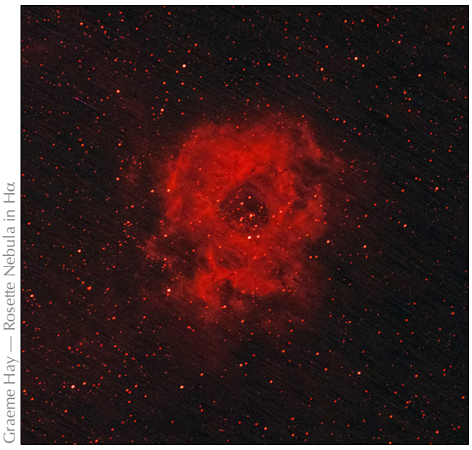
Skyletter

January–February 2020

RASC Kingston Centre

Malcolm Park — Rosette Nebula

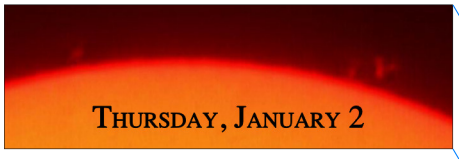


Graeme Hay — Rosette Nebula in Hα

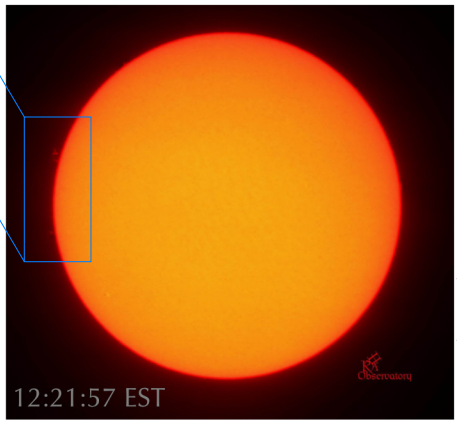
Wednesday, January 1

Stephen: It's time for bitching and complaining. It's been ten days since we had decent weather and probably another week before it improves. I'm suffering from withdrawal. I figure that bitching and complaining can't hurt and will maybe improve our prospects for clear skies.
Hank: Give it hell Steve! I am not even imaging, the sun sucks, and I still hate it! I support you 100%.
Graeme: Well I'm not one for bitching and complaining, however it is annoying when you wait through all the holidays (because your computer room is being used by a guest) to finally process your Hα only to find that its got streaks because you messed up.

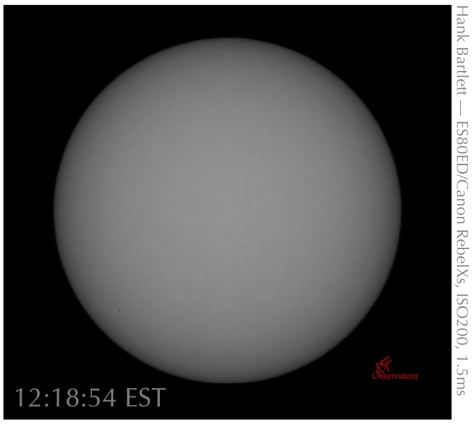
Also my cameras work better when its cold...like really cold.



Thursday, January 2



Hank Bartlett — Max60/Canon RebelXs, ISO200, 500ms



Hank Bartlett — ES80ED/Canon RebelXs, ISO200, 1.5ms

Hank: Around local noon it was CLEAR and there was a sunspot! I decided to head out and open the RHA Observatory and enjoy my first solar imaging in 26 days. I hoped that the cloud/haze curse faded away with the old year but alas in the 15 minutes it took me to gather my equipment, open the roof and lock on target haze and cloud shrouded the sun. Oh well I imaged just the same and I am happy enough with my images. Along with a few prominences, AR2755 shows well and has some faint plage visible in the white light image.
Malcolm: Lovely. I imagine we are turning the corner for solar minimum soon...
Hank: The suggestion is that we will be rather flat for about 1–2 years yet. Boo.

Saturday, January 4

Stephen: I'm suffering from major imaging withdrawal. The new moon was pretty well a wash out. It might be clear Wednesday but the almost full moon is going to be damn smack in the middle of where I want to image. I'm trying to get over a cold so I may give it a pass. Looking at the long range forecast it will be a while until we get decent weather.

Malcolm Park — Scorpius

Monday, January 6

Malcolm: Here are two of my recent pics: Rosette and Pleiades. Same details as before (same setup and process).

Malcolm Park — Pleiades

Malcolm Park — Rosette Nebula

Thu/Fri, January 16/17

Graeme (01:24): Quick test now that I got the EdgeHD8 mounted, balanced, and the OAG dual focus setup.

I'm moving from f/1.2–4.9 equipment up to f/10. Slower optics, but fortunately is cold outside (–15C) so I can crank up the ISO and still get a solid SNR improvement. I didn't apply noise reduction and all the other advance techniques I normally do as I wanted as close as possible side-by-side comparison.

23 subs x 10 secs at ISO 800 and then again at ISO 8000. The higher ISO shows a great improvement. Tomorrow night I may push the Z6 ISO even farther to find that ideal ISO now that we are well into the freezing temperatures. For comparison when I did this test in the summer I found ISO 800 seemed to be the sweet spot without risking high noise when we were above 20C.

The lower image is HDR at 50% from each ISO, mainly to get back some core detail as ISO 8000 blows it out pretty quickly. Now if only they made a cooled version of this camera, and perhaps mono... oh the fun I could have!

Graeme Hay — M42

Graeme Hay — M42

Tomorrow I'll pick a real target and run the gambit as best I can and see what I end up pulling out. Half the fun/stration is finding targets at this magnification...test how well I know the sky and star hopping.

Kevin (05:53): Wow...Awesomeness! and wow...COLD!

Graeme: It's not too bad, several layers of clothing, and I'm partially protected from the wind in the dome. A nice clear & cold night and everything working is likely worth a month of summer imaging so it's a decent trade off.

Rick: Nice shot and nice comparison. But it doesn't look to me like you're blowing out the core in the ISO 8000 images—the Trapezium is still nicely visible. I think if you're going to layering/HDR processing you could be shooting a lot longer at ISO 8000. I think in this case where the ISO 800 really helps is perhaps keeping the brighter stars from turning into blocked pure white disks. This is something that I think really makes a nice image—the stars look like Airy disks—brightest in the middle and fading into the sky.

If it looks like it will stay clear for a reasonable portion of the evening tonight I may even break down and get out the Sky90 refractor to do some imaging. I haven't had it out since I broke my arm in early June. I'd like to do a shot of the nebulae and clusters in central Auriga.

Graeme: For me I try to get as pinpoint stars a possible. It's a bit of a challenge sometimes with the EdgeHD8 as I don't have a focusing mask for it (one of the long list of things to purchase) and I could benefit from a more sensitive guide camera when using the OAG (the Orion StarShoot just captures the brighter stars).

This limits me going "longer" at the moment and still achieving my stringent round star requirements (for example when I was imaging the Iris Nebula in the summer I tossed 25% of subs) so the first night is more about refining the setup then truly imaging with intent.

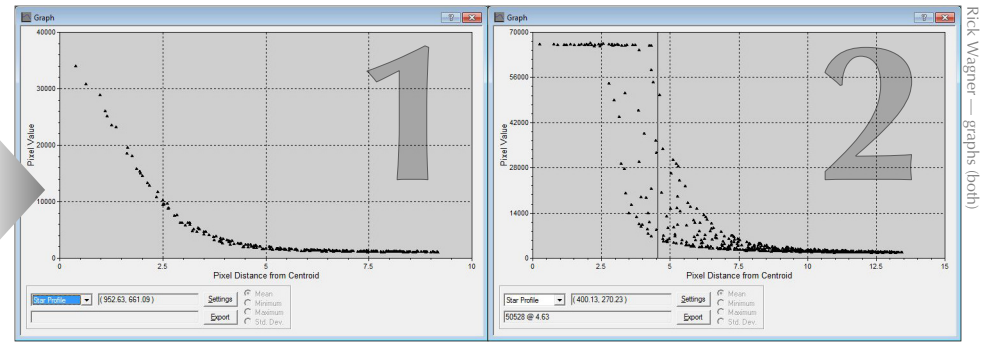
Tonight I'll be truly imaging a target and see how far I can push the setup in the cold (first time imaging with the Z6 in the winter so fingers crossed I get some great results!) then this weekend I really need to work on my v/blog posts explaining all the zany testing I've been doing as of late.

Clear Skies (looks like until 11:30 p.m. here for me),

Rick: Well, there's pinpoint and there's pinpoint. Perfect (round) stars still should have a point spread function that is approximately Gaussian (graph 1) rather than a top hat (graph 2).

