OASI News

The newsletter of the Orwell Astronomical Society

Flaming Star Nebula (IC405)

Photo by Stephen Olley

Trustees: Mr Roy Adams Mr Neil Morley Mr David Payne

Honorary President: Dr Allan Chapman D.Phil MA FRAS

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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

In the coming months, we will be guided by advice from the Government and Public Health England, as to when we can resume some of our activities. These are likely to be very limited at first, the Committee will decide what could be done, with the health and safety of everybody being the highest priority.

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

Please use the third gate into the school grounds by the gym.

Areas out of Bounds

Access to the Observatory is only via the black door at the foot of the Observatory tower, which leads to the staircase and thence to the spiral staircase up to the Observatory. If the black door is locked, please phone the observatory mobile during meeting hours. Kindly check/amend the number shown on your 2021 membership card.

Please do NOT explore other routes. When in doubt, ask or call the Observatory mobile.

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."?

Newsletter archive 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 2022

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
	Avtar Nagra	OASI @ Newbourne
Assistants	Martin Richmond-Hardy	Newsletter, OASI @ Newbourne

Committee Meeting

The next Committee Meeting will be on Friday 27 May at 8:00pm via Zoom.

Welcome to new members

OASI and BAA Events

Please note that the listed events may change depending on the progress of the pandemic. 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
Monday 2 May 19:30 Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI @ Newbourne Note date change due to Parish Council meeting
Friday 13 May 20:00 Zoom	Paul Whiting treasurer@oasi.org.uk	Zoom talk (recorded) "'The Standard Model" with Prof Harry Cliff
Saturday 14 May 14:00	https://britastro.org/meetings/2022	BAA Historical Section Webinar by Professor Wayne Orchiston and Darunee Lingling Orchiston
Thursday 19 May 20:00 Zoom	Martin Cook membership@oasi.org.uk	OASI-on-Zoom meeting If you a member of OASI and wish to join in our in-isolation chats, please contact Martin Cook.
Monday 23 May Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI @ Newbourne Sky Notes by Bill Barton FRAS
Friday 27 May 20:00 Zoom	Roy Gooding secretary@oasi.org.uk	OASI Committee meeting

Meetings via Zoom

Paul Whiting has set up an OASI account on Zoom Pro which allows us to accommodate more participants.. To join, please first contact Paul, 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.

In view of the ongoing Covid situation, we kindly request that attenders wear masks in the village hall to protect others and themselves. Hand gel is available.

Newbourne dates for 2022

May	2	23 (A)	Changed due to Parish Council
June	13	27 (A)	
July	11	25 (A)	
August	8	22 (A)	
September	12	26 (A)	
October	10	24 (A)	
November	14	28 (A)	
December	12	26 (may omit as it's Boxing Day)	

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 the occasional Quiz (Q).

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.

Astronomy Workshops/Informal talks

Meetings will depend on COVID-19 situation.

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.

All meetings are currently via Zoom. 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) have resumed at Whepstead Community Centre, Bury Road, Whepstead, Bury St Edmunds, IP29 4TA http://www.3a.org.uk/contact.htm .

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

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/meetings/2022.

2022

Saturday May 14 14:00	Historical Section Webinar by Professor Wayne Orchiston and Darunee Lingling Orchiston
Wednesday May 25 – 17:30	BAA Special General Meeting, Ordinary Meeting & George Alcock Memorial Lecture given by Mike Foulkes 'Great Storms on Saturn'. Hugh Allem 'Observing the 2017 – 2019 primary eclipse of VV Cephei in a low-resoluion spectroscope'. Sky Notes: Nick James.

Webinar recording – "The history of silvering telescope mirrors" is available to watch at

https://britastro.org/videos/wednesday-webinar-the-history-of-silvering-telescope-mirrors

The BAA Radio Astronomy Section

Thanks to an initiative by Paul Hearn, the BAA Radio Astronomy Section have been enjoying talks, seminars and tutorials via Zoom.

These are/will be available on the BAA YouTube channel.
https://www.youtube.com/user/britishastronomical/playlists

From the Interweb

UK to build software brain for giant radio telescope

UK to build software brain for giant radio telescope

Moon phases & libration 2022

https://www.youtube.com/watch?v=c4Xky6tlFyY

Shropshire bolide

https://archive.ukmeteornetwork.co.uk/reports/2022/orbits/202204/20220413/20220413_234520.679_UK/index.html

It looks like the fireball over North Wales may have dropped up to 500g of meteorites.

Neptune is cooler than we thought

https://le.ac.uk/news/2022/april/neptune-temperature

The Night Sky in May 2022

Martin RH

All event times (BST) 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

Object	Date	Rise	Set	Mag.	Notes
Sun	1	05:26	20:20		
	31	04:42	21:04		
Moon	1	05:46	21:18		First Quarter 09 May 01:21 Full Moon 16 May 05:14 Last Quarter 22 May 19:43 New Moon 30 May 12:30
	31	04:58	22:36		
Mercury	1	05:59	22:22	0.6	Inferior conjunction 21 May
	31	04:33	19:22	3.1	
Venus	1	04:24	16:04	-4	Aphelion 15 May
	31	03:30	17:22	-3.9	
Mars	1	03:59	14:30	0.9	
	31	02:39	14:40	0.7	
Jupiter	1	04:22	16:01	-2	
	31	02:34	14:35	-2.1	
Saturn	1	03:23	12:47	0.9	
	31	01:27	10:54	0.8	
Uranus	1	05:42	20:29	5.9	Superior conjunction May 5
	31	03:47	18:41	5.9	
Neptune	1	04:17	15:41	7.9	
	31	02:20	13:46	7.9	

Occultations during May 2022

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 May 2022

Source: BAA Handbook 2021 p26-27 and https://in-the-sky.org//newsindex.php?feed=meteors

Shower	Normal limits	Max-imum	Max RA/Dec.º	ZHR at Max	Notes
η-Aquarids	April19 – May 28	May 6	22:32 (336º) -0.8º	40	Fine southern shower, poorly seen from UK. Fast meteors, many with persistent trains. Good in 2004 & 2013
Daytime Arietids	May 22 – July 2	June 8	02:56 (44º) +24º	30?	Most active of the daytime showers. Good for radio observers. ZHR and radiant location uncertain.
Daytime ζ-Perseids	May 20 – July 5	June 10	04:16 (64º) +27º	20?	Peak overlaps with the Daytime Arietids. Good for radio observers. ZHR and radiant location uncertain.

