WEYMOUTH ASTRONOMY

Sky Watcher

Volume 13, Issue 3
10 August 2018

Trips / Events

Ideas for trips and events always welcome!

events@weymouthastronomy.co.uk

- 15 Aug CADAS—Gadgets and Gizmos evening.
- 4 Sept WAS—Lunar geology from the safety of your own home by Barry Fitzgerald
- 19 Sept CADAS— – Orbital oddities by James Fradgley
- 22 Sept WAS—Astro Open Day — with Space Detectives Astronomy Workshop
- 2 Oct WAS—AGM & Zero gravity by John Ives
- 17 Oct CADAS Ask the panel.
- 6 Nov WAS—Solar Image Editing by Sheri Lynn Karl
- 21 Nov CADAS—Astrophotography old and new with Pete Adshead and Bob Mizon

Programmes for many local Societies will be available in the near future. Check their websites for more details.

WAC Upcoming Events:

14 Sept—Open Evening / Viewing Evening

12 Oct—Barry FitzGerald - Lunar Geology from the safety of your own home

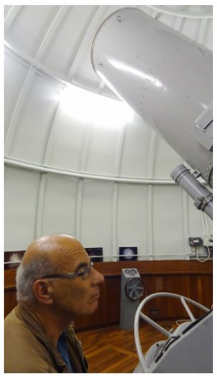
9 Nov—Sheri Karl - Gravity Waves

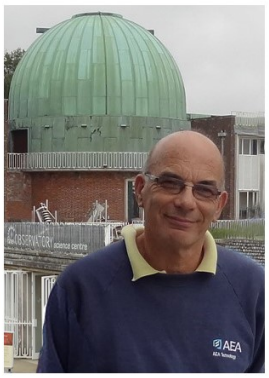
14 Dec—Christmas Quiz / Social Evening

More to come!!

WAC News—

Recently we received some sad news. Our fellow WAC member John Samways suddenly passed away. We reminisce fondly.





As Nigel recalls he 'can't claim to know John that well but I do know he was an enthusiastic member who joined up when this incarnation of the club was formed by yourself (and me getting on board shortly afterwards!!) back in 2006. He did occasionally offer me lifts back from the Upwey venue when I was having some car trouble and always enquired if I had transport for a period after. You're right - he was a good guy and will be sadly missed. The club will miss him and so will I…'

My own memories of John are from the early days of the club as well. He and Geoff Trim arriving for each meeting with a big smile ready to learn something new.

Chris Bowden was able to locate photos of John on a WAC trip almost 5 years ago when a few of us visited Herstmonceux. These photos certainly capture John's inquisitive and jovial personality.

We shall think of John on the next fireball appearance with this year's Perseids... I think he would have liked that. Until next month! ~SK

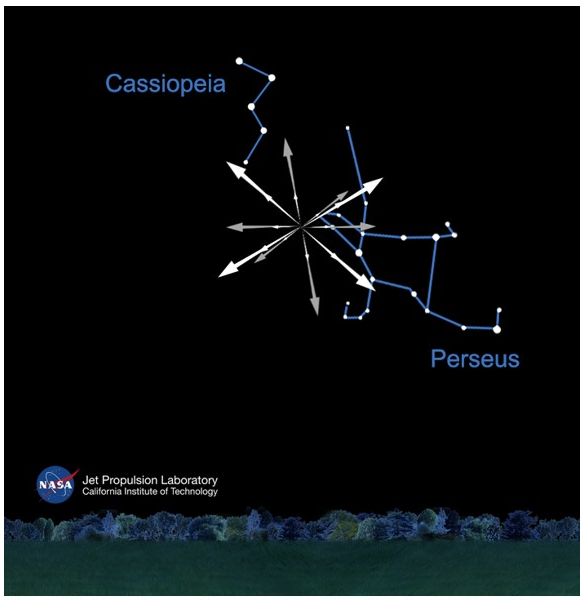
The Best Meteor Shower of the Year

by Jane Houston Jones and Jessica Stoller-Conrad

If you're a fan of meteor showers, August is going to be an exciting month! The Perseid meteor shower is the best of the year, and in 2018, the peak viewing time for the shower is on a dark, moonless night—perfect for spotting meteors.

The comet that creates the Perseid meteor shower—a comet called Swift-Tuttle—has a very wide trail of cometary dust. It's so wide that it takes Earth more than three weeks to plow all the way through. Because of this wide trail, the Perseids have a longer peak viewing window than many other meteor showers throughout the year.

The best time to look for meteors during this year's Perseid shower is at the peak, from 4 p.m. EDT on Aug. 12 until 4 a.m. EDT on the Aug. 13. Because the new Moon falls on the peak night, the days before and after the peak will also provide very dark skies for viewing meteors. On the days surrounding the peak, the best time to view the showers is from a few hours after twilight until dawn.



Caption: The Perseid meteor showers appear to radiate from the constellation Perseus. Perseus is visible in the northern sky soon after sunset this time of year. Credit: NASA/JPL-Caltech

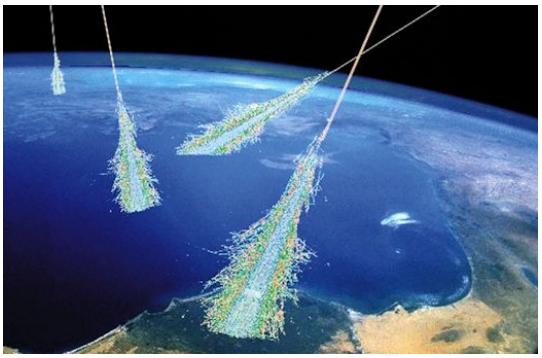
Meteors come from leftover comet particles and bits from broken asteroids. When comets come around the Sun, they leave a dusty trail behind them. Every year Earth passes through these debris trails, which allows the bits to collide with our atmosphere and disintegrate to create fiery and colorful streaks in the sky—called meteors.