Graeme: Fair enough. I'm using Betelgeuse to dial in my focus and Telrad and grabbing a short set of images. See if anything is lurking around what as normally quite a bright star.

Paul: I don't know how much free time you've got, Graeme, but I picked up a plastic file folder (as in, it holds pieces of paper 8½ x11") from Dollarama and made my own focusing mask for my 9.25" using an exacto knife. Because my hand is not steady, the lines are not all parallel, but I believe it lets me come to an exact focus. The main issue is that it took me parts of a couple of days, plus longer for the glue to dry on the band that snugs around the OTA end.



Rick Wagner — graphs (both)

Friday, January 17

Hank (16:50): Clear and cold today so the RHA Obs needed to be cranked open. It was –15C when I headed out at noon but once the roof was open and the door closed it was OK for a short solar imaging session.

The sun is rather featureless today but I couldn't miss the opportunity, this image really only shows one of the five small prominences and two filaments at the top right and left.

Hank Bartlett — The Sun in Hα

SolarMax 60, Canon RebelXs, ISO 200, 500ms

I used a few different than usual processing techniques to try and highlight the surface granulation. After a half hour the MTII hand paddle display began to shut down.

Fri/Sat, January 17/18

Starlink Satellites

Kevin (08:44): SpaceX will be blowing up a Falcon 9 rocket in the crew dragon abort test, Saturday morning. The launch window is from 08:00–12:00 EST. This will make up a tiny little bit (revenge) for launching Starlink willy-nilly. Boom!

In other news, the first report I have seen for the Starlink DarkSat (the one modified communication satellite that had some reflective abatement applied), said that it was not really effective at all. This stage 1 core has previously flown four times!

Rick (11:49): I may try to watch this one—with the snow storm coming I will likely be sitting in the house in front of a fire rather than working in the shop/office. So where do we watch it?

And speaking of Starlink there looks to be a good series of passes this evening about 18:30 and then an even better set about 17:30 on Sunday (after the skies have cleared following the storm?) While I think they are an abomination I still want to see a flock go by at least a few times. I think it will be quite impressive.

Kevin (12:39): You can watch it on the website spacex.com, or a number of others that carry it and provide colour commentary, e.g. twitch.tv/cosmoquestx.

Brian (18:51): I have just come in from my Kingston backyard. In spite of being able to see only three stars in Cassiopeia, I was able to count 38(!) Starlink satellites in less than 15 minutes.

Graeme Hay — Betelgeuse & Satellite

Rick (19:07): That was so amazingly cool! Several dozen bright satellites all streaming across the sky, single file, about 10° apart. Jeanette and I both stood out in the cold in awe.

I didn't take a picture this time—I don't know how closely they follow the same path—might just get one brighter trail. And unfor-

tunately from Heavens Above it looks like this was the last nice one we're likely to see for a while. There is a really nice pass Sunday evening (~17:30) and then they seem to get into orbits that don't get high above our horizon.

Oh, yeah—what an abomination!! The horror of it! (But it was still so cool to see—once.)

Brian: With a fixed camera, each one would have been a bit NW of the one before. Hence, many tracks.

Kim: 60 was really impressive. Especially when they seemed too overtake each other.

Rick: I'll be sure to shoot the next good one.

Kim: I do have pictures of them, just have not posted them.

Beltelgeuse

Rick (19:54): So, has anybody been shooting Betelgeuse? I'm going to go out in a few minutes and try a couple of wide-field shots including Betelgeuse and probably Aldebaran as a comp star.

Graeme (19:55): I have some narrow photos of Betelgeuse I just took; A1000 did a wide shot as well (although not too happy with the results).

Malcolm: Imagine having a camera running at the moment it explodes...

Kim (21:40): Total cloud cover...

Coda

Rick (18:30): I was worried for a bit this afternoon as there was already thin cloud floating through just before sunset. But it seemed to be a band so I was able to collect a set of flats (using my new twilight flat script which includes an auto-slew to just E of the zenith and a new technique for determining the next exposure duration from the signal of the last exposure. It didn't work perfectly—the signal levels are still dropping slightly through the sequence of flats—the goal is to have every flat come out with very nearly the same average signal—within a % or two.) I've also completed a few B and V shots of CE Cas A and B (pair of Cepheids separated by only ~3 arcsec) and am now running my normal set of 9 x 400s unfiltered on M31_V1. This is one of the last times I'll image this one as it will soon be in the trees.

Stephen (19:59): We got home from town just before 7 and I saw it was clear out so I considered opening the observatory. Then I saw the temperature, a brutal –21C. Clouds will start moving in by 11 and that is pretty cold to be operating the telescope. So I decided I will wait for a better night.

Graeme (20:00): It was nice after twilight but steadily getting worse.

I'm taking a break indoors to warm up, then heading out to see if I'm closing up or trying for another hour.

Stephen (20:07): I thought the sky was deteriorating. Things look good starting Sunday. I'll wait for that.

Rick (20:21): Yeah, it's already getting cloudy out—signal levels are getting lower. I'm going to shut down shortly—probably when I have to switch to my next set of targets.

Kevin (20:31): Please talk in greater detail about these things you call "signal levels."

Malcolm: You realize you missed a chance to say that the abort test was aborted.

Saturday, January 18

Kevin: The SpaceX Crew Dragon abort test has been postponed until Sunday. Wind/sea conditions were too high for the recovery teams, plus they want clear skies to record all of the gory details of the BOOM!

Sun/Mon, January 19/20

Stephen (20:54): I finally got my clear moonless night! The seeing isn't great but I can live with that. I'm well into imaging my first targets.

Stephen (05:30): At 5:20 a.m. it's a brutal –20 outside and a balmy +20 inside. My equipment is working well in spite of the cold and I am staying nice and warm inside. Almost time to close up.

Kevin: I was outside on Saturday trying to add the dome heater to the new AllSky1pi camera project. I lasted only a few minutes with the wind and the cold and incipient frostbite from working with bare hands. That didn't work! I will try again later this week when the weather gets better.

It seems that AllSky1pi is still a stable system and only lacks a clear dome (frost, condensate and snow on top).

AllSky2 last night showed a nice composite feature: three meteors forming a triangle and maybe a fourth forming another intersection...pretty neat.

Monday, January 20

Kevin: I hope most of us got to see the In-flight Abort Test yesterday with a 4x flown SpaceX Falcon 9 first stage and a Crew Dragon capsule. It blowed up good! (The rocket that is, the crew capsule landed successfully).

The US may have the capability of sending crew into space on a non-Russian craft as early as the

2nd quarter of 2020. Russian prices have gone up a *lot* in the lat decade or two: from $20M to $82M in 2015. Heck, a whole dedicated Falcon 9 launch does not cost that much!

In other news.. the Starlink 3 launch (the 4th set launched) is coming in under 24 hours, scheduled for Tuesday at 11:59 EST. They will be inserted into low earth orbit at 290km and an inclination of 53°. They will then split into three orbital planes and raise their orbits to about 550 km.

This stage1 booster has previously flown the first crew dragon test and Canada's RADARSAT constellation.

Kim has successfully imaged some of them from the Starlink 1 launch, I have not seen any at all yet.

I hope to video and image ones from this launch, as soon as possible after launch when they are lower and still hanging out together.

Mon/Tue, January 20/21

Graeme (00:31): I hope that everyone else who's out tonight is having more success than I am. I am apparently making a bunch of different mistakes including with my guide camera which is not playing nice with the OAG. In addition because I don't have go-to, I'm using star jump in *Stellarium* and I just spent half an hour trying to image the wrong object because the scaling I had set up with the wrong camera–scope combination...fun times.

Ultimately I'm going to get something valuable from tonight, just probably about a third of what I was hoping for, but half the night still remains so hopefully I can recover from all the earlier mishaps.

Stephen (01:02): I'm having a fairly good night, though not as good as last night. I was having trouble acquiring my targets. Turned out it was frost forming on my telescope's corrector plate. I got that sorted out and now I'm getting some good images of NGC 1893, The Tadpole Nebula in Auriga. Earlier in the night I managed to image Comet C/2017 T2 (Panstarrs) in Perseus. It's small and faint but I managed to get it. There is a lot of night left yet!

Graeme (01:28): Great news Stephen!

Imaging continues here, warming up and charging the spare battery for the camera at the moment. I have another hour before I swap to the final target of the night. The piggyback wide field camera is juiced and done for the night, now just a counterweight so I don't have to rebalance.

So far I've managed to image a few objects: the Flame Nebula (sort of a oops, and only got one set of images but I'll add that to the last run), NGC 5457 (M101), NGC 5474 (which I initially thought was M101, the Owl Head Nebula, and a couple frames of NGC 2844 I think...

Continued Clear Skies!

Graeme (03:35): Finally packing it in, Z6 batteries are spent and its cold.