For radio observation, use reflections from Graves radar on 143.050MHz or the Brams transmitter in Belgium on 49.97MHz. See also https://www.popastro.com/main_spa1/meteor/radio-meteor-observing-2020/

Visible ISS passes ≥15º max altitude

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

Times are BST. Predictions are approximate (26April) 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 May	-2.7	03:57:44	19°	SSW	03:59:33	33°	SSE	04:02:36	10°	E
02 May	-2.4	03:11:09	24°	SSE	03:11:26	24°	SSE	03:14:12	10°	E
03 May	-1.4	02:24:30	15°	ESE	02:24:30	15°	ESE	02:25:36	10°	E
03 May	-3.6	03:57:23	19°	SW	03:59:36	56°	SSE	04:02:54	10°	E
04 May	-3.3	03:10:41	37°	SSW	03:11:22	43°	SSE	03:14:34	10°	E
05 May	-2.4	02:23:55	28°	ESE	02:23:55	28°	ESE	02:26:09	10°	E
05 May	-3.8	03:56:48	14°	WSW	03:59:39	79°	S	04:03:00	10°	E
06 May	-3.8	03:10:03	33°	WSW	03:11:22	68°	SSE	03:14:42	10°	E
07 May	-3.6	02:23:13	53°	SE	02:23:13	53°	SE	02:26:19	10°	E
07 May	-3.8	03:56:21	10°	W	03:59:42	86°	S	04:03:03	10°	E
08 May	-2	01:36:19	23°	E	01:36:19	23°	E	01:37:52	10°	E
08 May	-3.9	03:09:12	21°	W	03:11:17	85°	S	03:14:38	10°	E
09 May	-3.9	02:22:15	55°	WSW	02:22:51	78°	S	02:26:12	10°	E
09 May	-3.9	03:56:15	10°	W	03:59:35	75°	S	04:02:55	10°	ESE
10 May	-3.1	01:35:16	44°	ESE	01:35:16	44°	ESE	01:37:44	10°	E
10 May	-3.9	03:08:09	13°	W	03:11:08	84°	S	03:14:28	10°	E

Date	Bright-ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
11 May	-1.6	00:48:15	18°	E	00:48:15	18°	E	00:49:14	10°	E
11 May	-3.9	02:21:07	30°	W	02:22:38	87°	S	02:26:00	10°	E
11 May	-3.6	03:56:01	10°	W	03:59:17	51°	SSW	04:02:32	10°	ESE
12 May	-3.9	01:34:01	81°	SW	01:34:07	84°	S	01:37:28	10°	E
12 May	-3.9	03:07:30	10°	W	03:10:50	65°	SSW	03:14:08	10°	ESE
13 May	-2.8	00:46:48	36°	E	00:46:48	36°	E	00:48:55	10°	E
13 May	-3.9	02:19:38	15°	W	02:22:18	77°	S	02:25:38	10°	ESE
13 May	-2.9	03:55:48	10°	W	03:58:46	30°	SSW	04:01:44	10°	SSE
13 May	-2.4	22:18:06	10°	SSW	22:20:04	20°	SSE	22:20:04	20°	SSE
13 May	-1.9	23:59:10	20°	E	23:59:10	20°	E	00:00:21	10°	E
14 May	-3.9	01:31:56	25°	W	01:33:43	84°	S	01:37:05	10°	E
14 May	-3.4	03:07:09	10°	W	03:10:19	40°	SSW	03:13:28	10°	SE
14 May	-2	21:30:21	10°	S	21:32:18	15°	SE	21:34:16	10°	ESE
14 May	-3.7	23:05:14	10°	SW	23:08:30	50°	SSE	23:11:45	10°	E
15 May	-3.9	00:41:47	10°	W	00:45:08	87°	S	00:48:29	10°	E
15 May	-3.8	02:18:31	10°	W	02:21:47	53°	SSW	02:25:03	10°	ESE
15 May	-2.1	03:55:52	10°	WSW	03:58:01	16°	SW	04:00:09	10°	S
15 May	-3.3	22:16:49	10°	SW	22:19:57	38°	SSE	22:23:05	10°	E
15 May	-3.9	23:53:09	10°	W	23:56:31	83°	S	23:59:51	10°	E
16 May	-1.8	03:11:23	15°	S	03:11:23	15°	S	03:12:16	10°	SSE
16 May	-2.8	21:28:31	10°	SSW	21:31:25	28°	SSE	21:34:20	10°	E
16 May	-3.9	23:04:32	10°	WSW	23:07:52	74°	S	23:11:12	10°	E
17 May	-4	00:41:14	10°	W	00:44:35	78°	S	00:45:05	60°	ESE
17 May	-3.8	22:15:54	10°	WSW	22:19:13	62°	SSE	22:22:31	10°	E
17 May	-3.9	23:52:33	10°	W	23:55:53	85°	S	23:57:45	24°	E
18 May	-2	01:29:18	10°	W	01:30:35	20°	W	01:30:35	20°	W
18 May	-3.5	21:27:20	10°	SW	21:30:34	48°	SSE	21:33:49	10°	E
18 May	-3.9	23:03:50	10°	W	23:07:11	86°	S	23:10:28	10°	E
19 May	-3.4	00:40:33	10°	W	00:43:19	48°	WSW	00:43:19	48°	WSW
19 May	-3.9	22:15:06	10°	W	22:18:27	82°	S	22:21:49	10°	E
19 May	-3.9	23:51:50	10°	W	23:55:09	69°	SSW	23:56:04	43°	SE
20 May	-3.8	21:26:23	10°	WSW	21:29:43	72°	SSE	21:33:03	10°	E
20 May	-3.9	23:03:03	10°	W	23:06:25	80°	S	23:08:49	18°	ESE
21 May	-2.3	00:39:52	10°	W	00:41:40	24°	WSW	00:41:40	24°	WSW
21 May	-3.8	22:14:16	10°	W	22:17:38	86°	S	22:20:59	10°	E
21 May	-3.5	23:51:00	10°	W	23:54:14	45°	SSW	23:54:25	44°	S
22 May	-3.7	23:02:10	10°	W	23:05:29	59°	SSW	23:07:10	25°	SE
23 May	-3.8	22:13:19	10°	W	22:16:40	72°	SSW	22:19:54	11°	ESE
23 May	-2.5	23:50:14	10°	W	23:52:45	25°	SW	23:52:45	25°	SW
24 May	-3	23:01:14	10°	W	23:04:19	35°	SSW	23:05:30	26°	SSE

