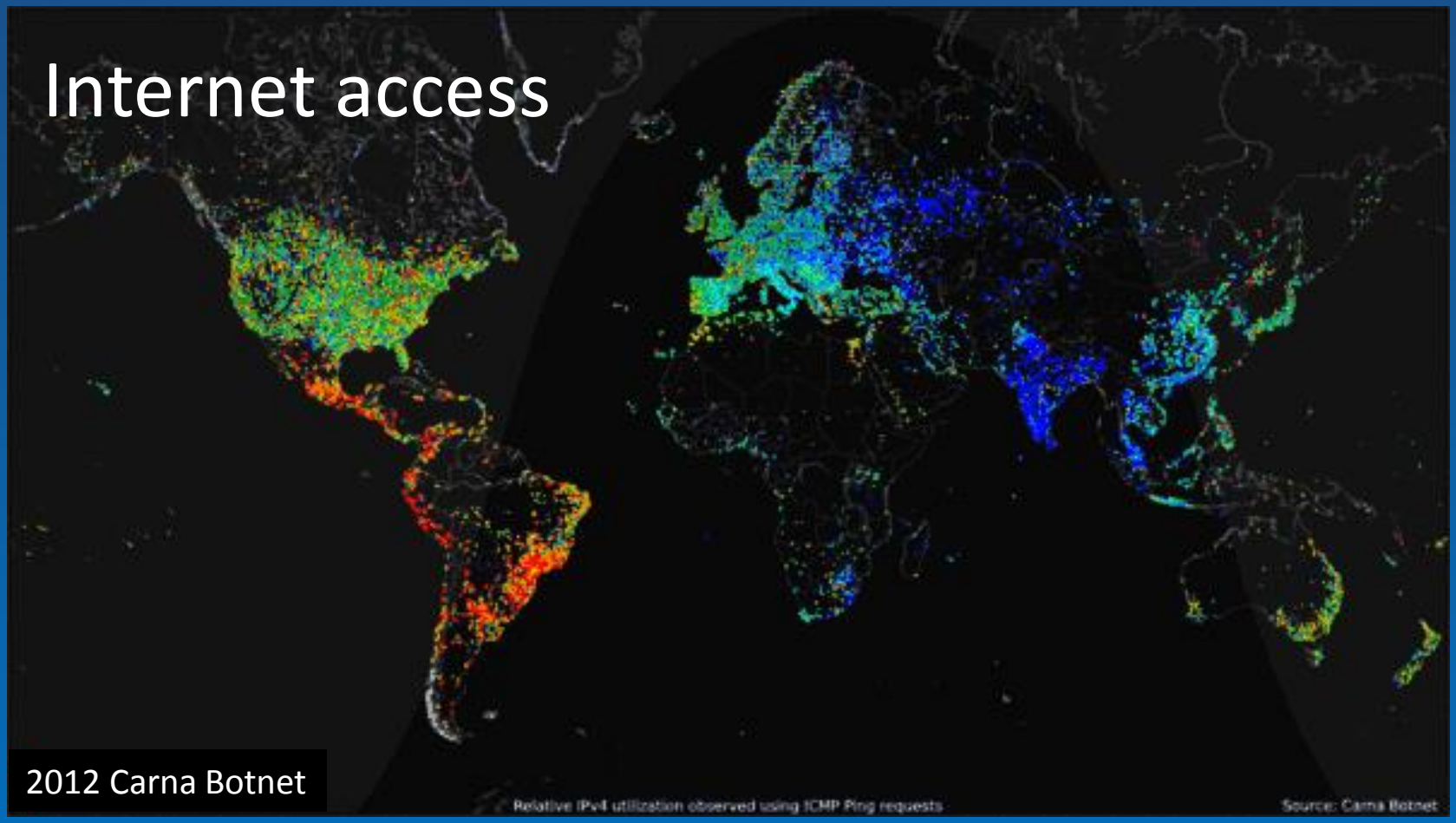
Why a Year of Light?



Why a Year of Light?

Why a Year of Light?

Why a Year of Light?



Why 2015?

