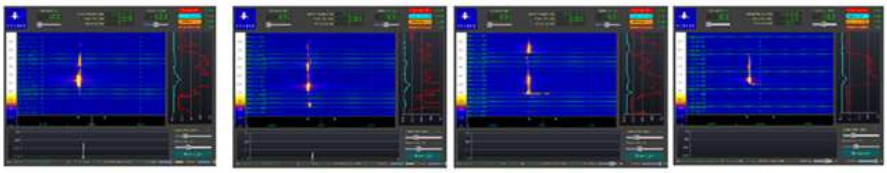
Edition No. 31

BLACKBURN LEISURE ASTRONOMICAL SOCIETY NEWS

Jul/Aug 23

Edited by Robert Shanks



Club News...

Thanks to David Kitching's successful grant application to JTL Training in February, the observatory now has a Full HD projector and a 4K 55" television installed high quality presentation display equipment. Pictured above is an immersive view of Earth from International Space Station being streamed live from the NASA website along with a locator map of where it is. The images top right are meteor echoes of the Perseid meteor recorded by our Radio Telescope.

BLAS has 25 paid-up members & is open for visitor bookings and Friday night general sessions. As of September the 10th, 642 people have attended BLAS so far this year bringing the total attendance of 7272 since 2016. Including the Club meal in January, 6 groups/events have taken place and there are 4 further bookings for groups this coming Autumn.

Would all members please note that our remote Zoom link which kept us together during the pandemic is no longer working. We have now moved over to a system called Jitsi when required. Jitsi is a much simpler system to operate and requires no installation. Please email us via the website for a link and instructions.

Lunar Tools...

Here is a write up of our July & August monthly meetings provided by members Andy Russell & Rob Kingdom. At our well-attended meeting on 24 July, which included a waif and stray from foreign shores (AKA Paul Reed), Rob gave a talk about a development on a well-known moon atlas upgrade and a new site he found with Lunar Reconnaissance Orbiter (LRO) and other satellites' high-resolution data. The first part of the talk was about the 20th anniversary update of Virtual Moon Atlas to 8.1. (v8 had a bug) This app is freely available here and it's necessary to download the program and its associated data files from the site. Rob went through some of the basics of what you could do with the program and the upgrades on a live version to show some of the new features he had found, but there are many more for you to explore! The front module has a few new features with access to new areas like notes (to enter your own observations) and calculations along with documentation and web resources. There is also an Atlun module which will give a profile over a drawn line (but be warned the associated data files are many and large!). We briefly explored some of the new textures, shown right emphasising the relief.

Hadley Rille "LRO WAC Big Shadows" Texture

"China Geographical Map" Texture

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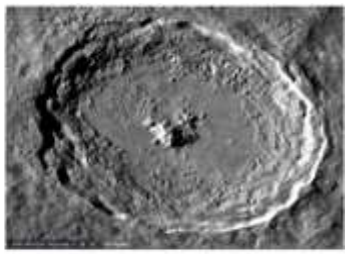
Full Globe

Getting Closer

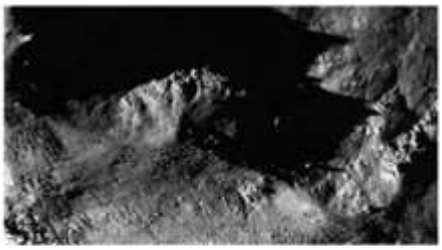


& Closer

There are also new Geographical maps (Rob has since found the legend in the help file!). There are also now more historical textures such as Elger's map of 1896 and Neison's 1881. Included are 12 new scientific layers covering anything from mineral type, slopes, and crustal thickness.

A number of new databases by subject such as impact craters, sinuous rilles and Lunar pits to name but a few are now part of the package. All in all if you are interested in the moon this is a must-have program. The second part of the talk focused on MOON LROC Quickmap (https://quickmap.lroc.asu.edu/) which is based on the Lunar Reconnaissance Orbital Camera data, but data from other satellites is available. Again this looks something like an indispensable tool. Rob gave a whistle-stop tour of the program using the crater Tycho as an example. It started out as a full globe and zoomed in by increments. There is much more to explore in this program but hopefully this gives an idea of the potential.

Tycho's central peak



Detail on the peak

Car size boulders on the peak!

Swift-Tuttle Showers Us Again..

The 28th August monthly meeting saw a good number of us gather, without any hope of using the scope (again). What a rubbish summer this has been!! Brian Davies opened the meeting and Allan Eccles, Dave Kitching and Chris Hannard talked us through the images they'd managed to take despite the clouds. Andy Russell then gave a very interesting update on the Perseids meteor shower. Andy initially, with Bob, monitor meteor activity using the GRAVES radar facility in Dijon, France and pick up the reflections of the ionised meteor trails using a 6 element loop-fed Yagi antenna with amplifier, utilising a raspberry Pi and a software defined radio unit (SDR) running "Echos" software. This is the first year we have had relatively full monitoring data over the Perseid meteor shower and we were all eager to see the results.