Date	Bright –ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
25 May	-3.4	22:12:17	10°	W	22:15:32	48°	SSW	22:18:14	14°	SE
26 May	-2.1	23:00:27	10°	W	23:02:57	20°	SW	23:03:50	18°	SSW
27 May	-2.5	22:11:15	10°	W	22:14:10	28°	SSW	22:16:35	13°	SSE
29 May	-1.5	22:10:35	10°	WSW	22:12:33	15°	SW	22:14:30	10°	S

Starlink passes

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

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

Astronomy on the radio

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

David Murton's Radio Broadcast

On 1st Tuesday of the month, 2.40pm on the Lesley Dolphin show on BBC Radio Suffolk and the internet. https://www.bbc.co.uk/radiosuffolk

Meteors: The April Lyrids and others

Main Activity 16-26 April

Maximum	22/23 April
Peak ZHR	18
Radiant	18:04 +34°
Velocity	48.4km/sec
Parent Body	Comet C/1861 G1 (Thatcher)

The first significant meteor shower of the Spring after a long quiet period.

Trails are usually short, but fireballs are sometimes reported.

The parent body is currently over 100 AU from the Earth and has a period of 415 years.

Radiant between Hercules and Lyra.

Best seen just before dawn when the radiant is high.

Station report for Kirton UK0056

https://archive.ukmeteornetwork.co.uk/reports/2022/stations/Kirton/04/index.html

My brightest was a Lyrid, just off the coast of Norway, close to the horizon on my camera.

Lyrid meteor captured only by UK0056 and UK0038 2022 04 24_2227 UTC

Summary Statistics for April Lyrids 2022

Courtesy of UKMON[1].

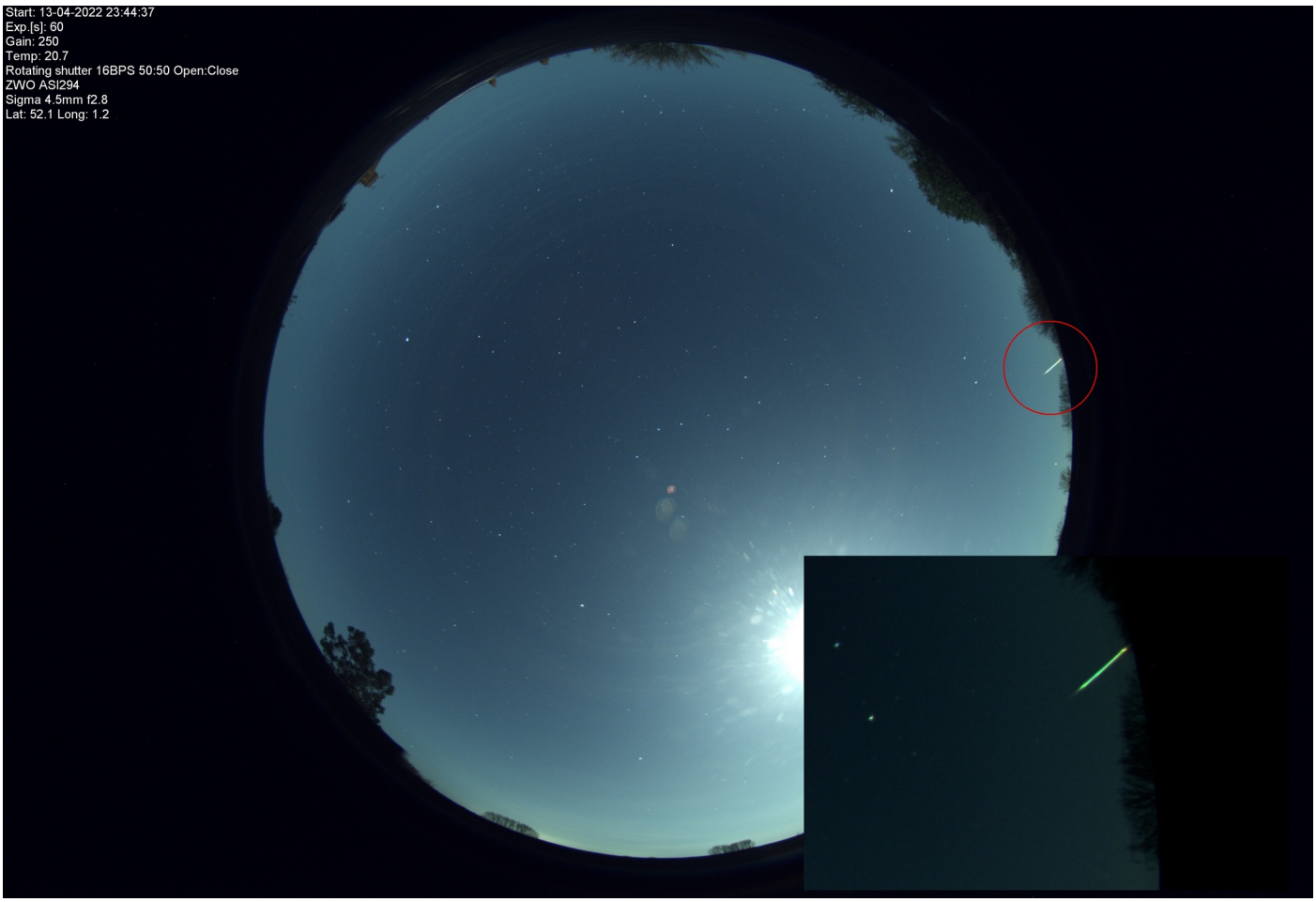
https://archive.ukmeteornetwork.co.uk/reports/2022/LYR/index.html

