OASI News

The newsletter of Orwell Astronomical Society (Ipswich)

The Flaming Star nebula

Photo by Stephen Olley

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Society Notices

Dear Members,

We use a Zoom Pro account for online meetings. If you would like to join in, please email Paul Whiting, treasurer@oasi.org.uk.

I would like to wish everybody clear skies, stay safe and I hope to see you soon.

Andy Gibbs, Chairman

Society Contact details

Email queries: info@oasi.org.uk

Facebook: Orwell Astronomical

Twitter: @OASIpswich

YouTube: https://www.youtube.com/channel/UCHgxe3QAeRVWf7vkjKkCl2Q

Members-only message board

https://groups.io/g/OASI

Observatory (meeting nights only)
07960 083714

Please send material for the OASI web site and newsletter e.g. observations, notices of events, general interest articles, to news@oasi.org.uk

The CLOSING date is the 15th day of the month

Access into the School Grounds and Observatory Tower

Orwell Park School have changed our access route to the observatory.

The new route will be as follows:-

- Enter through gate 2 (gate 1 being the main gate) and park inside as per the attached map.
- Enter the school through the double black doors as indicated on the map. A key fob will be required to open the door.
- Continue straight through the next set of double doors.
- Turn left at the end of the short corridor then immediately right.
- Pass through the single door and on your left you will find the staircase leading to the observatory.
- On no account must you deviate from this route.

When leaving the observatory use the same route but in reverse. Please keep noise to a minimum as there are staff quarters nearby.

Areas out of Bounds

- The staircase on the left through the first door is out of bounds.
- The staircase on the left through the second door is out of bounds.
- The double doors on the right just through the second doors is also out of bounds.

Any problems on the evening please phone the observatory number (07960 083714) on the back of your membership card.

Remember this is a school and straying into the main part of the school where the pupils reside would cause the society big problems and could see us losing the use of the observatory. Any member found to be anywhere other than the approved access route or the observatory area will face serious sanctions up to and including expulsion from OASI.

Please note that access time for all observatory member nights is after 20:15.

Articles for OASI News

News, pictures and articles for this newsletter are always welcome. Details above.

Please submit your articles in any of the following formats:–

Text:	txt, rtf, rtfd, doc, docx, odt, Pages, pdf
Spreadsheets:	xls, xlsx, OpenOffice/LibreOffice, Numbers
Images:	tiff, png, jpg
	Please send tables as separate files in one of the above formats.

If you don't feel up to writing a major article, perhaps you might write a short note for OASI News along the lines of "This month I have mostly been observing/constructing/mending/reading/etc."

The Newsletter archive is at www.oasi.org.uk/NL/NL_form.shtml

Authors, please note that your articles will be publicly available worldwide!

Reproducing articles from OASI News

If you plan to reproduce an article exactly as per OASI News then please contact the Editor – otherwise, as a matter of courtesy, please seek permission from and credit the original source/author. You may not reproduce articles for profit or other commercial purpose.

Committee 2023

Chairman	Andy Gibbs	Set overall agenda for OASI, Chair committee meetings, Press and publicity
Secretary	Roy Gooding	Outreach meetings (jointly with Chairman), observatory decoration
Treasurer	Paul Whiting FRAS	Finance, Supervision of applications for grants. Visits by outside groups, Observatory tours, Public appreciation of astronomy, Outreach activities
Committee	James Appleton	Committee meeting minutes, Web site
	Martin Cook	Membership, Tomline refractor maintenance & user testing
	Matt Leeks	Safety & security
	Peter Richards	Lecture meetings, Email distribution lists
	John Wainwright	Equipment curator
	Mike Whybray	Astronomy Workshops, Child protection officer, Orwell Park School Astronomy Club
	Andy Wilshere	Librarian
	Martin Richmond-Hardy	Newsletter, OASI @ Newbourne

Committee Meeting

The next Committee Meeting will be on Friday 26 May at 8:00pm via Zoom. All members welcome.

Welcome to new members

Andrea Hickey Christina Nunn Chris Barker

OASI and BAA Events

For the latest event details, please see www.oasi.org.uk/Events/Events.php

There's a Google Calendar on the OASI web site with the latest dates (and corrections!).

If you want to easily add OASI Events to your own computer/phone/tablet calendar application click this button on the website Events page (bottom right of the calendar) or use this address to access this calendar from other calendar applications:–

https://calendar.google.com/calendar/ical/1jhs9db71ncki4sojo7092vfvc%40group.calendar.google.com/public/basic.ics

For other astronomy news and astro pictures try our

Twitter feed https://twitter.com/OASIpswich

Facebook page https://www.facebook.com/pages/Orwell-Astronomical/158256464287623

Date, Time & Location	Contact	Event
Weekly, every Wednesday, from 20:15	Martin Cook, Roy Gooding	Observatory open
Friday 31 March St Augustine's Community Hub, Ipswich	Peter Richards lectures@oasi.org.uk	Lecture by Dr Nick Hewett "The Great Debate" Also via Zoom.
Monday 10 April Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI at Newbourne. Beginners welcome!
Friday 14th to Sunday 16th April	https://britastro.org/event/winchester2023	BAA Winchester Weekend
Thursday 20 April Zoom	Martin Cook membership@oasi.org.uk	3rd Thursday Zoom meeting
Monday 24 April Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI at Newbourne. Beginners welcome! Bill Barton FRAS: What's Up?
29 April 13:30–17:00 Gustave Tuck Lecture Theatre, University College London, Gower St, London WC1	https://www.popastro.com/main_spa1/meetings-and-events/forthcoming-meetings/	The Society for Popular Astronomy meeting. Main speaker is Prof Paola Pinilla (UCL-MSSL), on *Probing planet formation around other stars*. After a break, Robin Scagell will highlight the events coming up in the sky for the next three months, and then the director of SPA's Solar Section, John Chapman-Smith will talk about the section's observations of the Sun during the run-up to solar maximum in 2025.

