
Journal

of the

Nottingham Astronomical Society

September 2022



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Thursday, September 1st

**Nottingham Emmanuel School
Gresham Park Road,
West Bridgford,
Nottingham, NG2 7YF**

7:45pm (doors open at 7:15pm)

This evening we welcome

Dr Steve Barrett

who will be speaking on

The End of Everything

**The fate of the Earth, the Sun,
the galaxy ... and the Universe**

The Nottingham Astronomical Society: E - SERVICES

Whether or not you are a NAS member, you can keep up to date with details of the Society's meetings and other events by visiting the NAS website: www.nottinghamastro.org.uk

NAS on Facebook

You are welcome to connect with other members and friends of the NAS on Facebook by going to: <http://www.facebook.com/nas.org.uk>

NAS on Twitter

The Society has a Twitter account at <https://twitter.com/NottinghamAstro>

NAS Journal e-mailing list

To register for your monthly e-mailed link to the NAS Journal, and a copy of our SkyNotes, just e-mail secretary@nottinghamastro.org.uk

You don't have to be a Society member to take advantage of this service.

If you happen to change your email address, please remember to inform the Society by emailing us at treasurer@nottinghamastro.org.uk

Chairman's Message, September 2022

Hello everyone,

Well, with September fast approaching, it seems the days of summer are coming to an end. However for those astronomically minded, this is balanced by the earlier nights and the chances to see more. We had some great meetings over the summer: a fine **barbecue** where we all met up and had drinks, food and good conversations; then a **Perseids evening**, where I saw one out of the corner of my eye, but others did much better. The highlights of that evening were some fabulous views of Saturn and Jupiter despite them being low down in the sky.

We start our program again in earnest, starting with someone who has been a few times before and has always given great talks. Steve Barrett will be talking about the end of everything, how the Earth, the Sun, the galaxy and the universe will come to an end. Perhaps slightly depressing, but take heart that these are all a long way off.

Anyway, hope to see you all there at the meeting, and at the observing evenings we hope to have going forwards.

Best wishes to everyone.

Julian,
NAS Chair

The Mystery of Globular Clusters

At the Plumtree meeting in August, there was some discussion of globular clusters and their curious history. Fred Hopper recommends this video by Prof Mike Merrifield, which deals with the origin and survival of globular clusters:

<https://www.youtube.com/watch?v=D4NAE5-qo-8>



The globular cluster Messier 13 imaged by the Editor on 19th August
(13 min at f/10, ISO 800)

Sky Notes

September 2022

Compiled by Roy Gretton

All times given below are in British Summer Time



The **Southward Equinox** (Autumnal Equinox in the Northern Hemisphere) occurs just after midnight on September 23rd.

PHASES OF THE MOON

<i>Phase</i>	<i>Date</i>
First Quarter	September 3 rd
Full Moon	September 10 th
Last Quarter	September 17 th
New Moon	September 25 th

This month the Moon is closest to Earth on the 7th, and furthest on the 19th.

THE PLANETS

Mercury is unobservable this month. It passes through inferior conjunction on September 23rd.

Venus, which has lurked low down in the morning sky since almost the beginning of the year, will this month be disappearing into the pre-dawn glow.

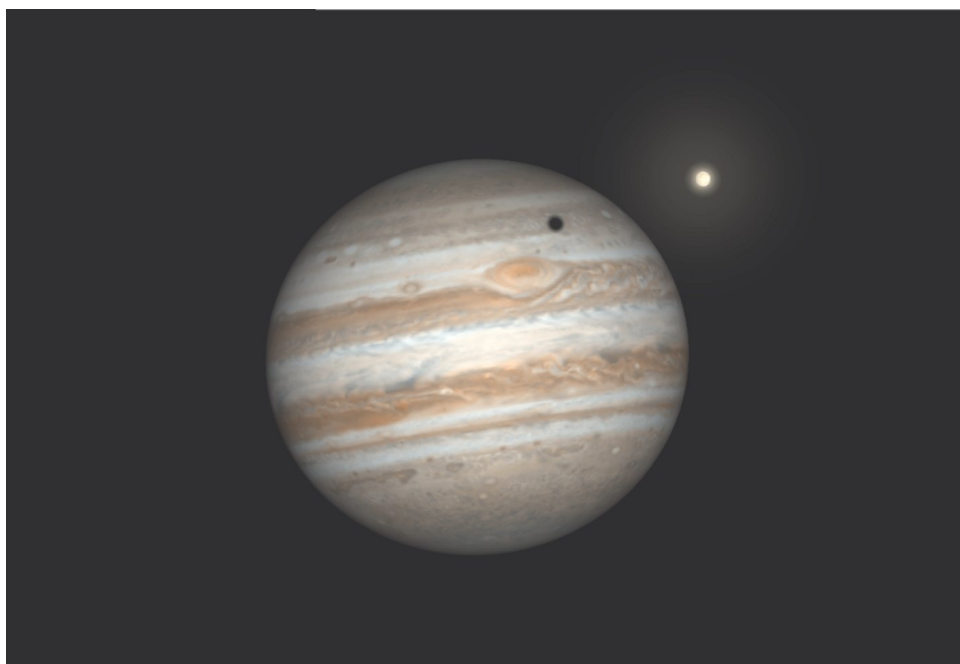
Mars will be rising just before 11pm at the beginning of September, and at about 9:30pm by the close of the month. In the first week of September it will be passing to the north of the Hyades cluster, with the Bull's Eye (also orange) nearby. During the month its angular diameter increases from 10 arcseconds to 12 arcseconds, and its magnitude from -0.1 to -0.6. It will now be high in the sky by midnight, its declination having increased to north of +22 degrees.

