



OASI News

The newsletter of Orwell Astronomical Society (Ipswich)



The de-orbit burn of LandSat9 rocket was captured by the allsky camera at Grundisburgh

Photo by Alan Smith

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

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, 07960 083714 during meeting hours.

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, rtf, 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 2021

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 held at 8pm on Thursday 25 November.

Please Contact Paul Whiting for Zoom connection details.

Message from the Chairman

Dear Members,

After a long eighteen months, we are glad to be resuming our weekly meetings at Orwell Park Observatory. Our meetings at Newbourne also resumed at the end of July: it was good to meet up, in person after such a long time!

As I mentioned in my email, sent out last week to all members, there are still a couple of measures required to ensure the safety of everybody. Please continue to wear face coverings when indoors at Newbourne and Orwell Park Observatory. We encourage observing and use of telescopes at both sites, but due to the risk of transmission of Covid, we insist that there will be no sharing of eyepieces, (except by members of the same household). There are a good number of eyepieces for members to use at Newbourne and Orwell Park, but it may be a good idea for members to bring their own.

Hopefully, if we stick to these few remaining, simple measures, we will be in a position to lift them in the near future.

Thank you and clear skies!

Andy Gibbs, Chairman

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/1jhs9db71ncki4sojo7092vfv%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 AGAIN!
Monday 11 Oct 19:30 Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI @ Newbourne 19:30 meeting opens;
Monday 25 Oct 19:30 Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI @ Newbourne 19:30 meeting opens; 19:45 Sky Notes by Bill Barton, FRAS.
Monday 8 Nov 19:30 Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI @ Newbourne 19:30 meeting opens;
Monday 22 Nov 19:30 Newbourne Village Hall	Martin R-H newbourne@oasi.org.uk	OASI @ Newbourne 19:30 meeting opens; 19:45 Sky Notes by Bill Barton, FRAS.
Thursday 25 November	Roy Gooding secretary@oasi.org.uk	OASI Committee meeting via Zoom.
Friday 26 November 8pm St Augustine's Church Hall, Bucklesham Road Ipswich IP3 8TJ	Pete Richards lectures@oasi.org.uk	Lecture: Steve Hubbard - "Sideways Astronomy". Also available via Zoom
2022		
Friday 28th January 2022	Pete Richards lectures@oasi.org.uk	Dame Jocelyn Bell Burnell will deliver a talk to OASI live on Zoom.

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.

We meet on Wednesday evenings from 20:00 and on Newbourne evenings (see below) from 19:30.

OASI @ Newbourne

Martin Richmond-Hardy newbourne@oasi.org.uk

We have now resumed meetings at Newbourne Village Hall, Mill Lane, IP12 4NP on the 2nd and 4th Mondays. 12 of us (including two new members) met on Monday 26 July for Bill's Sky Notes and a demo of Hydrogen line (HI) detection by Paul Whiting FRAS.

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 2021

13 Sep	27 Sep (A)	11 Oct	25 Oct (A)
8 Nov	22 Nov (A)	13 Dec	27 Dec

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.

On 26 November we hope to be back at St Augustine's Church Hall, Bucklesham Road, Ipswich IP3 8TJ

Friday 26th November 8pm Steve Hubbard - "Sideways Astronomy".

You can attend at the hall in person. For this first meeting there will be no refreshments provided. Bring your own if you wish to have some.

We also hope to stream this on Zoom – if you want to watch it live on Zoom please contact the society at: lectures@oasi.org.uk. As we'll be streaming from the hall using the WiFi there we can't promise a high quality Zoom connection but we'll do our best to allow remote attendees to enjoy the talk.

If the Covid situation deteriorates significantly the hall will be cancelled and the meeting delivered on Zoom only.

Friday 28th January 2022 Dame Jocelyn Bell Burnell will deliver a talk to OASI live on Zoom. The talk title will be confirmed at a later date.

Other local astronomy society meetings

Athaneum Astro Society

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

Meetings suspended during the Covid-19 situation.

LYRA Lowestoft & Yarmouth Regional Astronomers

www.lyra-astro.co.uk

Due to current Corona Virus outbreak all LYRA meetings are cancelled until further notice.

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 will be assessed in line with the current Government Guidelines in place at the time.

Our next Observing Session will be 3rd October 2021, at Darsham Village Hall Playing Field, between 7:30pm and 10:00pm and is not weather dependent, so if it is unsuitable for observing we will be inside the village hall, where we will have general discussions and help for those in need.