Waiting about a half hour inside (camera outside) to recharge one of the batteries long enough to do the darks and bias frames then calling it a night.

Things that went well:

1. Wide Field camera despite no dew heater was protected by the dome lip from dew.
2. I managed to get a bunch of targets, some on purpose, some by accident.
3. I really pushed the ISO on the Z6, so it will be interesting to see if the SNR pays off in the long run.
4. No major equipment failures (beside the guiding issue mentioned before) so everything still works at –20C

Night All (or good morning).

Stephen (03:49): I'll be up until dawn doing galaxies in Ursa Major. Then we get a string of cloudy nights. Now I'm hoping it will clear up for the weekend.

Rose-Marie: We're supposed to get snow again this weekend.

'Twas nice and clear last night, and I was admiring my favourite constellation, Orion, and seeing that Betelgeuse is indeed dimmer.

But COLD! I'm getting old, didn't take long for me to wimp out and skedaddle back into the warm house.

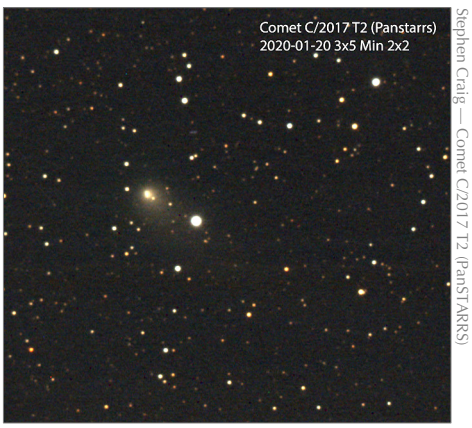
Stephen: Yes, I just looked at the forecast. It will be at least a week before it clears again. At lease I got in two good nights. I now have lots of images to process.

It was cold last night! –23.5C when I went to bed at 6. By the time Donna got up we had frozen pipes. Luckily by the time I got up at 1 they were thawed.

Graeme: Clouds for a week, might be a good time for me to send in my Z6 for the RAW video upgrade...

Yes I'm quite happy with all the data I got, despite the hiccups I managed to image a lot of targets.

Stephen: I mostly did galaxies this week, but last night I tried Comet C/2017 T2 (PanSTARRS). It is small and faint but I could see a hint of a tail.



Stephen Craig — Comet C/2017 T2 (PanSTARRS)

Hardware Projects
Friday, January 24

Kevin: The pathfinder project AallSkypi was taken down yesterday and brought in inside for some redesign. It turns out that duct tape will not keep water out of the housing. I will be siliconing the bottom end cap on next time, especially when 110VAC is right there as well!

Rose-Marie: What you need is some greenhouse sealer. It's malleable, has the consistency of the plasticene play-doh stuff we played with when we were kids, is sticky, and the best sealant I've ever used. It doesn't get hard, you can peel it off again after a few years. I think the company is Jacolite.

Rick: I've started work on my weather station which hopefully will eventually include an AllSky camera (along with SQM, cloud detector, precip sensor, temp, humidity, pressure, wind speed and direction.) I have all the sensors and processors, am building the screen for the sensors, then I'll breadboard everything up to see how they all work, then wire it up for official installation. (AAVSO has built a small weather station, the plans for which they say they are going publish, but I've seen nothing yet so I'm going ahead.)

My plan is to only carry 12V out to it through an underground conduit (probably from an old computer power supply that I have on hand.) Then use various buck converters, etc. to break that down to the various voltages the Raspberry Pi, Arduino, and sensors all need. I'm not interested in taking 120V out through the garden.

Rick: I got two full nights of photometry this past week but, because the first night the clearing was dubious and well after twilight and the second night we didn't get home from Kingston until mid-evening, I wasn't able to set up my Dob for some visual work. I was planning to hunt for NGC 1049, the globular in the Fornax dwarf galaxy (the challenge is that it's only mag 12.6 and at declination –34) is one of my few remaining targets from the Deep Sky Challenge list and it's disappearing into twilight. Given the weather forecast for cloud until the moon starts to interfere it looks like I've missed it until late spring when I can start to catch it before sunrise. Blech!

One of the other objects I'm hunting for is Abell 2065, the galaxy cluster in Corona Borealis. It needs a big scope and very dark clear skies (brightest galaxy is 15.8!) I'll try at South Bay Under the Stars if we have a good night but I don't know how dark the skies are there. My other option is to try to rope a bunch of us (including Doug with the 24") into heading up to Frontenac dark sky preserve for an observing session some time in the early summer. Anybody up for that?

Malcolm: Definitely maybe.

Paul: Yes I might be up for that!

Data Overload
Sunday, January 26

Kevin: A word of advice for anyone thinking of getting into astro-imaging: have lots of hard drives, have lots of large hard drives. I have run out of 1 and 2 and 4 TB drives, so I am trying to move files around to archive the oldest of the raw imaging to small 100–500 GB SATA drives.

I'm using a $30 USB3 docking station but unfortunately most of the computers around here are so old that they only have USB2, not USB3. I am averaging about 35 MBps on USB2, which means moving 1TB of data is taking approximately 1000 * 1000 / 35 = 29k seconds (8.05 hours).

I *just* found one computer with USB 3 and am now moving things across the network. So I'm getting 80 MBps now. Awesome, only 4 hours now! That's on a gigabit network to boot.

So...looking for a computer to handle stuff? Think of lotsa RAM (> 4GB, but at least 2), or all USB3 ports, 120 GB+ SSD boot drive and then at least one large spinning SATA drive internally (TB or better).

Graeme: To that point: I'm running a NAS (27 TB) to store files; I've also been using USB 3 (and soon USB 3.1C) drives because otherwise as you mentioned...it takes hours.

Monday, January 27

Graeme: I finally processed 500+ subs into photos. So the last clear night (and the only fully clear night this winter I've been able to image) was a comedy of errors, but I did manage to get several new targets I haven't imaged before.

I'll need to work out the kinks for next time in hopes of getting higher quality images.

More photos on my blog.

Graeme Hay— NGC 2841 (The Tiger's Eye Galaxy)

Tue/Wed, January 28/29

Stephen (23:17): It's time to bitch and complain again! There's a persistent cloud overhead that doesn't seem to want to move on. I don't know how long to wait. I assume it'll clear by morning.

Graeme (23:32): I tried some test shots for tomorrow and gave up, had maybe 5 minutes of semi-clear skies. Going to get some sleep and hope tomorrow is clear until 2 a.m.
Stephen (23:39): I have my sleep bank filled up so I'm not really very sleepy. I'll give it until 2 before I give up. Maybe Hank can get some solar tomorrow.
Hank (23:44): That would be very nice, I feel so deprived.
Stephen (01:33): Well, 1:30 and no sign of clearing. I'm giving up.
Kim (05:38): I went out after 9 p.m. ready to take a picture of Betelgeuse and Orion. What is this cloud? It was supposed to be clear. I saw the moon in the W, but a short 30 minutes before. I saw the sun peak between the clouds as it exited on the horizon.

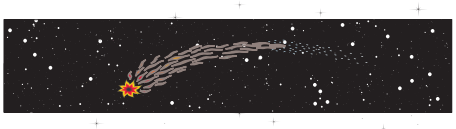
Got up at 3:30 a.m., checked the north was bright, the clouds above where lit up...better not be aurora as there was cloud everywhere.

It's to be sunny today, better get on with it, because there is still cloud at 5:33 a.m. and I have a date on the beach for some solar.

Wednesday, January 29

Malcolm (09:25): So I watched the Starlink launch a few minutes ago. Sadly, I cannot report a malfunction or failure. All systems nominal.

Kevin: Kim & I had a great day. First thing, right after work, we drove down to the Beaches and observed a SUNSPOT! Yes, an actual SUNSPOT.
Hank: I did get out for some solar today. It was not very satisfying but at this point I will take anything weather or schedule will allow me as a plus.



Wed/Thu, January 29/30

Stephen (18:55): Got a clear night at last. Only my third this month! As of the end of twilight I'm on to imaging my first target!
Stephen (21:37): I decided to give Comet Pan-STARRS another go. First I got a time lapse of 5 minute images. I could clearly see the comet moving between frames. Then I managed to acquire the comet with my guider and took a 20min guided image. It turned out fairly well. I'm looking forward to doing the same at its perihelion in May.
Graeme (21:39): Very cool! I'm about to point the RedCat at it (also got some very wide-field stuff this evening). It's looking like a good night.

Possible Satellite Collision

On Jan 29 at 23:39:35 UTC, these two objects [GGSE-4, IRAS] will pass close by one another at a relative velocity of 14.7 km/s (900 km directly above Pittsburgh, PA). The latest metrics on the event show a predicted miss distance of between 15–30 meters. These numbers are especially alarming considering the size of IRAS at 3.6m x 3.24m x 2.05m. The combined size of both objects increases the computed probability of a collision, which remains near 1 in 100.