Meetings via Zoom

To join, please first contact Paul Whiting, treasurer@oasi.org.uk – OASI members only. Be sure to install/update to the latest version of Zoom – there's no need to set up an account. Go to https://zoom.us/join and enter the meeting ID or personal link name. You will have received a link from the meeting organiser.

As well as for some lectures & talks, we meet via Zoom on the 3rd Thursday of every month at 8pm.

OASI @ Newbourne

Martin Richmond-Hardy
newbourne@oasi.org.uk

We meet at Newbourne Village Hall,
Mill Lane, IP12 4NP on the 2nd and 4th Mondays from 19:30.

Visitors are welcome but we do ask you to join the Society after two visits.

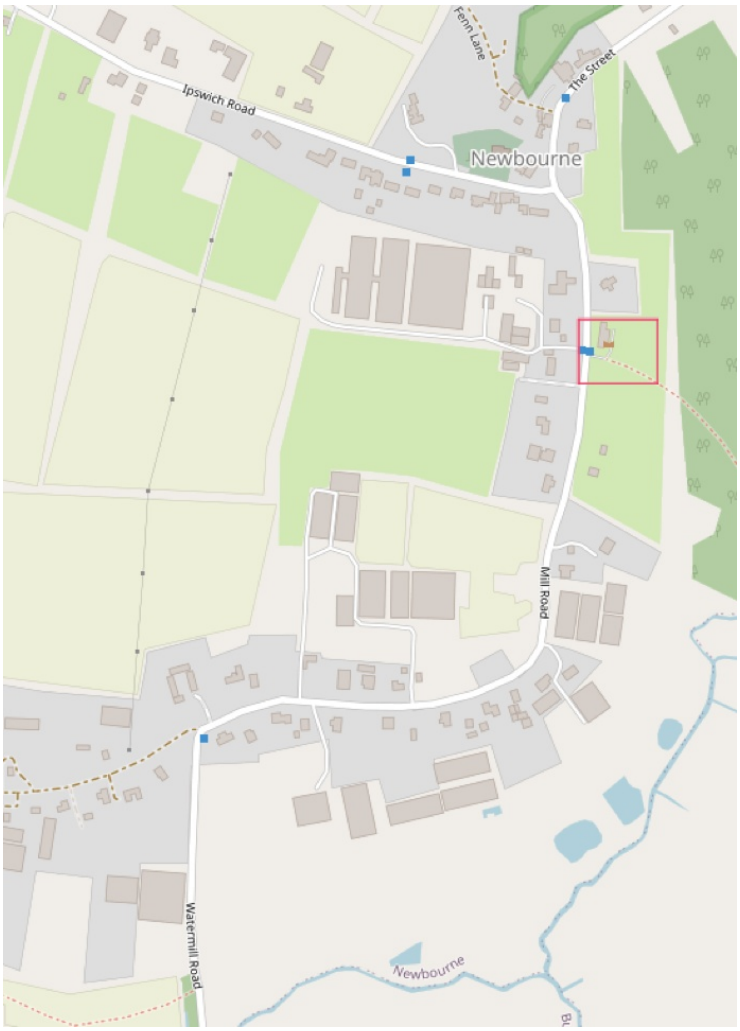
http://www.oasi.org.uk/OASI/Membership.php

Newbourne dates for 2023

April	10	24
May	1	22 note
June	12	26
July	10	24
August	14	28
September	11	25
October	9	23
November	13	27
December	11	

Note: The Parish Council requires the hall on 8 May (our usual date).

We open up for all meetings at 7:30pm. Astro News/Star Guide (A) at 7:45pm followed by any Talks (T), Workshops (W) and occasional Quiz (Q).



STOP PRESS!

Newbourne Village Hall now has wifi.

Stargazer's Guide

On the last meeting each month, at 19:45, Bill Barton FRAS will give a short presentation of what can be viewed in the following 4 weeks plus a reminder of OASI events. These will be available on our website.

Paul Whiting FRAS will give occasional Astro News briefings.

Astronomy Workshops/Informal talks

Contact Mike Whybray

Monday meetings start at 7:30pm. Workshops / Talks start at 8pm

If you are a new OASI member, or haven't been to one of these informal workshops before, they are a mixture of events of different characters including beginners talks, interactive workshops, films, etc., suitable for all.

Do you have a subject you could workshop/talk? You could do a short one, or share the effort with a partner. Drop Mike Whybray a line! workshops@oasi.org.uk

Lectures – via Zoom

Contact: Peter Richards lectures@oasi.org.uk

The start time for all talks will be 8pm and, as usual, the talks will usually be held on a Friday evening.
Contact Paul Whiting if you can't find the details.

Athaneum Astro Society

www.3a.org.uk/index.htm

Meetings (http://www.3a.org.uk/programme.htm) at Whepstead Community Centre, Bury Road, Whepstead, Bury St Edmunds, IP29 4TA http://www.3a.org.uk/contact.htm.