Perseids (more!)

In fact, this year you should be able to see some meteors from July 17 to Aug. 24. The rates of meteors will increase during the weeks before Aug. 12 and decrease after Aug. 13. Observers should be able to see between 60 and 70 meteors per hour at the shower's peak. The Perseids appear to radiate from the constellation Perseus, which is where we get the name for this shower. Perseus is visible in the northern sky soon after sunset this time of year. Observers in mid-northern latitudes will have the best views. However, you don't have to look directly at the constellation Perseus to see meteors. You can look anywhere you want to; 90 degrees left or right of Perseus, or even directly overhead, are all good choices.

While you're watching the sky for meteors this month, you'll also see a parade of the planets Venus, Mars, Jupiter and Saturn—and the Milky Way also continues to grace the evening sky. In next month's article, we'll take a late summer stroll through the Milky

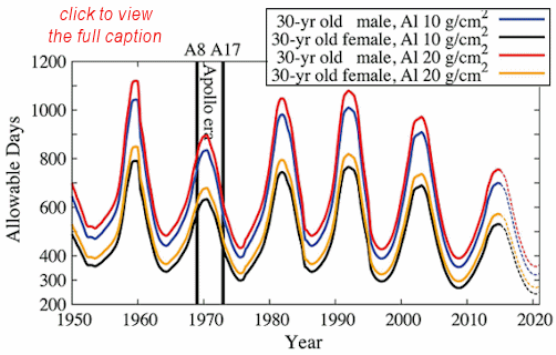
The Worsening Cosmic Ray Situation by Dr Tony Phillips (abbreviated version}



Cosmic rays are bad–and they're getting worse. That's the conclusion of a recent paper published in the research journal *Space Weather*. The authors, led by Prof. Nathan Schwadron of the University of New Hampshire, show that radiation from deep space is dangerous and intensifying faster than previously expected. The story begins four years ago when Schwadron and colleagues first sounded the alarm about cosmic rays.

Analyzing data from the Cosmic Ray Telescope for the Effects of Radiation (CRaTER) instrument onboard NASA's Lunar Reconnaissance Orbiter (LRO), they found that cosmic rays in the Earth-Moon system were peaking at levels never before seen in the Space Age. The worsening radiation environment, they pointed out, was a potential peril to astronauts, curtailing how long they could safely travel through space. This figure from their original 2014 paper shows the number of days a 30-year old male astronaut flying in a spaceship with 10 g/cm^2 of aluminum shielding could go before hitting NASA-mandated radiation limits: In the 1990s, the astronaut could spend 1000 days in interplanetary space. In 2014 … only 700 days. "That's a huge change," says Schwadron.

Galactic cosmic rays come from outside the solar system. They are a mixture of high-energy photons and sub-atomic particles accelerated toward Earth by supernova explosions and other violent events in the cosmos. Our first line of defense is the sun: The sun's magnetic field and solar wind combine to create a porous 'shield' that fends off cosmic rays attempting to enter the solar system. The shielding action of the sun is strongest during Solar Maximum and weakest during Solar Minimum–hence the 11-year rhythm of the mission duration plot (right).



The problem is, as the authors note in their new paper, the shield is weakening: "Over the last decade, the solar wind has exhibited low densities and magnetic field strengths, representing anomalous states that have never been observed during the Space Age. As a result of this remarkably weak solar activity, we have also observed the highest fluxes of cosmic rays."

But even on Earth the increase is being felt. The students of Earth to Sky Calculus have been launching space weather balloons to the stratosphere almost weekly since 2015. Sensors onboard those balloons show a 13% increase in radiation (X-rays and gamma-rays) penetrating Earth's atmosphere: X-rays and gamma-rays detected by these balloons are "secondary cosmic rays," produced by the crash of primary cosmic rays into Earth's upper atmosphere. They trace radiation percolating down toward our planet's surface. The energy range of the sensors, 10 keV to 20 MeV, is similar to that of medical X-ray machines and airport security scanners.

How does this affect us? Cosmic rays penetrate commercial airlines, dosing passengers and flight crews so much that pilots are classified by the International Commission on Radiological Protection as occupational radiation workers. Some research shows that cosmic rays can seed clouds and trigger, potentially altering weather and climate. Furthermore, there are studies linking cosmic rays with cardiac arrhythmias in the general population Cosmic rays will intensify even more in the years ahead as the sun plunges toward what may be the deepest Solar Minimum in more than a century. Stay tuned for updates.

Full article and more information can be found at: https://spaceweatherarchive.com/2018/03/05/the-worsening-cosmic-ray-situation/

BAA

Christchurch Weekend Meeting

WESSEX ASTRONOMICAL SOCIETY

Friday 7th – Sunday 9th September 2018

Christchurch Junior School, Clarendon Road, Christchurch, BH23 2AA

'Theories and observations of the Universe'

The Wessex Astronomical Society are our hosts for this weekend

To book and for more information visit www.britastro.org/Christchurch2018

Retailers attending will be the BAA Sales and W&W Astro