

Solar Eclipse 2015

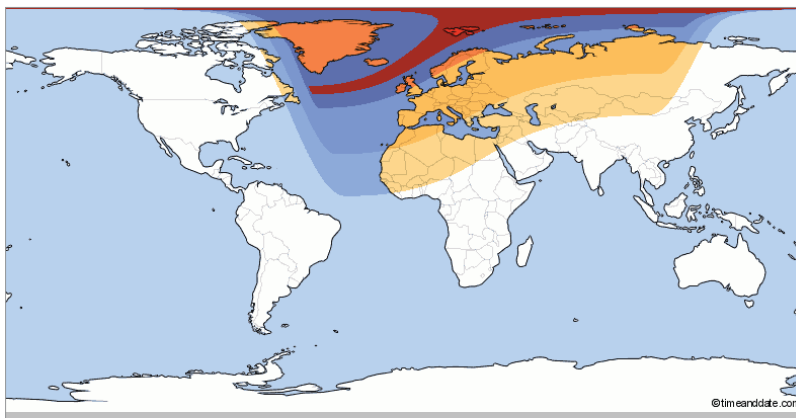
Near-total solar eclipse on 20th March

Joseph Roche



2015 is the International Year of Light.

The UN General Assembly is leading a year-long initiative to promote improved public and political understanding of the central role of light in the modern world. A particular focus of this initiative is to raise global awareness about how light-based technologies might provide solutions to challenges in energy, agriculture and health. For astrophysicists and astronomers every year is a year of light, but 2015 promises a rare event.



On 20th March 2015 one of the most dramatic spectacles of light will be visible in Ireland. A near-total solar eclipse will occur as the Moon comes between the Sun and the Earth and casts the darkest part of its shadow, the umbra, across Northern Europe. It will be more than a decade before the next solar eclipse is visible from Europe.

In the regions highlighted in red a total solar eclipse will be visible.
Credit: timeanddate.com.

More than 90% of the Sun will be obscured, leaving a bright halo visible. This is the Corona, the highest layer of the Sun's atmosphere, and is interesting to astrophysicists as it is here that the solar wind arises. The solar wind not only bathes the Earth in a constant stream of particles from the Sun but is also responsible for the Northern Lights. Occasionally the corona sheds huge amounts of material in a burst called a Coronal Mass Ejection. These events can damage and disrupt satellites and power grids. Prof. Peter Gallagher and the Astrophysics Research Group at the School of Physics in Trinity College Dublin not only study these phenomena, but will be helping people around the country get involved in events and activities to coincide with the solar eclipse. They have a dedicated website at www.eclipse2015.ie which provides details on the eclipse, as well as events and information for teachers and students on how to do make some simple projectors to safely view the eclipse.

The Sun should never be viewed directly as it can cause permanent eye damage.

Trinity College has a number of other ongoing projects that brings astrophysics to the classroom. "Sunspotter" is an online citizen project that seeks the help of the general public to classify images of sunspots which are regions of magnetic activity on the Sun. As well as visiting a number of schools around the country, the project involved launching the Sunspotter website (www.sunspotter.org) which has led to more than 2 million sunspot classifications in the last year. In collaboration with the School of Education in Trinity College Dublin, the Astrophysics Research Group is also working with science students and teachers to develop resources for secondary school students to develop programming skills in the classroom. Details of this project can be found at www.student2scientist.org. To cater to the growing

demand for entry level computer programming skills for adults, the Astrophysics Research Group are also running workshops based on Python, as well as teaching the concepts of computer programming generally. These workshops are designed to be relaxed and informal, "more akin to a book club than a night class", and are a perfect way to start exploring the potential of computer programming in the classroom. More information can be found at www.codifydublin.com.

Dr Joseph Roche is an astrophysicist at Trinity College Dublin. He has worked at NASA and used the Hubble Space Telescope to observe symbiotic stars. He is Assistant Professor in STEM Education at Trinity's School of Education where his research area is the role of science in society.

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A solar eclipse over Bor Udzuur in Mongolia in August 2008.
Credit: Prof Miloslav Druckmuller.