LYRA Lowestoft & Yarmouth Regional Astronomers

For events please see http://www.lyra-astro.co.uk/events/

DASH Astro

Darsham And Surrounding Hamlets http://dash-astro.co.uk

Meetings are normally held at New Darsham Village Hall and all DASH Astro observing sessions will take place at Westleton Common. ASOG observing sessions and locations may be arranged at the time of observation. Unless stated, all group meetings will take place from 7:30 pm. on Sundays.

Meetings https://www.dash-astro.co.uk/Events

BAA news & webinars

For full details of all meetings or cancellations, please go to https://britastro.org/events/future-events

14–16 April 2023	BAA Winchester Weekend
29 April 2023	SPA Meeting, Gustave Tuck Lecture Theatre, University College London, Gower St, London WC1
13 May 2023	BAA Spring Meeting – Cosmology: Galaxies and Stars, Cardiff
20 May 2023	Historical Section Meeting 2023, Birmingham and Midland Institute, Margaret St, Birmingham
7 June 2023	BAA Meeting and George Alcock Lecture, Institute of Physics, London
8 July 2023	Comet Section Meeting, National Maritime Museum, Greenwich.

The BAA Radio Astronomy Section

The BAA Radio Astronomy Section have been enjoying talks, seminars and tutorials via Zoom and these are available on the BAA YouTube channel
https://www.youtube.com/user/britishastronomical/playlists.

The Night Sky in April 2023

Martin RH

All event times are for the location of Orwell Park Observatory 52.0096°N, 1.2305°E.
Times are **BST** unless otherwise stated.

Sun, Moon and planets

Sources: http://heavens-above.com/PlanetSummary.asp http://heavens-above.com/moon.aspx

March 2023

Object	Date	Rise	Set	Mag.	Notes
Sun	1	06:31	19:28		
	30	05:28	20:18		
Moon	1	13:59	05:33		Full Moon 06 April 05:35 Last Quarter 13 April 10:11 Perigee 16 April 03:25 New Moon 20 April 05:13 First Quarter 27 April 22:20 Apogee 28 April 07:44
	30	14:08	04:10		
Mercury	1	06:54	20:51	-1.1	Maximum eastern elongation 11 April. Mercury will be at its greatest eastern elongation of 19.5 degrees from the Sun. This is the best time to view Mercury in 2023 since it will be at its highest point above the horizon in the evening sky, and the moon won't have risen yet.
	30	05:31	20:25	5.3	Perihelion 17 April
Venus	1	07:40	23:00	-3.9	
	30	07:15	00:16	-4	
Mars	1	10:01	03:02	1	
	30	09:25	02:03	1.3	
Jupiter	1	06:56	20:01	-1.9	Superior conjunction Apr-11
	30	05:14	18:46	-1.9	
Saturn	1	05:40	15:34	1	
	30	03:51	13:54	1	
Uranus	1	07:45	22:41	5.8	
	30	05:55	20:56	5.9	
Neptune	1	06:18	17:46	8	
	30	04:25	15:58	7.9	

Occultations during April 2023

https://iota-es.de/moon/grazing_descrx101.html and http://www.lunar-occultations.com/iota/bstar/bstar.htm

Observers are encouraged to download and install the Occult software program [Windows only] to generate predictions for their own particular site coordinates.

Meteor showers during April 2023

Source: BAA Handbooks 2022 & 2023 p26-27 and https://in-the-sky.org//newsindex.php?feed=meteors

https://earthsky.org/astronomy-essentials/earthskys-meteor-shower-guide/

Shower	Normal limits	Maximum	ZHR at Max	Notes
Lyrids	14–30 April	22-23 April	15	The Lyrids are known for uncommon surges that can sometimes bring the rate up to 100 per hour. Those rare outbursts aren't easy to predict, but they're one of the reasons the tantalizing Lyrids are worth checking out. The radiant for this shower is near the bright star Vega in the constellation Lyra. Very favourable.
η-Aquarids	Apr 19 – May 28	May 5–7	40	Fine southern shower but poorly seen from the UK.

See also https://www.rmg.co.uk/stories/topics/meteor-shower-guide

For radio observation, use reflections from Graves radar on 143.050MHz or the Brams transmitter in Belgium on 49.97MHz and UK GB3MBA on 50.408MHz https://www.ukmeteorbeacon.org/Home

See also https://www.popastro.com/main_spa1/meteor/radio-meteor-observing-2020/.

Comets

Source : https://heavens-above.com/Comets.aspx on 26 March.

Comet	Brightness	Date of last reported observation	Angular separation from Sun	Constellation
C/2022 E3 ZTF	8.5	2023-Mar-05	68º	Eridanus (close to Rigel mid April)
C/2017 K2 PANSTARRS	8.6	2023-Feb-28	62º	Eridanus (but below horizon in UK)

Visible ISS passes ≥15º max altitude for March 2023

Source: http://heavens-above.com/PassSummary.aspx?satid=25544

Times are **BST**.
Predictions are approximate (26 March) due to craft adjustments. Check the day before.

