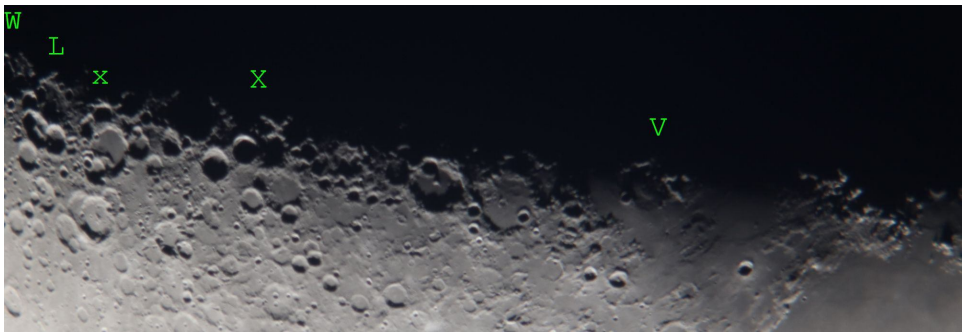
Regulus 2021 April

Newsletter of The Royal Astronomical Society of Canada - Kingston Centre
Celebrating our 60th anniversary 1961-2021 kingston.rasc.ca



Taken on the evening of 2021 March 20th. The **Werner Lunar "X"** feature along with a Lunar "W", "L", and "V". Kevin Kell used a 102mm Meade SC on a Meade LXD55 mount with a ZWO ASI 290MC camera.

Asteroid Vesta by Stephen Craig on 2021 March 20, 24x5min exposures binned 2x2.

Vesta is the brightest, moving streak and also in the image is NGC3501 in Leo.

kingston.rasc.ca Update Project Completed

Yesterday (2021 March 15) we successfully (we think, we hope!) replaced the kingston.rasc.ca website based on the content management system Drupal v7 with a completely new on based on Drupal v9 that looks very much the same.!

Thanks to Walter MacDonald for reuploading the content of the old site, as we were unable to find tools to automatically migrate everything. This is still in testing-and-fixing-missing-items stage. Over the next week we will continue to work on missing bits here and there. It is looking good under chrome and firefox and edge under win10. Tomorrow I will test it out on the imac safari, chrome and firefox.

At the time we started this project Drupal v7 was going to be reaching end of life and be unsupported... Since then, with Covid19, the end of life was pushed back another year... but what the heck, the project still had to be done. Unfortunately, user accounts were unable to be migrated. In a short time we will put out a call for those interested in a kingston.rasc.ca website account and start setting those up again... maybe by the weekend?

MEETINGS

RASC-KC Wednesday Weekly Social videoconference. 7pm Eastern all weeks except the 2nd Wednesday of the month. For members and their guests. Email list subscribers receive the link weekly 1 or 2 days beforehand. **Note** it is the same link for 2021Jan-June!
Next:: Wed 2021April07

RASC-KC Regular Monthly Meeting -
2nd Wednesday of the month 7pm Eastern. Zoom for members and youtube live stream for the public. Members receive email registration link about 1 week beforehand. For youtube.com search for RASC Kingston.
Note This is a unique link for each meeting

Next: Wed 2021April13
Guest Speaker: Laurie Graham

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* Astrotips – Imaging
* KFLA ScienceFair 2021 – Bruce Elliott
* Jupiter - 44 Cap Occultation Reappearance - Rick Wagner
* RASC-KC Solar Cycle 25 Monthly Review – Hank Bartlett
* Tips for a better zoom experience: - Kevin Kell

President's Tidbits for April 2021- Kim Hay

April....in like a small lion cub. We had a bit of snow but gone by lunch and the presence of spring has returned. The skies at night cleared for a bit, and some took advantage of that. The next two weeks look good.

The RASC is putting on a new Moon at Noon program, first one was April 1st and will run every Thursday until June from 12:00 till 12:30 pm. April 1st we were introduced to the Explore the Moon program available both for binocular and Telescope. More here at https://www.rasc.ca/moonatnoon
hope that some of our members will take up the challenge....I know I am.