Due to Corona Virus, we hope that all meetings will be face to face in the Village Hall. some covid precautions will still be in place and we will let you know as and when we know.

Our normal format is to have a short talk on a variety of Astronomical subjects as well as general chat email dashastro.info@gmail.com for details, and join in.

Haw Wood "Star Parties" Monday 1st November to Monday 8th November 2021.

Thursday 21st April to Thursday 28th April 2022.

As usual, these dates will be blocked out online, so people will need to email or telephone to book.

Stour Astro

<https://www.stourastro.org.uk>

The club, based in Cavendish, West Suffolk, will recommence monthly meetings on Tuesday October 5 2021.

Cavendish Community Hall, Cavendish, Sudbury CO10 8AG

Kelling Heath Star Party

Monday 4th October 2021 from 12:00pm to Monday 11th October 2021 12:00pm

Kelling Heath Holiday Park, Weybourne, Holt, NR25 7HW

Loughton Astronomical Society is organising this event

<https://las-skycamp.org>

Haw Wood Star Party

The next Star Party, organised by DASH Astro, will be held Monday 1st – 8th Nov 2021

Please book by phone or email with Haw Wood Farm.

<http://www.hawwoodfarm.co.uk/events/astronomers-week-spring-2021/>

FedAstro (Federation of Astronomical Societies)

Martin Baker, Webmaster Federation of Astronomical Societies

The latest online presentation from GoSpaceWatch takes place on Wednesday the 6th October at 7:30 pm BST.

The NASA Lucy Mission to the Trojan Asteroids by Dr Cathy Olkin from the South West Research Institute, Boulder, Colorado, USA

Synopsis

NASA's Lucy mission will be the first spacecraft to travel through the Jupiter Trojan asteroids. Over the course of 12 years, one spacecraft will visit 7 Trojan asteroids and 1 Main Belt Asteroid. The mission is designed to flyby a large number of Trojan asteroids to understand the diversity of the Trojan asteroids. The science investigation and current state of the mission will be discussed.

About the Speaker

Dr Cathy Olkin of the South West Research Institute, Boulder, Colorado, USA, is a planetary scientist with interests in icy outer solar system worlds. She uses near-infrared spectroscopy to study icy surfaces, stellar occultations to investigate tenuous atmospheres and is the Deputy Principal Investigator for NASA's Lucy mission and the lead for the Ralph instrument on NASA's New Horizons mission which flew past Pluto in 2015.

Tickets at just £3.00 pp available at <https://lucymission.eventbrite.co.uk>

BAA news & webinars

For full details of all meetings or cancellations, please go to <https://britastro.org/meetings/2021>.

2021

The Daylight Fireball of 20th March 2021

<https://www.youtube.com/watch?v=BV2UJCAAJ3s>

BAA Autumn Webinar

Stellar wind bow shock

<https://www.youtube.com/watch?v=34pH5tChzkY>

Wednesday, 13 October 19:00

Webinar: Live Observing

Saturday, 23 October 14:30

BAA Annual General Meeting and BAA Meeting,

Saturday, 4 December 14:00

BAA Christmas Meeting

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>

Radio Astronomy Python¹

Rupert Powell

1 <https://www.youtube.com/watch?v=3m87wpPATjc>

2 <https://www.youtube.com/watch?v=aBzePb9OG4g>

3 <https://www.youtube.com/watch?v=FKCHQzCEMLg>

4 <https://www.youtube.com/watch?v=JIMt-nZW0TE>

RA Python Part II - SDR and GPS

Rupert Powell

<https://www.youtube.com/watch?v=JIMt-nZW0TE>

¹ There is a really good free Python course from the OU on Openlearn, *Learn to code for Data Analysis*, <https://www.open.edu/openlearn/science-maths-technology/learn-code-data-analysis/content-section-overview?active-tab=content-tab>

Hydrogen Line Observing	Brian Coleman G4NNS https://www.youtube.com/watch?v=uzcvbGzKp8E
SpectrumLab workshop	Paul Hyde G4CSD https://www.youtube.com/watch?v=x0PnyxEzmZ0
Current Observations from Astropeler	Stockert Wolfgang Herrmann, https://www.youtube.com/watch?v=zB8veXpMdqU
On the tricky question of Pulsars	Peter East OBE FREng https://www.youtube.com/watch?v=vl40lcTvBII
e-Callisto; a Radio eye for Solar Activity,	Christian Monstein https://youtu.be/XQqIXdKpjiM
HAARP High-Frequency Active Auroral Research.	Whit Reeve Exploring the obscurities of the upper atmosphere. An extraordinary ex-military facility now open to Radio Astronomers. Whit will share some of his research and observations. https://www.youtube.com/watch?v=Zssj0InqBcw
GNU Radio Training Seminar	Marcus Leech, Science Radio Laboratories, Inc. “Unpacking the mysteries of GNU Radio” A complement to our ‘Python for Radio Astronomers’ course. https://www.youtube.com/watch?v=2awvu_p2-yE&t=3973s
Oct 1st 19:30 BST (18:30 UTC)	Dr. Gemma Richardson, Space Weather scientist in the British Geological Survey geomagnetism team. “The changing environmental conditions in near-Earth space”. https://britastro.org/node/25990
Oct 16th 10:00 – 17:00 BST	BAA day conference. Key note speakers: Prof Ian McHardy, Prof Ian McHardy School of Physics & Astronomy, University of Southampton. The mysteries of X-ray Cosmology. Dr Spencer Axani MIT CosmicWatch – the counting of muons. Other speakers to be announced – watch this space. Conference organiser – Paul Hyde
October 16th.	BAA RAG21 day conference. Key note speakers: Prof Ian McHardy, Prof Ian (09:00 – 16:00 UTC) McHardy School of Physics & Astronomy, University of Southampton. The mysteries of X-ray Cosmology. Dr Spencer Axani MIT CosmicWatch – the counting of muons. Other speakers to be announced – watch this space. Conference organiser – Paul Hyde
Nov 5th 19:30 GMT	Prof Lyndsay Fletcher Glasgow University School of Physics and Astronomy “The Physics, Analysis and Imaging of Solar flares. A perspective for Radio Astronomers.”
Dec 3rd 19:30 GMT	‘SARA presents...’ Pablo Lewin “Building a Radio Telescope for HI observations” Dr Richard Russell Deep Space Exploration Society (DSES) ‘Pulsars for Galactic Navigation’
Dec 10th 19:30 GMT	Christmas Lecture Prof. Anna Scaife. Professor of Radio Astronomy at the University of Manchester and Head of the Jodrell Bank Centre for Astrophysics ‘Jodrell Bank, the cold war and the space race’

The Moon: Meet our nearest neighbour

Ipswich Art Gallery

31 July – 10 October

The Moon: Meet our nearest neighbour is a touring exhibition and features fascinating objects such as a large inflatable Moon, scientific instruments, and actual Moon rock on loan from Bespoke Scientific, giving you the chance to discover what the Moon is made of, how it has influenced our history, culture and natural world, and how we have explored it from ancient times to the present and future.

OASI visit to Ipswich museum for Moon Exhibition

Subscribe to the Ipswich Museum's mailing list to keep up to date with all the news about the exhibition.

<https://www.ipswich.gov.uk/content/keep-touch-ipswich-museums>

From the Interweb

Gigantic cavity in space sheds new light on how stars form

Center for Astrophysics

Astronomers have discovered a humongous cavity in space while mapping interstellar dust. The sphere-shaped phenomenon may explain how supernovae lead to star formation.

<https://www.cfa.harvard.edu/news/gigantic-cavity-space-sheds-new-light-how-stars-form>

Scale model of the solar system

From Olaf Kirchner

Cool video about constructing a scale model of the solar system in the desert in the U.S.:

https://youtu.be/O_MZ8tda_I

Kit from the Apollo space programme

<https://www.youtube.com/watch?v=v49ucdZcx9s>

There is a series starting on YouTube examining some of the RF electronics used in the 1960's Apollo space program.

The Remnant and Origin of the Historical Supernova 1181 AD

<https://iopscience.iop.org/article/10.3847/2041-8213/ac2253>

Only nine historically recorded supernova (SN) explosions are known in the Galaxy (Green 2002). In only five cases has the remnant of the supernova been identified. For the other cases, the remnant is not known with certainty. The remnant is crucial for identifying the type of supernova, while the known time of the explosion and duration constrain the models of the evolution of the remnant.

The Night Sky in October

Martin RH

British Summer time ends 02:00 31 October.. Clocks go back 1 hour to GMT/UTC..

All event times (**BST**, UTC) are for the location of Orwell Park Observatory 52.0096°N, 1.2305°E.

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	06:56	18:32		
	31	06:48	16:28		
Moon	1	00:02	17:08		New 06 October 12:05 Perigee 08 October 18:29 First Q 13 October 04:25 Full 20 October 15:57
	31	01:26	15:17		Apogee 24 October 16:29 Last Q 28 October 2021 21:05
Mercury	1	08:45	18:29	1.6	Inferior Conjunction 09 Oct
	31	05:09	16:04	-0.8	Perihelion 20 Oct Maximum western elongation 25 Oct
Venus	1	11:29	19:38	-4.1	Aphelion 3 Oct
	31	11:35	18:09	-4.3	Maximum eastern elongation 29 Oct
Mars	1	07:11	18:34	1.7	Superior conjunction 8 Oct
	31	06:07	16:10	1.7	
Jupiter	1	17:15	02:35	-2.6	On Monday 4 October, there's a rare opportunity to see the shadows of Galilean moons Ganymede and Callisto in transit simultaneously. The event begins at 18:00 BST (17:00 UT) as Callisto's shadow starts its passage. Ganymede itself appears on disc at this time, but exits from view at 19:19 BST (18:19 UT) under darkening skies. https://www.skyatnightmagazine.com/advice/skills/jupiter-moons-how-see/
	31	14:16	00:36	-2.4	
Saturn	1	16:37	01:05	0.5	
	31	13:40	22:05	0.6	
Uranus	1	19:34	10:23	5.7	
	31	16:34	07:19	5.7	
Neptune	1	18:05	05:20	7.8	
	31	15:06	02:18	7.8	

Occultations during October 2021

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 October 2021

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

Shower	Normal limits	Maximum	Max RA/Dec.°	ZHR at Max	Notes
October Camelopardalids	Oct 5-6	Oct 6	11:04 (166°) +79°	5	Significant activity reported by video observers in 2005 and 2006. Another outburst in 2016. Very favourable.
Orionids	Oct 6 -Nov 7	Oct 22	06:24 (096°) +15.7°	20	Fast meteors, many with persistent trains. Flat maximum, with several sub-peaks.. Good in 2007. Unfavourable.
Northern Taurids	Oct 20 - Dec 10	Nov 12	03:57 (059°) +22.3	5	Northern branch of the Taurid complex. Slow meteors. Very favourable.

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 ≥15° max altitude

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

Times are BST until 31 Oct.. Predictions are approximate (26 Sept) due to craft adjustments. Check the day before.

Date	Bright-ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
01 Oct	-3.3	19:19:14	10°	W	19:22:34	58°	SSW	19:25:43	11°	ESE
01 Oct	-1.5	20:56:32	10°	W	20:58:41	18°	SW	20:58:41	18°	SW
02 Oct	-2	20:08:57	10°	W	20:11:47	25°	SSW	20:13:20	18°	S
03 Oct	-2.4	19:21:30	10°	W	19:24:36	34°	SSW	19:27:41	10°	SE
05 Oct	-1.2	19:24:06	10°	W	19:26:29	18°	SW	19:28:50	10°	S
21 Oct	-0.8	06:48:45	10°	S	06:50:38	14°	SE	06:52:31	10°	ESE
23 Oct	-1.8	06:49:32	10°	SSW	06:52:28	28°	SSE	06:55:24	10°	E
24 Oct	-1.4	06:02:45	10°	SSW	06:05:18	20°	SE	06:07:52	10°	E
25 Oct	-1.1	05:17:04	13°	SSE	05:18:11	14°	SE	05:20:07	10°	ESE
25 Oct	-2.9	06:51:11	10°	SW	06:54:27	49°	SSE	06:57:44	10°	E
26 Oct	-2.6	06:05:03	17°	SW	06:07:13	38°	SSE	06:10:22	10°	E
27 Oct	-2.2	05:19:55	28°	SSE	05:20:01	28°	SSE	05:22:58	10°	E
27 Oct	-3.6	06:53:11	10°	WSW	06:56:33	75°	S	06:59:55	10°	E
28 Oct	-0.7	04:34:43	14°	ESE	04:34:43	14°	ESE	04:35:27	10°	E
28 Oct	-3.5	06:07:42	28°	WSW	06:09:16	63°	SSE	06:12:37	10°	E

Date	Bright -ness (mag)	Start			Highest point			End		
		Time	Alt.	Az.	Time	Alt.	Az.	Time	Alt.	Az.
29 Oct	-2.9	05:22:26	46°	SE	05:22:26	46°	SE	05:25:18	10°	E
29 Oct	-3.7	06:55:25	10°	W	06:58:45	87°	S	07:02:07	10°	E
30 Oct	-0.7	04:37:07	16°	E	04:37:07	16°	E	04:37:56	10°	E
30 Oct	-3.8	06:10:06	34°	W	06:11:25	83°	S	06:14:49	10°	E
31 Oct	-3.1	04:24:45	54°	ESE	04:24:45	54°	ESE	04:27:30	10°	E
31 Oct	-3.7	05:57:43	11°	W	06:00:56	78°	S	06:04:17	10°	ESE

Starlink passes

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

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

Comets with magnitude brighter than magnitude 10

Source: <https://heavens-above.com/Comets.aspx> and BAA Handbook p95.

8P Tuttle Brightness 9.0 but angular separation from the Sun reducing during the month.

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>

All-Sky camera reports

Alan Smith, James Appleton & Chris Albins

Fireball 0032hrs UT 25 Sept.

Image (just under the moon) captured from Grundisburgh and a number of other cameras including those of the Dutch Meteor Society (Klaas Jobse at Oostkapelle and Franky Dubois at Leper (Ypres) also showing a faint radio reflection.

The faint stars belong to the constellation of Cetus.

No data reduction yet, but it was probably over the North Sea (again!)

Just caught it under the moon and just before the exposure ended.



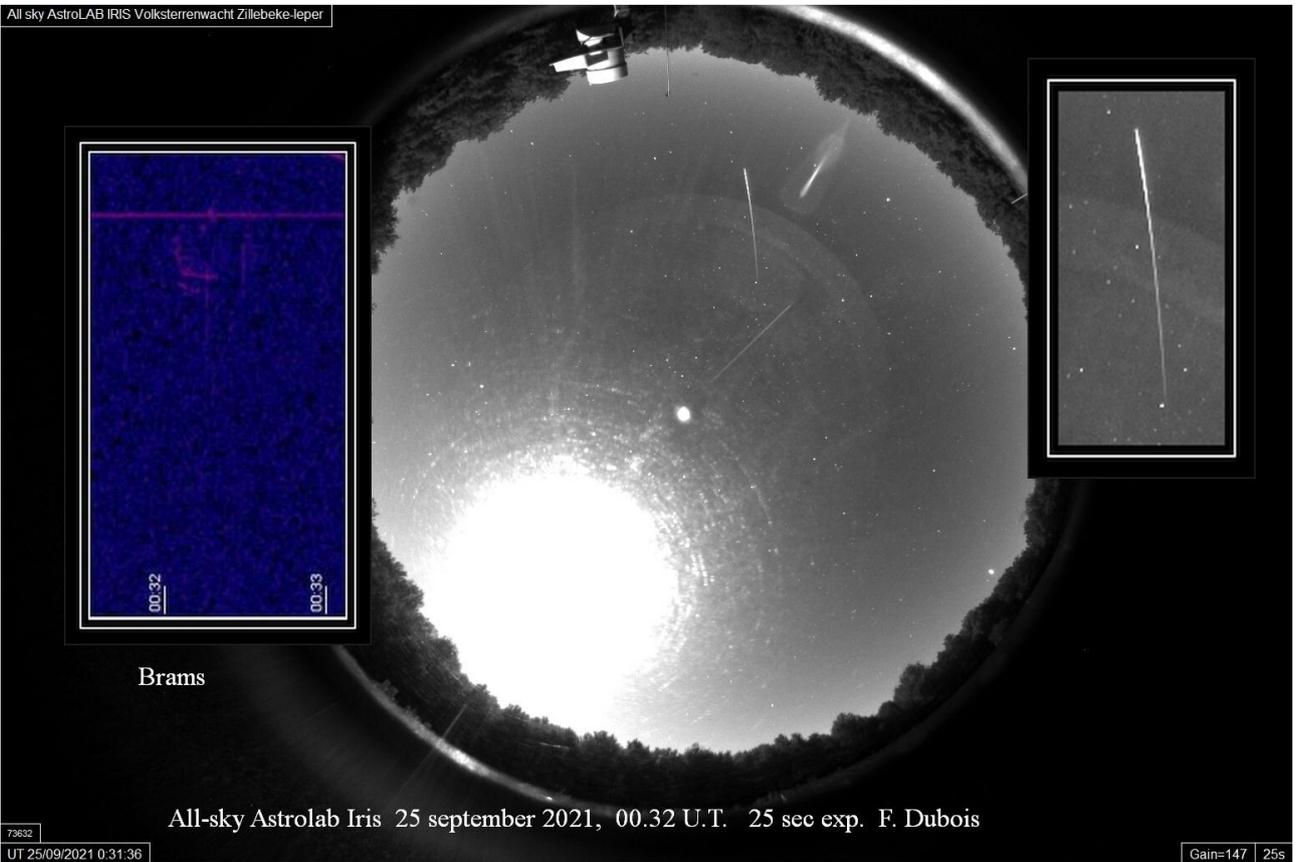
James Appleton commented:

Appcam is offline at the moment for testing the new software build (to provide adaptive gain).

However, I saw the meteor visually! I was outside and it was spectacular. Trajectory was from Pegasus to Orion. Progress along the trail appeared very slow. I could see structure, with an ablation glow surrounding the bolide, and corresponding structure in the trail, a dense central path, more "fluffy" towards the edges. Spectacular!



Dutch Meteor Society: Klaas Jobse at Oostkapelle



Brams

Dutch Meteor Society: Franky Dubois at Leper (Ypres) also showing a faint radio reflection.

Chris Albins captured the meteor on his security video camera.

Using <https://ezgif.com/video-to-jpg> I've selected the 10 brightest of the 24 captured frames [Ed.].



The de-orbit of the LandSat9 launch rocket

Alan Smith

A joint NASA and U.S. Geological Survey project launched Landsat9 from the Vandenberg Air base at 1812 hrs UT this afternoon (27/9/21). The upper stage of a Centaur RL10 rocket climbed to 679km, released Landsat9 and then manoeuvred to a lower orbit to deploy 4 'CubeSats' (2 of which were military). A 'deorbit' burn was then fired to steer the spent rocket back into the Earth's atmosphere for a destructive re-entry over the Pacific Ocean.

The Grundisburgh allsky image is below. This deorbit burn was captured by the allsky camera at Grundisburgh and a couple of others of the Dutch Meteor Society.

My complete image (a compilation of 3 * 60sec exposures) taken by the allsky camera at Grundisburgh is below.

Obviously the video images are a bit more spectacular!

The burn itself was supposed to last for only about 25 secs but as the video shows the atmospheric effects lasted much longer.

The video is available at <https://www.youtube.com/watch?v=UdVtASijy44> and was made by the allsky7 group.



See also <https://spaceflightnow.com/2021/09/27/launch-timeline-for-atlas-5s-mission-with-landsat-9/>

And here for the flight path:–

<https://mk0spaceflightnoa02a.kinstacdn.com/wp-content/uploads/2021/09/av092timeline.jpg>

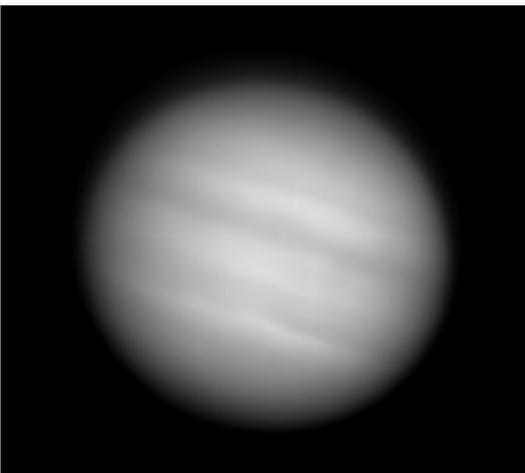
Test of ZWO ASI178 Camera with the Tomline Refractor

Andy Gibbs

It was great to be back at Orwell Park Observatory! OASI's first meeting at the Observatory since March 11 2020. Last night we tested Martin Cook's ZWO ASI 178 MM (Mono) camera with the Tomline refractor, with the aim to provide observers with a more Covid safe view.

This proved successful, despite the less than perfect viewing conditions. OASI will now proceed with purchasing the colour version of this camera, which will prove invaluable for group visits and public outreach.

I have attached a couple of images of Jupiter and Saturn.



NASA's Work with Heliophysics. Part 1

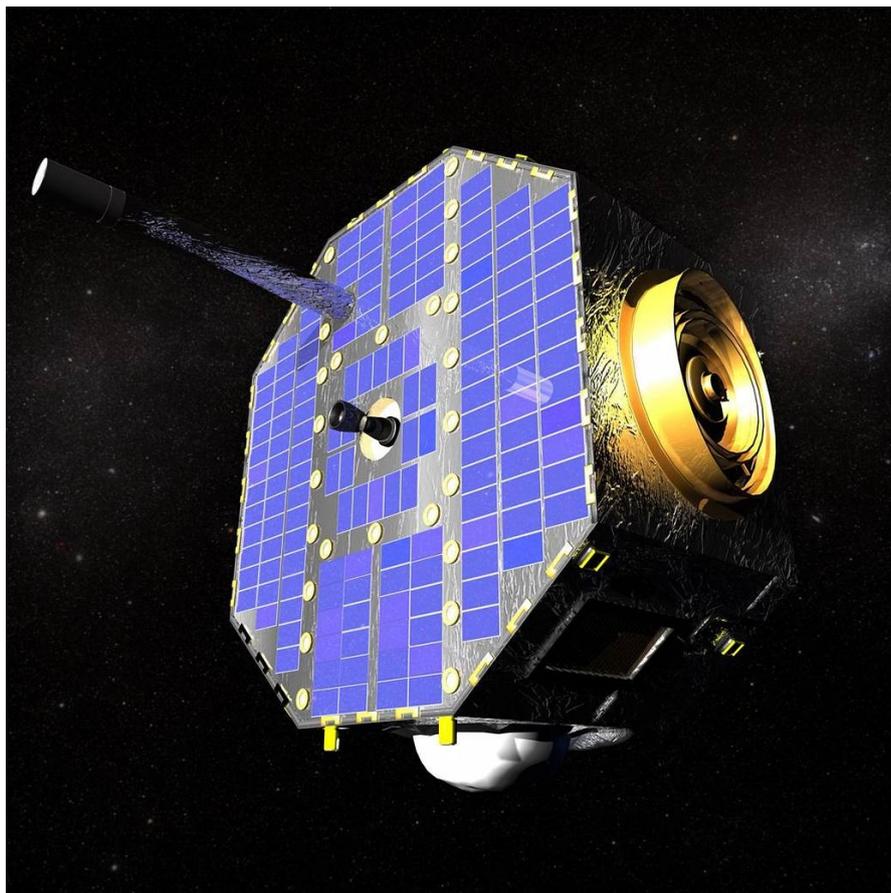
Library short article.

Andy Willshire

Heliophysics is described as the science that connects the Sun to Earth. NASA has over the years sent missions into space that form a flotilla designed to collectively comprehend the driving forces behind the functionality of the solar system. All of these scientific missions are housed under the Heliophysics System Observatory (HSO).

Two of these missions will form the basis of this short article. The first of these is the Interstellar Boundary Explorer, (IBEX) and the second, the Interface Region Imaging Spectrograph (IRIS).

IBEX has been in operation for just over 12 years and has spent its time investigating the perimeters of our solar system, whilst orbiting the Earth, and is about the size of a small table. All the parts of the system were assembled at Vandenberg Air Force Base, California. IBEX was attached to a Pegasus XL rocket, which was suspended underneath a Lockheed L-1011 Stargazer aircraft. This then flew to Kwajalein Atoll in the Central Pacific Ocean, arriving on October 12th 2008. On October 19th 2008 with the aid of the Pegasus XL rocket, it was launched into space from the underbelly of the Lockheed aircraft. Using this near Equatorial launch, Pegasus was able to lift 16kg more than, if the Kennedy Space Centre had been used. The development of Pegasus was to propel a small payload, weighing no more than 1,000 lbs into a low Earth orbit. The plane carries the rocket to a launch altitude of 39,000 feet at which point Pegasus takes over. There is a period of 5 seconds of free fall before the rocket motors ignite and the first stage motor accelerates to over 5,000 miles per hour. This lasts for 76 seconds whereby the second stage takes over commencing burn at 97 seconds. At the 10-minute point, both second and third stages have burnt out, with the rocket reaching 17,000 m.p.h. and a climb of 460 miles. The spacecraft then disconnects from Pegasus to begin its mission, climbing into a high altitude elliptical orbit that allows it to spend most of its time outside Earth's magnetosphere, which can cause problems with its research. This is due mainly to charged particle interference. In June of 2011, IBEX changed into a new orbit that elevated its perigee to greater than 30,000 km, and evaded a course that would place it too close to the Moon, causing gravitational interference.



Picture credit: NASA picture gallery

On board IBEX are two energetic neutral atom (ENA) imagers, IBEX-Hi and IBEX-Lo. Each of these incorporates an electrostatic analyser, collimator and particle detector. The two imager's record particle counts in the 300eV to 6keV for the Hi and 10eV to 2keV for the Lo. Data is transferred slowly back to Earth where it is analysed at two control centres at Dulles and San Antonio.

The heliosphere is a vast cavity configured by the Sun in the surrounding interstellar medium. Within this area, solar winds roam and come into contact with the interstellar medium. The closer to the Sun, the stronger solar winds are, the further away, control is taken up by the interstellar medium (ISM). This point forms a boundary and is termed the heliosheath with the heliopause, the outermost part. The formation of the ISM is predominantly hydrogen and helium as well as small amounts of sodium, calcium, water, ammonia and formaldehyde. Dust plays a small part and is considered to be about 1%. Stars may form in areas of the ISM that is compressed enough for gravity to exert enough energy on gas and dust, making hot dense spheres, leading to their formation.

Energetic Neutral Atoms are comparatively swift ionized particles with no charge. This enables them to travel in straight lines, as they do not respond to magnetic fields. These are the ENA's that are picked up by IBEX in its scientific endeavour to discern what happens between the ISM and solar wind at the boundary of our solar system.

Data from IBEX is analysed and a heliospheric map generated, which can establish how the solar wind and interstellar medium share a relationship. If the boundary between the two did not exist, four times as many high-energy cosmic rays would enter our solar system, damaging the ozone layer and causing detrimental changes to human DNA.

The second mission to discuss is IRIS (Interface Region Imaging Spectrograph). Its mission is to study the connecting border between the photosphere and the corona of the sun. The spacecraft is designed to point at the Sun to study the chromospheres in both far and near ultraviolet spectral regions. The spacecraft has a 20cm telescope construction that supplies an imaging spectrograph and far and near ultraviolet wavelength camera imaging apparatus. The near U.V has a resolution of 0.4 arcsec and the far U.V's resolution is 0.33 arcsec, and has a science data link of 32Mbit/s. The craft mass is 183kg and is 2.18 m long and 3.7m width (including solar panels). The launch was carried out on June 28th 2013 at 2.27 UTC. The craft was attached to a Pegasus XL rocket which was carried by a Lockheed L-1011 aircraft to the prescribed height and allowed after a period of 5 seconds of free fall to ignite and the first

stage motor takes over. This was similar to the launch of IBEX. The sun-synchronous orbit obtained an altitude of 620km * 670km with an inclination of 97.9°. The idea of this is that it will be able to view continuously for seven months each year. It will not be operated in the remaining months as this is the eclipse period.



Picture credit: NASA images of IRIS.

There are three main topics of essence concerning solar and plasma physics. These topics are:

- i What types of non-thermal energy control the chromosphere.
- ii Chromospheric management of mass and energy supplying both corona and heliosphere.
- iii What role does magnetic flux have in solar flares and mass ejections.

IRIS is now mapping a most dense and fluctuating region of the sun's atmosphere, which prior to this spacecraft, had not been accomplished. Heat and energy is graphically analysed and plotted as it moves through the system. The information obtained interfaces well with other solar observatories. i.e. NASA's Solar Dynamics Observatory.

In a paper published in 'Nature Astronomy' on 21st September 2020, scientists have registered the first ever comprehensive picture of nanojets, which can be seen moving in a vertical motion to the magnetic complex in the corona. IRIS is able to concentrate on small areas of the Sun enabling it to observe precise events. Once the nanojets were spotted, and working with other astronomical agencies around the world, confirmation data was obtained. These agencies combined their data to confirm that the results showed that nanojets are connected to nanoflares, which are probably germane to coronal heating

References:

[IBEX Image Gallery | NASA](#)

https://www.nasa.gov/mission_pages/ibex

https://www.nasa.gov/mission_pages/iris

<https://science.nasa.gov/heliophysics>

Some Nebulae

John Hughes

Sh2-132, Lion Nebula

Another WIP. If you are having trouble seeing the 'Lion' as I was then imagine the curved Hii region sweeping up and to the right is the tail then according to Mrs H you can then see legs and a head.

74 x 300s Ha 3nm (6 hours of exposure time).



C9, Sh2-155, Cave Nebula

