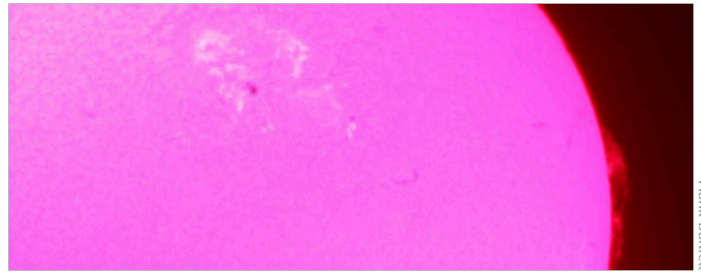


November-December 2020

Skyletter

RASC Kingston Centre



Hank Bartlett

HBS OBSERVATIONS Oct 31, 2020

Graeme:
It was Clear on Halloween so I decided to take a photo of the sun, didn't quite nail focus and I really need to figure out how to process it better, but I did manage to get a bit of 1779 & 1778 on the disc edge.

2779 & 2778

SUNDAY, NOVEMBER 1

Kevin: After the last session on Oct. 30, I thought there were dust spots on the camera sensor window glass, so this was cleaned. I wanted to test it, but there were so many clouds...but there was a gap in the clouds last night, for maybe 60s. This is the result of processing a very short imaging run, maybe 30s with enough cloud to reduce the exposures from the normal 10ms to 20ms. This is the best 25% of maybe 1k frames.

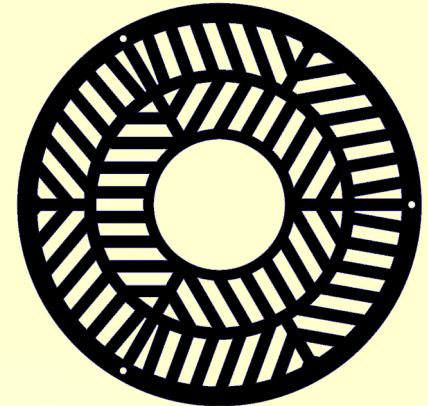
There are not enough light areas on this to see if the dust spots are gone. I'll go back to the moon or sun and see what has happened.

Altitude 46 deg Diameter=19.88" Magnitude=-2.11 transparency poor seeing poor, clouds! CM=19.5"
Cleaned camera window
Meade 102mm Schmidt-Casse 120 FL-2000mm Meade LX205 mount ZWO ASI290MC frames=best 10% of 16K
Kevin Hill SSCS-Sterrenryk Observatory Wilket Ontario Canada
2020-11-02-0102_8kk1mars_exposure=20ms_zwoasi290mc_pipp_lap4_ap16_drizzle15w9k9er25.png

Focal length: 2,000 mm
Aperture: 2,033 mm
Baffle: 1 s
Circle focus: +1,274 micron
Defocus: -60 micron

The Tri-Bahtinov Mask

Malcolm Park



Graeme Hay

Malcolm: I was reading today about a device that appears to have been around for a few years now. But I only just discovered it: it's a Tri-Bahtinov mask, which not only helps you focus but helps you collimate. The idea being, if you simply put a Bahtinov mask on an SCT, and focus, you may be in focus for that orientation of the mask. But if you rotate the mask 90°, or more, and check focus, you may no longer be in focus due to this change of orientation, indicating you are probably out of collimation.

So, to take advantage of this, Tri-Bahtinov increases the number and orientation of diffraction spikes on a mask so that you can see three orientations at once. You can focus and collimate with the same mask, without having to move it or switch to another one.

There are lots of articles on this online. Kevin, it may work for the Torus. I see one on a webstore off the shelf for \$30 bucks for the Edge HD 9.25.

I think I'll order one.

Graeme: There is an even better updated design for the Tri-Bahtinov mask. I printed one for Bruce to help him focus the 6" club scope.

Malcolm: Nice. So I have to buy a 3D printer now?

Yup, that's the pattern the \$30.00 mask has. I'm ordering it.

Keith: What is the largest diameter you can make?

Graeme: ~11.8" although if I segment the mask in 3 pie-wedge sections I can print bigger: maybe 16/18" in total diameter. There is a generator online so sizing them isn't too complicated.

Roger: I'll have to try making two or three of these, once my 3D printer is back up and running.

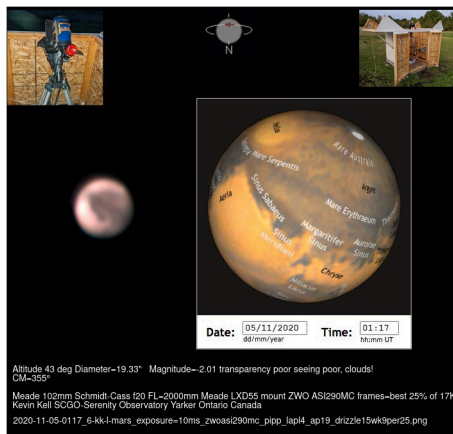
I have a 6" AstroTech Ritchey-Chretien that might need collimation, and while the 12" Meade SCT is reasonably well collimated, I have a standard Bahtinov mask for it already. I also have a 500mm f/6.3 Opteka mirror lens, which I don't have a mask for (and I don't know if I can collimate it though).

Since I'll be making masks anyway (eventually), I may as well make the Tri-Bahtinov style.

Mark D: So I am getting a Bahtinov mask for xmas. Would it be better to have Santa bring me the Tri-Bahtinov style?

Graeme: It is for SC and reflecting telescopes.★

Kevin: Here is [Mars](#), imaged during the Centre’s weekly social chat videoconference. The inset is the BAA Mars Mapper simulation. Now that we are on Standard Time, it is a little easier to get outside and image in the evening.