We had great success in the Frontenac & Lennox & Addington Science Fair held virtually this year In March , with the lead by Bruce E. and members Graeme H and Elena Z. helping out with judging. The winner this year of the Leo Enright Award for Astronomy was Reed R. from Kingston Christian School . His project was on Rocketry. At the end of the FLASF we got to listen to Col. Chris Hadfield on the Facebook FLASF page.

Also for outreach this month was a class from Leeside School which Bruce E. , Francesco A., and Kevin W. answered questions submitted by the class and held an online ZOOM session with more questions after. Even in this time of social distancing we can still do outreach for all ages. Thank you everyone for helping our young students with their questions, and helping to shape and touch their future paths.

We have our upcoming Social nights on Wednesday with our Regular Meeting on Wednesday April 14th at 7:00 pm.
Our speakers will be our Vice President Laurie Graham on " A Tale of Two Torqued Terrestrial Bodies".

Our Past President Rick Wagner presenting the "Leeside Observatory and Boltwood telescope".

We will also have Malcolm Park and Hank Bartlett presenting.

The 2021 General Assembly will be held Virtually online June 25-27th with more information on the RASC GA Website https://www.rasc.ca/general-assembly.

RASC-Kingston Center Board of Directors

President: Kim Hay
Vice-President: Laurie Graham
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"Local" telescope retailers

compiled by Kevin Kell

*Not a listing of quality, price, service, etc. **just** a listing of who might be within driving distance for pickup.

* Astronomy plus https://astronomyplus.com Longueuil, Quebec
* Focus scientific https://focusscientific.com/ Ottawa Ontario
* Khan Scope Center https://khanscope.com/ Toronto Ontario
* KW telescope https://kwtelescope.com/ Kitchener Ontario
* Maison de l'Astronomie https://maisonastronomie.ca/en/ Montreal Quebec
* Ontario telescope https://www.ontariotelescope.com/ Caledon Ontario (NW Toronto)
*Otelescope https://www.otelescope.com/ Ottawa Ontario

Skyward for April 2021 By David H. Levy.

January 6, 2021

Just one day after the Earth passed its closest point to the Sun in its orbit, its perihelion, the American Astronomical Society was having its annual meeting online, the United States Congress was validating the results of the 2020 national election, and Wendee and I were settling in for a civics lesson about the way the United States Government works. The day did not turn out that way.

Shortly before noon, on our television set a news ticker appeared. It announced that two buildings in Library of Congress (LC), the James Madison, and quickly afterwards the Adams and Jefferson buildings, were being evacuated. That news sent a chill through me. The LC is one of the finest libraries in the entire world. It contains more than 170 million books, of which more than thirty are books I wrote entirely or at least a foreword. It also includes all of the more than two hundred "Star Trails" columns I wrote for Sky and Telescope magazine between 1988 and 2008, and dozens more I wrote for other magazines and journals. Only the British library, with over 200 million books, is larger than the Library of Congress.

This event was personal for me. A few minutes later, when the entire Capitol complex was stormed, it was personal for all of us. All of us had reactions to this, but in addition to the feelings I shared with most of you, I had an additional feeling– specifically about the library.

How many books does it take to make a library? When I was a child in 1963, a teacher gave the best answer I've ever heard: "two books." For me, a library– any library– is every bit as priceless as a dark sky. The wisdom of the ages is contained in each library- from the LC to a child's collection. I have never gone into a library without feeling better when I exited. The idea that this magnificent collection was threatened that day was terrifying.

I have read many books over my lifetime, from *The Cat in the Hat* to my boxed set of *Lord of the the Rings*. One small treasure, Jene Lyon's Golden book *Our Sun and the Worlds Around It,* began a lifetime of stargazing. That gem, by the way, also lives in the LC. What is more, I have never encountered a really bad book. When an author places her or his thoughts on paper in a book, that book immortalizes those thoughts.