Date	Bright–ness	Start			Highest point			End		
	(mag)	Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Apr	-1.6	20:19:29	10°	W	20:22:00	20°	SW	20:24:30	10°	SSE
26 Apr	-1.8	04:47:47	10°	SSW	04:50:22	21°	SE	04:52:58	10°	E
27 Apr	-1.4	03:59:21	11°	S	04:01:03	14°	SE	04:02:57	10°	ESE
28 Apr	-2.8	04:44:34	10°	SW	04:47:40	37°	SSE	04:50:47	10°	E
29 Apr	-2.4	03:56:36	18°	SSW	03:58:10	26°	SSE	04:01:02	10°	E
30 Apr	-1.9	03:08:41	19°	SE	03:08:41	19°	SE	03:11:05	10°	E
30 Apr	-3.6	04:41:37	10°	WSW	04:44:54	59°	SSE	04:48:11	10°	E

Starlink passes

https://heavens-above.com/AllPassesFromLaunch.aspx

For a dynamic 3-D display, see https://heavens-above.com/StarLink.aspx

Bill Barton's Radio Broadcast

ICRFM (Ipswich Community Radio) 105.7 MHz at about 08:25 in the morning of the first Wednesday of each month. I aim to cover what there is to see in the sky and then a little bit on something topical. ICRFM is also available to listen to over the Internet and there is a listen again option on their website. http://www.icrfm.com

From the Interweb

The Winchcombe Fireball — that Lucky Survivor

https://arxiv.org/pdf/2303.12126.pdf

Galaxy changes classification as jet changes direction

https://ras.ac.uk/news-and-press/news/galaxy-changes-classification-jet-changes-direction

A team of international astronomers have discovered a galaxy that has changed classification due to unique activity within its core. The galaxy, named PBC J2333.9-2343, was previously classified as a radio galaxy, but the new research has revealed otherwise. The work is published in Monthly Notices of the Royal Astronomical Society.

A crucial building block of life exists on the asteroid Ryugu

Uracil, a component of RNA, was found in a sample collected by Japan's Hayabusa2 spacecraft.

https://www.sciencenews.org/article/building-block-life-asteroid-ryugu

Brightest gamma ray burst

ESA space telescopes have observed the brightest gamma-ray burst ever seen.

https://www.esa.int/Science_Exploration/Space_Science/Brightest_gamma-ray_burst_illuminates_our_galaxy_as_never_before

Catching Mercury by the tail

It's possible to capture this planet's glowing sodium tail without any filters or special equipment.

https://astronomy.com/magazine/stephen-omeara/2021/10/catching-mercury-by-the-tail

Astronomers witness the birth of a very distant cluster of galaxies from the early Universe

Using the Atacama Large Millimeter/submillimeter Array (ALMA), of which ESO is a partner, astronomers have discovered a large reservoir of hot gas in the still-forming galaxy cluster around the Spiderweb galaxy — the most distant detection of such hot gas yet.

https://www.eso.org/public/news/eso2304/

Light-bending gravity reveals one of the biggest black holes ever found

A team of astronomers have discovered one of the biggest black holes ever found, taking advantage of a phenomenon called gravitational lensing. The findings are published in Monthly Notices of the Royal Astronomical Society.

https://ras.ac.uk/news-and-press/news/light-bending-gravity-reveals-one-biggest-black-holes-ever-found

