Scarborough

2

Astronomical Society Skynotes

2023-01

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1 WELCOME



Welcome to the January edition of the SARAS Skynotes.

Happy New Year! Here's looking forward to a cloud-free 2023!

Leo is now starting to present above the Eastern horizon with bright Regulus leading the way at the point of the famous "reverse question mark" asterism. The arrival of Leo brings with it the notable Leo-Triplet of galaxies that hints that full galaxy season is not too far away.

Sirius, the brightest star in the night sky, is now in a great position for observation below Orion in the Southern portion of the sky. In fact, Orion is now at its best for both observation and imaging.

Mars is in retrograde and still riding high above the Hyades cluster in Taurus as Jupiter begins to dip away in the West.

Castor and Pollux in Gemini make great markers of the mid-winter sky and Pollux is one of the corners of the great Winter Hexagon:



There's a comet to look out for this month – 2022 E3 (ZTF) will brighten as it travels through the constellations of Boötes, Draco, Ursa Minor before ending the month in Camelopardalis where it may reach a magnitude of +4.5 – making it a naked-eye comet. Don't get too excited – we've been here before with other promising comets that haven't delivered but it will be visible through binoculars throughout the month and will make a great start to the observations of 2023.

Don't forget, the Facebook page is available to society members as usual - https://www.facebook.com/groups/sarasmembers/

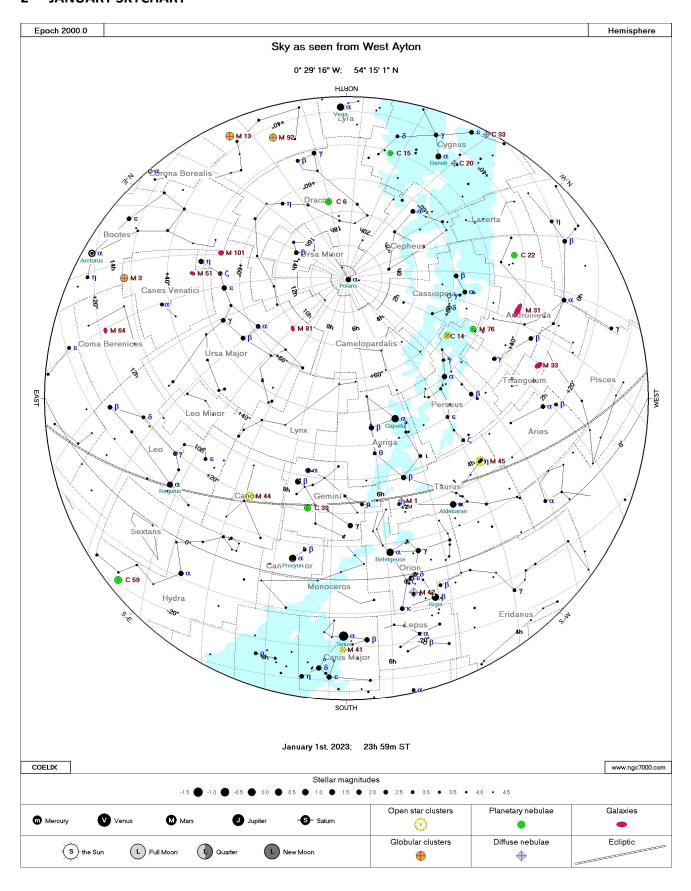
Thank you for your continued support of SARAS and if you have any comments about anything you'd like to see in Skynotes, please let me know.

Stay curious and keep looking up!