I hope that Capitol Hill and the Library of Congress are never threatened again. They belong to we the people, and stand beautifully in Washington, D.C. to govern us, teach us, and encourage us to follow our dreams and reach for the stars.

In the Sky This Month - April 2021 - Rick Wagner

02 Apr - 6th mag 44 Cap reappears from occultation by Jupiter; about 05:55EDT Jupiter will be ~8deg above the ESE horizon in a twilight sky. Don't forget to look for Saturn 12deg to Jupiter's upper right.

04 Apr - last quarter Moon

04 Apr - asteroid 9 Metis at opposition in Virgo
06&07 Apr - thin crescent Moon passes 4deg south of Saturn and Jupiter in the eastern sky shortly before sunrise.

07 Apr - asteroid 1561 Fricke occults 8.9mag star HIP62458

11 Apr - new Moon 22:31

12 Apr - extremely thin crescent Moon (21hrs old) just above the eastern horizon after sunset.

20 Apr - first quarter Moon

22 Apr - Lyrid meteor shower maximum should show about 15 meteors per hour in the pre-dawn hours today.

24&25 Apr - Mercury and Venus very low in the western sky very shortly after sunset.

26 Apr - Full Moon, 23:32EDT

25-27 Apr - Mars passes 0.5deg north of M35

RASC-KC Contact Information:

The RASC-Kingston Centre
c/o 76 Colebrook Road, RR#1,
Yarker On K0K3N0

email: kingston@rasc.ca
website: kingston.rasc.ca
Twitter: https://twitter.com/astrokingston
Youtube:youtube.com search for RASC Kingston
Facebook Page: facebook.com/rasckingston
Facebook Group:
facebook.com/groups/681409686039729/

Blast from the Past: 1980 June Regulus

A MEMORABLE MEETING

On Thursday, May 29th, 1980, members of the Kingston Centre had a chance to attend one of our meetings which those who did will likely not forget for a long, long time -- a chance to hear our Honorary President, Dr. A. V. Douglas, report on her trip to India for the February eclipse. Her two-week trip to the great Asian sub-continent was a fascinating and enviable experience, but it was a real thrill for the rest of us when she shared with us the highlights of that memorable venture.

Dr. Douglas not only told us of the awesome spectacle of the three and a half minutes of totality on the high, central Indian plateau but also gave us a feeling for the places she visited with their culture, setting, and historic importance. The group of American astronomers, of which she was a part, flew from New York to London and on to Bombay on the west coast of India. There she described seeing the magnificent seventh-century bas-relief statuary on Elephanta Island in the great harbour, and later touring the Tata Institute For Scientific Research -- an institution named after one of India's scientific pioneers.

Minutes of The RASC-KC Regular Monthly Meeting (via zoom) of Wednesday February 10th 2021

The ninth Regular Meeting since the onset of the COVID-19 pandemic, was held remotely with Zoom video conferencing software and started at 19:00EST. 24 people were in virtual attendance

Kim Hay Started the meeting at 19:02 EST and welcomed everyone with season greetings. The YouTube live stream and session recording were started. All participants were muted so that the presenters could be heard without interruption.

Kim introduced herself and the executive team members. Kim presented the Agenda for tonight's meeting.

Kim announced the following:

- This year the Kingston centre is celebrating 60th anniversary
- Fall'N'Stars is scheduled for Sept 10-12th 2021
- Science Fair is scheduled for March 22-26

Kim gave a brief biography for Judy Black.

Kim handed over to Judy Black

Judy presented "How Observant!"

- It is highly recommended to always record your observations
- What does it mean to "Observe"?
- Why to record observations?