Jupiter comes to opposition on September 26th. It will be rising at approximately 9 pm as the month begins, and at magnitude -2.9, apart from the Moon will be the dominating object in the evening sky by the end of the month, when it will be rising as the Sun sets.

Throughout the month it hovers close to the celestial equator, as it continues its retrograde motion in the constellation of Pisces.

The constant movements of the four brightest satellites are fascinating to observe. Interesting phenomena include: **eclipses** (when a satellite disappears as it enters Jupiter's shadow), **occultations** (when a satellite passes behind the body of the planet), **transits** (when a satellite passes in front of the planet) and **shadow transits** (when a satellite casts its shadow on to the visible surface of Jupiter). Of these, shadow transits are probably easiest to observe with a modest-sized telescope (say 100mm aperture or greater). Look for a dark spot crossing Jupiter's disk. A list of shadow transits visible in the evenings this month is given below.

September	Shadow transit of
2 nd	Io 21:10 to 23:24
9 th	Io starts 23:05
13 th	Ganymede 21:05 to midnight
18 th	Io 19:28 to 21:42
24 th	Europa 21:15 to 23:47
25 th	Io 21:23 to 23:37



Jupiter with Ganymede and its shadow at 21:45 on September 13th
(south at the top)

Saturn, in the constellation of Capricornus, will be due south at 00:50hr at the beginning of September, and at 22:45 by the close of the month. At these times it will be 21 degrees above our southern horizon.

Uranus, in the constellation of Aries, will be rising at 10 pm in early September.

Neptune, close to the border between Aquarius and Pisces, will be rising as the Sun sets in mid-September.

METEORS

A lesser-known shower, the **Epsilon Perseids**, come to maximum activity this year on September 9th, a matter of hours from the Full Moon; that is, under the least favourable conditions. They are much less prolific than their August cousins, with five events per hour expected under ideal circumstances.

DIARY DATES 2022

Monthly Meetings of the Nottingham Astronomical Society

**1. Meetings at
Nottingham Emmanuel School
Gresham Park Road,
West Bridgford,
Nottingham, NG2 7YF**

Held on the **FIRST Thursday** of each month except **August**
Doors open at 7:15pm for 7:45pm start.

*These events are normally centred around a talk by a visiting speaker,
except Quiz Nights, etc, when NAS members provide the activities.
Normally we have a **Helpdesk** open at each meeting.*

Date	Topic	Speaker
September 1 st	The End of Everything The fate of the Earth, the Sun, the galaxy ... and the Universe	Dr Steve Barrett
October 6 th	The Cosmic Web	Prof Alfonso Aragon-Salamanca
November 3 rd	Annual General Meeting followed by cheese, wine and cake	
December 1 st	(To be announced)	

2. Social and Practical Astronomy Meetings at the Burnside Memorial Hall, Plumtree

Church Hill, Plumtree, Nottingham, NG12 5ND

Held on the **THIRD Thursday** of each month from **7:30pm**

*These meetings are of a more informal nature, providing opportunity for
members and guests to share their hobby over a cup of tea or coffee,
as well as listening to a short talk or discussion*

The next meeting will be on 15th September

Social and Practical Astronomy, Plumtree, July 2022

At the July Plumtree meeting Julian spoke about his recent trip to Spain for a conference held in Miraflores de la Sierra. We were shown lots of photographs of the beautiful scenery, and the social gatherings at the meeting, and Julian explained the purpose of some of the workshops he attended. It looked like a very productive and enjoyable time away.

Leigh and Andrew Green then gave us an update on the James Webb Space Telescope. Andrew (upper image) spoke about the mission project which has been in the pipeline for many years, and Leigh (image right) picked out some of the early observations which the Project Team have released and described what these show and compared some to our previous best images of these targets. There was some lively discussion about the project and theories on how it will change our understanding of the Universe.



Thanks to **Julian, Leigh and Andrew**

Social and Practical Astronomy, Plumtree, August 2022

I had planned to hold the August Plumtree meeting at the Observatory, but the weather forecast looked wet and windy, so we held the meeting in Plumtree.

Roy (right) gave us a preview of the Sky Notes for September 2022, and talked us through some of the objects we are able to observe in September. Roy focussed on Jupiter and talked about transits of the Jovian Moons. With larger telescopes, it is possible to see through an eyepiece a shadow of a Jovian moon projected onto the illuminated disc of Jupiter. This is often more easily seen



when undertaking fast frame rate astrophotography. The moons can also reflect sunlight and appear to be illuminated and whilst they can't compete with the bright disc of the planet itself, as they appear to either emerge from or vanish into the gas giant, a bleb can be seen or imaged on the limb of Jupiter.

Roy also showed us two images he had taken through his new C11 as part of his project to align all of his equipment and experiment with exposure settings and the like. The first was a lovely image of M13, and the other was of the Dumbbell Nebula. We look forward to seeing many more images from Roy over the autumn and winter.

James continued the theme of thinking about the September sky and using the free software package [Stellarium](#) showed some of the prominent constellations in the southern sky as well as looking at the transits of the Jovian moons which Roy had talked about. We also go to hear about Barnard's Star in the constellation of Ophiuchus.