Date-Time	Magnitude
20220420_024913.710_UK	-2.51
20220420_024913.254_UK	-2.48
20220420_024913.457_UK	-2.05
20220423_014136.549_UK	-1.93
20220424_222713.993_UK	-1.86
20220423_021501.686_UK	-1.79
20220424_015624.145_UK	-1.57
20220422_212133.330_UK	-1.36
20220423_003124.975_UK	-1.34
20220423_005151.300_UK	-1.3

1 Creative Commons BY 4.0 International License.

Grundisburgh All-SkyCam

Alan Smith captured this low elevation greenish sporadic meteor on 13 April. This was the one that may have dropped up to 500gm of meteorites just south of Shrewsbury.



Details from UKMON are here: Orbital Analysis for matched events on 20220413_234520.679_UK

https://archive.ukmeteornetwork.co.uk/reports/2022/orbits/202204/20220413/20220413_234520.679_UK/index.html

BBC report here:–
https://www.bbc.co.uk/news/uk-england-shropshire-61147230

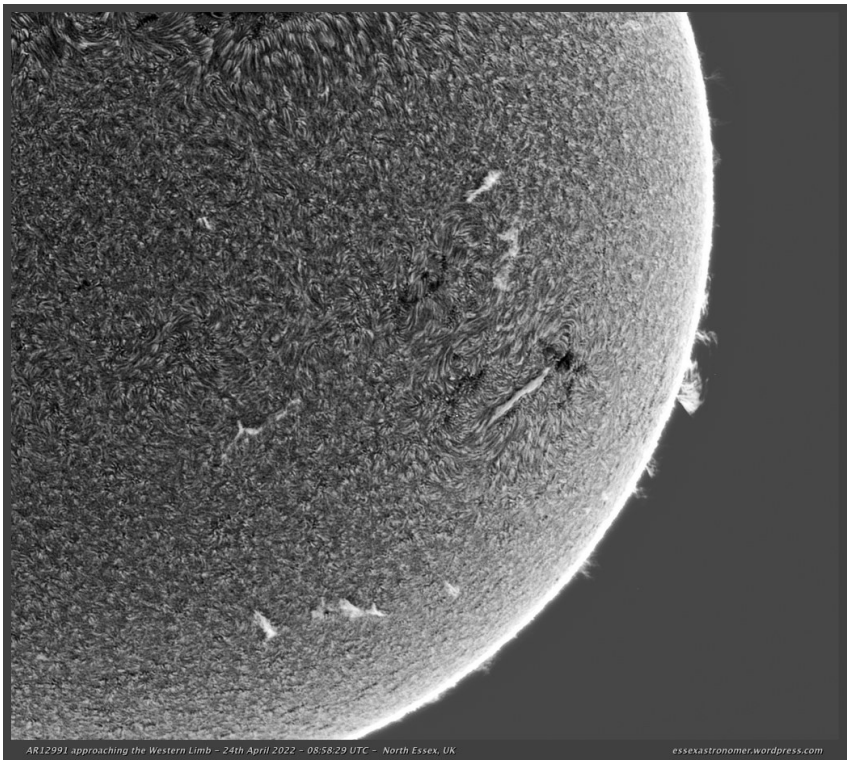
Photo credit UKMON

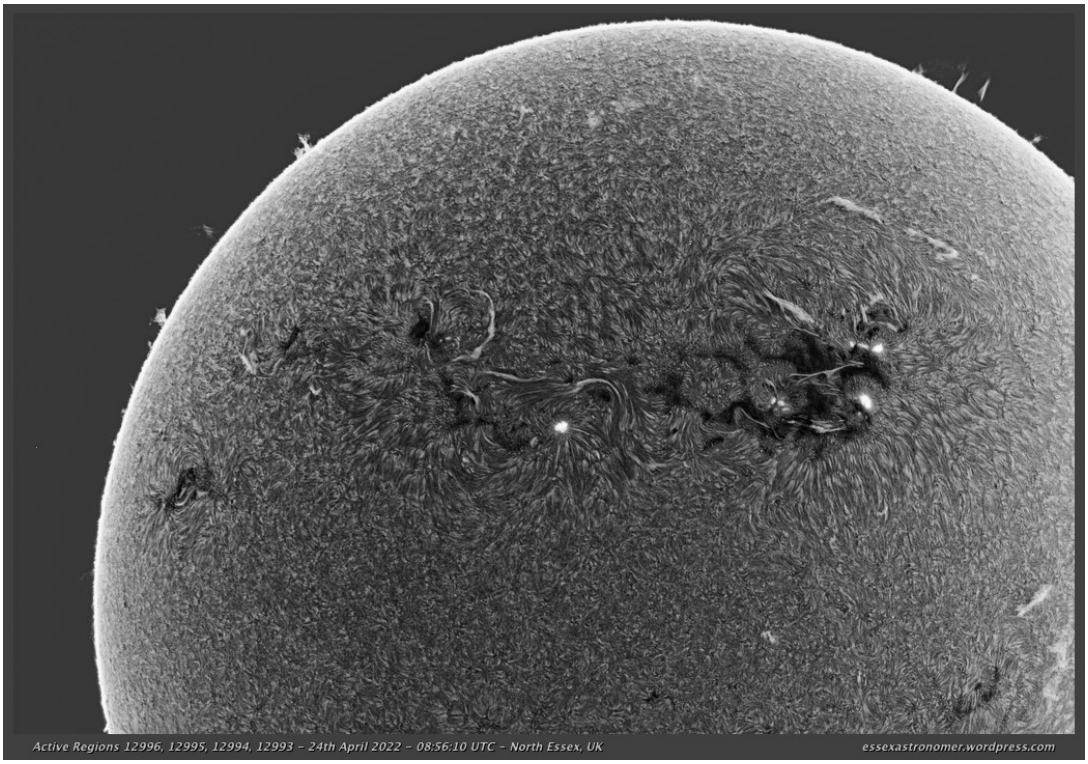
Sol in Hα - 24th April 2022

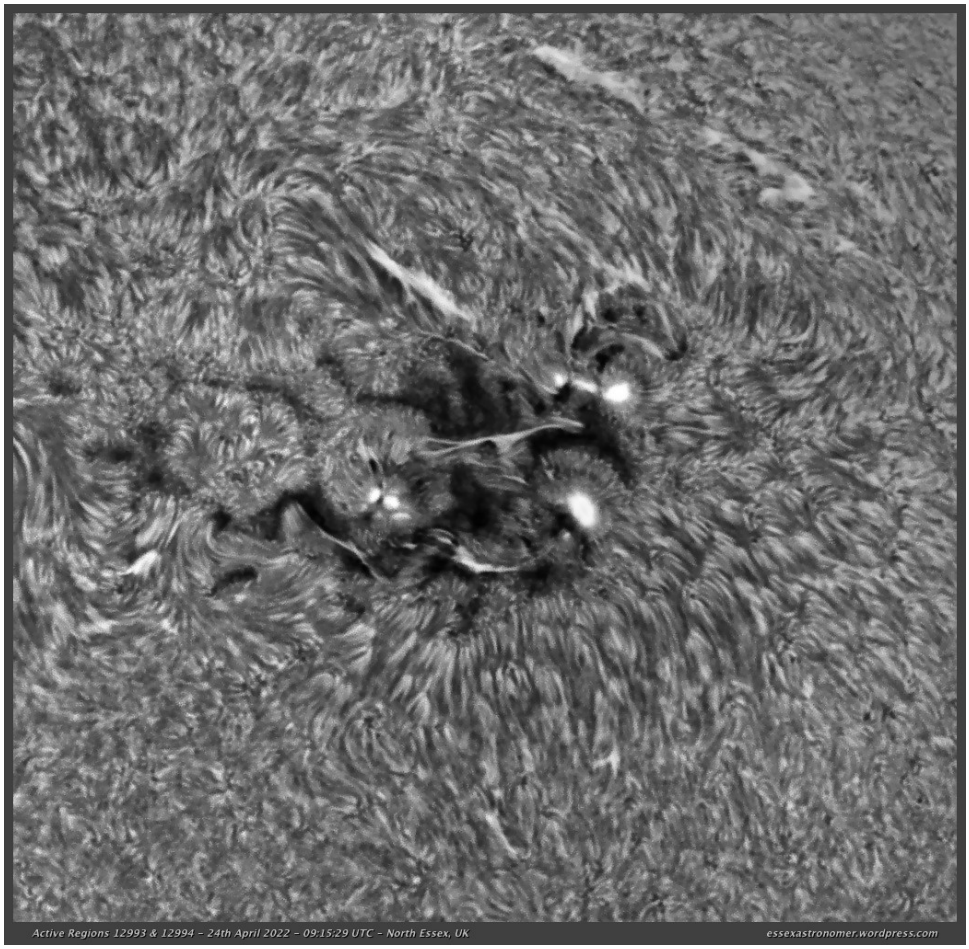
John Hughes

Very windy Sunday morning made it difficult with very little in the way of stable seeing.

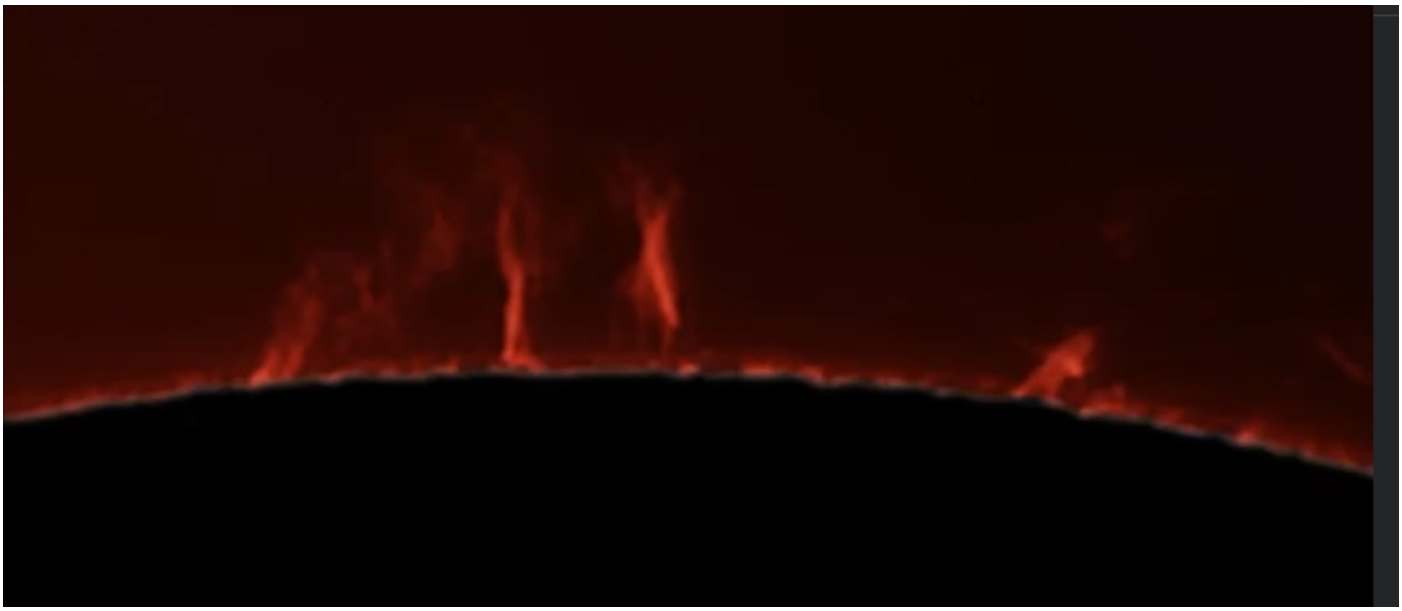
Here is a selection of images captured of the events taking place on the Sun that morning.