- When/Where to log your observation
- What to log in the record?
- What kind of logging media can be used?
- How to organize a logbook
- RASC Observing Certificates details
- Q&A session with Judy

Kim handed over to David Levy
David thanked Judy for her presentation and presented small excerpt from “Country Churchyard” poem by Thomas Elegy
Kim handed over to Malcolm Park
Malcolm gave a tutorial on how to stack images using Pixinsight

- How stacking works?
- What other post-processing to enhance picture quality
- Pixinsight introduction
- Stacking steps demonstration
- Comparison of SNR between the various stages
- Comparison between original single frame and stacks photos
- Q&A session

Kim handed over to Hank Bartlett
Hank presented Hank’s Sun Spot

- Progress of sunspots over the past month
- January 18th,20th,24th,28th, February 4th,9th,10th solar images
- Q&A session

Kim Handed over to Rick Wagner
Rick presented What’s up in the sky?
Scheduled events

- 12 Feb - Queen’s physics colloquium
- 13 Feb - AAVSO webinar
- 18 Feb - Queen’s Observatory Perseverance landing party
- 20 Feb - BAA Solar Section webinar
- 27 Feb - AAVSO webinar
- 6 Mar - BAA annual meeting webinar
- 6 Mar - AAVSO DSLR photometry
- 10 Mar - Kingston Centre regular meeting

Moon this month:

- 4 Feb - Last Quarter
- 11 Feb - New Moon
- 19 Feb - First Quarter
- 27 Feb - Full Moon
- 06 Mar - Last Quarter

Planets this Month

- 11 Feb - Jupiter in SE before sunrise
- 25 Feb - Jupiter, Saturn, Mercury in ESE before sunrise
- 28 Feb - Mars passes through Pleiades to Hyades

Asteroids this Month

- 22 Feb - asteroid 29 Amphitrite at opposition
- 6 Mar - 266 Aline occultation

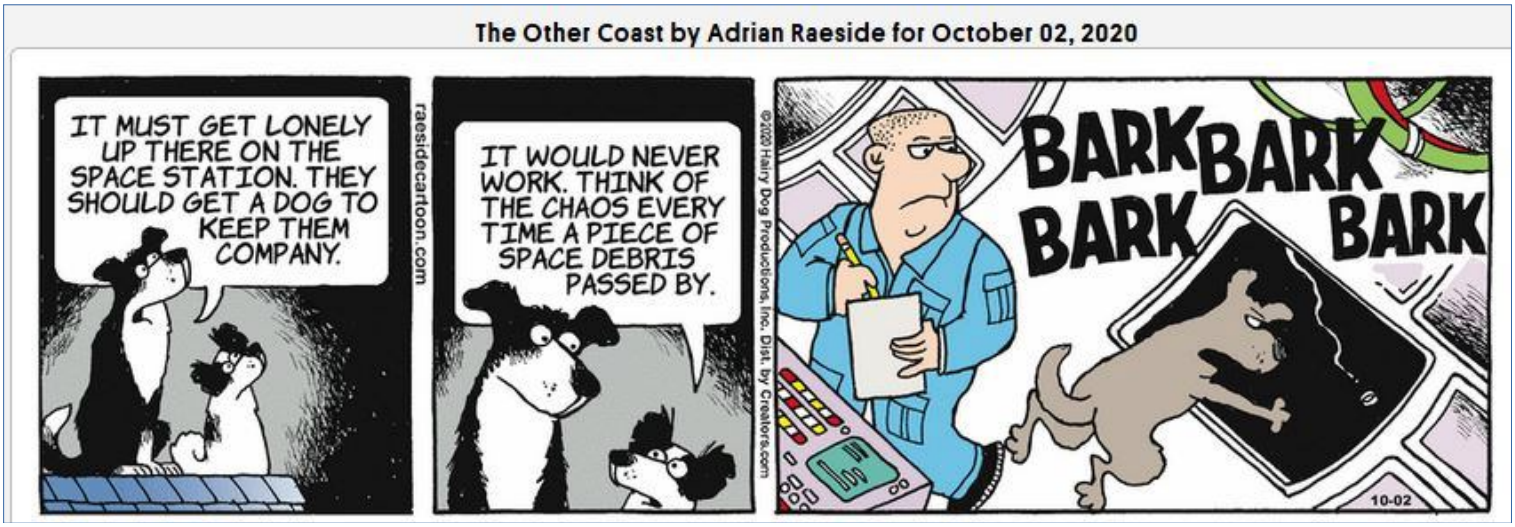
Explore the Universe

- Winter constellations
- Moon phases
- Planets: Mars, Uranus
- Zodiacal light after sunset
- Algol eclipsing binary
- Q&A session