Nick Duffy

Skynotes Editor

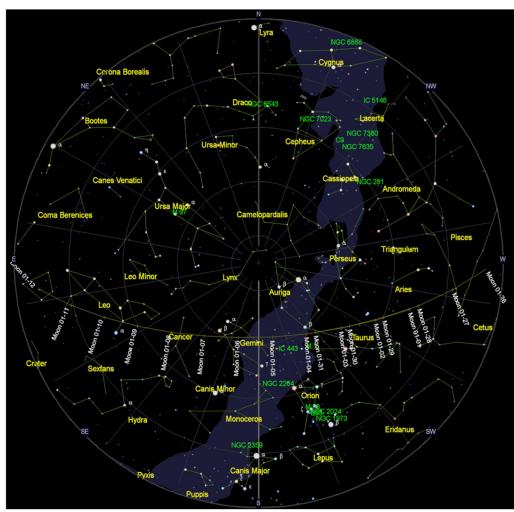
2 JANUARY SKYCHART

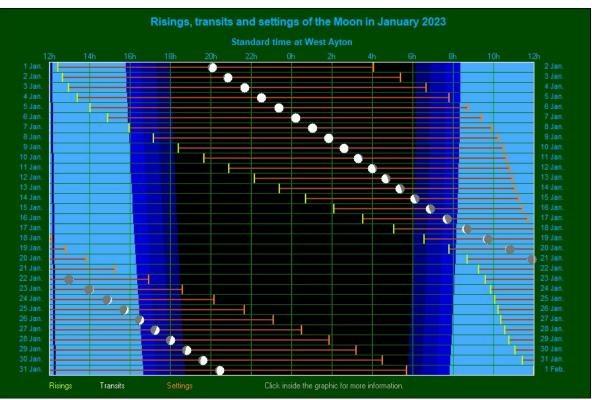


Hold this sky-chart above your head and align with the compass direction you are looking in. The middle of the map will be directly overhead (your zenith) and you should then be able to find the constellations fairly easily. The edge of the chart is your theoretical horizon (i.e. assumes no trees, buildings, mountains etc.).

3 OBSERVATIONAL DATA

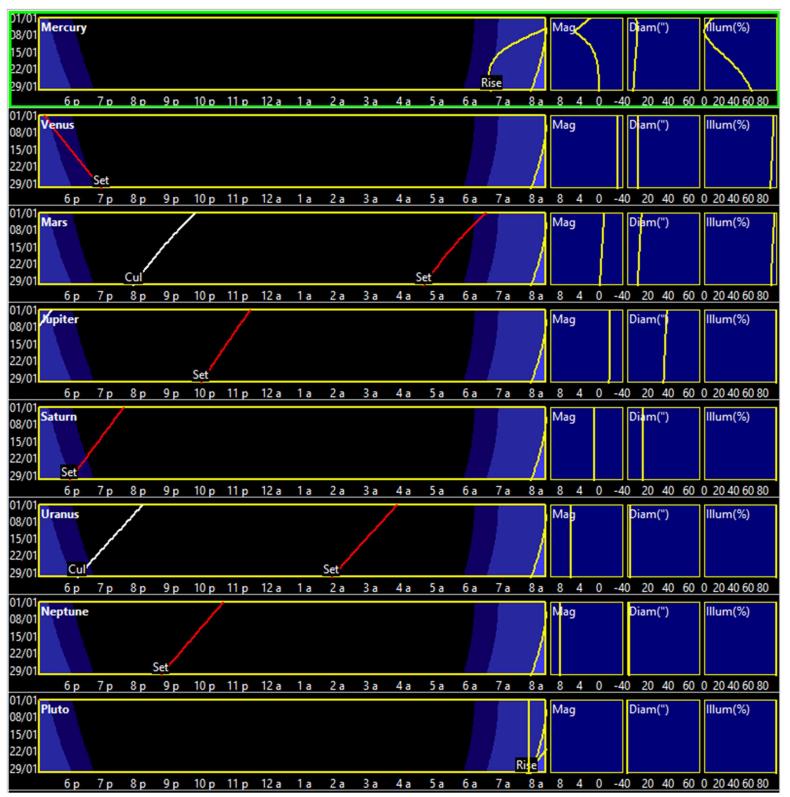
3.1 Moon Position and Visibility





3.2 Visibility of Solar System objects

Rising (yellow), culmination (white) and setting (red) for Solar System objects.



4 PHENOMENA OF THE MONTH

Times are given in standard time for Scarborough (0° 29' 16" W, 54° 15' 1" N, zone Z).