Again we had some interesting discussions and questions.

Chris had made a chocolate and orange cake which went down very well, and the newly re-opened NAS Library was looked after by Richard and several books lent out on loan. Andrew Green is the new NAS Librarian and the collection of books, DVDs and other items are going to be left at Plumtree on the NAS Library Trolley. Please contact Andrew should you have any questions about the NAS Library.



Thanks to **Roy** and **James** and **Chris** and everyone who contributed.

Dave Mattison who many will remember has recently donated some books to NAS which we have put into the NAS Library. Dave has been busy of late but hoping to come back to NAS in the autumn and we look forward to seeing him, and we are very grateful for these books. If you wish to borrow any of these, please speak to Andrew our Librarian.



In the last issue of the NAS Journal we talked about the BAA Meeting held in Nottingham in June 2022. In that report, I mistakenly said the last time the BAA was in Nottingham was 2004. Actually the last time the BAA held a meeting here was 2010, see below.

David Arditti, President of the BAA, mentioned NAS and our observatory in his regular *From the President* column in the BAA Journal. I have been given permission to reproduce that page from the BAA Journal here; see over. Journal of the British Astronomical Association 2022 August Vol 132 No. 4.

 **Are you new to Astronomy?** 

The BAA "Back to Basics" Workshop is for YOU!

Sat 30th January 2010
University of Nottingham NG7 2RD

The **British Astronomical Association** has designed a programme of talks and practical sessions to help you learn basic techniques and develop your interest to its full potential. Experienced people will be on hand to answer your questions.

The cost of this event is £13.50 and £11 for under 16's & BAA members, including all refreshments and a buffet lunch (vegetarian option available).

The day starts at 9:30 with registration and is due to finish at 17: 35.

We start with a number of short lectures on how to observe the moon, sun, planets, double stars and what equipment etc you need to get started. After lunch there will be a number of in-depth question and answer sessions with some practical work on each of the subjects. If the weather is fine there will be an observing session to view the sun and a further observing session with telescopes at the end of the day, for anyone wishing to stay on.

Our Hosts: - The Nottingham Astronomical Society -

founded in 1946, the membership now exceeds 50.

Meetings are held on the 1st Thursday of each month (except August) at the British Geological Survey, Nicker Hill, Keyworth, Notts. NG12 5GG.

Doors open at 7:30 for 8pm start and visitors are always welcome.

The society encourages active observing and operates an observatory near Cotgrave with a 24" Newtonian Telescope.

Bookings with remittance should be sent no later than 18th January 2010 to:-

The British Astronomical Association, Burlington House, Piccadilly, London, W1J 0DU

The booking form, with further information, can be downloaded from the **NAS Website** at:-
<http://beehive.thisisnottingham.co.uk/nottinghamastro>
(or simply type - **Nottingham Astronomical Society** into Google).

Or contact the **BAA Office** at the address above or Tel: - **020 7734 4145**



From the President

David Arditti



If you receive the printed *Journal*, you will have noticed the ballot paper and candidate biographies that arrived with this issue. If you are a member with whom we communicate by e-mail, you will have received an invitation to complete the ballot by the alternative online method.

This year there are fewer candidates than there are places to be filled. I ask you to vote, however, to show membership participation in the governance process. The Council have considered changing the by-laws to not require an election in years where the number of candidates equals, or is less than, the number of positions to be filled. Such a change could happen in future if sanctioned by a Special General Meeting of members. In the meantime, bear in mind that any member can stand for any of the positions listed on the ballot paper, if they can get two other members to nominate them. We have (occasionally) had contested elections for officer positions (including President). But I would advise any member wanting to get involved in the running of the Association to stand for an ordinary place on Council first, to gain experience of how it operates.

Introducing the Cicely Botley Prize

Cicely M. Botley (1902–1992) was a prolific contributor to this *Journal* and a much-loved figure in the Association. Her obituary here (by Patrick Moore) was followed by this note:

The Council has decided to award a book prize, to be known as the Cicely Botley Prize. This award will be made from time to time to a person who is considered to have made the best contribution to one of the Association's publications in the period under review. All sorts of contributions (e.g., articles, papers, letters, reviews) will be eligible. Further details will be published in due course.

They never were (until now!), and the prize has never been awarded. Following research on Miss Botley's life by Martin Mobberley that brought this fact to light, Council reconsidered this, and charged me with implementing this 30-year-old decision.

We have slightly modernised the terms of the award, to make eligible any contribution to the Association's publications, including video and online content. You can now nominate someone to receive the Cicely Botley Prize (as well as the

Sir Patrick Moore Prize). See p.211 for details. Of the six previously existing awards of the Association, only one was named after a woman, so I think it is good that we now have another.

The BAA visits Nottingham

Our one-day Summer Meeting was held this year on Jun 25, at the University of Nottingham. We had no fewer than four talks from leading professional researchers on subjects including cosmology, planetary formation, and life in the Universe; we heard about the history and current activities of Nottingham Astronomical Society; and we had talks from two BAA Directors on the work of their Sections. The outstanding success of this day was down to the excellent organisation by our Meetings Secretary, Hazel Collett, and the committee of Nottingham AS.

A 'fly in the ointment' was the occurrence of a national train strike that day, which probably prevented some people from attending, and meant that I needed to stay an extra day in Nottingham. However, this 'fly' was turned into something more fortuitous, as the Nottingham AS committee invited me to visit their observatory on the Sunday, before I returned home. It is always interesting seeing these major projects by local societies, involving hard work by many people over many years. They can create facilities of wide community benefit, as well as for the enjoyment of members.