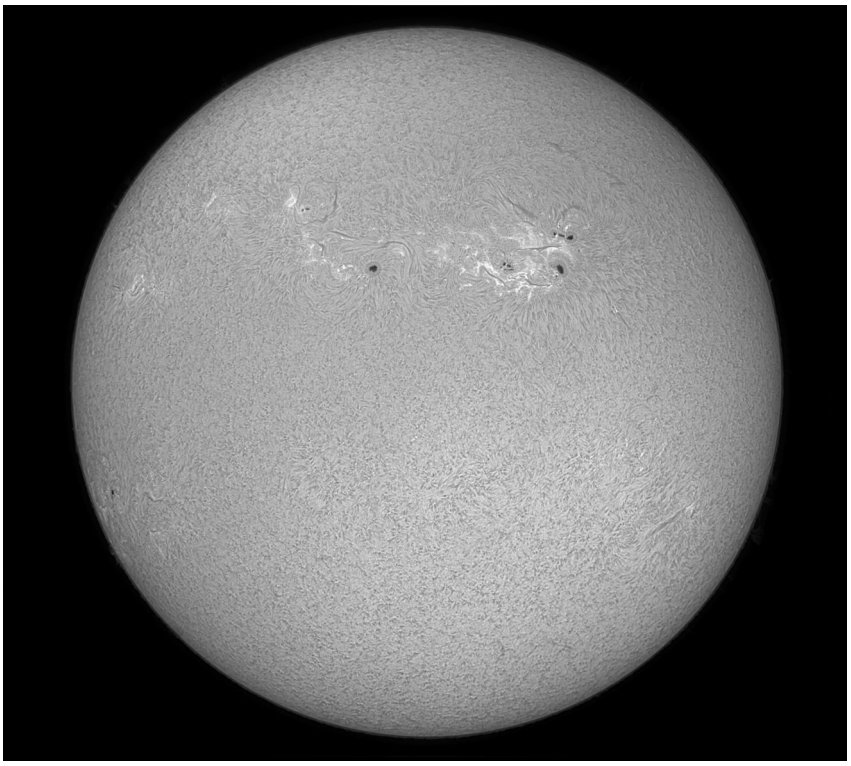


And a few solar flares:

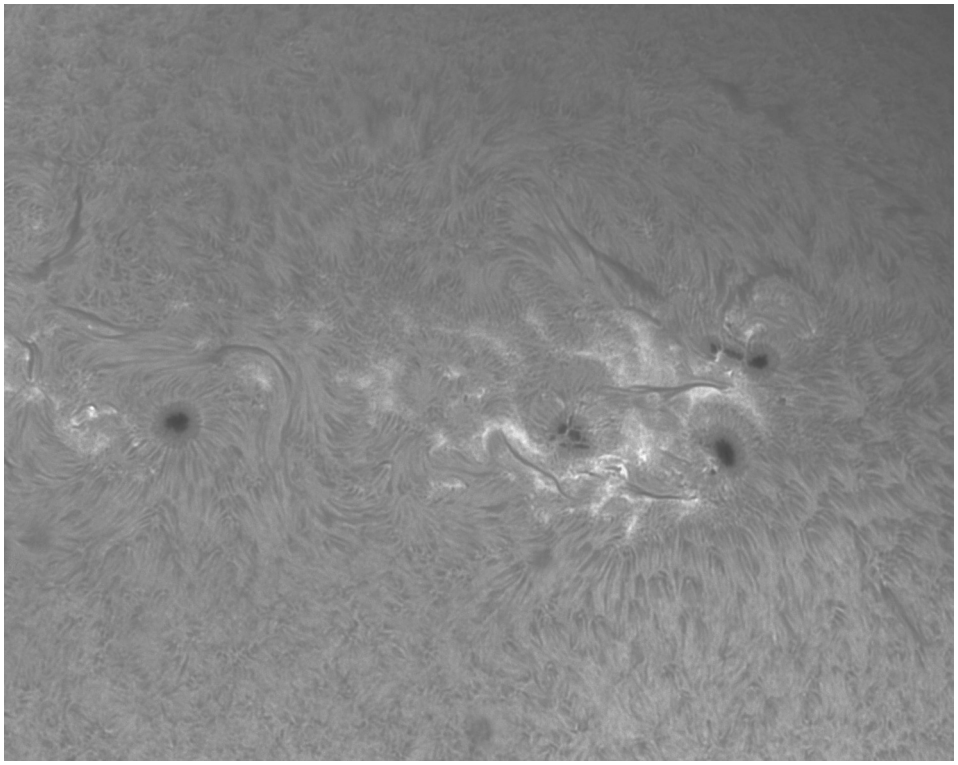


Sunday Sun day – The Sun 24 April at 12:15 in H-Alpha

Martin Cook



Lunt LS60THa/B1200 telescope and Zwo 178MM camera.



The enlarged image of the sunspots was taken using a 2.5x Barlow.

Very Long Baseline Interferometry (VLBI)

Investigating Galaxy Henize 2-10 using VLBI and Space Telescope Imaging Spectrography, specifically considering Black Hole Initiated Star Formation

Short article from the Library

It has been noted that in disparate dwarf galaxies that have active galactic nuclei, black hole motivated outflows can occur. At a distance of 9Mpc, Henize 2-10, a dwarf starburst galaxy was selected by a group of scientists from the eXtreme Gravity Institute, Montana State University, to study the central region, to determine if black hole outflow influenced star formation.