| Date Hour | Description of the phenomenon |
|------------------|--|
| 2022 01 01 12:26 | Maximum of the variable star eta Aquilae |
| 2022 01 01 23:59 | Moon at perigee (geocentric dist. = 358033 km) |
| 2022 01 02 19:33 | NEW MOON |
| 2022 01 03 00:28 | Minimum of the variable star Algol (beta Persei) |
| 2022 01 03 08:21 | Comet C/2021 A1 Leonard at its perihelion (dist. to the Sun = 0.615 AU; magn. = 6.2) |
| 2022 01 03 14:24 | Meteor shower: Quadrantids (110 meteors/hour at zenith; duration = 16.0 days) |
| 2022 01 03 18:52 | Close encounter between the Moon and Pluto (topocentric dist. center to center = 3.2°) |
| 2022 01 04 03:00 | Close encounter between the Moon and Mercury (topocentric dist. center to center = 3.6°) |
| 2022 01 04 07:00 | The Earth at its perihelion (distance to the Sun = 0.98333 AU) |
| 2022 01 04 21:27 | Close encounter between the Moon and Saturn (topocentric dist. center to center = 4.6°) |
| 2022 01 05 13:48 | Maximum of the variable star delta Cephei |
| 2022 01 05 21:17 | Minimum of the variable star Algol (beta Persei) |
| 2022 01 06 03:54 | Close encounter between the Moon and Jupiter (topocentric dist. center to center = 4.7°) |
| 2022 01 06 17:44 | End of occultation of 71-tau2 Aqr (magn. = 4.05) |
| 2022 01 07 12:00 | GREATEST EASTERN ELONGATION of Mercury (19.2°) |
| 2022 01 07 14:22 | Close encounter between the Moon and Neptune (topocentric dist. center to center = 4.6°) |
| 2022 01 08 16:41 | Maximum of the variable star eta Aquilae |
| 2022 01 08 18:07 | Minimum of the variable star Algol (beta Persei) |
| 2022 01 09 01:48 | INFERIOR CONJUNCTION of Venus with the Sun (geoc. dist. center to center = 4.9°) |
| 2022 01 09 06:41 | Minimum of the variable star beta Lyrae |
| 2022 01 09 09:45 | Maximum of the variable star zeta Gemini |
| 2022 01 09 16:19 | Comet C/2019 L3 ATLAS at its perihelion (dist. to the Sun = 3.554 AU; magn. = 12.1) |
| 2022 01 09 19:11 | FIRST QUARTER OF THE MOON |
| 2022 01 10 22:35 | Maximum of the variable star delta Cephei |
| 2022 01 11 13:20 | Close encounter between the Moon and Uranus (topocentric dist. center to center = 2.2°) |
| 2022 01 11 14:56 | Minimum of the variable star Algol (beta Persei) |
| 2022 01 13 21:02 | Opposition of the asteroid 7 Iris with the Sun (dist. to the Sun = 2.087 AU; magn. = 7.7) |
| 2022 01 14 00:55 | Close encounter between the Moon and Aldebaran (topocentric dist. center to center = 5.9°) |
| 2022 01 14 10:27 | Moon at apogee (geocentric dist. = 405805 km) |
| 2022 01 14 11:45 | Minimum of the variable star Algol (beta Persei) |
| 2022 01 15 20:37 | Close encounter between the Moon and M 35 (topocentric dist. center to center = 1.3°) |
| 2022 01 15 20:56 | Maximum of the variable star eta Aquilae |
| 2022 01 16 00:00 | Mercury at its perihelion (distance to the Sun = 0.30750 AU) |
| 2022 01 16 07:23 | Maximum of the variable star delta Cephei |
| 2022 01 16 15:49 | CONJUNCTION between Pluto and the Sun (geoc. dist. center to center = 1.7°) |

2022 01 17 07:56 Beginning of occultation of 57 Gem (magn. = 5.04) 2022 01 17 08:34 Minimum of the variable star Algol (beta Persei) 2022 01 18 00:49 FULL MOON 2022 01 18 17:47 Close encounter between the Moon and M 44 (topocentric dist. center to center = 2.5°) 2022 01 19 13:21 Maximum of the variable star zeta Gemini 2022 01 20 05:24 Minimum of the variable star Algol (beta Persei) 2022 01 20 22:09 Beginning of occultation of 46 Leo (magn. = 5.43) 2022 01 20 23:12 End of occultation of 46 Leo (magn. = 5.43) 2022 01 21 16:11 Maximum of the variable star delta Cephei 2022 01 22 05:15 Minimum of the variable star beta Lyrae 2022 01 23 01:10 Maximum of the variable star eta Aquilae 2022 01 23 02:13 Minimum of the variable star Algol (beta Persei) 2022 01 23 07:00 Venus at its perihelion (distance to the Sun = 0.71845 AU) 2022 01 23 11:28 INFERIOR CONJUNCTION of Mercury with the Sun (geoc. dist. center to center = 3.3°) 2022 01 25 14:41 LAST QUARTER OF THE MOON 2022 01 25 23:02 Minimum of the variable star Algol (beta Persei) 2022 01 26 06:28 Beginning of occultation of 8-alpha1 Lib (magn. = 5.15) 2022 01 26 06:36 Beginning of occultation of 9-alpha2 Lib, Zubenelgenubi, (magn. = 2.75) 2022 01 26 06:48 Close encounter between Mars and M 8 (topocentric dist. center to center = 0.5°) 2022 01 26 07:38 End of occultation of 8-alpha1 Lib (magn. = 5.15) 2022 01 26 07:46 End of occultation of 9-alpha2 Lib, Zubenelgenubi, (magn. = 2.75) 2022 01 27 00:59 Maximum of the variable star delta Cephei 2022 01 28 19:51 Minimum of the variable star Algol (beta Persei) 2022 01 29 05:59 Close encounter between Mercury and Pluto (topocentric dist. center to center = 5.3°) 2022 01 29 16:57 Maximum of the variable star zeta Gemini 2022 01 29 17:24 Close encounter between the Moon and Mars (topocentric dist. center to center = 3.1°) 2022 01 30 05:24 Maximum of the variable star eta Aquilae 2022 01 30 08:09 Moon at perigee (geocentric dist. = 362252 km) 2022 01 31 04:21 Close encounter between the Moon and Pluto (topocentric dist. center to center = 3.2°)