Tracking continues to be so—so on the Meade LXD55 mount. Manual guiding corrections are needed every ~30–60s. The new FireCapture beta 2 is working well. I still do a 30s run with no autoalign, and then a 30s autoalign, followed by 180s runs with auto-align, then a 120s wait, giving a cycle of 5 minutes from one imaging run to the next.

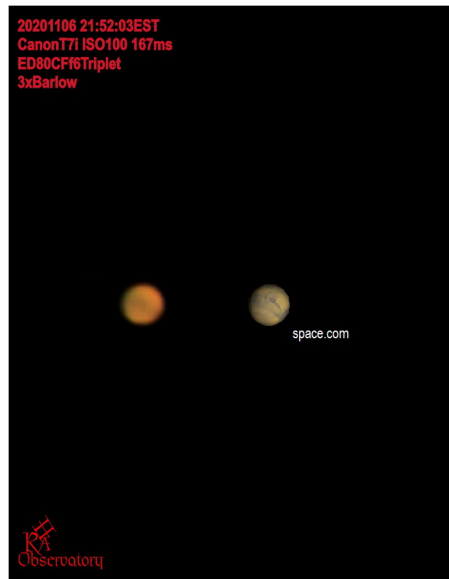
FRI/SAT, NOVEMBER 6/7

Hank: An email from Keith today encouraged me to go out and take a look at [Mars](#) tonight and even image it. I captured this image with my DSLR and the ED80 f/6 refractor with 3x Barlow. I did not expect much but got more than I thought for my troubles. For visual in the SkyGuy925 I had to use my variable polarizing filter to cut the light for features and it worked well.

Between using the two totally different scopes, the SG925 was not powered tonight so that was a challenge, I kicked the ED80 tripod a couple of times, the SG925 dewed up some, and I remembered

why I do not enjoy fumbling around in the dark. This is why I do solar! I did however take the SkyGuy for a little cruise around to [Betelgeuse](#), [M42](#) and [M45](#) (M45 looked better in the ED80 as it all fit in) before coming in to process [Mars](#).

I do sometimes miss doing night observing, but only until I do it—then I don’t for a couple of more years. Thanks Keith for the trip down memory lane.



Kevin W: Inspiring! Did you keep the diagonal in? And are these multiple shots stacked, or one image processed?

I might have to give it a try, with the DSLR camera loaned to me through the Centre (originally donated by some guy name Hank). I have been under-using this camera. If anyone else is eager to borrow it, please let me know!

Hank, I hope that you do not give up on night-time astronomy. Once my rooftop observatory is finished in all its glory, you should visit, and you too may be inspired again. And, I will even double check that the railing and walls are secure, so that you don’t fall off. It’s a promise.

PS. Your picture of [Mars](#) is kind of what I see visually

through my telescope.

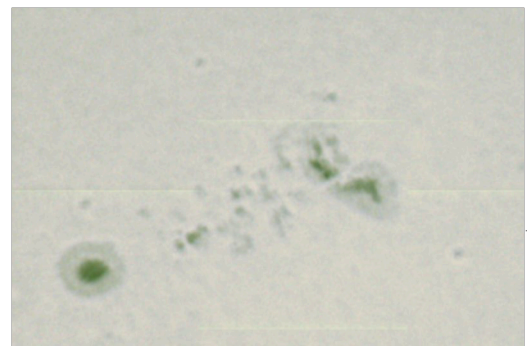
Hank: It depends on the scope: in the SMIII70DS & ED80 f/6 refractor the diagonal stays in; in the SG925 SCT & the Mak 90 the diagonal must come off to reach focus; in the Newt 4.5" I have not figured it out yet (probably have to remove the spacer at the eyepiece but I cannot get it apart so far). This is one best image of the many I took—no stacking—just processed in ACDSee Photo Editor 11.

Generally I gave up on night observing over a decade ago except for comets, novae, and things smashing into things. I am sure you will have a good platform for your observatory and some day we may be able to start visiting fellow astronomers in a group again.

Malcolm: I was out viewing with binos last night and saw the [Pleiades](#) beside [Gemini](#) and [Sirius](#). Seeing was kind of misty, so [Orion](#) itself was very faint. You’ve encouraged me to have a closer look at [Mars](#) again!

SATURDAY, NOVEMBER 7

Kevin: All of this talk of day observers going over to the Dark Side inspired me to go over and try out solar imaging. So here is my first image: the focusing leaves a lot to be desired, and there may be too much magnification. Taken with a Meade 102 SCT, 2x Barlow, and a ZWO ASI 290MC camera. 3ms exposures using a Thousand Oaks polymer white light filter, best 5% of 1k images, stacked and



Kevin Kell — Sunspots

wavelet processed. The image size was reduced down to 800x600. There are still some dust spots (seen outside the sunspot area).

Keith: I decided to tackle the [sun](#), even if it is cloudy out today, and despite this and poor eyesight while focusing, this is my result.

SUN/MON, NOVEMBER 8/9

Malcolm (17:52): No! Ground fog has started!

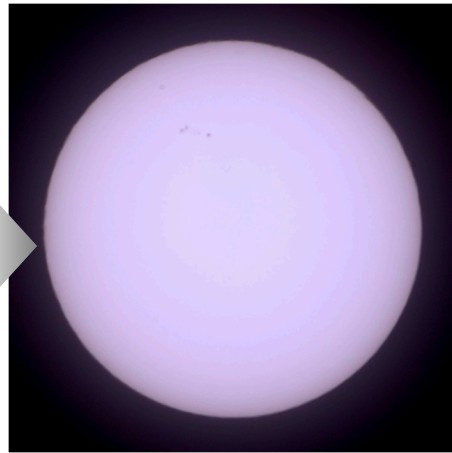
Susan (18:09): I have high hopes but there was a pretty thick layer of haze between me and Amherst Island at sunset.