The Perseids were active between 17 July and 24 August this year and the shower peaked during 12-13 August. This is one of the highlights for many meteor hunters due to its zenithal hourly rate of about 100 with bright meteors, caused by the Earth colliding into the debris left behind by comet 109P/Swift-Tuttle in July and August every year. However visual observations are restricted to hours of darkness and require clear skies unlike the radio antenna that can monitor 24/7, and Andy could report we had captured thousands of traces from the initial data collected.

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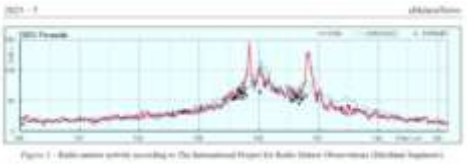
At the time of the meeting Andy had only just collated some of the data so we were getting a first glimpse and were shown screen captures one after the other of bright trails. We will look forward to a more in-depth analysis as time allows! Here are a few screenshots showing various meteor echoes. Click here for detailed screenshots of some of the action. As Andy explains, the signal from the SDR is sampled in the time-domain, as a quadrature signal consisting of the real and imaginary parts. This is converted into the Power Spectral Density in the frequency domain using a Fast Fourier Transform (FFT) and the resulting instantaneous power at each frequency is plotted as the plotted (white) on the bottom of the screen. The graph along the side shows both the average power (cyan) and peak power (red), calculated by adding up the individual powers, and plotting them over time. We use the difference between these to trigger the capture of events, and classify the meteors according to their duration. Finally the blue coloured waterfall plot is the instantaneous power plotted over time on a rolling display.

One of the interesting observations Andy wanted to view was the three separate peaks in the detections (shown right) that other observers have seen. See September issue of eMeteorNews online | Meteor News for further information. Brian wrapped up the evening with a roundup of interesting photos, articles on the web and a few photos of the night sky from his recent holiday in Anglesey using nothing more than a camera phone.



Unusual Perseid activity in 2023 (Paul Roggemans)

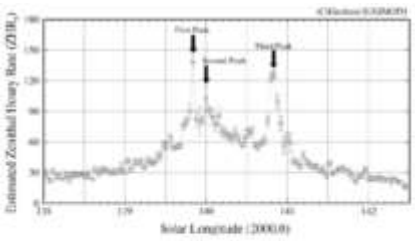
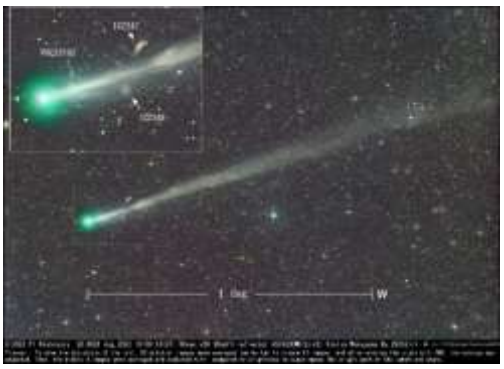


Figure 1 – Estimated ZHR using 39 datasets worldwide.

(Perseids 2023 by worldwide radio meteor observations Hirofumi Sugimoto1 and Hiroshi Ogawa2)

A new comet on the block

We were talking in our August meeting about the arrival of C/2023 P1 Nishimura which apparently in the September issue of eMeteorNews online | Meteor News in the second paper by John Greaves has a remarkable similarity of the orbit of the σ Hydrid meteor shower. An examination of a large number of archival meteor orbits have revealed that C/2023 P1 Nishimura is either the parent comet for the σ Hydrid meteor shower or is at least strongly associated with an unknown parent comet that it has possibly detached from. There is a slight offset in Solar Longitude and radiant position relative to the usual published values, between meteor orbits and the comet orbit which may or may not be due to dispersion of meteoroids since the comet's last apparition roughly half a millennium ago.



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Teasers of the year

Will comet Nishimura, due to arrive 12th Sept, live up to the hype in the coming week ? & Are we seeing the beginnings of another race to the moon ? Russian attempts at a South pole lunar lander failed, India has landed a rover on the Moon's south pole, Japan just launched a moon lander shot – rocket H-IIA and SpaceX have sent the 7th crew to the ISS. Watch this space and show us your pictures of comet Nishimura.

Picture of the month

To validate that our Radio observations of the Perseid meteors were real, our Spanish member Paul Read, unhindered by cloud, obtained the following composite image of the Perseids taken over two nights featuring the beautiful Ermita de Santa Anna in the foreground.

Finally, it is with deep sorrow that we announce the passing of David Lidster pictured below which occurred recently after a short illness. He will be remembered for his enthusiasm, wit and laughter he brought to the club in the early years of the club's formation. Friends and family are invited to the service at Haltemprice Crematorium on 15th Sept at 12:30pm.
RIP Dave, see you on the other side.