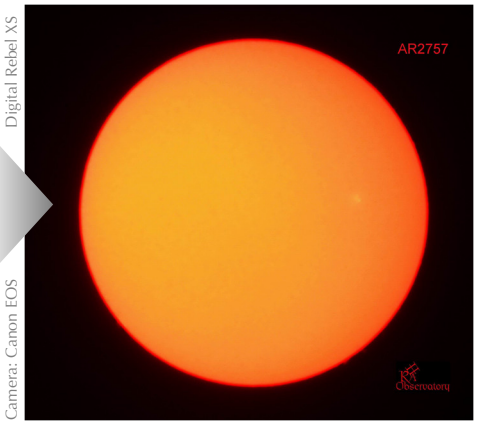
Mark: I hope IRAS takes one.

I was canoeing in Killarney Park at the end of April, beginning of May back in the 1983 when we had to stop and camp for a couple of days because two of our party got hypothermia. It was beautifully clear and on the first night laying over, I discovered a comet in the northeastern sky. I knew it was a new comet. But cell phones were two years in our future and there was not any way for me to get to a pay phone. When we finally got out of the woods, I called Linda and I said I discovered a comet as at the same time she asked me had I heard about the new comet, IRAS-Araki-Alcock. I had pre-discovered the comet by two days.

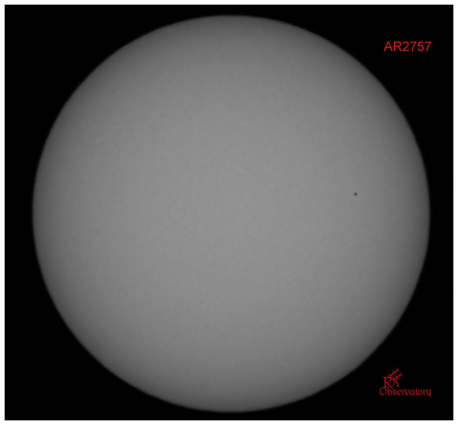
To add insult to injury, Linda and I drove north of Toronto to a dark site (off the King Road, in the 80's, that was a dark site) and parked on a side road and setup in a field to photograph the comet. When we got back to the van at 04:00, it had sunk up to its axles in the wet road. We had to walk to the 400 and find a payphone (remember, no cell phones) at one of the interchanges and call for a tow truck. We got home around 10:00.

To doubly add insult, the slides of this comet, that turned out very nicely, have been lost in our moves to and from Alberta.

So I will cheer if IRAS gets smacked! ★



Camera: Canon EOS Digital Rebel XS
Hank Bartlett — Sun in Ha, 11:34 EST, ISO 200, 3/10s



Hank Bartlett — Sun, 11:45 EST, ISO 100, 1/500s

Mark: Okay. If I am reading Heaven's Above correctly, IRAS will top out at magnitude 5 and be less than that at the time of collision. GGSE-4 would max out at magnitude 7.9 if it reaches that point in the sky it will be less than that at the time of collision. How are people going to watch this? I suppose if you are sharp, you may be able to pick up IRAS. It is moving quite slowly relative to the LEO satellites that one commonly sees on any random evening. IRAS will be just leaving Cassiopeia heading south about 90s before close approach. That is when it will be at its brightest. Picking up GGSE-4 will probably be impossible for me.

Hopefully Malcolm will film the entire event and we will see the aftermath at our next meetings.

Mark (18:52): Linda and I went out for a look. We could not find IRAS. No idea what the result was.

Graeme (18:57): I didn't see any collision but I'm also not 100% sure that I got IRAS, but I did get a bunch of satellites. Boy it's getting crowded up there!

I'm now imaging Comet PanSTARRS while I wait for the moon to go down and get a bit serious with some astronomy side by side testing.

Malcolm (19:34): Well that was fun. My 50mm lens on the old D800 unmodified captured the IRAS transit dead centre. I also was able to visually see IRAS egressing after the collision point and I had to ask myself is that debris or IRAS. I don't know, but there's no evidence of debris in my pics.

If GGSE-4 was on a collision course I think it should have been picked up by my camera also. But I picked up not a trace of it that I can see on the 50mm data.

I also had my AT65 with D810A trained on it at 420mm but like Graeme I'm shooting the Double Cluster and I'll have to check that data later. I'm processing the 50mm shots now.

Malcolm (19:41): Did anyone else see the ISS pass? Nice one just before the IRAS pass.

Malcolm (23:42): So the twitterverse says no collision. I see nothing to contradict that in my imagery. I stacked 15 or so frames, blended using lighten mode in PS CC. They are well aligned because they were tracked. The framing was pretty good, but not perfect. I was able to see IRAS. I was not able to see GGSE4.

GGSE4 is clearly tumbling and its brightness fluctuates sufficiently to make it practically invisible to the naked eye. IRAS too is tumbling but at a lesser rate.

Cathy: Tried for the IRAS sighting last night, drove to the south end of Ottawa where open fields started. There's a church with a nice quiet parking lot around the back, figured that might work, good southern horizon.

I could not see it naked eye, limiting mag just not enough. The church, normally dead quiet, had an event on, so also had a couple lights I had to block with my car. Lots and lots of airplanes going over low, real low, the glide path to Ottawa airport is only about a km south of where I was. Didn't see the ISS, was probably just pulling in behind the church at the time.

At least it was clear. CBC radio said Ottawa has only had 43 hours of sunshine since New Year's Day.

Kevin: We ran some errands, got home before 18:39:35 EST, and managed to get cameras, tripods and ourselves outside before the main event. We may have also imaged one Starlink satellite (from the previous launch, not Wednesday's).

Waiting outside in the cold, Kim started using her diffraction grating for spectra with our old DSLR, and I tried to get the CHDK software up and running on our little Canon ELPH camera...no joy on that, so it was restricted to 15s exposures only.

We have a battery powered red LED clock in the observatory but it does not display seconds. An astronomer really really needs a clock that shows seconds when waiting for split second events like this one (and occultations). We were +1 one minute and unsure, but kept looking up and down...and probably did not see anything at all. Maybe one glint or spec but from Mark's comments about magnitude and the US "Space Force" reporting no collision, it was maybe something else?

In the meantime I have downloaded a newer version of CHDK and have successfully installed it... 60s exposures here we come!

No ISS pass seen. We were not aware of it and were not looking for it.

Sat/Sun, February 8/9

Graeme (17:54): Waiting for it to clear the trees and I'll be imaging tonight, going to try my hand at proper lunar video/imaging with auto stackers etc... I'm in for a night of amazing results or a lot of loud swearing.

Kim (18:24): Good luck, stay warm!

Susan: It was a chilly 2 hours on the deck last night. Laurie, Devon and I enjoyed every minute? Yeah that's it...every minute! Graeme, full report to follow for *Regulus*.

Graeme: I'm going to see if I can further improve the results with wavelets today, but boy was it cold outside!

continues on page 11 ☞

RASC Remote Scope

Kevin: Did anyone here catch the remote telescope project presentation last night (Feb. 19)? It is on RASC's YouTube channel now.

It was good to get information. Jenna is a good presenter and kept going for about 2 hours. I'mot sure how many people participated in the "Zoom" videoconference, but there were at least 55 watching on the YouTube channel.

The model of membership use is not what I would have preferred but they did not design it for me.

For $100/year a RASC member will have access to all publicly taken images by the astrophoto team and the science team. They will not be able to choose any targets of their own nor suggest any.

For $300/year a RASC member can join the astrophoto team or the science team. I interpret this to mean you have bought yourself onto the telescope time committee, who will make decisions about which targets are selected. And you have access to all of the publicly taken images as above.

The last category is $75/hour where you do select the targets an only you will have that data, "private data" if you will.

The intent is 3 days/week for the astrophoto team, 1 day/week for the science team, 1 day/week maintenance, 1 day/week for outreach—and I forgot the last day.

If you join up to a "team" at $300/year you will all be training yourselves on processing.

As far as I know, no regular member not on the committee will be an actual telescope operator at this time. That one person, per team, per day-of-week, will be the one running the scope remote desktop-ly.

It will be interesting to see the operating financial details behind this. What are the operating expenses, how much amortization will they load it down with and do they really think the income will cover the operating costs. All remains to be seen.

At least there is *something* happening.

Alternatively I encourage you to try out the SMU-BG-OBS that Kim & I talked to last year, a free service where you make your target request and it gets queued.

Susan: I did listen in and thought it was very helpful. As to a question Rick had about past data...all data collected since the purchase of the scope from Paul [Mortfield] will be available to those who subscribe. That is roughly 1.5 years of data.