Kim announced the upcoming regular meeting sessions schedule and speakers
Kim adjourned the meeting at 21:03
Meeting minutes prepared by Asser ElGindy 2021-03-12

An Allsky1 startrail image on the night of 2021 April 1&2 with a high altitude pass of the International Space Station with a crewed Soyuz and the Spacex Crew Dragon currently docked.

StarlightCascade Gardens & Observatory – Kim Hay & Kevin Kell



Astrotips - Visual

https://www.skyatnightmagazine.com/advice/how-to-star-test-a-telescope/

by Ian Morison

Examine the quality of your telescope's optics by conducting a simple star test and enjoy clearer views of the night sky.

By star-testing a telescope you'll be able to judge how well made or collimated (aligned) the lenses or mirrors are. You can then use the results to fine-tune the optics and squeeze the most out of your scope for perfect views.

To carry out a star test you need to observe a bright star with your telescope and a high-magnification eyepiece, looking at the star when it's in focus, when it's inside focus and when it's outside focus. The patterns of concentric rings that the star makes reveals the state of your scope's optics.

The star should be high in the sky so that atmospheric effects don't cause it to twinkle too much. If the stars are twinkling heavily, don't bother with a star test because you won't get good enough results.

See the linked article for the complete procedure*

Astrotips - Imaging

https://www.skyatnightmagazine.com/astrophotography/astrophoto-tips/how-to-photograph-planets/

by Pete Lawrence

All you need to know to photograph the planets, including what telescope you'll need, photographing with a DSLR and tips, tricks and techniques.

In this guide we'll reveal how to photograph the planets, including what equipment you'll need, how to get set up, tips, tricks and techniques, and how to use a digital camera to photograph a planet.

Photographing the planets can, even in today's enlightened times, lead to surprising discoveries. Often the announcement of an impact on Jupiter or storm on Saturn comes from an amateur, having been recorded by a planetary imager.

In this guide we'll consider how to photograph all of the planets, from Mercury out to Neptune. Some of these planets, such as Mars and Jupiter, appear more dynamic than others, so we'll concentrate on these to illustrate some of the techniques needed to image the planets.

See the linked article for the complete procedure*

KFLA ScienceFair 2021

– Bruce Elliott

Last week, Elena, Graeme and I judged 5 Astronomy related projects for the Leo Enright Award. We chose Project #2205 (below) because this participant did some really interesting experiments - testing several parameters to build the best rocket from the materials they had available. Included also were some awesome videos along with expressions of sincere excitement about the results obtained!

Attached are our comments on the five projects, all of which posed exciting questions, and were well researched on the Internet, but lacked experiments or observations in the field. We have suggested some interesting next-step questions and experiments that we hope will encourage them to follow through.

As we had one obvious awardee, there was no need to interview directly any participants.

We're really happy that there was a virtual KFLA science fair this year, and enjoyed very much the judging experience.

2205 Rocket ship 

We really enjoyed seeing your project about pop-bottle rocket ships (comparing volume vs aerodynamics). We hope you found it interesting to find out that internal volume mattered so much in how high the bottle flew off the ground.

Your launch platform is clever, although if you decide to pursue this research further please include a control rod to help direct the bottle upwards, and possibly stabilization fins so your bottles don't fly left/right.

You presented data results and showed a decent understanding of the concept. In future, controls and repeats would be nice. Also please be sure to define your objective and hypothesis clearly – maybe show a draft to a friend.

Your videos were awesome. A huge plus is that you learned from your experiments and adapted your research through cycles towards an improved thrust and flight. This is how good research happens!

Excellent project – congratulations!

I just received the email message below from Reed Rickards who is our FLASF 2021 recipient of the Leo Enright Astronomy award!