The Nottingham AS observatory, on a hill-top at Cotgrave, east of the city, is an excellent dark-sky site. Established in the 1980s, until 2021 it housed a 24-inch Newtonian telescope, but this was receiving little use. In a major society project conducted during the lockdown it was replaced by a more modern system, consisting of a Celestron 14-inch SCT plus a Sky-Watcher 80mm ED refractor, both on a Sky-Watcher EQ8 GoTo mount. Both night and day-time observations are now possible, far more members than before are enjoying the observatory facilities, and visits from youth groups have been accommodated.

The facilities are still being improved, with ongoing

▲ The President with committee members of Nottingham AS in their observatory. Left to right: Dr David Arditti, Mike Provost, Chris Sneddon, Leigh Blake, Dr Julian Onions, Richard Severn and James Dawson. (Chris Jackson)

Left: A solargraph taken using a pinhole camera, showing the changing path of the Sun above the Nottingham AS observatory over six months (2021 Dec 21 to 2022 Jun 24). (James Dawson)

work to motorise the dome and provide a warm room (using a shipping container). I was impressed to see how everything on the site is powered by a combination of solar and wind generation, as it has no mains electricity. This includes the kettle for making the tea! The society made me very much at home there.

Sir Patrick Moore Prize for Andrew Robertson

It also gave me great pleasure at the start of the Nottingham meeting to present to Andrew Robertson his Sir Patrick Moore Prize certificate (awarded last October).

Andrew received the Prize for 'the encouragement of a public interest in astronomy'. His proposers, Dr Steve Hubbard and Owen Brazell, attested how Andrew has organised and led countless outreach sessions within local societies as well as at star parties, and how his contribution to the founding and continuation of the star parties at Kelling Heath and Haw Wood has been pivotal. He has given many talks to societies and other groups, including the BAA Deep Sky Section, and served as chair of Lough-ton AS, and on the committees of the Webb Deep-Sky Society and several other local organisations. They nominated him for his 'lifelong and overwhelming enthusiasm for, and knowledge of, amateur astronomy, and for his enduring desire to communicate it to everyone who wants to hear'.

New postal address

The postal address of the Association has changed, as shown on the inside covers of this *Journal*. There is also a new registered office address – the legally required location at which the company documents may be inspected – and it is different to that for post. All postal correspondence with the Association should now be sent to PO Box 702, Tonbridge TN9 9TX. 📧



The President presents Andrew Robertson with his Sir Patrick Moore Prize certificate. (James Dawson)

An Evening with the Perseids



On the evening of Friday 12th August we opened the Observatory. It was a lovely warm evening with a clear sky. James gave an interactive [and slightly convoluted] talk about the Perseid Meteor Shower (image above) in the open air which went down nearly as well as the Pimm's.

After the talk, Richard got the C14 on the planet Saturn which although very low to the horizon, put on a spectacular display for us, and everyone who looked at the gas giant was mesmerised. Richard also subsequently showed people the Moon, and Jupiter.

Outside of the observatory people sat in garden chairs and looked up for passing meteors. We saw a good number, but none that were amazingly bright as they were being bleached out by the moonlight of a nearly full moon.

Some had brought along telescopes and binoculars and cameras, and fun was had by all. There is something very peaceful and relaxing about being under the night sky in summer when it is warm, and whilst there is more to see in the middle of winter, it is also often perishingly cold!

James Dawson

Observatory Director

helpdesk@nottinghamastro.org.uk

METEOR OBSERVING

by Graham Winstanley

As a teenager I became a very keen meteor observer and spent many nights in our small back garden in Liverpool watching for meteor showers. I completed observing records and sent them off to the Junior Astronomical Society (now the SPA) and the British Astronomical Association. I was also lucky enough to see some very impressive fireballs.

Today the visual observing of meteors is just for the joy of seeing them streak across the sky, and record keeping has been superseded by automated digital video cameras connected to a computer.

A few years ago I set up my own using a ZWO ASI120MM camera housed in a weatherproof enclosure with optical acrylic dome. It uses the meteor lens provided with the camera which has a field of view of about 150 degrees. This is not automated but using Sharpcap images of 8 second exposure are saved to a WIN7 laptop inside my observatory. I have to scan through the captures manually to look for meteors captured. This has worked successfully and provided some fine images. I even have one of the fireball that dropped the Winchcombe meteorite. It was so bright that the result was more of a large blob than a trail (see it here on my BAA member album https://britastro.org/observations/observation.php?id=20210301_204002_7a297f1fa8112f90).

Since May this year I have been running a fully automated system purchased from UKMON, the UK Meteor Network. It is run by a Raspberry Pi computer which is the only part of the system you have to supply yourself. There is a great deal of help to get started and I had never used a Pi computer before. The UKMON videos are really easy to follow and without those I would have been struggling.

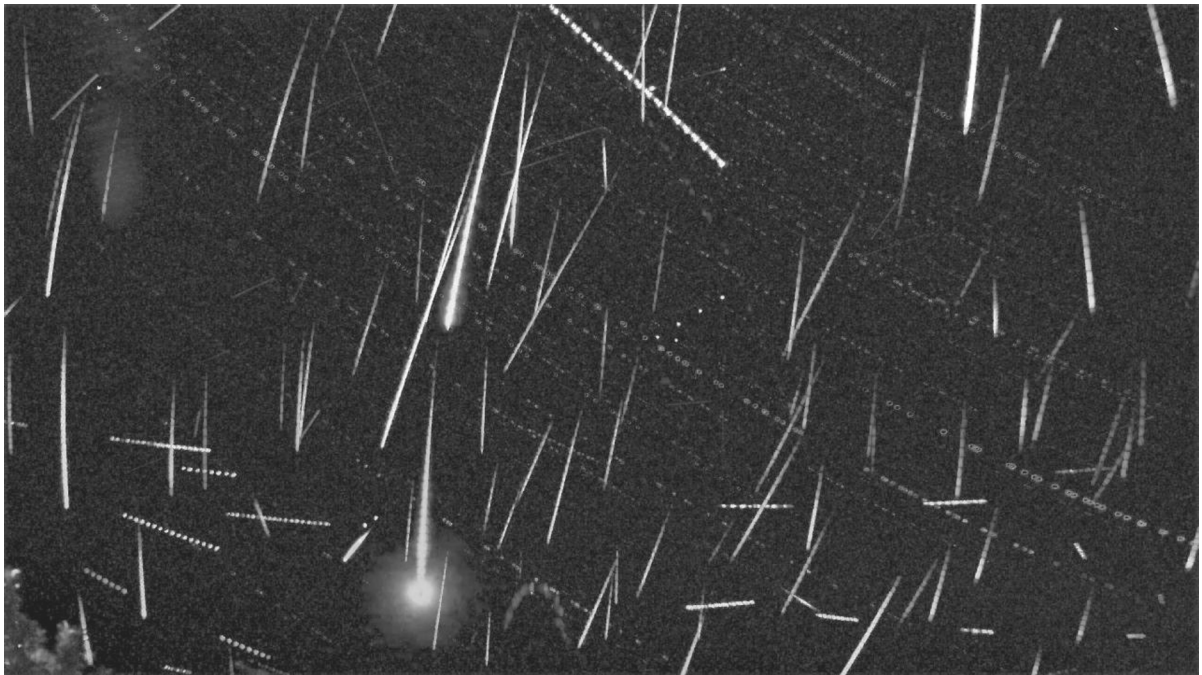
My captures are now appearing on the UKMON website live feed and when seen by other stations are being analysed for their orbit and path through the atmosphere. The daily reports include a chart showing the showers that each meteor belongs to. The recent Perseids have been well recorded with the best night showing a total of 69 shower members plus sporadics and a few minor shower members. Not bad for a year when the Perseid maximum was plagued by a full moon. My camera points south west so the moon was actually in the field of view for a large part of the night.

It runs 24/7 and the Pi turns it on during twilight and off again in the morning. The captures are uploaded to UKMON and Global Meteor Network each morning for processing and the data is analysed and the results of the night are saved to the Pi. Connection to the Pi is from any other computer using Anydesk or VNC software, but you can also connect a screen and keyboard.

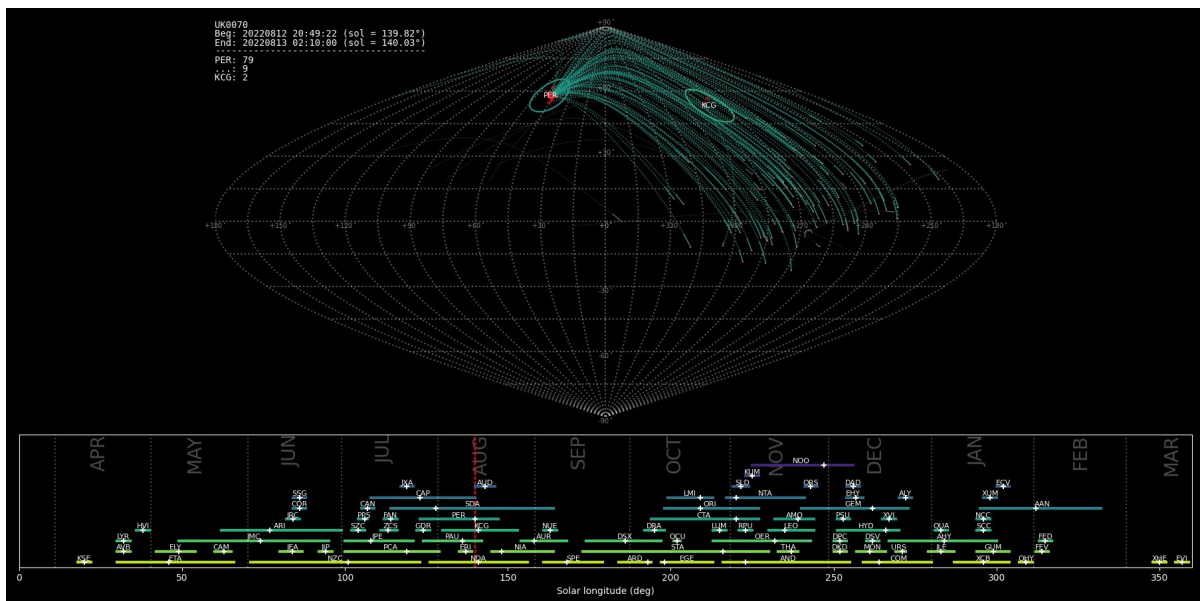
The daily output includes a video of the full nights imaging that lasts only a minute or so which is useful to see what the sky conditions were like. The most interesting is probably the stack, showing every detection during the night on one image. The software is quite good at picking out the meteors but there are the inevitable false detections from satellites or aircraft. I am not yet fully connected to the Global Meteor Network but that is in progress and should be ready soon. I look forward to my data being a contribution finding the next UK meteorite fall. For more information see the websites of UKMON and GMN.