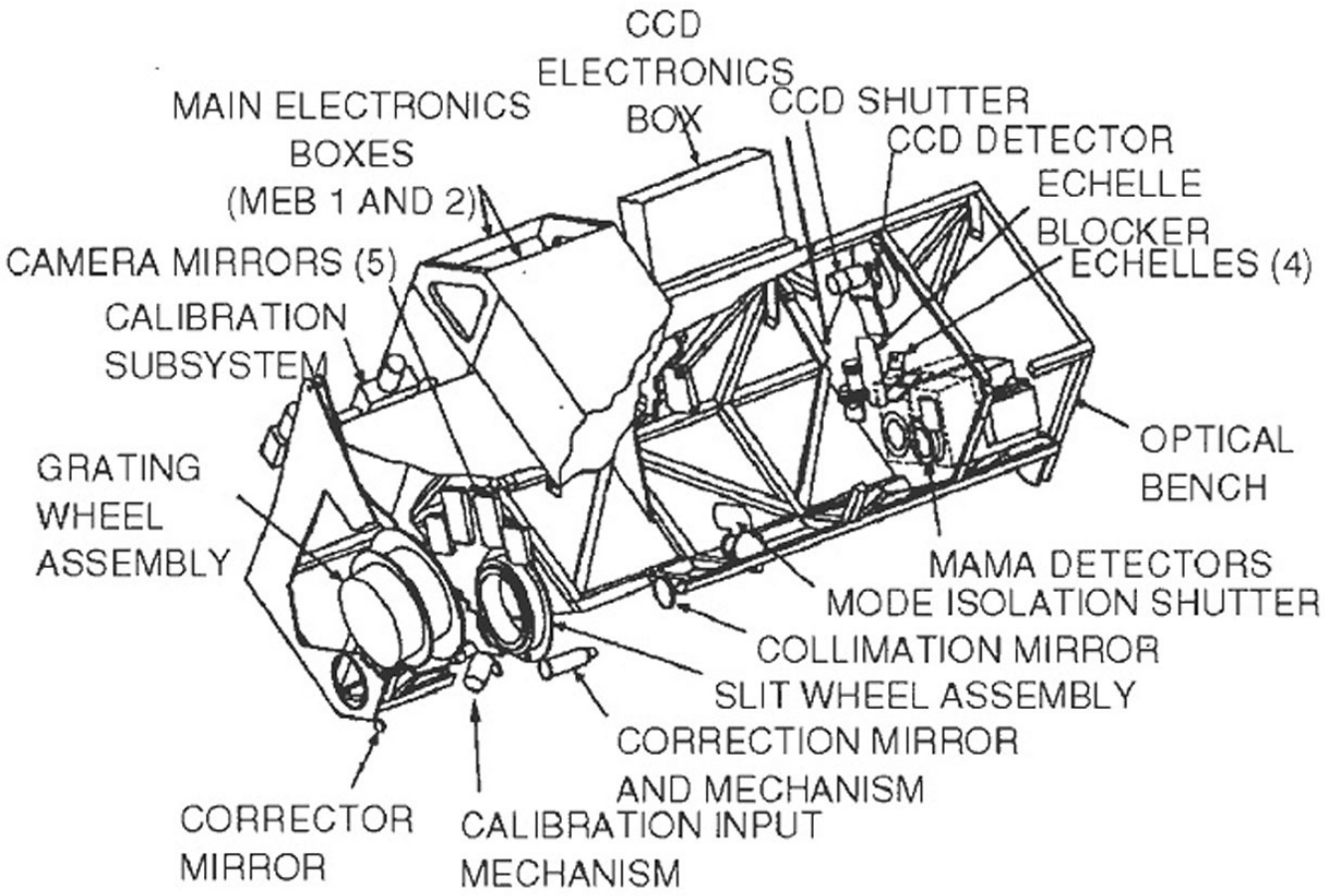
Radio observations of the dwarf galaxy using VLBI uncovered a dense, nuclear source, whose emitted radiation does not depend upon its temperature, with a luminosity L_R $4*10^{35}$ erg s^{-1}. High resolution X-ray monitoring of the same area noted a luminosity of L_X 10^{38} erg s^{-1}. There are two possible interpretations for these results, one is that there was a sub-Eddington immense black hole (AGN) and the other is that a very young supernova-remnant is situated in the area. Other results such as light curves from the Chandra X-ray observatory and gas excitation and ionization conditions however lead us to the probability that it is the former.

Very Long Baseline Interferometry (VLBI), is a collection of multiple telescopic apparatus that work together collecting higher resolution data by acting as a single large telescope. The theoretical advantage of this system is that it may increase the angular resolution that would be found on a much larger telescope and produce an aperture equal to the separation between all of the combined systems.

These multiple radio telescopes require that the distance between them is calculated using the time difference between signal arrival. The arrival times are taken from a local atomic clock , such as a hydrogen maser, which is also locked onto a GPS time system. The data collected from the different telescope antennas are matched to exact arrival times, thus synchronising all data inputs. Care must also be taken to record temperature variations at different recording centres. Atmospheric pressure differences as well as antennae deformation due to heat can corrupt VLBI measurement data.

In VLBI, the digitized data collected at the antenna is usually recorded at this point, for accuracy using both the hydrogen maser and GPS time standard. All these recordings are then transferred to a central location which is set up to play back data simultaneously using the atomic clock timings. Recently there have been trials of sending data directly to the operation centre via electronic, or e-links, thus chopping out the data assessment at individual telescopes. In Europe six telescopes are connected this way. The system network is called GEANT $_{2.}$ GEANT is a pan-European data network for research and education. This system has been proved less problematic, quicker and faster, and in most cases data can be whisked away via normal Internet connections. Understanding how the proportionality of the brightness at the source is disseminated can still be a major headache for quantitative recordings, but computer algorithms are being used to alleviate this problem.

As well as using radio observations for Henize 2-10, Optical wavelengths were also utilised. For this, Hubble Space Telescopes Imaging Spectrograph (STIS) was employed. This integrates a camera along with a spectrograph, encompassing wavelengths from the near-infrared to the ultraviolet region. The concept of a spectrograph, is to stretch out the light collected by the telescope, in order for it to be examined to establish its properties, e.g. chemical composition, radial and rotational velocity, as well as magnetic field and interstellar gas. STIS is a combination of three detectors, each having 1,024 pixel square area. It also has a CCD for discerning both optical and near infrared light, and two Multi Anode Microchannel Arrays (MAMA) detectors looking for near and far ultraviolet light. Many aperture and filters are accessible in the STIS slit wheel. This system is therefore ideal for looking at black holes, especially the Doppler shift enabling the measurement of mass. It also has the ability to record the spectra of up to 50 well-defined locations within a galaxy for example.



The Space Telescope Imaging Spectrograph (STIS)

Picture credit : ESA.