There is real excitement in Reed's note, with heartfelt thanks expressed by his mother in the last paragraph! Reed is from Kingston Christian School. Thanks again to Elena and Graeme for their help in judging and offering helpful comments to the participants.

Bruce

"To RASC Kingston Centre:"

Hi I'm Reed from the science fair special award Leo Enright Award for Astronomy. Thank you so much for the 100 bucks and book, I really appreciate it and I will use the money to learn more about chemistry. When I grow up I want to be a chemical engineer so my project helped me learn more about chemistry, and flight! Thank you so much and have a good day.

Hello Mr Elliott, my name is Courtney and I am Reed's Mom. Just for reference Reed is 12 years old and in Grade 7, as well as the younger of my 2 boys (so he has an older brother to contend with;). This year Reed and his assistant, his grandpa, literally had a blast testing factors that affected bottle rocket flight height. To also win a prize after all that hard work (and fun) only makes the whole event that much more memorable. Even to be acknowledged made his day, he was so proud, but when I read him the e-mail explaining there was a prize he lost his words at first - a rarity in our house! The school changes and loss of softball and ball hockey last year made him sad, it has been so wonderful to watch him channel his energy into other interests and to see that bring him joy! Thank you ever so much!"

A concept rolloff building/shed to cover the 60cm Venor Dobsonian telescope to consider if we ever find property to set up an observatory and observing area.

Jupiter - 44 Cap Occultation Reappearance

by Rick Wagner

Date: April 2, 2021 at 11:20 AM

I awoke this morning shortly after 5AM and lay there for a little while to try to go back to sleep. After about 15min I remembered that I had planned to get up to see the reappearance of 44 Cap from behind Jupiter sometime shortly before 6. Rolling over to look out the window I could easily see (even with my glasses off) Jupiter gleaming on the horizon so I got up, dressed, and dragged the 20cm/5.6 Dob out to my cliff-top observing site. It was a lovely morning though somewhat chilly at -7C and with a goodly breeze blowing from the north. Saturn and Jupiter were both very prominent in the SE, the waning gibbous Moon to the south. I centred up Jupiter with the 8.8mm eyepiece (127X) to find a nearly featureless blob (slight darkening in the middle was all that could be seen of the belts) accompanied by three of the Galilean moons. The disk of Jupiter was colour-fringed from atmospheric dispersion and frequently wracked by very fast waves of turbulence which tore pieces off the upper and lower limbs, even occasionally breaking through the middle of the disk. Somewhat daunted I continued my careful watch regardless. After several minutes I was able to distinguish Io having departed its transit of the disk, already well separated from the boiling disk. By about 6AM the seeing was occasionally moderately good for periods of up to 15s, the equatorial belts were nicely separated and their different widths and intensities obvious during these intervals. I began to be aware of a fainter near twin to Io, closer to Jupiter and somewhat fainter (Stellarium says 44 Cap should be 0.5mag brighter than Io but that's not how it appeared.) By about 6:10 I could no longer resolve the two 'stars' and they stayed that way, very slowly drifting away from Jupiter, until 6:25 when the Galilean moons were beginning to intermittently disappear in the brightening twilight so I gave up the effort and headed off for a very chilly pre-dawn bike ride.

So, occultation reappearance not really seen but to watch the moon and the planet merge into a single object was very nice. To be out under the sky for an hour, to hear the first bird awaken to greet the dawn was lovely.