The other day that Kevin did not recall was for the 'by the hour' users.

My understanding is that the first year of cost of operation has been covered by the donations made last year. I heard that some time ago not last night. There may have been more donations made than expected as Randy [Attwood] asked that donations be made to the scope rather than as retirement gifts to him.

Malcolm: My thoughts...
For $100/year, that's a great deal IMHO if there's enough data to keep a member busy. Process to your heart's content; the objects you want imaged will eventually be imaged, just perhaps not when you want them to be. Having high quality data to process makes all the difference in pretty picture making.

The $300/year team smells like politics and bickering to me. I would pass on the $75/hr private data—that's a lot given (as an example)...one might want 1 hour per filter x 4 filters (LRGB) = $300.00 and seriously, you may want 10 hours per filter to get good SNR. Thats $3,000.00? no thanks.

But if you are happy to use public data, the same object may be in the library for $100/year.

Susan: I agree. Especially for a dabbler like me. $100 is the only affordable option. I have a lot of spending to do on other things. $300 for a team effort may indeed be a 'gate keeper' $ number.

Graeme: The hundred dollar level sounds intriguing, however I would've preferred to of had it as $100 and you get to pick and choose 100 hours worth of data on whatever targets are in their portfolio; I would want to know what limitations there are with what you can do with that data.

Ask for the $300 and up I don't see a huge value out of that because if 30 people decide to be on that level, then good luck ever getting your *target* on the observation list. It's been said before, but I agree $75 an hour adds up really quickly.

Target—I haven't listened to the specs on the scope or anything but I'm assuming this is a pretty decent telescope, and therefore targets that it should be aimed at should probably be ones that most members cannot get easily with their home-base equipment. This, however, results in the requirement of several hours of imaging faint targets and I think that there would be a giant fight over whose faint nebulosity or star cluster or far off galaxy is going to be imaged first. Especially when you consider the vast numbers of tiny objects in the sky that this telescope will be able to see.

That's my two cents on the matter.

Cathy: Yes, watched most of it on YouTube. Interesting how many people asked questions about the cost. I noted Jenna's comment that if it doesn't pay for itself, they

could always sell it...obviously many people have concerns in that regard.

I noted the comment that SkyNews readers will be informed about the remote telescope as well. Are the national council reps actually being told about what goes on behind the scenes at *SkyNews*—or are the actions of the SkyNews board of directors kept private, and not shared with the RASC national council? All RASC costs should be transparent, including the remote telescope.

Rick: I sat in on the zoom conference. A couple of comments:

The scope/camera combo is amazing—imagine a 3.5m focal length and still be able to image half of M31 in a single frame! The field of view is wide enough that it will shoot quite large targets—not limited to small faint galaxies, etc. If people are interested I can show one of the science images (M31_V1) at the next meeting.

If there is no maintenance required on the weekly maintenance night it will be allocated to the other groups on a demand-load basis. The number of nights per week for each group is subject to change depending on demand—pretty pictures have been the most heavily 'subscribed' during the commissioning phase.

I think getting a small like-minded group together to share a $300 subscription could work—for example a project involving photometry or astrometry of a small group of objects with the intent of publishing a paper would be quite doable. Or agree on a half-dozen pretty picture targets to put forward to the AP team. The two teams will essentially be a larger group of (hopefully) like-minded individuals who will negotiate between them to allocated time.

If you want to take on the duty of being one of the team leaders, you get a free subscription to that team. I think that includes writing the scripts (CCD Autopilot or CCD Commander) that will actually control the scope to shoot the images, data QA, client liaison, etc. I've offered myself up as the science team leader.

As Malcolm says, if you're interested in making the pretty pictures and don't insist on directing the telescope or collecting your own photons (to the extent that one is doing that anyway with somebody else's remotely operated telescope) then $100 for access to ALL the data for the year (except what I expect will be a minimal amount of private data) is pretty reasonable. However, access to all the data from the past 1.5 years isn't going to get you much—as far as I've seen there were only a half-dozen targets.

I was quite surprised at how much interest there was in outreach—a lot of questions. Jenna has been doing exoplanet transits with high school classes. They get visited by an expert, decide on a target, cooperate in collecting the data, and then are responsible for analysing it. *SkyNews* has a blurb on the experiences of one of the classes (on their web site I think?).

☆ ☆ ☆

Betelgeuse Brightening, No Supernova Yet

Friday, February 21

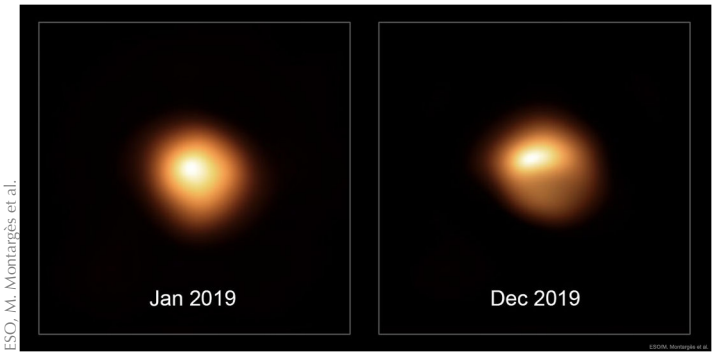
Hank: Bummer, it would have been EXCITING!

Rick: Given that we don't know what's going on with the star yet (barring the possibility of it being dust clouds as per the recent images) this brightening still might be a precursor to explosion. We can only hope.

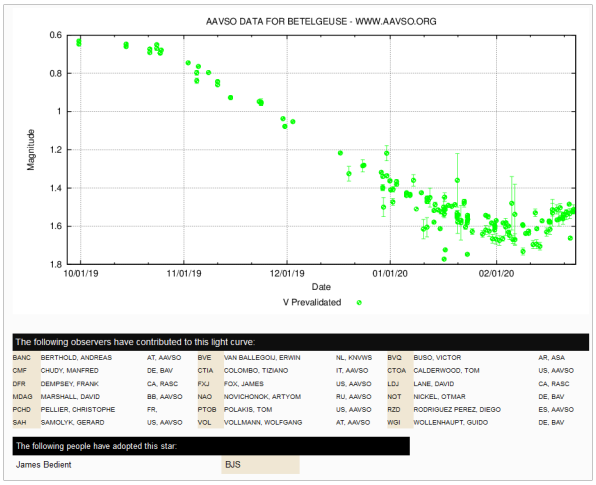
Mark: I am not sure if hoping for a supernova that might wipe out any civilizations (or any life for that matter) within 50 light years is quite the right thing to wish for just so that we can have a light show. Besides, it would ruin observing in the months that Betelgeuse is in the sky.

Hank: Ah, but Mark, a once and maybe last in our lifetime, and the lifetime along with it.

Malcolm: If it happens to go supernova it will likely be in June when it's about 15' from the sun.★



ESO, M. Montargès et al.



...continued from page 8

Paul: This morning I arrived at the commuter car park at Hwy 4 (one exit W of Odessa on the 401), showing up at 10 a.m. for the 10:49:48 transit. I used my 100 mm Takahashi f/7.4 refractor on a Celestron Evolution motorised mount. I used a 1000 Oaks white light filter and a 14mm 82° AFOV eyepiece. It was lucky I arrived early, as I had forgotten to bring the GPS coordinates to input to the mount. I had time to look them up on my smart phone.

Although the transit was at low altitude, which would result in a small size of the ISS, it was to last over 1s across the centre of the sun.

As it turned out, the sky was intermittently cloudy from 10 a.m. until 10:44, but with reasonable views of the solar disc. At that point the clouds closed in completely. For all I know the ISS swerved into the atmosphere and re-entered; I really don't know!

Fri/Sat, February 14/15

Stephen (22:00): I didn't have a very successful night. I had a hell of a time keeping the telescope in focus. To make matters worse my remote focuser doesn't seem to like the –20 temperature. After a couple of botched images I finally got the focus problem solved, just in time for the clouds at 9:30. So much for what was supposed to be a clear night!

Graeme (22:04): I know what you mean, nothing likes –20C and those clouds are two whole hours early.

I did managed to get some subs before the clouds came in (just warming up now) enough that I can stack and image. Going to process tonight and see what I end up with (I'm adding Hα to my Rosette Nebula project).

Susan: I just realized that you photo processors are the only ones who have something astronomical to do on a cloudy night.

Graeme: That is true...

Rick: No, the science guys have even more to do—don't even need data to interfere with automation, instrument design, etc.

I was hoping we might get some clear skies tonight, indeed it looked clear just after sunset, but the cloud has moved in. It's just patchy enough to catch the occasional sucker who looks out the window and responds without checking the satellite image. I've had the camera cooled, mount connected, all ready to go if it cleared off. I also (after working all day) finally managed to get my SQMLU connected and working with an ASCOM driver. It's now mounted in the observatory and will be set to take continuous readings every night all night, and also take readings to include in the header of all my images. Eventually it will be moved out to my weather station pole in the garden.