Looking at some of the results taken from STIS information, the central region of Henize 2-10 provided interesting observations, especially using a 0.2" slit in two orientations. These were East-West, which showed the nuclear/Xray source associated with a filamentary ionized configuration, which was noted between two points. The North–South rotation was focussed on the nuclear origin. From both orientations, strong emission lines were captured, which were of great interest for the scientific team.

From all data acquired, it was noted that there is a connection between Henize 2-10 and a local area some 230 light years away from the black hole. This area is seen to be a star forming zone. The attachment between the two is a jet of gas, which according to spectroscopy from Hubble is traveling at about $1^* 10^6$ miles per hour. Prior to this jet arriving at the star forming sector, a dense cloud of gas had found a home there. When the jet from the Henize 2-10 arrived, it was like a meteor hitting Earth, spreading the geology in a circular fan shape. From this newborn stars formed. This exciting fact is that usually in larger galaxies, any matter that falls towards a black hole is swept away in plasma jets at the speed of light. Because Henize 2-10 is only $30 * 10^6$ light years distant Hubble was able to use its equipment to provide all data necessary.

References

[2201.08396] Black hole triggered star formation in the dwarf galaxy Henize 2-10 (arxiv.org)

Very-long-baseline interferometry - Wikipedia

SGP Techniques: VLBI (nasa.gov)

Hubble's Instruments: STIS - Space Telescope Imaging Spectrograph | ESA/Hubble | ESA/Hubble (esahubble.org)

Hubble Finds a Black Hole Igniting Star Formation in a Dwarf Galaxy | NASA

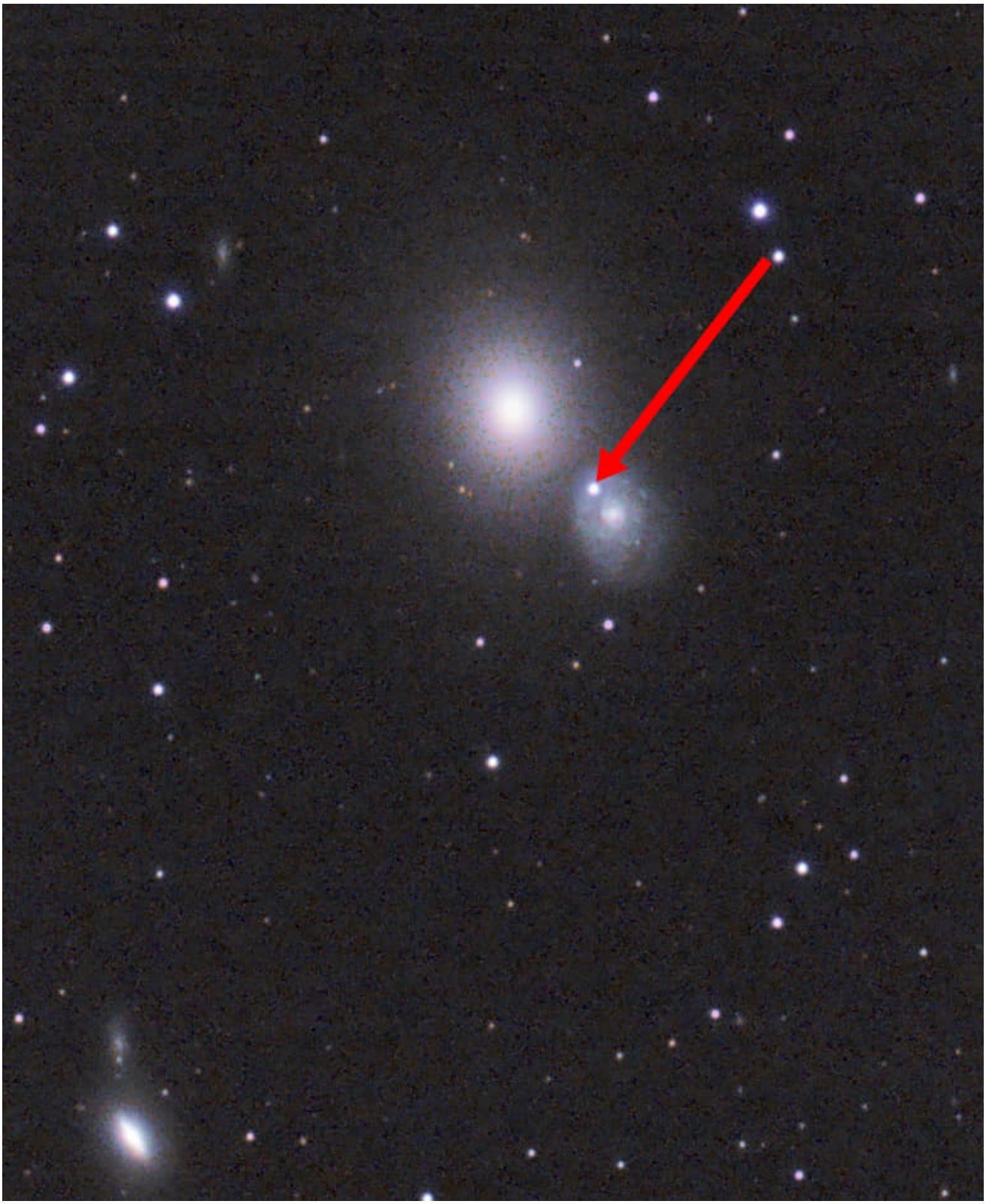
Flaming Star Nebula (IC405)

Stephen Olley

5 nights on Flaming Star Nebula (IC405) in Jan and Feb. Only targeted it early evening while awaiting M42 to clear a tree. Turns out to be just as interesting as its more famous and glamorous big brother.

6 hours subs + darks and flats in Sharpcap, processed in APP and PS

Altair Starwave 102ed , HEQ5, Altair 294c — in Ipswich, Suffolk.

Supernova (SN2022hrs) in NGC4647

3.5 hrs from last night, on the new Supernova (SN2022hrs) in NGC4647. Absolutely fascinating to be viewing an event that occurred around 63 million years ago, in a galaxy far far away.