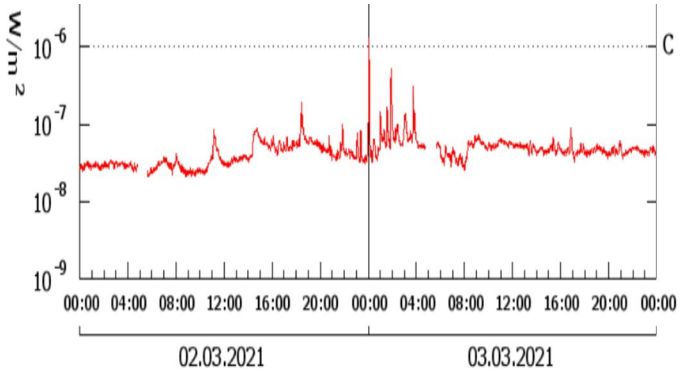
In 1989 I was able to watch Saturn occult 28 Sagittarii (with this same telescope.) The event took place higher in the sky so the seeing was better. Saturn has a much lower surface brightness than Jupiter so 28 Sgr stood out much better and was easily visible winking in and out of view as it went behind density variations in the rings, sparkling especially brightly through Cassini's gap and between the crepe ring and the disk. Finally as it disappeared behind the disk of the planet it throbbed in brightness every 2s, perhaps 4 or 5 times before finally disappearing. Very exciting. Paul Boltwood, Rob Dick and Jon Buchanon(?) from Ottawa imaged the whole event (with a movie camera if I recall correctly.) They spent days digitizing the frames, aligning each individual frame on the star, performing photometry on every image. The result was the first ever extreme resolution densitometry of the rings to something like km resolution. Completely ignored by the professionals. I don't know if the data even still exists.

RASC-KC Solar Cycle 25 Monthly Review

A review of solar activity and images during the past month
by RASC-KC solar observers.
By Hank Bartlett

2021 03 02

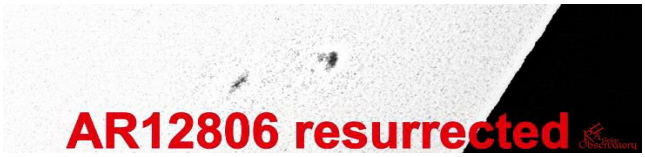
March came in as a Lamb as active region 12804 rotated over the NE limb. Then our hopes were lifted as 12807 released a C1.2 flare at 00:3:00UT on March 3 spiking above the 10^{-6} x-ray range. During solar maximum this event would not be a noted flare, it would be the baseline.



https://tesis.lebedev.ru/en/sun_flares.html

During first week of March spot activity from AR12807 & 806 put on a good show and decent multiple fledgling size spots for this time period in the new cycle. Unfortunately however it was short-lived joy as both almost faded away after a few days. Oh the disappointment, then oh the surprise on March 7, AR12806 had a significant resurrection. Confused? I am.

Sunspot resurrections are not unheard of, never count a sunspot out. Before observing in h-alpha I thought when a spot collapsed it was gone, now with h-alpha one can see the continuing active region in spotless form lingering for days and ready to restart. We have also seen in the past some of the larger sunspots last 3 full solar rotations, over 75 days. However in this case 806 rotated away only two days later on March 9 and will not likely be seen again.

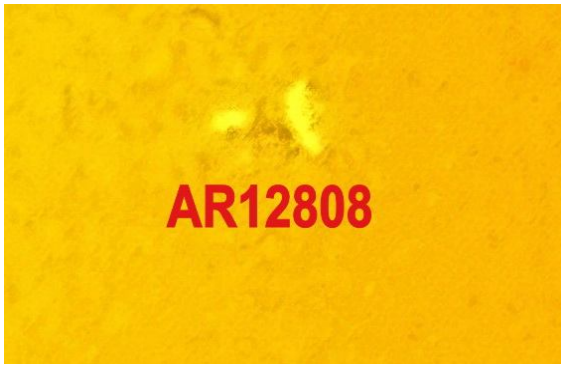


2021 03 07

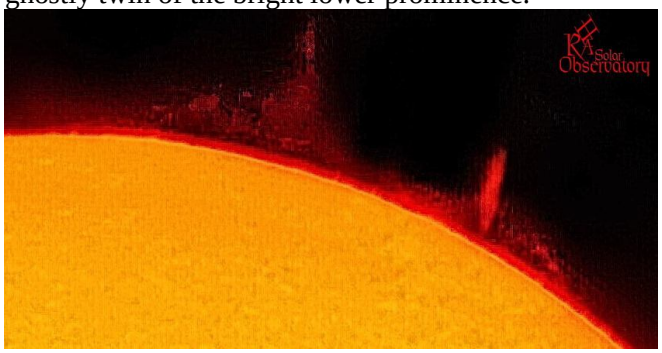
It is said for every death there is a birth, for every departure an arrival. A new active region appeared in the NE limb area the same day 806 departed heralding AR12808, this is the way we want it to be, a constant flow of activity.