2022 01 31 16:41 Minimum of the variable star Algol (beta Persei)

5 WHAT'S HAPPENING IN 2023

Here are some of the night sky's top events in 2023 to look forward to:

- Meteor showers This year the major meteor showers will not have to battle bright moon light for attention. The Perseids (August), the Orionids (October), the Leonids (November) and the Geminids (December) will all have a Moon-free sky to display their wares.
- Comets The visibility of these notoriously fickle beasts is difficult to predict but, apart from January's Comet 2022 E3 (ZTF) look out for 103P/Hartley-2 (August to December), 62P/Tsuchinshan-1 (November to December), 2P/Enke (October to December).
- Supermoons Only two this year and both in August which makes the second one a Super-Blue Moon so you can enjoy telling non-astronomers that no, it's not actually blue it just means it's the second full moon in a calendar month.
- Solar Eclipse There will be an Annular Solar Eclipse on the 14th of October this year but you'll need
 to travel to the USA to see it. If you are planning on heading over there to see it, get in touch with
 NECAS (the North East Concord of Astronomical Societies) who can put you in contact with other
 members who may be also be travelling to see the eclipse (Drop me an email and I can pass it on to
 the group).
- Space Missions There are a number of notable space launches and missions happening in 2023 such as:
 - JUICE (JUpiter ICy moons Explorer) developed by the European Space Agency is planned for an April or May launch. This spacecraft will reach Jupiter in 2031 and spend 3 years investigating the moons Europa, Ganymede and Callisto. It will primarily be studying the subsurface oceans of these moons and assessing the likelihood those oceans could harbour life.
 - SpaceX's Starship should be ready for its maiden flight early in 2023. No date has been set but, if successful, Starship will be the most powerful rocket ever launched capable of carry 100 tonnes of cargo up to low Earth orbit.
 - The return of ORISIS-REx on the 24th of September will see the second time a sample of an asteroid returned to Earth. The 1 kg sample of regolith taken from the surface of asteroid Bennu will be of great interest to planetary scientists as the composition of minerals may have been altered by the presence of liquid water at some point in the asteroid's past.
 - There will a glut of lunar landers launching this year from private companies partnered with NASA as well as from Japan and India.
 - NASA's Psyche mission will launch in October and head for the asteroid of the same name. Psyche is a metal asteroid that astronomers currently think may have been a planetesimal that was stripped of its outer core during a planetary collision in the early years of the solar system. The probe won't reach its target until August 2029, so we'll have to wait until then for those questions to be answered.

6 ASTRO IMAGING

The society's astro imaging group is getting active now and I predict 2023 will be a good year for imaging! For those interested, take a look at our Discord chat room and join in the conversation – see the Secretary's Newsletter for details.

Here are some examples of what has been produced so far:



Andromeda Galaxy – Craig Dixon



Elephant's Trunk Nebula – Craig Dixon



Pleiades – Craig Dixon



Iris Nebula – Trevor Appleton



Moon halo – Neil Graham

7 SECRETARY'S NEWSLETTER

Happy New Year and welcome to January 2023's Skynotes.

2023 Graphical Almanac

As with previous years, please find attached the 2023 Graphical Almanac, the location used is approx Scarborough Castle headland.

Dalby Public Nights:

Our next public night at Dalby will be Friday 3rd February.

Outreach:

We have a few outreach events planned for January & February, if anyone is able to assist at any of the following, even just driving a telescope, please contact me at saras.secretary@gmail.com.

This is the link to the Outreach Dates:

https://docs.google.com/spreadsheets/d/1k-IY 3NXY6jWL0tdRhlgGM3W1hRAG4MH/edit?usp=sharing&ouid=110351666681567279227&rtpof=true&sd=true

SARAS Discord Chat Room:

I have created a Discord chat server for the Society.