1015: 1000 years of Arabic optics

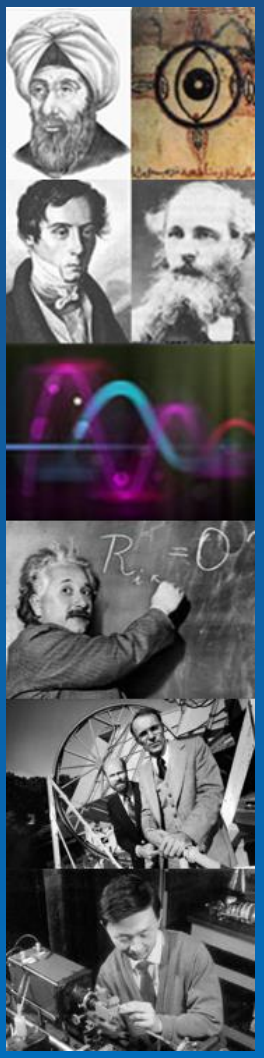
1815: 200 years of Fresnel's theory of diffraction

1865: 150 years since Maxwell's electrodynamics

1915: Einstein Centenary, General Relativity.

1965: Discovery of Cosmic Microwave Background, Penzias & Wilson

Invention of Optical Fibre Technology
Charles Kao



Why technology?

World Direct Photonics Market ~ €300 bn

Much larger multiplier effect along value chain (e.g. in USA, 7.4 million high value jobs)

Growth rate worldwide ~ 8-10% p.a. significantly exceeding GDP growth

Light-based technologies provide solutions to global challenges and can be used to boost economies in developing countries

Impact on energy

Climate change and sustainability are topics of immense importance for us all

Energy-efficient buildings, smart cities and homes, architecture & design can better exploit daylight and use low consumption lighting

Smart lighting can both mitigate global warming and lead to improved well being

2015 and 2016 set to break global heat records, says Met Office

Next two years likely to be hottest recorded as the world's climate reaches major turning point - but UK summers may be cooler, report predicts

Manmade-driven global warming and other factors could make this year and next break heat records. Photograph: Philippe Huguen/AFP/Getty Images

The world's climate has reached a major turning point and is set to deliver record-breaking global temperatures in 2015 and 2016, according to a new report from the UK Met Office.

PARIS2015
UN CLIMATE CHANGE CONFERENCE
COP21·CMP11

Impact on development

Light-based technologies can dramatically
Improve health and quality of life:

- inexpensive glasses (1 USD) for improved vision
- UV light for water purification
- Mobile internet for education
- Solar solutions for offgrid lighting
  and “study after sunset”
- Improved healthcare diagnostics
- Improved agriculture

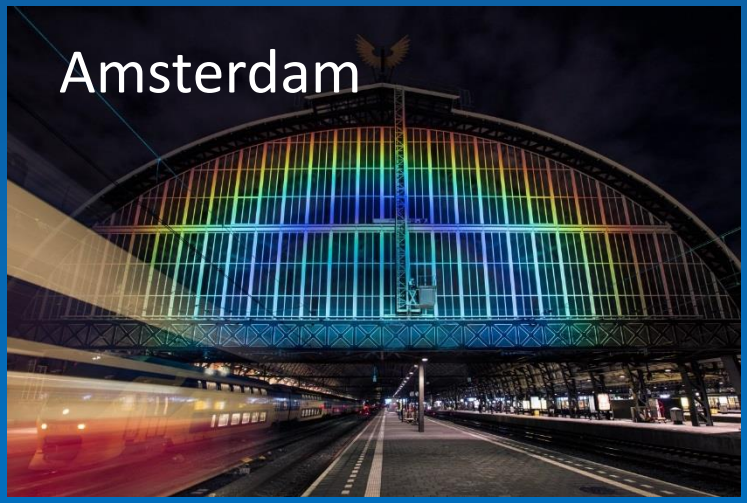
International impact

1000’s of events in over 120 countries reaching millions organised by partners & volunteers worldwide

Major events bringing scientists, decision makers and public together (UNESCO, Brussels, Ghana, Mexico, USA, Rep. Korea, Eq. Guinea, South Africa, Brazil …)

Light as a Symbol

Raising visibility with the public using lighting



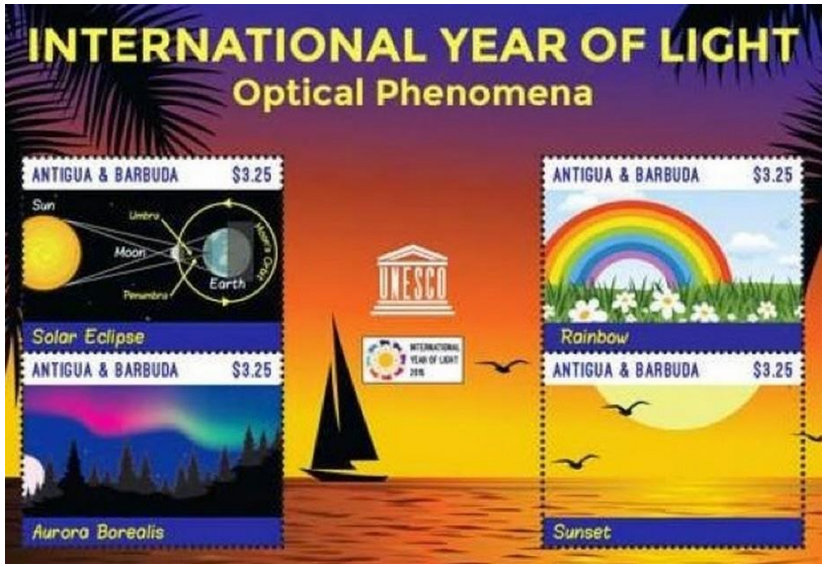
UN lit blue on 24 Oct

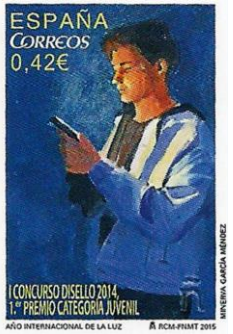
300 iconic monuments worldwide lit blue on UN day to highlight the importance of the UN and UN system to citizens of the world

Dark skies awareness

Lighting brings many benefits but can be done in a way that allows the beauty of the universe to be appreciated as well

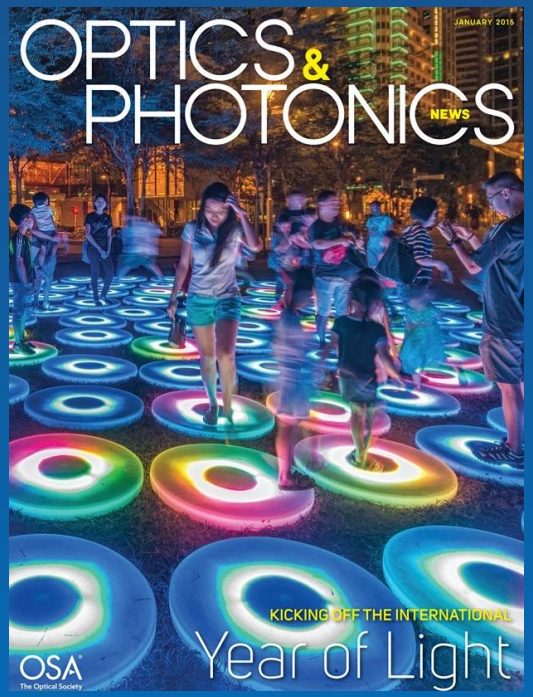
International impact





Stamps & Coins: Antigua & Barbuda, Gambia, Guyana, Kyrgyzsta, Israel, Italy, Liechtenstein, Montserrat, Nevis, Romania, Serbia, Sierra Leone, South Africa, Spain, Vatican, UK

Basic science



Today's Session

Thematic Talks

Naomi J. Halas
Laboratory for Nanophotonics, Rice University (USA)

Claudia Mignone
European Space Agency, Estec (NL, IT)

Wolfgang Sandner
Extreme Light Infrastructure (EU)

[You may ask questions after each talk]

Moderated Discussion

Maciej Nalecz
UNESCO HQ