Walter (18:09): The radio mentioned fog in tonight's forecast. CSC is still holding for tomorrow night, so maybe it will be fog-free. In the meantime my imaging run is underway and will continue as long as the plate solves work!

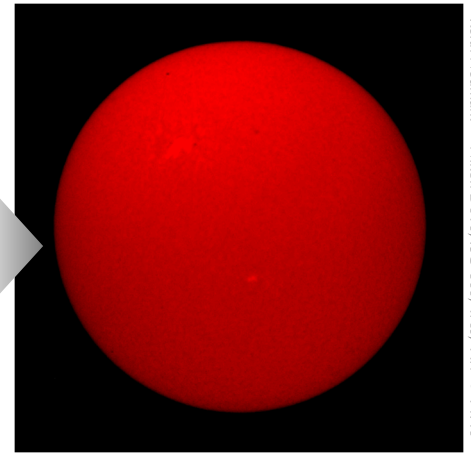
If there's fog, perhaps the seeing will be good for Mars?

Malcolm (19:10): Perhaps, but it's not every day you can photograph a [comet](#) near [M42](#)!

Stephen (20:21): The sky is pretty good here. Transparency isn't perfect but it's better than last night. The seeing is pretty good.



Keith Neumark, ISO 100, 1/200s, 117 @ 13:15



Keith Neumark — Nikon D610, ISO 800, 1/6s, 117 @ 14:40

Stephen (20:58): I just went outside to take a look at the sky condition. I have a slight haze, but not what I would call fog. I'm happy with it!

Walter (02:51): I'm awake again. [Comet Atlas](#) is looking like it is 12th mag (nuclear).

Having updated the orbital elements for ECU, I see [C/2020 P4-B \(SOHO\)](#) is listed at mag 7.0 down near the Leo-Sex border. I may give that one a go during twilight—hopefully it won't be behind the tree.

Haven't heard from Rick tonight. He must be sleeping... Speaking of which, I'm off for another nap (since I'm sleeping in the control room tonight).

Kim (06:07): The sky was pretty good last night. I was out for about 1.5 hours. There was dew falling and the temps were down to 5C.

I tried out my new ZWO ASI120MM camera. I did manage to get [Jupiter](#), though overexposed. [Saturn](#), have not processed yet but there are rings. Trouble finding [Mars](#). Tried [Capella](#) and [M31](#). Learning curve ahead.

I was using it in the morning on the [sun](#), but need to put in the extension tube. More testing. Did sketch the [sun \(AR2781\)](#) and do a water colour of the H-alpha, saw one prominence.

Rick: Yes, I was asleep. We were in Ottawa yesterday, got home about 7:30. The sky looked excellent so I started up the observatory and ran all night. I awoke at 6 to find it had clouded over just a few minutes earlier and the telescope just parking itself. It was a bit misty out, but nothing problematic. 155 more images under my belt.

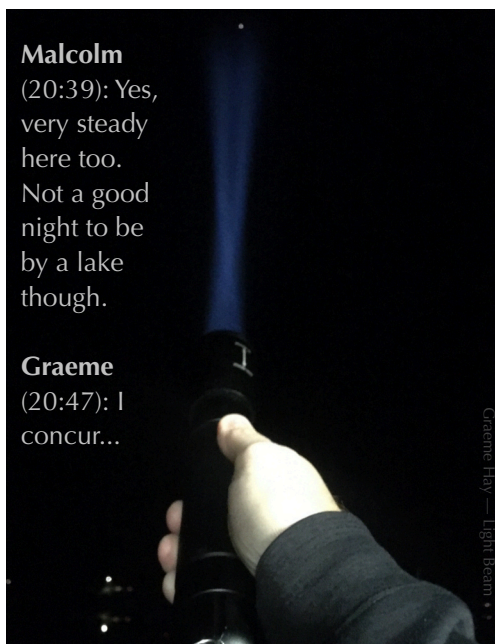
Susan: [Mars](#) was very steady here last night compared to last week. Things did get a bit damp as the evening went on.

Kim: Soon Malcolm, the lake will be behind you, so to speak. When is the last date in PEC?

Malcolm: Dec 15. Looking forward to the change!

Walter: There were two USB lockups tonight. Fortunately I was sleeping in the control room and was able to unplug and replugin the camera without losing too much time. I had to disconnect/reconnect the camera in Maxim/ACP and resume imaging both times.

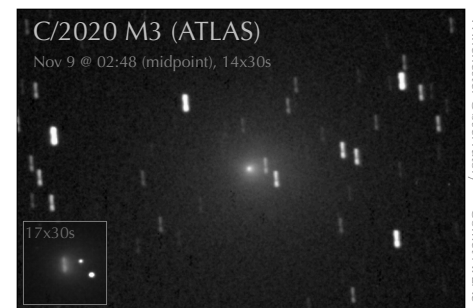
After 261 [variables](#) imaged, I started getting out-of-memory



Malcolm (20:39): Yes, very steady here too. Not a good night to be by a lake though.

Graeme (20:47): I concur...

Graeme Hay — Light Beam



C/2020 M3 (ATLAS)
Nov 9 @ 02:48 (midpoint), 14x30s

17x30s

Winchester Observatory — Comet ATLAS

errors. I had to reboot the computer to clear them up.

I tried to image **C/2020 P4-B (SOHO)** but there was no sign of it. Cloud came in from NE to SW as I was closing the dome!

MON/TUE, NOVEMBER 9/10

Malcolm (20:18): Wow, what a night. Rick, wake up!

Walter (20:21): I just woke up! The N half of the sky is cloudy. Hopefully it doesn't move S. Dark frames going now, will start imaging soon.

Last night the dome pointing was off early in the evening until I remembered to uncheck the "DST" box in DigitalDomeWorks!