Sun/Mon, February 16/17

Stephen (00:18): Good things come to those who wait! The last of the scattered clouds left just before midnight and I am into my first image run, NGC 2403 in Camelopardalis. It's a nice face on spiral galaxy.

I got my focuser working. When it seized up in the cold the other night it popped the clutch to prevent damage to the motor. I got that tightened up and all is working well.

Looks like I'll have at least two good hours of imaging.

Graeme (06:37): Up visiting family in Ottawa; it's clear here this morning.

Hank: Every so often one has to go back to the moon just to make sure it hasn't changed, gotten smaller or hatched!

Stephen: Last night stayed clear. I got three image runs done before I fell asleep in my chair at 4:30 More clear sky coming this week!

This is NGC 2403. I've been trying to get it for a couple of nights. It turned out not too badly this time:

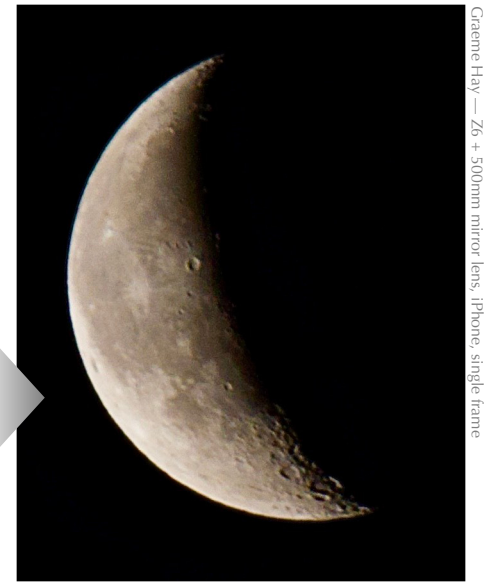
Stephen Craig — NGC 2403

Hank: Very nice Stephen. Your catalogue of images continues to grow and refine.

Mon/Tue, February 17/18

Rick (18:52): It didn't clear off here until morning. There were occasional sucker holes but nothing worth starting up for.

For me it is clear at last now, but it won't last unfortunately. I'm imaging a couple of my ESA Cepheids and will stay on those or their compatriots until the cloud gets too thick in a few hours. My SQM is taking readings every 60s—right now at 20.85 mpsas.



Graeme Hay — Z6 + 500mm mirror lens, iPhone, single frame

Graeme (19:43): I'm imaging super-wide f/2.8 and faster lenses on Orion. Looks like maybe another hour here if it sticks to forecast.
Graeme (19:53): It's been one of those kinds of nights—yes, that is a pipe wrench, and yes I needed it for astronomy tonight.

Everything is running now.

Graeme Hay — Pipe Wrench

Graeme (20:09): There is cloud coming in slowly from the W—I expect I have at most 20 minutes left looking at Orion. (I think I'm one of the farthest members W of the club as I seem to get the W clouds before everyone else who is out and emails).
Susan (20:40): Venus has been fuzzy since sunset so I'm not surprised. What is the most Mickey-mouse free stacking software again?
Graeme (20:44): Clouds moving N-ish, so I'm still a go for now. Now imaging straight up at Auriga, as Orion is fuzzing out.

Susan—DeepSkyStacker. (If you just have one or two images runs to process I could run them through a stack for you using PixInsight to get you started.).
Susan (20:47): Thanks, I'm good. I do not want to use up too many electrons on anything I have yet.
Susan (21:36): Here is a crash course—11x4s shots with DeepSkyStacker.

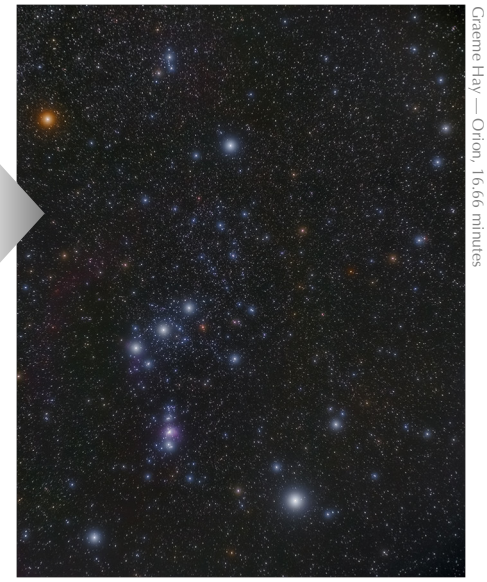
Kim: Very nice Susan. You are starting to get some of the nebula in the sword. You could go up to 15s before you get star trailing.

Susan: I think my biggest problem at this point is focusing. I do not aspire to match the fab photos usually posted here. Just fooling around.
Kevin: I popped outside with the Canon 300D DSLR (circa 2003) and took a few images of Orion. It was still not dark at 18:39 EST, hence the bluish background.

Exposures were made on a tripod in the snow with 30s manual exposures (hence some star trails) from the backyard. Focus was tough: we have no live view so this was done through the viewfinder. I think everyone with a newer camera uses live view on a bright star, zooms in on the display, and manually focuses from that? I used ACDsee v4 to crop and rotate.
Graeme: Far from my finest work, I had issues with clouds which also meant I missed focus but a tad and there is a ton of star bloat in the photo. However, here is what I got for my night worth of effort (the second camera was completely off ...oh well, so much for double the data last evening). The ½-Auriga image had significant passing cloud, and eventual overcast.

Susan Gagnon — Orion

Kevin Kell — Orion, 43mm f/5, ISO 1600, 30s



Graeme Hay — Orion, 16.66 minutes

These are with the Nikon Z6 + Noct-Nikkor, various settings (I just mashed them all together for the final images...).

Graeme Hay — Auriga/Perseus, 51.33 minutes

Paul: Last night I went out early to avoid the clouds I figured were coming (jump when the iron's hot). Venus was hard to focus despite the unusually good transparency at my location. Although the dew point was safely below ambient temperature, I think the corrector plate must have been moist. But I did get a great view of the Clown-Face nebula (NGC 2392) at 290x—first time I'd seen it. I guess planetary nebulae look best in bigger apertures (next time I'll try a darker site, with a more powerful eyepiece). I checked out several other objects: M42/43 (super as always), M45, M44, M31, but the best sky was in Perseus (at zenith). I've never seen the Double Cluster look so gorgeous, or the background so dark. Then I had to go in to help with dinner (and my hands were frozen!).

Wednesday, February 19

Hank: I have been watching some YouTube imaging / processing videos for solar H-alpha and have picked up some pointers that have shortened my DSLR processing time and allowed me to bring up a more defined prominence.

This prom was easily observed and imaged on a bright clear day in the burgh. The large, round, extended part was not visually observable but came up in the processing. However I did not concentrate on looking for it visually as I didn't realize it was there; perhaps some more time under the hood and some dark adaptation would have showed it.

Kim: We were at K5 at 1:00 a.m. or 6:00 UT this morning.

I did also see Jupiter, the Moon, and Mars but it was hiding in the trees from inside the house.

Wed/Thu, February 19/20

Stephen (18:29): Darn! It looks like a brilliant clear day is turning into a cloudy night. I hope Hank got something because for me it's going to be a wash out.

Hank (23:33): I did Steve, early this morning, and then unfortunately I was on the road the rest of the day. Beautifully clear and I was not home.

Graeme (22:08): Despite incoming clouds (it was clear when I first looked outside) I was able to test another lens for wide-field photography.

Hank (23:31): Gee Graeme, "(it was clear when I first looked outside)." I have the same affliction most often. Good test.

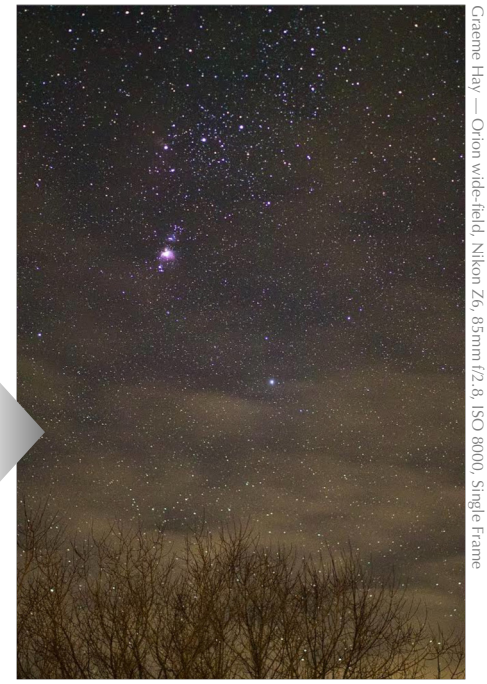
Thu/Fri, February 20/21

Stephen (22:52): Well, that's it from me for a while. My telescope controller has failed. That will take a while to get fixed. It started off being a great night too. Oh well, sh*t happens.