Gresham Astronomy Lectures in 2023

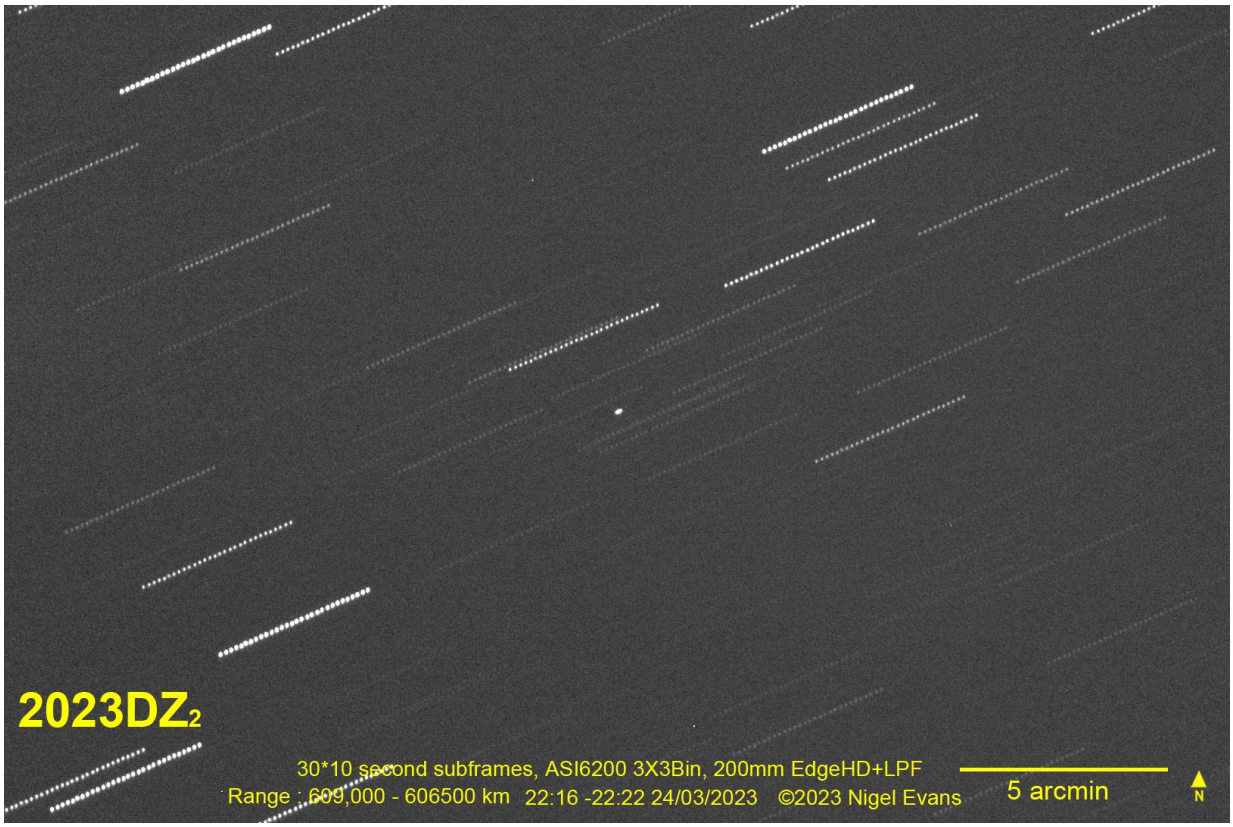
The End of the Universe

Asteroid

Nigel Evans

The recently discovered asteroid 2023DZ2, some 70m in diameter, recently gained attention because it might hit the Earth on Feb 14 2046. Thankfully this is no longer the case.

On a less dramatic note it would however pass very close to the Earth on 25 Mar 2023 at a distance of 175000km. It will not be visible from the UK at that time but was visible earlier on the night of 24 March. It was moving at an angular velocity of some 40 arcsecond per minute, requiring quite short exposures to arrest the motion.



The above image shows a series of images, stacked to follow the asteroid at a range of some 600,000km and a magnitude of 14. Even here the elongated shape is due to motion blur and is not due to its shape.

230324 2023 DZ2 NSE.mp4 shows a short video of the asteroid's motion amongst the stars, then following the asteroid. See https://oasi.org.uk/Obsvns/Obsvns.php

Ceres and M100

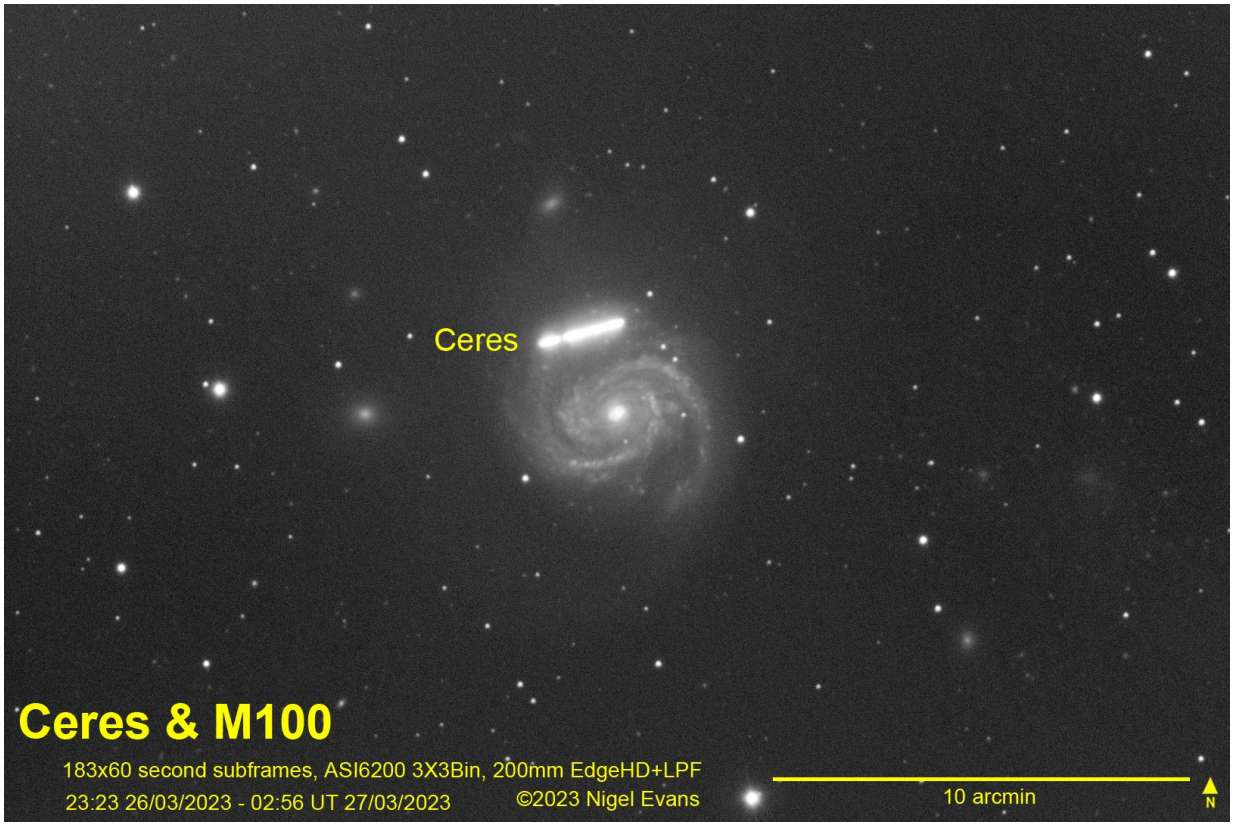
Nigel Evans

The popular mags highlighted that the largest dwarf planet Ceres would pass in front of a Messier object, M100, on the night of 26-27 March 2023, creating a photo opportunity.