See images below...





Stack of 90 meteors



Radiants

The Iris Nebula

I imaged NGC 7023, also known as the Iris Nebula and Caldwell 4, in the constellation of Cepheus, on 5th August 2022. Despite only 2 hours exposure in my light polluted back garden and not yet reaching astronomical darkness, I was able to capture this image with a ZWO ASI533MC Pro camera attached to an ED80 telescope. Even with the short exposure, the dark dust in the nebula becomes visible. This target deserves more integration time to pull out the fine detail and I hope to return to this later in the year.



Leigh Blake

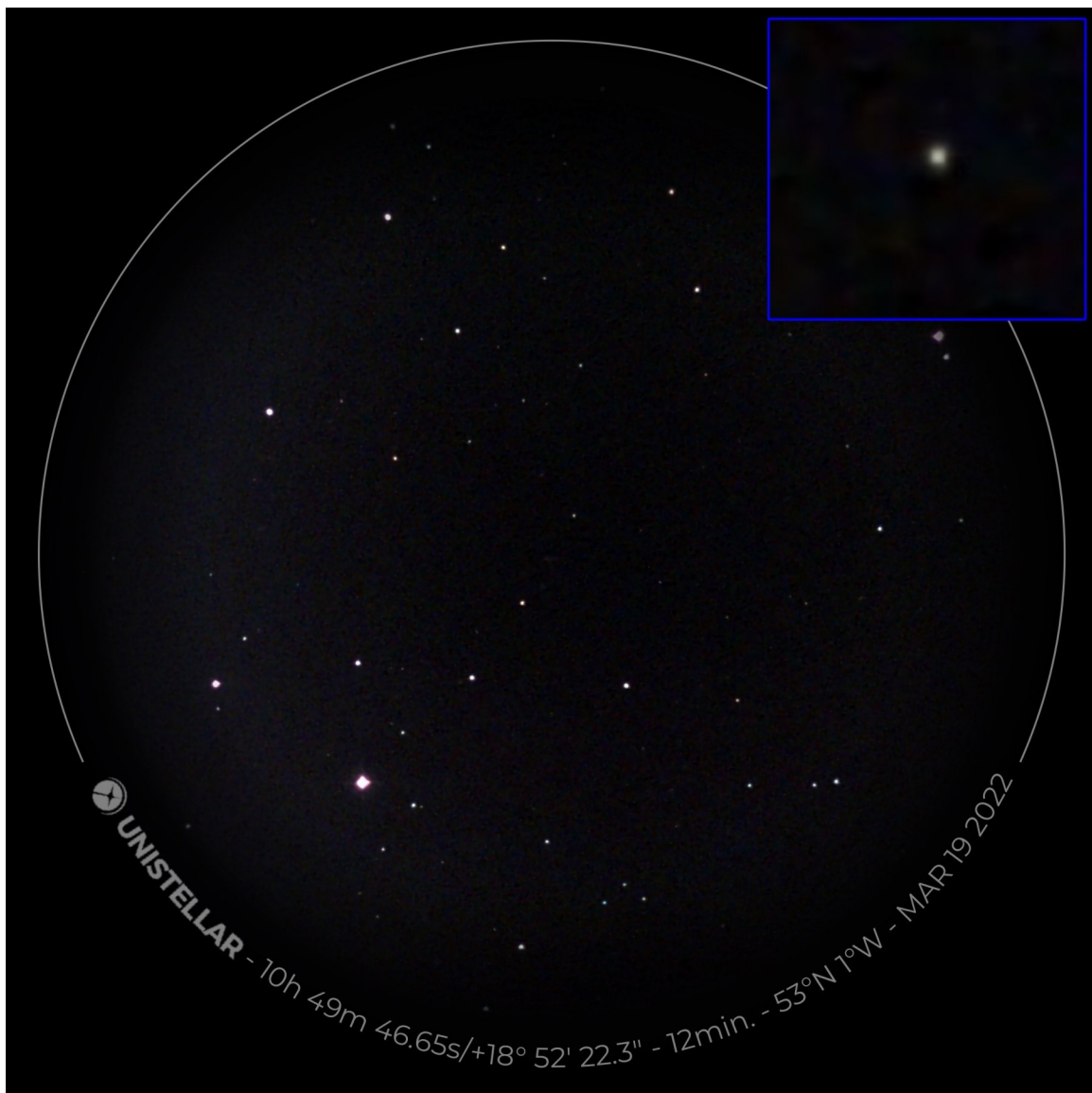
James Webb Space Telescope - Citizen Science

I observed the James Webb Space Telescope as it approached it's final destination Lagrange Point 2 with my Unistellar eVscope on the 19th March 2022 in Enhanced Vision (12 mins) and Scientific mode (40 mins).

Named as a contributor in the Unistellar paper (page 1) "Citizen Science Astronomy with a Network of Small Telescopes: The Launch and Deployment of JWST" submitted to SPIE (Society of Photo-Optical Instrumentation Engineers).