At the request of some members, I have set up a Astro-Imaging sub-category for collaboration on that specific subject within the Discord Server - this is now seeing regular use.

For those not familiar, Discord is a combined chatroom / forum with photo and video upload facilities, voice and video chat functionality, as well as "rooms" to separate out topics, much like the web forums we had previously.

The server is private, with the invite code only sent out to members.

Discord can be accessed by mobile app, web browser or PC application and is cross platform, so you can access the server by any of the listed means and see the same content, regardless of which device is used. Invite code: https://discord.gg/4W4f5GgWFX

Forthcoming Events:

Friday 20th January 19:45 - Ayton Meeting - Workshop Night - Astrophotography

Reminder: All our events are on the website event calendar here: http://www.scarborough-ryedale-as.org.uk/saras/calendar/

8 USEFUL WEBSITES

The SARAS website is at http://www.scarborough-ryedale-as.org.uk/saras/

John Harper's site is at http://www.jonvran.co.uk/

Jim Cornmel's website is a really great resource for star charts and much more. https://www.jimscosmos.com/

Mark Tissington's gallery is at http://images.eyeonthesky.org.uk/#!home

BAA https://britastro.org/

SPA http://www.popastro.com/

IAU http://www.iau.org/

RAS https://www.ras.org.uk/

International Meteor Organisation http://www.imo.net/

SolarHam http://www.solarham.net/

Aurora Watch http://aurorawatch.lancs.ac.uk/

EQMOD Project http://eq-mod.sourceforge.net/introindex.html

ASCOM http://ascom-standards.org/

Stellarium http://www.stellarium.org/

Stellarium Scope (EQMod) http://www.bytearts.com/stellarium/

Registax http://www.astronomie.be/registax/

GIMP https://www.gimp.org/

IRIS Image processing http://www.astrosurf.com/buil/us/iris/iris.htm

Deep Sky Stacker http://deepskystacker.free.fr/english/index.html

Astrophotography Tool http://www.ideiki.com/astro/Default.aspx

Backyard EOS / Nikon https://www.otelescope.com/index.php?/home/&page=bye

PHD Guiding http://www.stark-labs.com/phdguiding.html

Jodrell Bank http://www.jb.man.ac.uk/astronomy/nightsky/

Astro Bites http://astrobites.org/

AstroTortilla https://sourceforge.net/p/astrotortilla/home/Home/

Comet Watch http://www.cometwatch.co.uk/current-observable-comets/

9 MOBILE AND VR APPS

Planetarium Apps

Stellarium – Android (free, £7.49), iOS (£9.99)

Sky Map - Android (free)

Star Walk 2 - Android (free), iOS (free)

Sky Wiki – Android (free)

Solar System Scope - Android (free)

Daff Moon – Android (free)

Star Chart- Android (free), iOS (free)

Night Sky – iOS (free)

Sky Safari – Android, iOS (free or up to £38.99 depending on the version)

Weather Apps

Clear Outside - Android, iOS (free)

Good to Stargaze - Android, iOS (free)

Nightshift - Android (free)

Weather & Radar - Android (free)

Westweather.co.uk/jetstream.php

Object Tracking Apps

ISS Detector – Android, iOS (free)

ISS Live Now - Android, iOS (free)

Satellite Tracker - Android, iOS (free)

Asteroid Alert – Android (free)

Setup and Planning

Polaris View – Android (free)

Glendale App – Android (free)

APT DC - Android, iOS (free)

DSO Planner- Android (free, £17.49)

Light Pollution Map – Android (free, £9.49 sub), iOS (free, £9.99)

Virtual Reality Apps

Titans of Space Plus – Oculus Quest (£7.99)

Star Chart – Oculus Quest (£7.99)

Homestar VR Special Edition – Oculus Quest (£18.99)

Mission: ISS – Oculus Quest (free)

Spheres - Oculus Quest (£7.99)

10 CONTACT DETAILS

| Treasurer | Editor/Chairman | Secretary |
|---------------------------|-------------------------|---------------------------|
| | | |
| Neil Graham | Nick Duffy | Neil Graham |
| | | |
| 33 Overgreen View, | 2 Yedmandale Terrace, | 33 Overgreen View, |
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Acknowledgements

Star Chart and Other Charts: Cartes du Ciel

Moon Phase and Monthly phenomena:: Coelix Apex

The Sky this Month: John Harper's Website