Comet 11P/Tempel-Swift-LINEAR is listed in the Great Square at mag 8.9 so I'll start with that tonight.

Stephen (20:31): I finished dinner at 6 and went out to open the observatory. Darn! It was cloudy! So I had a nap until 7:30. Then it was clear and I opened the observatory. I see a bit of cloud to the W. Hopefully it will evaporate before it gets here. I'm imaging **galaxies** in Aquarius and Cetus tonight.

Walter (20:52): OK, I think I see **11P**—about 4 arcmin off its ECU position and really faint. I'll know for sure when I stack the images later.

Rick (21:01): Wha? Who? Oh, yeah, it's clear out?

We were in Kingston today to pick up a calendar (thanks for doing that Susan, it was lots of fun standing around in a parking lot talking to missed friends) and for various medical and car appointments (the Subaru only had two burnt out taillight bulbs, total bill \$21—better than the mouse-chewed wiring or main computer failure that we were worrying about.)

Got home about a half-hour

ago and had the scope doing photometry images of **M15** within about 10 minutes. It is now just moving into the trees so it's on to the regular photometry script.

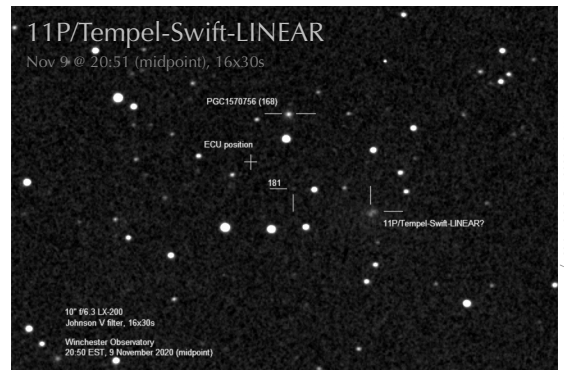
John (06:46): Last night I was outside looking at the planets and checking for the comet. At 1913 a very bright **shooting star** went by very high in the S moving from E to W with some colour flashing, maybe the AllSky caught it?

Walter: Another all-night run. Only 75 **variables** (mostly CV, but a handful of Miras at dawn). Imaged two comets, did new sky flats at dawn.

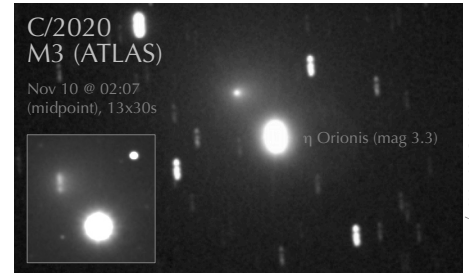
The clouds ruined the evening last night, but the forecast is for clear tonight until around midnight so hopefully I can get the missed sky (Her, Lyr, Cyg).

I went out in the back yard this morning and saw **Venus**, **Spica**, and **Mercury** together in the SE. Very nice! So I saw all the classical planets last night. Guess I should have observed Uranus, Neptune, and Pluto telescopically to round out the collection.

Susan: My sky was not great closer to my horizon, but **Mars** was



Winchester Observatory



Winchester Observatory

pretty good and I had an enjoyable session. I must try for some of these comets.



TUE/WED, NOVEMBER 10/11

Rick (22:35): C'mon team, where was my wake-up call? Fortunately I was awake anyway and got things started about 7:30 when the cloud finally moved out. Things seem to be going well though it's quite breezy which is increasing my



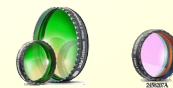
Graeme Hay (left); Malcolm Park (right)

Graeme: Clouds ruined my first attempt to image the sun today with the first of my new filters... grumble. Although they made pretty when the sun set.

Hank: I got out this morning before going to Kingston (not processed yet). Wish I had my new filters: Baader 1.25" Solar Continuum and UVIR.

Malcolm: This was the view from Harrowsmith.

Rick: Beautiful! Almost exactly the same view I had from the Walmart parking lot while Jeanette was shopping. Just replace the tree with a couple of light standards.★



FWHMs. Just off to bed now until shutdown time in the morning. Hold my calls until then.

THU/FRI, NOVEMBER 12/13

Walter (18:08): Just noticed the sky clearing 20 minutes ago. Scope synched with sky, focusing now, about to start var star run!

Rick (20:27): Well, that didn't last long. I was expecting at least a few hours, but it has clouded over here. Kind of patchy but enough that plate solves are failing which is screwing up my scripts, so I've put things on hold for an hour or two to see if this band of cloud moves on. At least I got a couple of hours in.

Stephen (20:40): Cleared here early. Cloud arrived at 8. I'll wait for a while but I expect it is a losing proposition. At least I got one galaxy tonight.

Walter (20:53): D'oh! I thought the images were a tad ratty, but the images are still looking usable. I'll see how long I can go. I'm up in the control room watching the Toronto Centre meeting this evening.

Stephen (01:00): Cloud at 1 a.m. Time to quit.

Susan: Glad to see these reports. I was busy for an hour then focused on **Mars** waiting for the thin cloud to dissipate. Gave in at 9 p.m. At 11 p.m. it looked clearer, but we were off to bed.

SAT/SUN, NOVEMBER 14/15

Stephen (18:43): I wanted to get an early start to the night as it will likely cloud over before the end of the night. I got such an early start that my main targets are still in the trees!

Walter (18:46): I got started right at dusk. CSC calls for it to start clouding over here about 0400 but the satellite loop doesn't look nearly that hopeful. I can probably get a few dozen CVs in tonight

though.

Spent about 3 hours on Zoom for AAVSO stuff today. Great!