My UK data is specifically mentioned in the Global light curve variation diagram & section too (page 8).

NB. The complete paper can be viewed at <https://arxiv.org/abs/2207.04337> and download PDF



Citizen Science Astronomy with a Network of Small Telescope: The Launch and Deployment of JWST

Lambert R. A.^a, Marchis, F.^{a,b,*}, Asencio, J.^b, Blaclard, G.^b, Sgro, L.A.^a, Giorgini, J.D.^c, Plavchan, P.^d, White, T.^c, Verveen, A.^c, Goto, T.^c, Kuossari, P.^c, Nagendra, S.^c, Loose, M.A.^c, Will, S.^c, Sibbersen, K.^c, Pickering, J.W.^c, Randolph, J.^c, Fukui, K.^c, Huet, P.^c, Guillet, B.^c, Clerget, O.^c, Stahl, S.^c, Yoblonsky, N.^c, Lauvernier, M.^c, Matsumura, T.^c, Yamato, M.^c, Laugier, J.M.^c, Brodt-Vilain, O.^c, Espudo, A.^c, Kukita, R.^c, Iida, S.^c, Kardel, S.^c, Green, D.^c, Tikkanen, P.^c, Douvas, A.^c, Billiani, M.^c, Knight, G.^c, Ryno, M.^c, Simard, G.^c, Knight, R.^c, Primm, M.^c, Wildhagen, B.^c, Poncet, J.^c, Frachon, T.^c, Shimizu, M.^c, Jackson, A.^c, Parker, B.^c, Redfern, G.^c, Nikiforov, P.^c, Friday, E.^c, Lincoln, K.^c, Sweitzer, J.^c, Mitsuoka, R.^c, Cabral, K.^c, Katterfeld, A.^c, **Fairfax, M.^c**

^aSETI Institute, 339 Bernardo Ave, Suite 200, Mountain View, CA, USA 94043; ^bUnistellar, 5 allée Marcel Leclerc, bâtiment B, 13008 Marseille, France; ^cSolar System Dynamics Group, Jet Propulsion Laboratory, California Institute of Technology, 4800 Oak Grove Drive, Pasadena, CA 91109, USA; ^dGeorge Mason University, 4400 University Drive Fairfax, VA, 22030, USA; ^eUnistellar Citizen Scientist, Earth.

ABSTRACT

We present a coordinated campaign of observations to monitor the brightness of the James Webb Space Telescope (JWST) as it travels toward the second Earth-Sun Lagrange point and unfolds using the network of Unistellar digital telescopes. Those observations collected by citizen astronomers across the world allowed us to detect specific phases such as the separation from the booster, glare due to a change of orientation after a maneuver, the unfurling of the sunshield, and deployment of the primary mirror. After deployment of the sunshield on January 6 2022, the 6-h lightcurve has a significant amplitude and shows small variations that we cannot explain. These variations could be due to the deployment of the primary mirror or some changes in orientation of the space telescope. This work illustrates the power of a worldwide array of small telescopes, operated by citizen astronomers, to conduct large scientific campaigns over a long timeframe. In the future, our network and others will continue to monitor JWST to detect potential degradations to the space environment by comparing the evolution of the lightcurve.

Keywords: JWST, telescope network, digital telescope, citizen science, new astronomy.

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3.3 Global Brightness Variation

Over the course of the campaign, the overall brightness of JWST appeared to vary based on its distance to the observer (from 0 to 0.01 AU) and the projected size of the space telescope. In Figure 7, we divide this variation into 4 major phases, depicted as yellow lines highlighting the overall trend in brightness.

1. Phase 1 is characterized by a sharp decrease in brightness as JWST drifted away from the Earth from 0 to ~430,000 km. During this time, the sunshield has not been deployed and the distance/projected size of the space telescope is the dominant factor in the drop of brightness. The orientation of the spacecraft has remained the same after the last MCC maneuver.
2. During phase 2, the sunshield begins deployment. During this time, the brightness increases due to the increased projected size and surface brightness from the reflective sunshield. Observations also show significantly more variation in the lightcurve, with for instance the first detections of peaked structure in the lightcurve on January 6 2022.
3. After the space telescope is fully unfurled, phase 3 begins. At this point the projected area is no longer increasing and JWST begins to dim once again as it travels to L_2 .
4. The final phase begins once JWST reaches its final destination, L_2 . The distance and projected size remain largely static ($V \sim 16.5$). The brightness of the space telescope varies slightly between observations but shows no global trend towards dimming or brightening. The last observation shown here was taken on March 19th from the UK by citizen scientist [Mark Fairfax](#).