2021 03 09

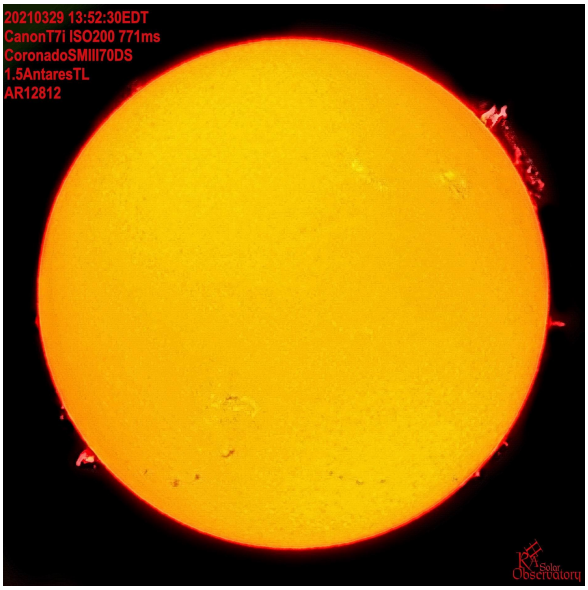
March 14 (Pi Day) SDO showed 808 and 809 as a “returned” pair as well as another new active region below that did not last long enough to be numbered. The next day only a tiny 808 spot remained. But as I stated earlier that does not mean the active regions themselves had diminished or dissolved as seen below in these 2021_03_15 h-alpha images.



The warmer weather of the second half of the month has meant even more cloud and less observing. However on March 19 a beautiful pairing of prominences on the Sun's SW limb made up for the past missed days. The upper of the two barely appeared to the eye, in the image below it looks a little like a ghostly twin of the bright lower prominence.



20210319



The first day of spring was clear but hazy and this is becoming more common as spring advances with its wet weather. Haze is a real enemy of h-alpha solar observing, as we all know haze = hydrogen and that is what we are trying to observe and image. As the month comes toward a close I have had 14 observing sessions so far and clear sky today on the 30th yet to be taken advantage of. Over all there has been some decent observing, with 9 sun pots forming and either fading out or rotating away. The x-ray level at the start of the month was 10-7 and that appears to be how we will be ending the month, the sun needs a kick start to get going it! All is not a loss or waste however with observations and images like this…

I am attempting to produce this article monthly as we move into cycle 25 to document it and encourage others to take up solar observing. If you have a solar image during the month to contribute to RASC-KC Solar Cycle 25 Monthly Review forward it to rhaobs (at) gmail (dot) com along with exif and any other documentation and I will include them in that month's reports as I would prefer it is not just a forum for my own images.

Tips for a better zoom experience:

- Kevin Kell

1) restart your computer beforehand
2) close down all unecessary programs, save memory and cpu cycles.
3) use network cable and not wifi for better speed and reliability
4) upgrade your zoom program to the latest version, I am now at v5.6.0
5) turn off your video so your audio has more available bandwidth for you to hear others and others to hear you.
6) If you feel comfortable, go into your zoom program whilst in a meeting and take a look at the bandwidth in use and compare that to your internet plan. video options/settings, statistics, and in the right hand window, will tell you send and receive bandwidth in use. The end result.. try to get a better internet plan if the numbers are too close to each other (it you are bumping up against your limits).
7) use a headphone at least (speakers in ear), headset at best (speakers in ear and microphone). This really improves the quality of audio for you and for everyone else, and reduces the amount of noise cancelling needed (which is not perfect in any event), again saving cpu cycles.

The Fine Print: