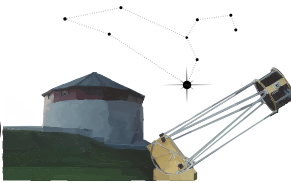


Regulus

May 2020
RASC Kingston Centre



Upcoming Meetings

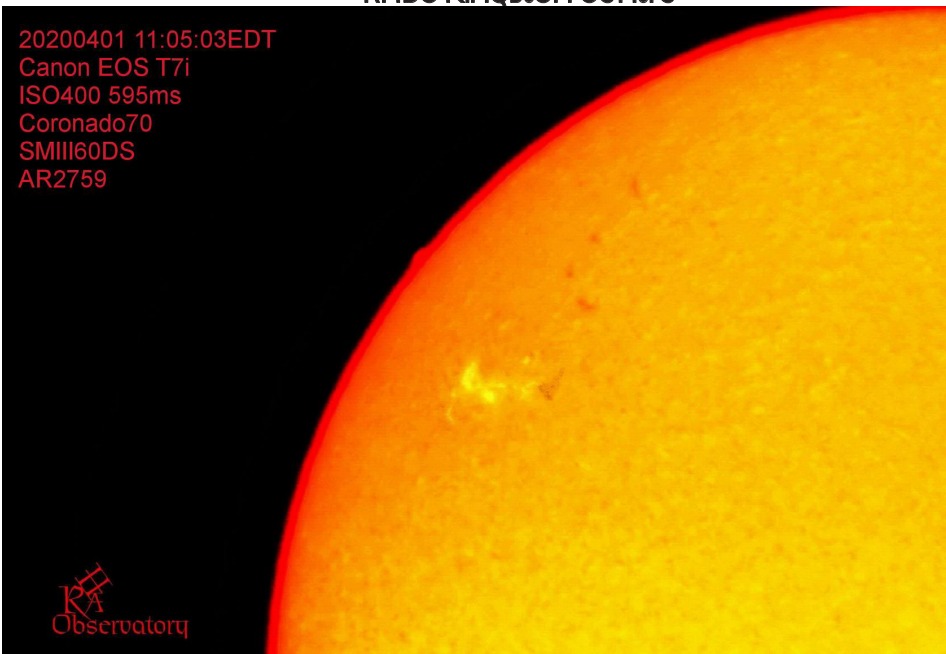
Join us at our next Kingston RASC Meeting online Zoom Meetings @ 7pm!

- May 14th, 2020
- June 11th, 2020

Email Kingston@RASC.com for an invite (note we are working on a email list for members to get notification invite for meetings).

Return of Solar Activity? - Hank Barlett

20200401 11:05:03EDT
Canon EOS T7i
ISO400 595ms
Coronado70
SMIII60DS
AR2759



RASC
Observatory

Wednesday was Sun day and it was no April Fools! Yay!!!!!!

Here are a few pics from this morning of AR2759 near the solar NE limb, hopefully it is going to continue to grow. H-alpha is Canon EOS T7i on Coronado70 SolarMax60DS and white light is same camera on ES80ED Triplet with Baader film. Imaged between 10:31 - 11:49EDT



In this issue:

Sun Spots Return _____	1
SCGO All Sky Pi Project _____	2-5
New RASC Image Database _____	6
Crew Dragon in the Night Sky _____	8
Connect Online _____	7
AstroCross _____	9
Spotlight Astrophotography _____	10

April Fools from APOD



Pretty subdue year for April Fools jokes, but NASA's APOD (Astronomy Photo Of the Day) asks...
"Is this asteroid Arrokoth or a potato?"

<https://apod.nasa.gov/apod/ap200401.html>

Full Solar Disc - Hank Barlett

20200401 11:49:29EDT
Canon EOS T7i
ISO400 771ms
Coronado70
SMIII60DS
AR2759



RASC
Observatory

Background:

An allsky camera system monitors the sky throughout the night. It can be used to see what the skies look like for cloud cover and incoming weather from a remote location (even if just inside your house), keep a historic record of weather and cloud conditions, provide a gorgeous animation of the entire night and more. Many people also use it for more specific reasons, such as fireball detection or aurora imaging.

Our 1st allskycamera in 2003 was replaced with a donated system that ran from 2006 until 2018. Commercial allsky systems that used to be available trended around \$1000USD +, but are discontinued as well (Moonglow, Mallincom,

Orion). So we started to look at another homemade system, with low cost, reuse of existing parts and a smaller footprint computer for the data collection. Computer electrical cost was also a consideration so instead of a desktop system we were looking at a smaller laptop, or netbook.

the software installed and up and running. The system went live in December but after a few weeks, a check revealed water in the housing, along with 110vac and condensation on the dome.

A redesign led to a larger housing (12" long rather an 9"), removal of 110vac to inside the ob-



The dome heater with a silicon bead between the dome and the lid with vent holes in the lid to the housing - Kevin Kell



The assembled and installed SCGO Allskypi camera system - Kevin Kell

The new design:

Then along came this project: <http://www.instructables.com/id/Wireless-All-Sky-Camera/> and we started along the process of developing The SCGO Allsky Camera Version 3.

It uses a ZWO ASI120MC camera (we had one from 2014)) with 1280x960 pixels colour USB2.0, and came with an ASI ° Lens Adapter 1/3" 2.1mm lens and a Raspberry Pi 3b (about \$40Can).

It took a couple of days to assemble the hardware, a few hours to get

servatory, and the introduction of a 5vdc powerline for the pi and a 12vdc powerline for a heating element in the dome.

The dome heater is a 10 ohm 10 watt resistor running at 3vdc (=0.9watts). The dome no longer condenses, fogs or holds snow and ice. On the opposite side, the camera sensor temperature gets pretty warm (20+C) on a sunny day, so we introduced a mechanical 110vac power timer on the 3-12vdc power adapter for the heater, running only from 6pm to 6am.

Cont -->

The holes in the lid were drilled pre-dome-heater, hoping to have hot air from inside the housing rise up into the dome. Now perhaps the holes are allowing hot air from the domeheater to infiltrate back into the housing and heat up the camera sensor.

I plotted the temperatures of the sensor, air and dew from our nearby weather station and got this below. So looking at this graph, what more can be done to lower the camera sensor temperature (which causes more hot pixels in a 60 second exposure)?

Idea 1) plug the holes in the lid to stop airflow from dome to housing

Idea 2) add vent holes at the top of the housing, below the lid and dome, to allow hot housing air to escape.

Idea 3) build some kind of airconditioner.. ie a Peltier cooler, to cool

air inside the housing.

Come warmer air temps in the summer, the sensor temp will definitely get too high... already in the last two weeks it has hit 15C!

As of today (2020 March 08), we have a system that covers approx 130-150 degrees of the sky (limited by the 2.1mm lens that came with the camera), biased northward to capture aurora primarily but to also avoid as much sunlight (and heat) and moonlight from the south. The software runs automatically from dusk to dawn in astronomical mode but also runs through the day on an occasional image basis. Nice for weather and cloud images.

It autoexposes during the night, up to 60 seconds, archives all of the night images (317 from last night), generates a video from the images, generates a startrail (still working on that), and a keogram

Submit your Astronomy Content

(Astro Articles, Photos, Sketches, Observation Reports, Etc.)

Email Kingston@RASC.ca

“Regulus” mentioned in the Subject line!

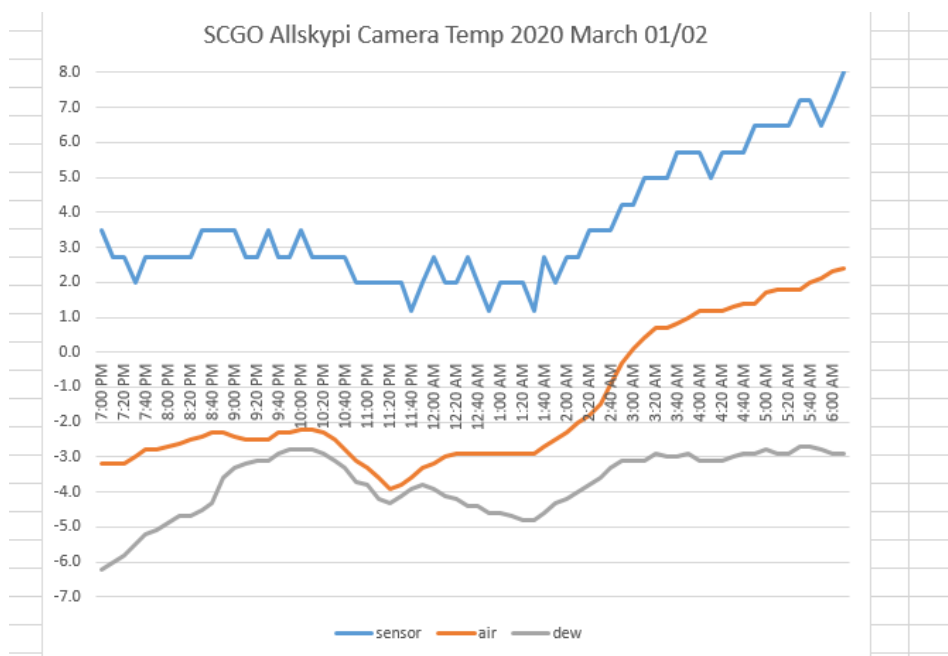


The Fine Print:

Members of the Kingston Centre receive Regulus as a benefit of membership. Non-commercial advertisements are free to members of the Centre. Paid commercial advertising is also welcome and should be in electronic format.

Submitted material may be edited for brevity or clarity. © 2020, all rights reserved.

Permission is granted to other publications of a similar nature to print material from Regulus provided that credit is given to the author and to Regulus. We would appreciate you letting us know if you do use material published in Regulus. «



The dome heater setting is 3vdc onto a 10ohm resistor giving $V^2/R=0.9$ watts of heat.
 The raspberry pi power adapter is outside the housing and can provide up to 10 watts of power
 The raspberry pi and asi120mc camera use power inside the housing.



RASC Kingston Centre

c/o 76 Colebrook Road,
 RR#1, Yarker, ON K0K 3N0

E-mail:

kingston@rasc.ca

Website:

kingston.rasc.ca

Cont: SCGO AllSkyPi Project

Kevin Kell

approx 60GB.

The sample image below is 1280x960 pixels covering 100 x 132 degrees. The date and timestamp is annotated on the image along with the camera sensor temperature, the exposure time and gain. We are attempting to add on location and other information as well.

We are superduper happy with the allsky1pi camera project. It has better resolution and colour images over the older allsky1 system (2006-2018) running a very old SBIG ST237A camera system. It also required a desktop computer with parallel port for the camera controller box.

Keeping a desktop running outdoors in the winter did have its challenges (numerous versions of blankets, wood boxes, multiple hard drive failures, etc). and not a small amount of electricity to run (80-100 watts 24h/365d): That's approx 2.4kwh/day or 876 kwh/year

A system image from 2020 March 01 at 03:06:15 EST showing the text annotation, a local cell tower, cloud bank and stars in a 60 second exposure with no moon, north is up, east is left, west is right - Kevin Kell

at our average power price of \$0.15 came out to about \$130/year! (not counting the dome heating or the camera controller power).

The new project runs on an ittybitty raspberry pi and comes in under 10w for the computer and camera combined. And that comes in at only \$13/year all else being equal. It has now been running for 31 days without intervention as well!

More information can be seen at:

starlightcascade.ca/allsky1



Good morning everyone!

My name is Virginia, and I'm the new Marketing Assistant for RASC National for the summer. I will be working on promoting RASC to the public. This means that part of my job consists in managing RASC's various social media accounts and creating posts.

I wanted to focus on using images taken from you, our members, as opposed to stock images from Google Images and NASA. To

this effect, I created the RASC National Astrophotography Database to store images that we have been given permission to use. I am therefore pulling out a call for member astrophotography images. All images will be credited to the creator every time they are used.

If you wish to submit images, please email them to marketing@rasc.ca. Please include the name of the object in the email, as well as your full name and the centre from

which you are a member. Please let me know if you have any questions or concerns. Images will be accepted at any time now and in the future.

Thank you very much for your help and contributions. Have a wonderful weekend!

Regards,

Virginia Rufina Marquez-Pacheco
Marketing Assistant
RASC National

Crescent Nebula Attempt #1

Graeme Hay

So I'm starting to image in earnest with my Celestron EdgeHD 8 which up to this point has mainly had visual observation duty. Still working out some kinks in the guiding set-up with the OAG (before it was worse with a guide scope). First up was a quick shot of the Crescent Moon that was quickly setting in the east as I started to set-up for the evening.

I decided to start with Imaging the Crescent Nebula, and with some aggressive sigma rejection I ended up getting a decent first image

although my tracking was not quite dialed in.

I do have a new RA Axis motor I want to install which should help smooth out the periodic error from the mount then I'll revisit the Nebula as it will then be higher in the night sky.



Cup of Comets... C.L. Hall

Heads up on some neat comet positions coming up:

C/2020 F8 (Swan), ~mag 6
May 18 - Triangulum
May 21 - Perseus
~June 2 - right near Capella
<http://www.aerith.net/comet/catalog/2020F8/2020F8.html>

C/2017 T2 (PanSTARRS), ~mag 8
June 1 - near Pointers
mid-June - in bowl of Dipper
<http://www.aerith.net/comet/catalog/2017T2/2017T2.html>

C/2019 Y1 (Atlas), about mag 11
May 18 - near Pointers
May 23 - in bowl of Dipper
<http://www.aerith.net/comet/catalog/2019Y1/2019Y1.html>

C/2019 N1 (Atlas), about mag 13
end of June - in bowl of Dipper
<http://www.aerith.net/comet/catalog/2019N1/2019N1.html>

29P/Schwassmann-Wachmann I (2019), about mag 14
heading across Pisces
<http://www.aerith.net/comet/catalog/0029P/2019.html>

RASC-KC Board of Directors

- President: Kim Hay
- Vice President: Laurie Graham
- Secretary: Kevin Kell
- Treasure: Susan Gagnon
- Librarian: Kim Hay
- National Council Rep: *vacant*

Committee Chairs/Coordinators

- Email Lists: Kim Hay
- Equipment: Kevin Kell
- Fall'n Stars: *vacant*
- KAON: *vacant*
- Social Convenor: Kim Hay
- Tardis Project: Kevin Kell
- Webmaster: Walter MacDonald
- Regulus Editor: Graeme Hay

Weekly Kingston RASC Meetings via Zoom

Weekly Social Gathering via Zoom to talk about all things Astronomy and keep touch with members. In addition if you have a question or ran into trouble reach out at the social to get some helpful advice.

Wednesday 7-8pm EDT

Meeting ID: 961 7852 1640

Password: 092783

<https://zoom.us/j/96178521640?pwd=anFSN2c1VDFtTERxYWdqEXpzdHpzZz09>

Kingston RASC Facebook Page & Group

Join us on Facebook!

Page

https://www.facebook.com/rasckingston/?ref=br_rs

Group

<https://www.facebook.com/groups/681409686039729/>

Kingston RASC YouTube Channel

Check out some of our videos about astronomy

<https://www.youtube.com/channel/UCFF-jyftqHUeQwsVMh99fXQ>

Official RASC Canada YouTube Channel

Learn about Astronomy from some of Canada's Top Astronomers and join in on Live Stream Videos via chat to ask questions about all things space related!

<https://www.youtube.com/user/RASCANADA>

Kim & I went out to catch the 2145ish pass of the Crew Dragon and ISS. We used Heavens Above which stated the Crew Dragon was to come first.

We had heavy intermittent cloud and did not see Dragon. A couple of minutes later around 21:51 the ISS appeared and we started imaging it, 5sec at first (it was still quite bright outside), then 10 second exposures with the Canon T7i at 800ISO.

Just the 2nd last shot with the ISS descending into the eastern horizon and cloud, we spotted another bright object on the same orbital track. This is the best image of the two together in one frame

After hearing from the rest of you, we believe the ISS was leading and Dragon trailing. Heavens Above was possibly wrong due to Dragon firing engines to change orbits multiple times and HA was not uptodate?

[Editor's Note - Crew Dragon was indeed following the ISS rather than Leading it - Heaven's Above appears to have used the wrong orbital info]

Astro Vlog: Graeme Hay



Managed to grab a video of the Crew Demo-2 from SpaceX as it followed the International Space Station through the night sky.

<https://www.youtube.com/watch?v=4Jl3GjZtrU4>



R	S	S	C	A	P	O	A	C	I	E	R	N	O
N	S	E	O	R	S	E	P	V	E	N	U	S	S
U	R	E	N	E	T	I	L	L	E	T	A	S	U
L	A	R	S	O	E	S	T	M	A	R	S	F	P
M	T	N	T	S	M	S	S	P	S	R	I	R	E
M	S	S	E	M	O	C	O	S	U	R	S	E	R
I	S	T	L	B	C	E	A	S	E	S	A	I	N
N	E	O	L	L	U	L	L	F	A	E	T	B	O
O	I	P	A	J	X	L	L	I	E	O	U	A	V
O	X	S	T	U	I	I	A	J	S	L	R	T	A
M	A	N	I	C	E	U	I	E	I	S	N	S	E
I	L	U	O	S	P	J	U	P	I	T	E	R	I
L	A	S	N	S	S	M	X	A	A	A	L	L	L
I	G	E	S	T	A	L	A	B	A	E	S	V	S

fireflies
 constellations
 stars
 venus
 supernovae
 nebulae satellite galaxies
 saturn
 mars iss jupiter
 moon comets
 sunspots bats

NGC 4631 The Whale Galaxy
2019-04-04 5 x 20 Min 2x2 Px
Canes Venatici



NGC4565 The Needle Galaxy
2018-05-16 5x15 Min 2x2
Coma Berenices