Graeme (00:02): Most unfortunate Steve.

Kim (05:51): Sorry to hear this Steve. I hope that it will not take long to get fixed. As I laid awake at 2:00 a.m. watching those clear skies...I was thinking "man, if I did not have to go to work in the morning..."

Stephen (11:27): Great news! Focus Scientific has a controller in stock. So I am off to Ottawa!

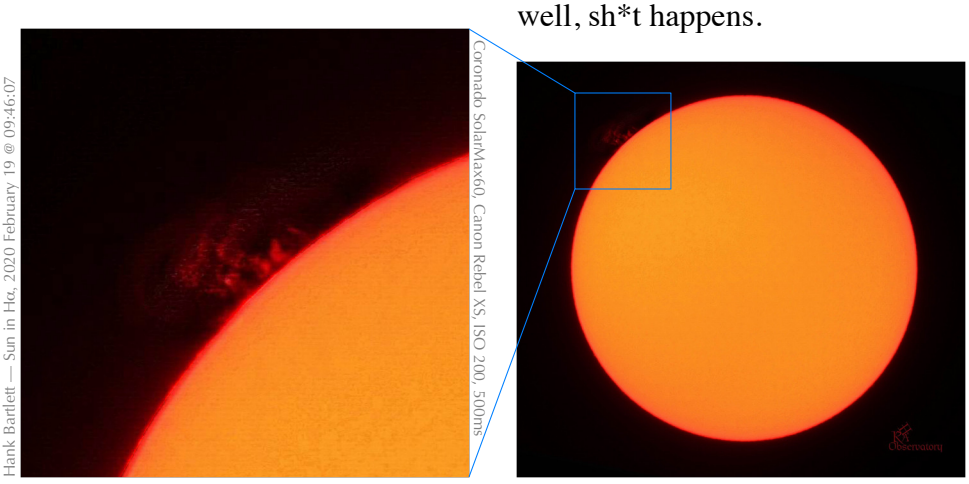


Graeme Hay — Orion wide-field, Nikon Z6, 85mm f/2.8, ISO 8000, Single Frame

Friday, February 21

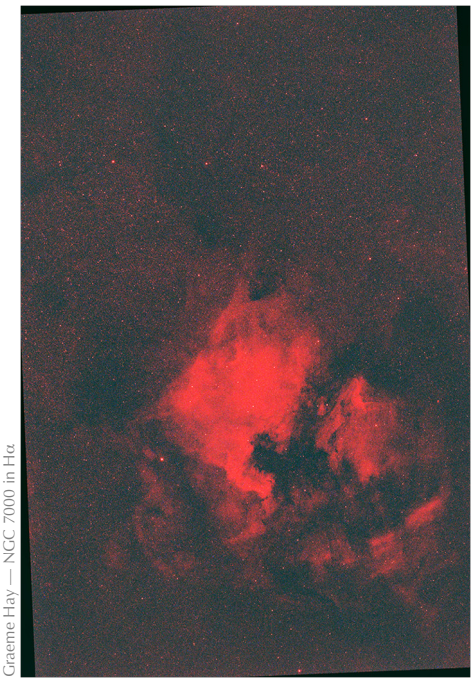
Graeme: I'm keeping my astrophotography to a limited budget this year (after last year's RedCat purchase one has to slow down a tad), however I wanted to give hydrogen alpha a go. The RedCat holds 2" filters, so how could I not?

I scoured the internet and found the 2" SVBONY 7nm Hα Filter (spoiler—its not 7nm according to my quick prism test) but it seems to do an okay job. I'm out in dark skies already, so this is more for playing with red vs. Hα than trying to overcome light pollution.



Hank Bartlett — Sun in Hα, 2020 February 19 @ 09:46:07

Coronado SolarMax60, Canon Rebel XS, ISO 200, 500ms



Graeme Hay — NGC 7000 in Hα

FRI/SAT, FEBRUARY 21/22

Stephen (20:21): Got the new controller installed and everything calibrated. Now I'm well onto my first image run of the night. It looks like a great night!

Rick: Glad you were able to get back up and running so quickly. Have you diagnosed the problem? Or was it a complete failure?

I've been imaging for a couple of hours now but the images are beyond awful—almost not worth continuing. The wind is blowing the scope back and forth in Dec to give me stars that are 15 arcsec long. SExtractor's fluxauto mode probably still will be able to measure them adequately but not nearly as well as round stars. Looks like the wind is to keep up most of the night.

Graeme (20:34): I skipped tonight, while I have the dome to protect the scope when I looked up the seeing was so-so and there were a few small streamer clouds which play havoc with my guiding if they pass bay the scope (which results in more hassle in post aligning images, etc.).

Graeme (20:54): Totally random, out with the dogs and just saw a large long, slow-moving fireball streaking southward for several seconds finally ending just west of Orion's Belt. Single streamer, no break-off. Time 8:52 p.m.

Rose-Marie: Aargh! I was out with my dog at 9:00 p.m., just missed it! I was admiring Orion, staring at Betelgeuse trying to decide if it really had dimmed all that much, and was lamenting that I was having to head to bed early since I've been committed to judging some kids' speech contest today. A nice clear night, something that we haven't had much of this winter.

Stephen (21:07): Wind doesn't seem to be much of a problem here. Seeing is adequate. My images look pretty good. I'm continuing with my galaxies of Ursa Major project. The night looks at least adequate. Considering I missed out on last night, I'll take what I can get.

Malcolm (04:47): I skipped tonight also. Images of Orion from Thursday were OK, but guiding was bouncing all over the place. If I was shooting long focal length it would have been annoying, to say the least. I did manage to get some Orion pics at 24mm and 50mm. The purpose of guiding was just to dither. Errors were slightly noticeable in pics though, even at those focal lengths.

It was windier here last night, so I didn't open. I had hoped to shoot M42 at 420mm with the D810a. Orion is perfectly placed right now, in that it has transited the meridian just a few minutes after dusk so you can image without concern for a flip.

Kevin: Thanks for the [fireball] sighting report!

I checked the new AllSky1pi and it is N horizon biased for aurora, so it does not see Orion's belt until it hits the lower right of the rectangular sensor frame... many hours later.

AllSky2 did not pick up anything in that time frame either. (20:52 EST, = 01:52 UTC).

AllSky1pi still has condensation/frost issues. I need to get a new power supply ordered.

Stephen: had a good night last night. Everything worked well. The wind didn't affect my images until the last one at 4 a.m. The cloud was coming in then so I

READING CANON FILES

Susan: So now I have Canon raw image data and need something to open the files. Is there a better-than-average free download out there? I have no idea what to look for. [*And no CD to be found...*]

Kevin: Our goto free image software is IrfanView which opens up our canon RAW files *.CRW from a Canon 300D DSLR without issue, and then it can even save as to other formats like JPG or PNG.

Graeme: It is best to save as TIFF files to preserve the bit depth.

Susan: The Canon website has software for CR3 format but mine come up as CR2. I'll have a go at it bit by bit.

I've one more lens to sort out and then my kit will be complete...I think.

Rick: There are the Canon utilities ZoomBrowser, Digital Photo Professional, Picture Style Editor, EOS Utility (remote control of camera) and maybe a couple of others. They work adequately. As Kevin says (though he's looking at CRW files which are more out of date than modems and fax machines) IrfanView will open CR2 (which my camera produces) and will do minimal editing. GIMP is a good editor but doesn't handle 16-bit images (like raw files) and it has quite a learning curve. But for free it's about the best there is.★

packed it in at 4:30. I got six image runs done in Ursa Major with pretty good results. These are two of my favourites:

Stephen Craig — NGC 3953

Stephen Craig — NGC 4605

Mark D: I have finally been able to get a picture using my EAA setup. The picture is of the Orion Nebula. For all of you pros into astro-photography, no laughing. Last night I spent ~3 hours until I finally found another target: Hubble's Variable Nebula. I have been having growing pains getting my small chip camera (ZWO 224) to locate items, but now I am up to two.

No processing, it is just what you see off the live screen. All tips and tricks, comments etc are appreciated.

Mark DesLauriers — M42, 61s, 40 frames

Mark DesLauriers — NGC 2261, 60s @ 5s sub

Hank: I won't even attempt this level of imaging! They look good to me, a little processing will make them pop!

Graeme: These are really good for a live stack extraction. Keep at it! The Messier marathon is right around the corner (well, in a month).

