WEYMOUTH ASTRONOMY

Sky Watcher

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Trips / Events

Ideas for trips and events always welcome!

events@weymouthastronomy.co.uk

- *20 July CADAS—Disks Around Stars and Galaxies—James Fradgley*
- *2 Aug WAS—Project Alcock: A Comet Search Programme—Roger Dymock*
- *17 Aug CADAS—Lunar photography with a Webcam—Bill Reed*
- *6 Sept WAS—Dawn, Rosetta and New Horizons—Robin Catchpole*
- *21 Sept CADAS—Deep Sky Imaging—Philip Perkins*
- *4 Oct WAS—AGM & Astronomers' Question Time*
- *19 Oct CADAS—Starting out in Astronomy*
- *1 Nov WAS—Lunar geology from the comparative safety of your own home—Barry Fitzgerald*

If you are interested in giving a talk or workshop, let the organisers know. They like to offer new titles in their programme line-up.

WAC Upcoming Events:

12 Aug—Club Public Open Evening at SACC

9 Sept—How Astronomy has Changed—Lillian Hobbs

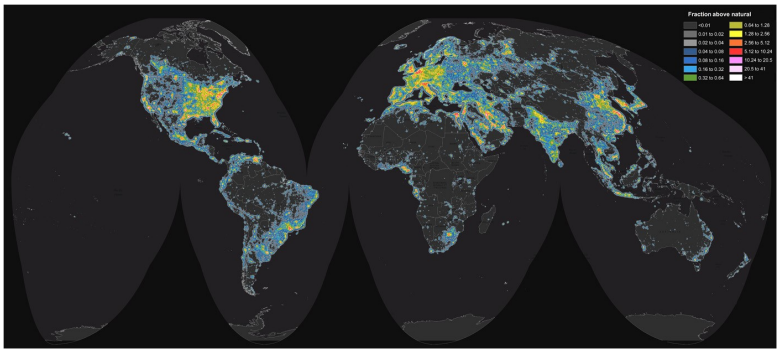
14 Oct—Sundial workshop—John Macdonald

11 Nov—Aurora in the Solar System—Sheri Karl

More to come!

Plans for informal viewing nights will take place after the monthly meetings, weather permitting.

WAC News—



A new AMA-approved report backs six-year-old findings of the International Dark-Sky Association (IDA) about the negative consequences of the global movement to LEDs as the preferred outdoor lighting technology. Exposure to blue-rich white light leads to increased risk for cancer, diabetes, and cardiovascular disease. Blue-rich LED streetlights are five times as disruptive to the human sleep cycle as conventional lighting.

http://scitation.aip.org/content/aip/magazine/physicstoday/news/10.1063/PT.5.1079?utm_source=Physics%20Today&utm_medium=email&utm_campaign=7284067_The%20week%20in%20Physics%2027%20June%E2%80%931%20July&dm_i=1Y69,4C4F7,E1OC7F,FW6GN,1

Until next month ~SK

Hubble's bubble lights up the interstellar rubble

By Ethan Siegel

When isolated stars like our Sun reach the end of their lives, they're expected to blow off their outer layers in a roughly spherical configuration: a planetary nebula. But the most spectacular bubbles don't come from gas-and-plasma getting expelled into otherwise empty space, but from young, hot stars whose radiation pushes against the gaseous nebulae in which they were born. While most of our Sun's energy is found in the visible part of the spectrum, more massive stars burn at hotter temperatures, producing more ionizing, ultraviolet light, and also at higher luminosities. A star some 40-45 times the mass of the Sun, for example, might emits energy at a rate hundreds of thousands of times as great as our own star.

The Bubble Nebula, discovered in 1787 by William Herschel, is perhaps the classic example of this phenomenon. At a distance of 7,100 light years away in the constellation of Cassiopeia, a molecular gas cloud is actively forming stars, including the massive O-class star BD+60 2522, which itself is a magnitude +8.7 star despite its great distance and its presence in a dusty region of space. Shining with a temperature of 37,500 K and a luminosity nearly 400,000 times that of our Sun, it ionizes and evaporates off all the molecular material within a sphere 7 light years in diameter. The bubble structure itself, when viewed from a dark sky location, can be seen through an amateur telescope with an aperture as small as 8" (20 cm).

As viewed by Hubble, the thickness of the bubble wall is both apparent and spectacular. A star as massive as the one creating this bubble emits stellar winds at approximately 1700 km/s, or 0.6% the speed of light. As those winds slam into the material in the interstellar medium, they push it outwards. The bubble itself appears off-center from the star due to the asymmetry of the surrounding interstellar medium with a greater density of cold gas on the "short" side than on the longer one. The blue color is due to the emission from partially ionized oxygen atoms, while the cooler yellow color highlights the dual presence of hydrogen (red) and nitrogen (green).

Image credit: NASA, ESA, and the Hubble Heritage Team (STScI/AURA), of the Bubble Nebula as imaged 229 years after its discovery by William Herschel.

Hubble (*continued*)

The star itself at the core of the nebula is currently fusing helium at its center. It is expected to live only another 10 million years or so before dying in a spectacular Type II supernova explosion.

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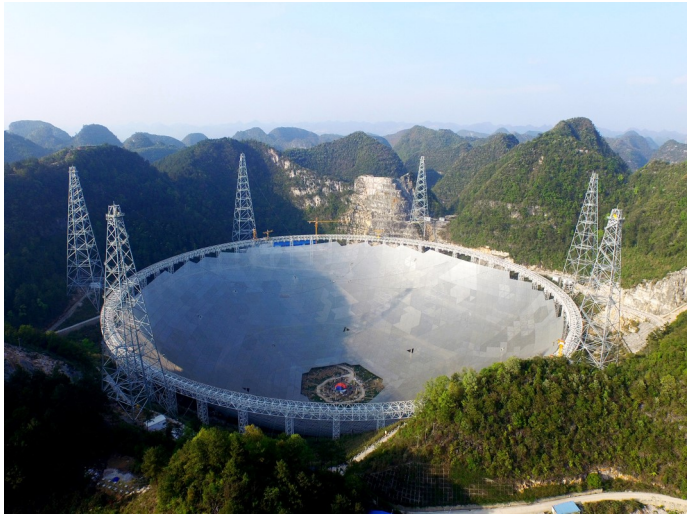
China fits final piece on world's largest radio telescope

4 July 2016

The 500 m Aperture Spherical Telescope, (FAST) has installed the final piece in the dish. It is due to begin operating in September and will be the largest radio telescope on the planet. Currently Arecibo in Puerto Rico holds that title at 33 m diameter. BBC made an overview video which can be found at: http://www.bbc.co.uk/news/resources/idt-0192822d-14f1-432b-bd25-92eab6466362

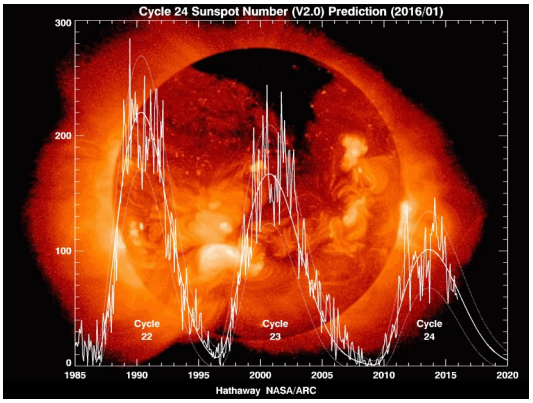


What will the telescope do?

- Survey neutral hydrogen in distant galaxies and detect faint pulsars (highly magnetised balls of neutrons)
- More than 2,000 pulsars so far said to have been detected
- Improve the chances of detecting low frequency gravitational waves
- Help in the search for extraterrestrial life

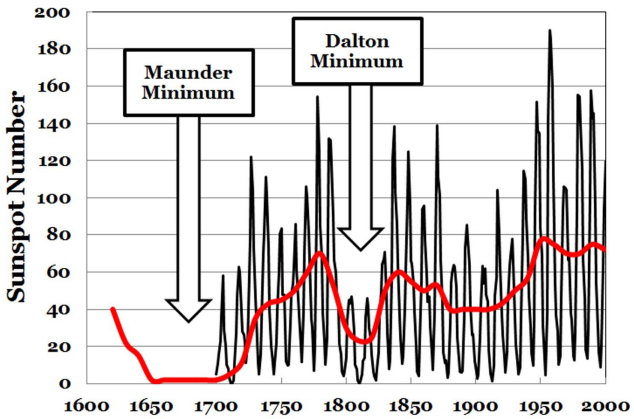
Sources: Xinhua, South China Morning Post / BBC News

An Amateur Astronomer's Life by Geoff Kirby



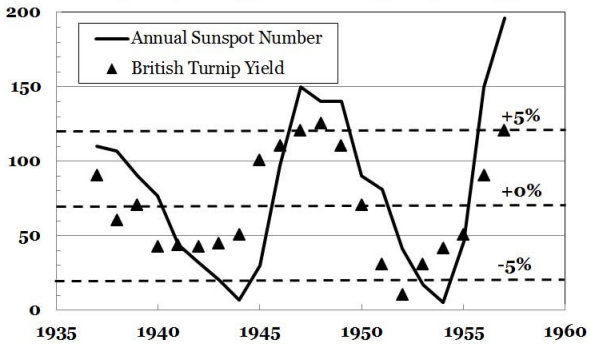
In the previous WAC Newsletter Sheri showed a photograph of the Sun free of sunspots. Although not unusual as the Sun approaches and passes through one of its periodic minima there may be indications that sunspots could become rare for several decades as this century progresses.

Plotting annual mean values for sunspots as shown in the chart taken from my book "An Amateur Astronomer's Life" (see www.geoffkirby.co.uk/Books) we see the familiar undulations in sunspot activity which has a mean period of about 11 years.



However, superimposed on these short-term variations (red line) are longer variations which include periods when the number of sunspots remained very low for decades - even as long as a century. The best known of these is the Maunder Minimum labelled on the adjacent chart. This lasted for about a century and was a time of severe cold weather in Europe. There have been other periods of extended low sunspot activity such as the Wolf Minimum (1280–1350), the Spörer Minimum (1460-1550) and the Dalton Minimum (1790-1820). In each case Europe suffered severe cold periods such as the so-called "Little Ice Age".

The mean numbers of sunspots at recent maxima have been steadily falling as shown on the chart. The sunspot maximum around 1990 reached 220, that around 2001 reached 160 and that last maximum in 2014 reached a count of 100. If this is a continuing trend then the sunspot maximum due in around 2036 will be very low and we will be well into another period of climate chilling; perhaps another "Little Ice Age".



There is a great deal of evidence connecting sunspot cycles with climate changes and agricultural productivity. The chart taken from my book shows just one example where the variations in the UK's turnip yield seem to vary with annual mean sunspot numbers.

If we are approached another period of very low sunspot activity – another "Little Ice Age" - what will be the global consequences for our ability to feed ourselves?"