Ceres does not move that quickly across the sky, about half an arcsecond per minute, so it would takes several hours to cross M100. At magnitude 7 it can't really be mistaken for a supernova which would be around mag 15 or so in M100 (but if you didn't know...)

There is a video of the passage of Ceres in front of M100. Early evening cloud delayed the start and occasionally cloud obscured the view during the crossing, hence the black gaps (+ a meridian flip). The video will soon be available at https://oasi.org.uk/Obsvns/Obsvns.php].

The following image is a composite still.



Astrophotography

Stephen Olley

Some recent images captured from my back garden in Bixley Farm : Flaming Star Nebula, Horsehead/Flame Nebula, North American Nebula, Andromeda Galaxy and the Rosette Nebula.

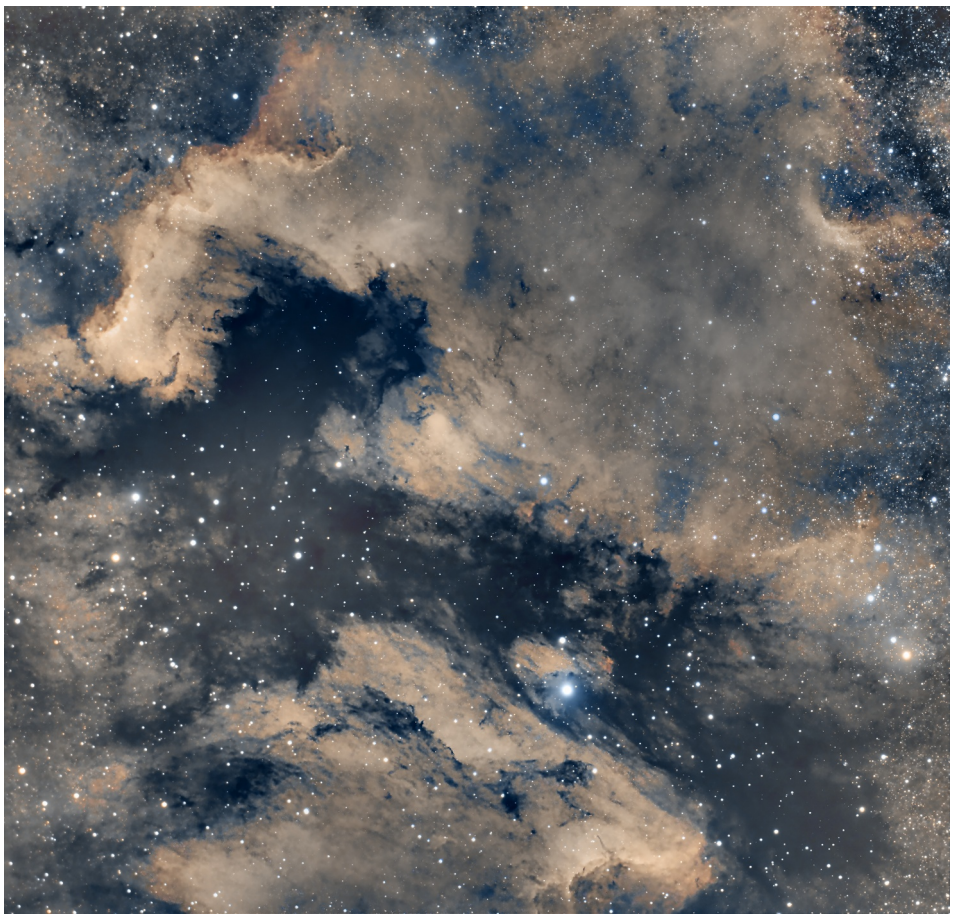
Captured in NINA, Stacked in Astro Pixel Processor, processed in PS

Altair Hypercam 294c, Altair Starwave 102 ED, HEQ5 mount.

The Flaming Star Nebula

The Horseshead Nebula

Andromeda Galaxy M31 with M32 (left) and M110 (right)



North American Nebula

The Rosette Nebula

Meteor Reports for March 2023

Quiet, wet and cloudy sums up March.

Station report for Kirton at end of March 2023

Martin Richmond-Hardy

Note: the following data are released by UKMON under the CC BY 4.0 license, so if you are using the data whether for scientific or other purposes, your must reference this web site https://archive.ukmeteornetwork.co.uk/index.html and UKMON in your work.

Up to 29 March 65 meteors recorded by Kirton cameras UK0056 and UK007W were included in the UKMON daily "brightest 100 (or fewer)" reports.

The top 12 brightest for Kirton cameras are listed here:–

The DateTime links will take you to the UKMON record for further information and images.

DateTime	Mag.	Shower	Name of shower	Observing Stations
20230325_031111.271	-1.1	SSR	16-Scorpiids	Eastbourne Eastbourne Lincoln StLeonards Pickworth Sturton Peldon Kirton
20230314_040652.550	-1.0	XHE	X-Herculids	Gretna Mathon Dursley Eastbourne Kirton Kinellar
20230318_224813.107	-1.0	EVI	eta-Virginids	Kirton NLObservatory
20230325_034059.784	-0.9	SSR	16-Scorpiids	Tackley Searby YeovilMarsh Eastbourne Kirton Nettleham Sturton Peldon Searby
20230327_031713.354	-0.8	spo	sporadic	SearbySearbyHawick Kirton Royston Peldon EastCramlington Kinellar Searby
20230311_022619.590	-0.5	spo	sporadic	Searby Eastbourne Kirton StLeonards Sturton Peldon Costessey Marton
20230306_035509.721	-0.3	spo	sporadic	Eastbourne Bexley Kirton Clapton
20230318_043253.265	-0.3	spo	sporadic	Kirton Sturton Toton
20230318_015251.646	-0.2	spo	sporadic	Kirton Peldon Searby
20230327_003903.447	-0.2	spo	sporadic	Kirton EastMey Morham
20230310_223917.510	-0.1	NMV	Northern March gamma-Virginids	Searby Searby Kirton Nettleham Peldon
20230327_005659.229	-0.1	spo	sporadic	Kirton Peldon Kirton Costessey

UKMON report for March 2023

Up to 29 March 1265 meteors recorded by UKMON cameras were included in the UKMON daily "brightest 100 (or fewer)" reports.The top 10 for UKMON in March were:–

Event	Magnitude	Shower	Shower Name	Stations
20230301_040054.294	-3.2	spo	sporadic	Abele Dursley Eastbourne Plymouth
20230319_045930.602	-2.6	spo	sporadic	Tackley Rhiwbina YeovilMarsh Wilcot Dursley Newtonhill Hawick Lincoln Dyffryn EdinburghW Beverley EdinburghSW Retford Edinburgh NLObservatory Marton Clanfield Sheffield
20230326_222039.931	-2.1	spo	sporadic	Peterhead EastMey Nettleham
20230319_002448.469	-2.0	NMV	Northern March gamma-Vir-ginids	Ringwood Chard Chard YeovilMarsh YeovilMarsh Treworga Alvechurch Hatherton Plymouth
20230323_232704.168	-1.9	spo	sporadic	Rhos Exeter Chard StAustell Tytherington Corsley
20230311_021205.538	-1.7	spo	sporadic	Tackley Searby Wilcot Wilcot Dursley LongCompton Alvechurch Retford Fareham Tytherington Stretton Redhill Searby MoulshamLodge
20230314_021840.630	-1.6	spo	sporadic	Abele Ringwood Tackley Ringwood Pantybwlch YeovilMarsh YeovilMarsh Treworga LeightonBuzzard Wilcot Alvechurch Doseley Coventry Tytherington
20230324_004654.942	-1.6	spo	sporadic	Chard Billingborough Pantybwlch YeovilMarsh Blakeney Treworga LeightonBuzzard Wilcot Wilcot Whiteparish Alvechurch Doseley Alvechurch Bassingham NLObservatory Peldon Hatherton MoulshamLodge
20230301_231213.960	-1.5	MTB	March 12-Bootids	Abele Eastbourne Costessey Eastbourne StLeonards Catherington Clanfield
20230311_022824.627	-1.5	spo	sporadic	Tackley Blakeney Eastbourne Coventry StLeonards Peldon Tytherington Searby

The latest meteor news can be found here https://www.meteornews.net/category/news/

There are now 200+ cameras in the UKMON network.

VERITAS

Venus:Emissivity:Radio Science:InSar:Topography:and Spectroscopy

This month's short article from the library

VERITAS is designed to assist in understanding how other planets formed and if they are hospitable to any life. It will elucidate what processes configured rocky planet evolvement, and are they active at present, and was there ever water. This is a mission planned for the future. It will chart the geologic development of Venus in order to establish its history and establish why Earth evolved in a contrasting manner. At present datasets obtained from early investigations are far from up to date, and therefore VERITAS is tasked with correcting this.

In August 2021, we looked at the possibility of whether the Veritas experiment was viable. It had been proposed and submitted in 2015, with NASA's Jet Propulsion Laboratory serving as the lead agency. On the 30th of September the same year, it was chosen as one of the five finalists. VERITAS was unsuccessful at that time, but was submitted again for the Discovery program in 2019, with a more positive response. In February 2020 it was granted phase ' A ' funding and on the 2nd of June 2021 was a co-selectee to be put into space as one of the succeeding Discovery missions. US$ 500 million will be the expenditure of the mission.

NASA's partners in this project are:

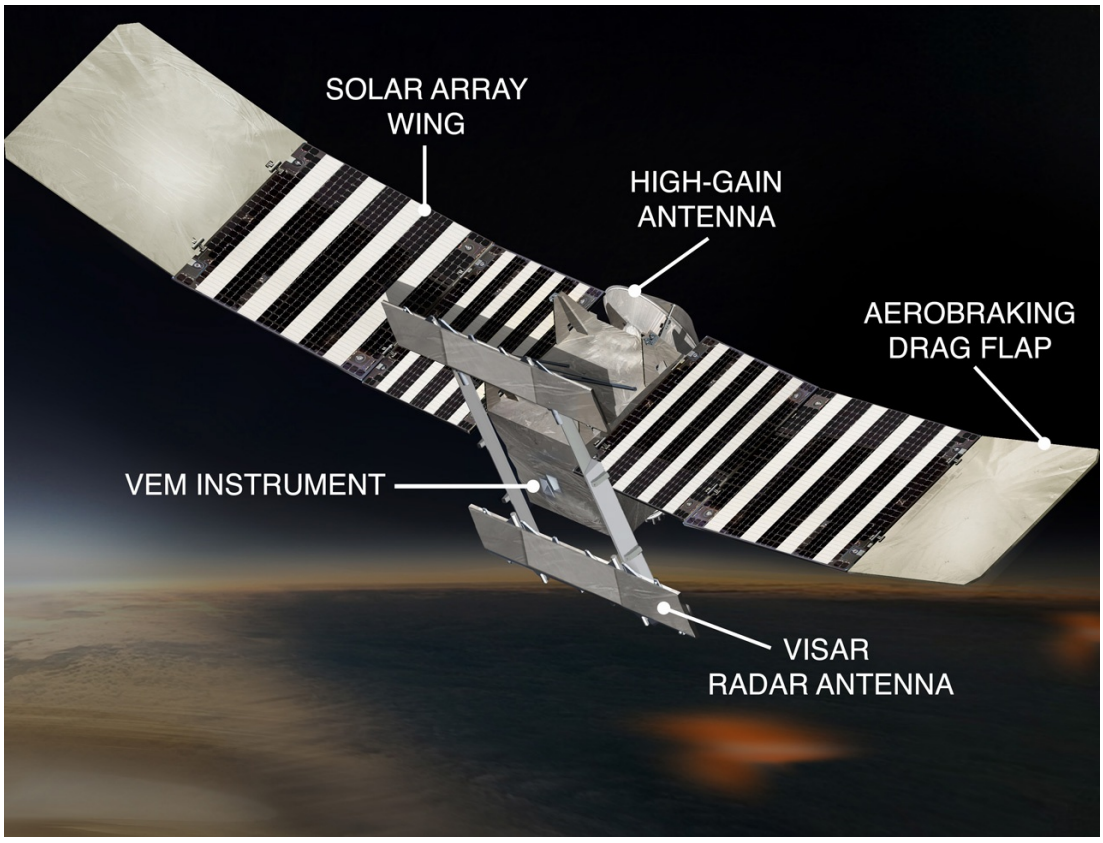
German Aerospace Centre (DLR, Deutsches Zentrum für Luft-und Raumfahrt).

Italian Space Agency (ASI, Agenzia Spaziale Italiana)

French Space Agency (CNES, Centre National d'Etudes Spatiales).

The mission duration will be approximately 3 years, which may be extended.

The mission type is an orbiter, which is manufactured by Lockheed Martin. It is due for launch in December 2027 and will arrive at Venus in July 2028.



Picture credit: NASA/JPL-Caltech.

Three main mission objectives have been set out:

- What activities configure rocky planet evolution?
- Is this geological activity still extant on Venus?
- Is there substantiation that water was ever on Venus?

The following will elucidate how these goals will be answered.

The VERITAS spacecraft is solar powered and is designed similarly to the Maven craft, which has been used by NASA at Mars since 2014. Maven is a Mars orbiter weighing 2454 kg. It was launched by an Atlas V 401 (AV-038 +Centaur) on the 18th November 2013, from Cape Canaveral Florida, and reached Mars orbital insertion on 21st September 2014. It is still in operation, although has had to have some software tweaking in its later stages. It was built and tested by Lockheed Martin Space Systems, is cuboid in shape (2.3m*2.3m*2m) and has two solar array wings with three solar panels found on each wing. Once Veritas is launched, the arrays will station themselves in the correct position, and have a total area of about $28m^2$. Once they arrive at Venus, they are capable of producing 5,740 Watts of power. Part of this wing function incorporates aerobreaking. One side of the outermost solar array panel, can be manoeuvred as a drag flap, thus slowing the craft. There are two aerobraking phases performed that are capable of reducing Veritas's apoapsis altitude from 40,000km to 400km. They will also, by using atmospheric drag, supply a comparable ΔV to the vessel of approximately 2km/s.

Between the two aerobraking phases, it begins its first scientific phase. This section will last about 4.5 months and uses only the Venus Emissivity Mapper (VEM). This is an infrared imaging spectrometer used to detect the composition of Venus' surface. Because of the dense clouds of CO_2 that obscure the planet's surface, VEM uses a narrow range of infrared light ranges (1,000nm) that allow them to pass through the clouds and for VERITAS to acquire information. It utilises six near infrared bands that are responsive to iron formation, as well as searching for active and recent volcanism.

After the second aerobraking session, the second scientific phase begins. VEM will continue as in the first phase, but will be augmented by VISAR (Venus Interferometric Synthetic Aperture Radar), which operates as an X-band (3.8cm) single pass interferometer. This equipment produces global radar maps of topology and surface. This data will be used in ascertaining how the rocky planet evolved. It will be using interferometry, which will allow radar images to be obtained at different times, superimposed on top of each other, to show if any changes have occurred. If this occurs, it will demonstrate to some degree that Venus is still active.

Gravity science will also be utilised to give information about planet rotation and the interior of Venus. The craft will orbit Venus and detect tiny changes in gravity in different places. These changes will indicate how the strata are positioned. This has been used on previous missions, such as Dawn, Cassini and Juno.

Also on board will be the 'Deep Space Atomic Clock-2', which was also built by JPL, which will assist spacecraft in the future performing autonomous operations and radio science. The atomic clock is designed to provide greater stability, with the Deep Space Atomic clock losing 1 microsecond after 10 years. These clocks are about 50 times more reliable than atomic clocks found on GPS satellites.

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