Rick (19:50): Things seem to be going well here. I got started just a few minutes after sunset with a set of twilight flats. Right now I'm shooting a bunch of images of **Landolt SA41** to test my photometry accuracy and precision. 400s images and I'm getting FWHM under 1.5". Looks like we've probably got another couple of hours yet before the first clouds move in. And then maybe another hour or two before the cloud gets thick enough to kill photometry.

Malcolm (19:55): I'm just leaving the house in Harrowsmith for the county. I took a little tour of the sky with the EDGE 9.25, took some snapshots with the DSLR.

My Tri-Bahtinov mask arrived and I gave it a go. Liveview even on **Vega** is just too fuzzy. I'll have to wait and use the mono CCD later.

Sky here is not bad at all. I'm sure I will be quite content here! I have noticed that I appear to be on the line of approach to YGK.

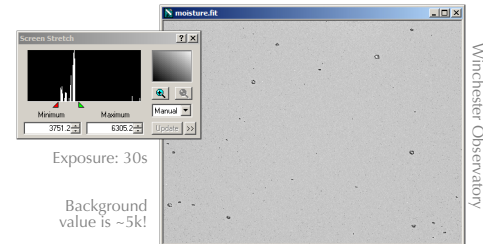
Beautiful night, I saw my first Harrowsmith **meteor**.

Stephen (20:07): I was just looking at the satellite loop. The band of cloud that is approaching seems to be evaporating and will probably pass by quickly. I don't think it will be much of a problem for long. **Stephen** (00:34): Cloud at 12:30. Quitting time.

Rick (02:11): Things still quite good here yet, any cloud is very thin and certainly not materially affecting my photometry. I wish now I had set up the little scope for some pretty pictures—I didn't think it was worth it for a only a couple of hours but it has already been about 7 hours of good observing time. And from the satellite loop it looks like I can get another two hours yet.

Walter: Cloud was coming in fast

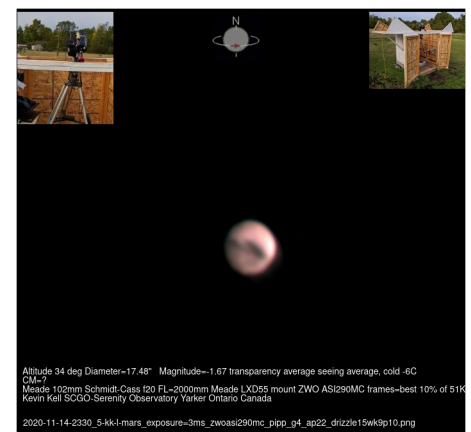
on the satellite loop, confirming CSC's prediction that it would cloud up around 0100. After about a 90 minute pause in the imaging plan (after **Per**, before **Tau**) the camera showed severe signs of moisture, so I ended the session and wrapped a heater element around the camera.



Winchester Observatory

Kevin: Kim & I were out observing and imaging last evening... from maybe 17:30 to 19:00. By the time we packed it in from the cold it was -6C here. Somehow it feels colder now than a few years ago. I did a few imaging runs of **Mars**, **Jupiter**, **Saturn**, and then Mars again.

Mars was probably at the highest altitude that I have ever imaged at and for the first time I saw the affects of atmospheric extinction. Just a couple of weeks



Mars Mapper 2020-2021

Date: 14/11/2020 23:30
Time: 23:30
Re-load current time Enter new date & time
Reset to now Recalculate
-1 day -1 hour +1 hour +1 day

The map shows Mars with celestial north down and east to the right, matching the inverted view of a Newtonian (or a refractor / Schmidt-Cassegrain / Makutov-Cassegrain without a diagonal) on an equatorial mount.

Show map feature labels

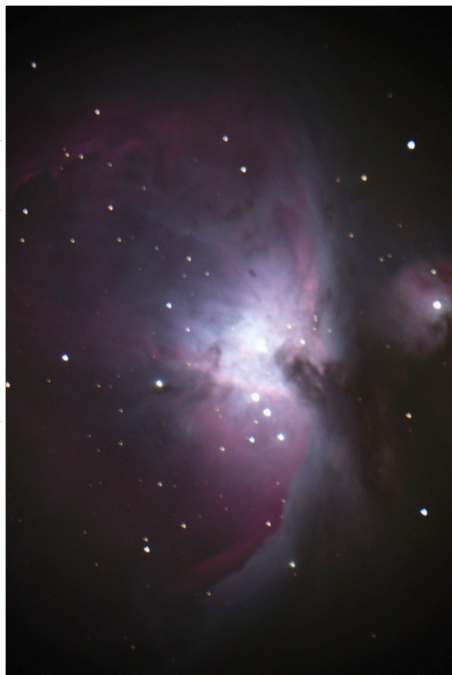
Mars data for observers

Magnitude: -1.7	Phase: 95%	Angular diameter (arcsec): 17.5
North pole position angle: 327°		Solar elongations: 142°
Distance from Earth: 0.536 a.u.		Martian central meridian longitude: 238°
2020 opposition: past		Closest approach of 2020: past

ago Mars was in the 20–30° altitude range and my exposures were running 10ms. Last night Mars was higher (35°) and the exposures were down to 3ms! I think it was using the same optics (*i.e.* 2x Barlow) with no other changes.

Starting to process now... expecting a lot as a 5 min run at 3ms per gives me a *lot* of frames to pick from! This is with a 2x Barlow and as you can see, the absolute pixel size of Mars is small and getting smaller. We have heard of other imagers using up to 5x Barlows (so 25x less light than with no Barlow at all), so that means you need a bigger telescope. That means I still need a bigger telescope.

Keith: I tried for Mars also and after talking with Malcolm, he was absolutely correct that I will not be able to get a decent photo of Mars with my DSLR, and that I would have better luck getting M42. How right Malcolm was: Mars was a red blob, but I did impress myself with M42.