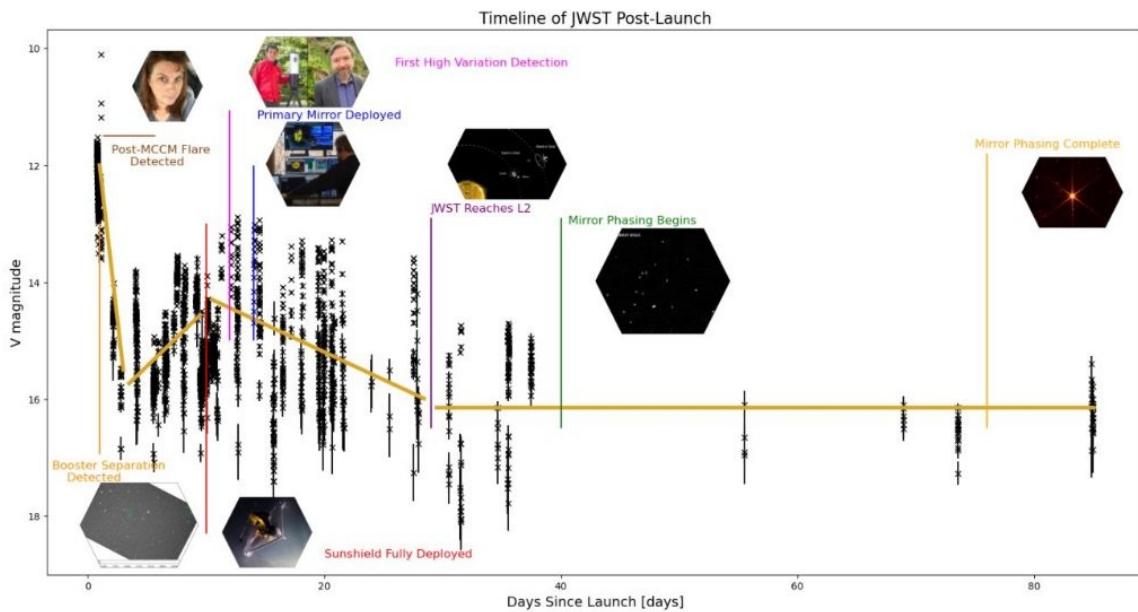


Figure 7. Global light curve variation showing the changes in brightness. Yellow lines indicate the overall trend in the brightness of JWST at various stages of its deployment.

Mark Fairfax

NAS Observatory opening on 15th July

We opened the observatory on the 15th July to observe the comet C/2017 K2 PANSTARRS. As it was still mid-summer, the sky was far too bright to view the comet with a telescope and eyepiece. Mark Fairfax and myself utilised live viewing on our camera enabled scopes to be able to see the comet passing close to Messier 10. I used my SkyWatcher ED80 scope and a ZWO ASI533 camera, with the ASI-Live software to produce a live stack of the images on screen. 60 second long exposures were added together to produce a reasonable image of the globular cluster and the comet. While not as good quality as a proper deep-sky acquisition, the screen showed a reasonable image of the sky after a few minutes and I was able to share the image with our visitors on a laptop screen.



Leigh Blake

Mark's account of the July 15th event

Using my Unistellar eVscope 1 in Enhanced Vision mode:

While Globular Cluster M10 and Comet C/2017 K2 (PanSTARRS) were getting cozy together unfortunately my eVscope field of view (~30 arcmin) was too constrained to catch them in the same image.

A bonus on the night was getting a rather pleasing image of M16 Eagle Nebula, considering it was rather low to the horizon.



Advertisements

FOR SALE

Atik 460EX Monochrome Cooled CCD, with original box and cables - £700

Starlight Express Lodestar X2 guide camera, with original case and cables - £200

More details and pictures available on request.

[Contact leigh@xanthic.co.uk](mailto:leigh@xanthic.co.uk)

FOR SALE

Set of four coloured 1.25-inch filters £25

Please contact Sam Boote
sam@boote.myzen.co.uk or at Society meetings

FOR SALE

Skywatcher Skymax 127 SynScan GoTo Maksutov-Cassegrain
computerised telescope

Basically brand new and unused but opened. Complete with original box and all packaging, all accessories, tripod, mount, instructions, etc. and is in perfect condition. A Lynx Astro heated dew shield also included (but this doesn't have a controller unit with it).

This package would cost well over £500 new but I'm happy to offer it to NAS members for **£300** (or near offer). The OTA is highly regarded and is an excellent planetary telescope. There is plenty of information available online if more details are required.

Please email brian@greenfieldworld.co.uk

Brian Greenfield

For Sale

Contact Mark Fairfax at fairf77@icloud.com

Celestron telescope accessories

Celestron deluxe tele-extender (#93643) **£50**

For eyepiece projection photography with your 5 to 14-inch Celestron SCT to take magnified images of the Solar System.

Celestron Neximage 10 Solar System Colour Imager (#93708) **£220**

Easy to use color camera, provides live video for quick focusing

Celestron 18774-CGL PowerTank 7, 12V -7Ah, Black **£75**

Mobile power station with spotlight

Nottingham Astronomical Society

Affiliated to the **British Astronomical Association**
Member of the **Federation of Astronomical Societies**
Supporters of the **Commission for Dark Skies**

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Meetings

Our formal meetings, often with an illustrated talk by a guest speaker, are held on the first Thursday of each month (except in August) at:

**Nottingham Emmanuel School
Gresham Park Road,
West Bridgford,
Nottingham, NG2 7YF**

Doors open 7:15pm

Meetings start 7:45pm

Meetings end 9:15 pm

These meetings are open to the public, and visitors are welcome to attend, subject to a charge of £3 per meeting for adults.

Annual subscriptions 2022

Full	£30
Joint rate for partners living at the same address	£45
Under-18s and full-time students	£5

Subscriptions become due on 1st January. Half-price subscription is charged if joining after 30th June (minimum subscription £5).

Please make cheques payable to:
Nottingham Astronomical Society.

If you would like more information about the **Nottingham Astronomical Society**, or would like to become a member, please contact the Secretary secretary@nottinghamastro.org.uk or speak to any NAS committee member at one of the regular monthly meetings.

The Nottingham Astronomical Society

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