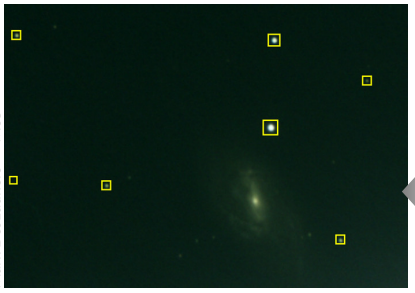
Susan: I agree, very nice.

Kim: Great images Mark. Nice setup and detail. Way beyond me.

Sat/Sun, February 22/23

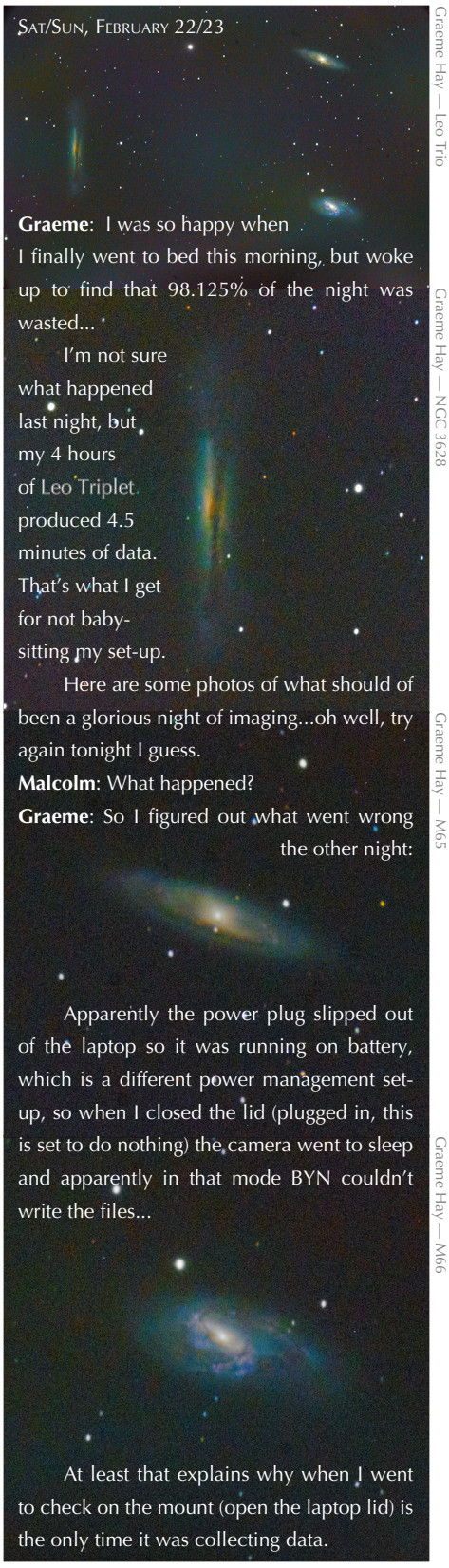
Rick: Up until recently I've had a bunch of frustrating periods like that. Most of my observing now is controlled by Perl scripts and every so often the script just gets bored and pauses—often right in the middle of an exposure. Nothing happens for an hour or more until I come to check on it. Hitting the enter key in the command window sometimes starts things up again but a couple of hours of data has been lost. It turned out that it was a Win32::sleep command that occasionally fails to return. (When I start an exposure I go into a loop—sleep for 1 sec, check if the exposure is done, and repeat until the image is available.) By just changing to an apparently more robust Time::HiRes::sleep function the problem has gone away.

Now to overcome all the other problems.



Mark DesLauriers — M65

Mark D: I spent about 3 hours last night trying to get my scope to align itself accurately enough to find M65. I finally did by luck, but then could not get my program to align—not enough stars. My ZWO



Graeme Hay — Leo Trio

Graeme Hay — NGC 3628

Graeme Hay — M65

Graeme Hay — M66

camera FOV is .3° by .22° so it's a really small area in which to find things. I stacked about 60 frames for 170s for this image.

Sun/Mon, February 23/24

Stephen (21:53): I've been clear since 8:15, I couldn't observe last night since I had to be up early this morning. But I'm making up for that now! We may get another cloud band in an hour or so but that shouldn't last too long. I'm doing a couple of open clusters in Auriga until Ursa Major climbs high enough. Then I am back into galaxies for the rest of the night.
Graeme (21:56): Cloud band you talked of...rolling through now. Telescope can still see stars and it's banded with gaps of clear skies so hopefully it clears up.
Stephen (22:05): Where are you Graeme? You must be west of me. It's still clear as a bell here.
Graeme (22:06): I'm just south of Napanee.
Graeme (22:17): Fingers crossed it looks like the cloud is density is dropping, been imaging in and out of the clear bands. Hopefully another 20 minutes and I'll be under clear dark skies again!
Graeme (22:36): Clouds gone, guiding tuned, imaging run is a go (and yes files are saving!)
Stephen (22:40): It just clouded over here. Hopefully I will clear about a half hour after you. The timing was good. I just finished my image run and was lining up on my first galaxy.
Graeme (23:32): I saw a meteor at 23:14 heading west through Cepheus just above the lower two main stars. I may have caught it in my fisheye lens. I'm doing a time-lapse; will check later.
Graeme (00:08): So far so good. I'll see how long I can image before I have to stop the telescope from hitting the pier, then I'll image some star clusters that are rising, as I suspect they will be easy to find using live view, then call it a night.
Graeme (03:05): 02:34—a catastrophic power failure shut me down (battery ran out of power). I should have about ~3.5 hours of Leo Triplet in the bag. I also have my fisheye time-lapse.

Clouds are coming in, so I guess I'm processing and making astro vlogs for the next while.
Stephen (03:36): Just as I was reading your email I lost my guide star. I thought, "oh sh*t, is it cloudy?" I went outside to check. It's clear as a bell. I just needed to do a meridian flip. I was on the last of that image run anyway so no harm done. Now I'm on to my next target.

Paul: Good grief! After checking the forecast with three separate sites, having determined the skies would be clear, I went out after supper and found this to be true. Spent 30 minutes setting up, then looked up at 7:30 p.m. to see solid overcast from horizon to horizon. Took it all apart and brought it in again. Gave me something to do all evening.
Kevin: I too...went outside just before the latest zombie show episode...checked Clear Outside and it said 0% cloud. So I dressed—parka, boots, toque, headlamp—programmed cameras in the light, went outside over the ice sheet and bam! Totally overcast!

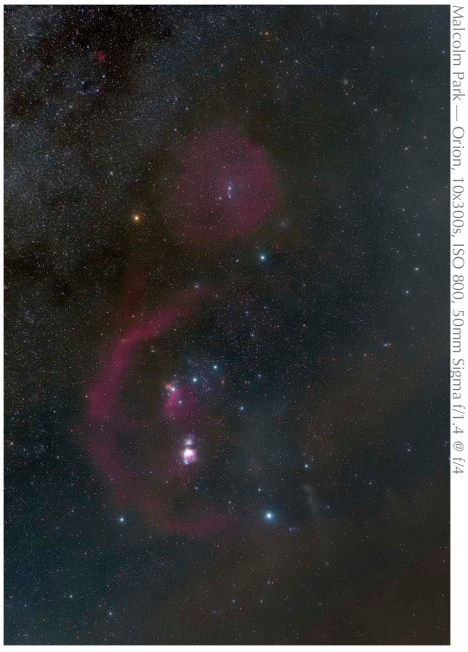
Since then I have added a near realtime AllSky clock image from SCGO AllSky1pi to the Centre's website landing page. For now it updates once an hour but that can and probably will be increased.
Susan: I find the most reliable way to know what the sky is like is to take the compost out after dinner. Of course it has no predictive element but real time it works like a charm.
Malcolm: Nothing you can do when your data is compromised by clouds. Posting anyways. This may have been my last chance to image Orion for the year. The sky looked fine when I started but there was a lot of low crud and Orion is getting low in the west now.

Details: Nikon D810a, on AP Mach-1 guided and dithered, using Backyard Nikon to control everything (saved to camera and PC).

Processed old school: not using Pix here because I'm not comfy with Pix's RAW workflow yet. I imported the raw frames into Lightroom, applied lens correction as a flat substitute, and applied some noise reduction, then exported the files as TIFF.

I registered all the files and saved padded/cropped copies using RegiStar, then I loaded the aligned images as a stack into Photoshop. I converted the stack to a smart object, and changed the blend mode to median, then flattened the layers into a single frame.

Further processing involved using all of my Photoshop plugins: Hasta La Vista Green, Gradient Xterminator, Nik plugins, and Noel Carboni's Astronomy Tools. I couldn't process the clouds away, but I was pleased that IC 2118 showed up nicely.★



Malcolm Park — Orion, 10x300s, ISO 800, 50mm Sigma f/1.4 @ f/4