Keith Neumark — M42, Nov. 14 @ 23:05 Nikon D610, ISO1600, 1/375

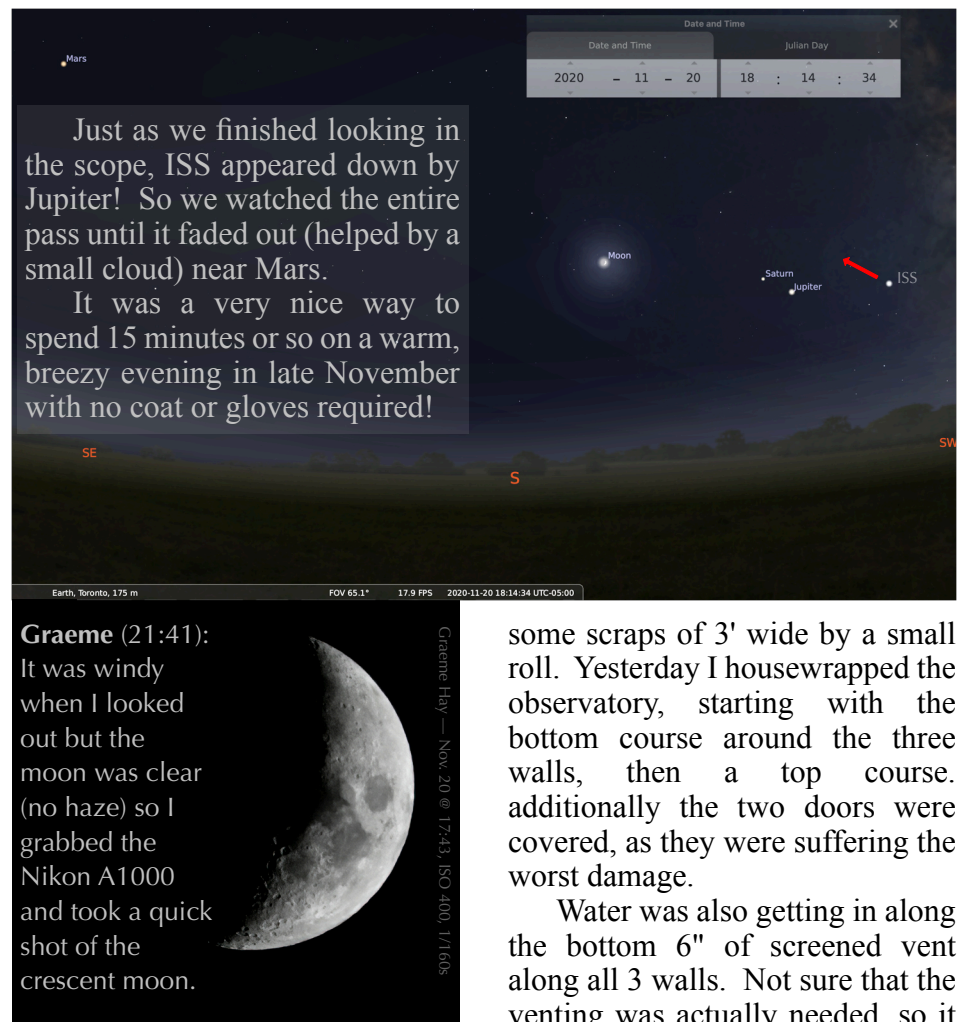
FRI/SAT, NOVEMBER 20/21

Stephen (17:30): Well, it cleared

up right on time but it's too windy for me to open my observatory. Hopefully the wind will die down soon.

Rick (18:09): I started up dead on the end of nautical twilight. But it is a little breezy so my stars are rather elongated roughly N-S, the direction of the wind over the obsy. I wasn't expecting the clearing so this is a bonus for me.

Walter (18:44): I came up to Oshawa this afternoon and despite some nice sunshine on the last half of the trip there was a lot of cloud. At dusk there was still a lot of cloud, but then just after six it was clear enough to see Jupiter, Saturn, moon, and Mars. So I set up an 8" SCT in the driveway and my mom and I observed all of them. The scope was a bit jiggly due to wind and the seeing wasn't great, but the views were still worthwhile.



Just as we finished looking in the scope, ISS appeared down by Jupiter! So we watched the entire pass until it faded out (helped by a small cloud) near Mars.

It was a very nice way to spend 15 minutes or so on a warm, breezy evening in late November with no coat or gloves required!

Graeme (21:41):

It was windy when I looked out but the moon was clear (no haze) so I grabbed the Nikon A1000 and took a quick shot of the crescent moon.



Graeme Hay — Nov. 20 @ 17:43, ISO 400, 1/160s

Stephen (19:53): I napped until 7. The wind had died down by then so I set up. There is a haze around the moon. I hope that is not indicative of the night.

Stephen (22:47): I'm having a good night. The cloud has managed to hold off for now. I'm getting some good images.

SUNDAY, NOVEMBER 22

Kevin: After two winters, our SCGO Serenity Observatory was already showing a little bit of wear and tear. It was quickly and cheaply constructed out of 2x3 and OSB. Although heavily painted (two coats of white paint), the OSB is absorbing water, especially on the exposed edges.

I put out a request for any small bits of house wrap on the list a week or two ago. We did acquire

some scraps of 3' wide by a small roll. Yesterday I housewrapped the observatory, starting with the bottom course around the three walls, then a top course. additionally the two doors were covered, as they were suffering the worst damage.

Water was also getting in along the bottom 6" of screened vent along all 3 walls. Not sure that the venting was actually needed, so it

was covered up, stopping the blowing wind and water from getting in. There is still some room for air movement it get in as well.

The roof panels are still using its original heavy ply wood pellet bags and is holding up well. The only area not covered were the roof panel gables.

Kevin Kell — Serenity Observatory, Nov. 21 @ 14:09



Stephen Craig — MI



Stephen: I'm always trying to improve on my images. This one of Messier 1 from Friday night isn't my best. But it's not a bad effort. Seeing was not as good as I had hoped and my guiding was a bit ratty. I'll try again another night when it is higher in the sky.

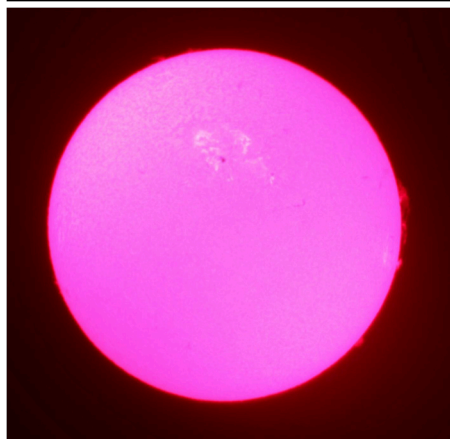
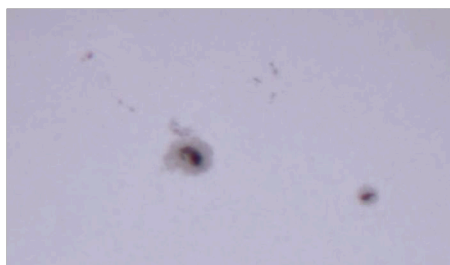
TUE/WED, NOVEMBER 24/25

Rick (21:02): The cloud is getting thicker and thicker. I've given up on my normal targets and am shooting a series of 60s images of **SW Andromedae**, a 10th mag particularly interesting RR Lyrae star. I'm still getting S/N above 400 but it's going down slowly.

SATURDAY, NOVEMBER 28

Hank: I just had a nice 1½ hour

solar session, seeing sucks mostly but it is SUNNY! It has been four days of missing **AR12786** and the rest and all the changes. I do not think it has been named yet but **AR12787** has emerged around the east limb. Here are a couple of unprocessed/downsized images. If you haven't observed 12787 get out there as it appears to be breaking up.



Hank Bartlett — Canon T7i, Nov.28 @ 10:33, ISO100, 1/200s

Hank Bartlett — Nov.28 @ 10:11, ISO200, 3/5s

Kevin: You bet. I've tried out the old DSLR and its 75–300mm telephoto zoom and the 58mm polymer solar filter. Wayyy too small an image. So over to the 500mm f/8 camera telephoto lens. Bigger image. Used a 4" telescope solar filter for the ~3 1/8" diameter camera lens.

Looks like it worked out. I forgot to reset the ISO down from 800—so it's a little grainy (1/1000s is a little dim).

Focusing is tough without a Live View feature. Only the spots near the centre are showing here (missing one near the edge). The sun was taking up about 1/3 of the sensor in the short dimension.



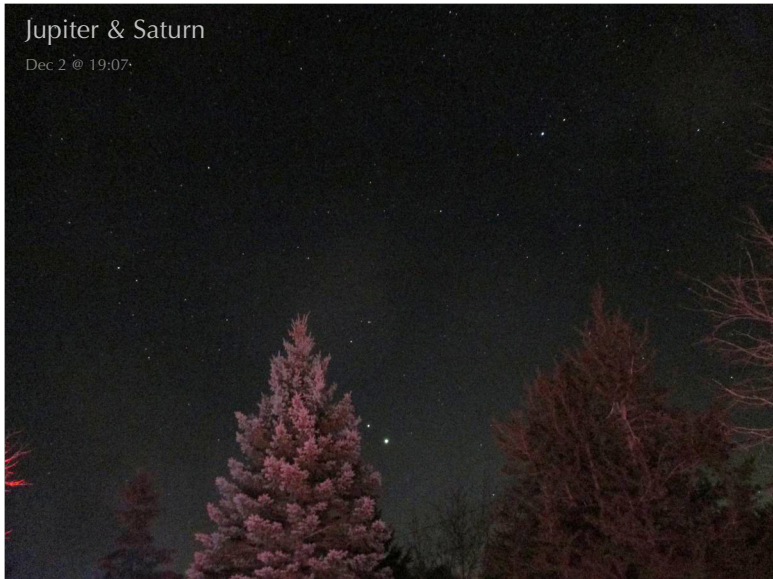
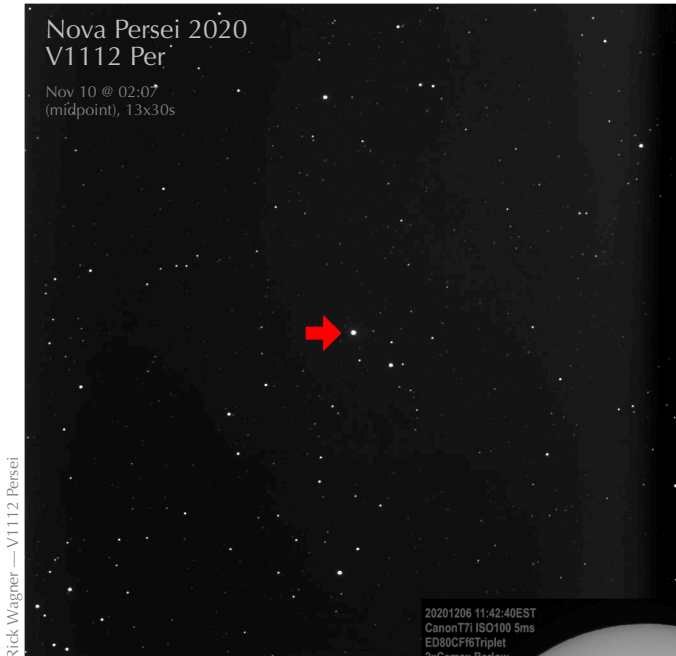
Kevin Kell — Nov.28 @ 12:29, Canon Rebel, ISO200, 1/125s

SUNDAY, NOVEMBER 29

Hank (09:26): I am hoping to get out to the RHA soon this morning. There was an M4–5 flare this morning behind the east limb, perhaps something even bigger coming!

Rick: The nova in Perseus is apparently continuing to brighten. Latest ob I've seen shows it near 7.6 mag. Definitely worth a look. I imaged it for a couple of hours Friday night with the remote scope and; if it stays clear enough long enough tonight I'll image it here too. And then again tomorrow night from California.

Here's a stack of a few dozen images [see image next page], shrunk down (originals are 16 megapixels) and JPEGed. The nova (now officially designated **V1112 Per**) is the brightest star dead centre in the image and is located at RA 04:29:19, Dec. +43:54:23. The field here is 36 arcmin square. To help you locate it in your star atlases, part of the open cluster **NGC 1582** is just poking into the lower left of the field and the bright star just to the nova's lower right is 9.7 mag.



Rick Wagner — V1112 Persei

Kim Hay — Canon Powershot ELPH 120IS, 5mm f/3.2, ISO 800, 15s

Hank Bartlett

SUNDAY, DECEMBER 6

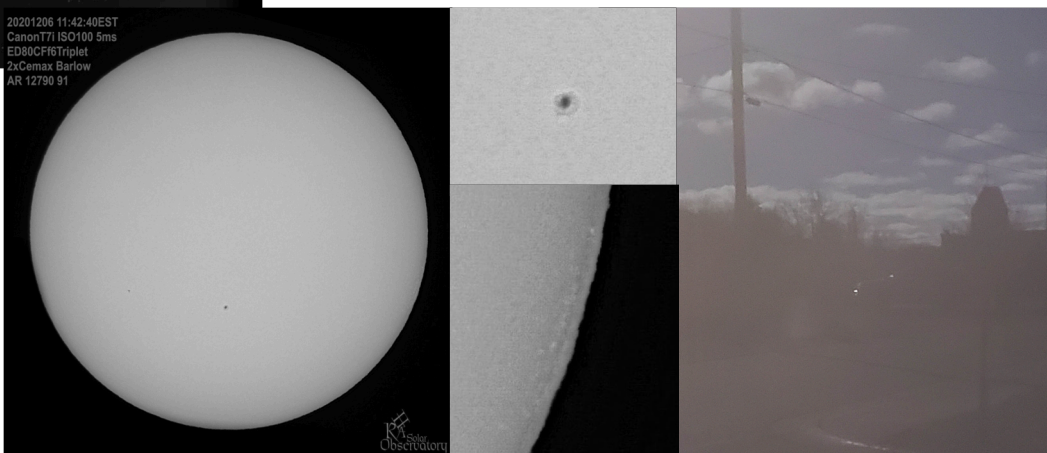
Graeme (17:32): Setting up for a night of imaging at last.
Stephen (18:23): I got set up right at the end of twilight. My first clear, moonless night in 16 nights!
Malcolm (20:13): I enjoyed the view of the night sky at twilight but movers are coming tomorrow and I'm betwixt and between. Can't wait to settle down.

Stephen (21:57): Damn! Cloud at 9:45.

Rick (22:19): Yep, cloudy here too. I noticed the clear sky just at sunset so was able to get up and running in time to collect a set of flats in twilight and then about 3 hours of images. I can still detect bright stars with the camera but nothing at all useful. I think we're done for the night.

I've been hoping to image **Nova Persei** but it clouded over too early. I got shots on the 3rd but they were slightly overexposed, so the nova was saturated. I was going to try tonight with half the exposure.

Graeme (22:33): I'm imaging **Orion Nebula** with the Edge HD.



It is still clear here as the **moon** is coming up soon so my last imaging run completes just before that.

2020_12_06 13:07:56EST ISO640 f1.5 90ms, I took this with my Samsung S10 phone camera to test the Baader film solar filter and got this image surprisingly. Pointing at the sun was too bright. I will have to try again but turn off auto exposure.

MON/TUE, DECEMBER 7/8

Stephen (18:55): It's clear again! I was late getting home so I didn't get set up until 6:30. Here's hoping it stays clear longer than last night!

Graeme (19:41): Someone on the Napanee FB page is reporting seeing a large (orange?) **meteor** streak above highway 41 around 19:20, E to NE of Napanee.

Rick (20:23): Once again I only noticed the sudden clearing when heading into the house from the office. I got the camera cooling and went back to work in the office. Suddenly it's nearly 6 and I've missed 10 minutes of imaging time! Anyway, things are well

underway now. And in about a half hour our science run on the [RASC] remote scope begins in California—promising a whole night of spectacularly clear skies. Again.

I'm not actually driving tonight but I may try to get on after midnight and shoot some wide-field images of the **nova in Perseus**. Or, if it stays clear here long enough I may try to just shoot it here on a tripod.

Susan (22:22): [**Meteor**] I was opening up the observatory just before 8:30 and glanced back toward the house to the south. It was quite bright yellow and red, more exciting as it was breaking

up! First sighted leaving Orion, went below the roof around Cetus.

Kevin: Looking at the archives of AllSky2 (the UWO system), I see one on 2020 Dec08 at 01:30:18 UT in the south, so -5 hours is 20:30:18 EST and it is going off the S end of the screen. The video of this event shows <3s.



There is another one at 05:05:03 UTC (00:05:03 EST) a little higher, more in the SW, not as bright.

AllSky1 is not all-sky (I'm still looking for a wider-angle lens that is not outrageously priced) and is biased towards the N in order to pick up aurora. Nothing was seen on that camera (likely due to a 30s gap between images).



MORE ON STARLINK

Malcolm (Dec.7): [from *Geekwire*] SpaceX Starlink wins \$885M in rural broadband subsidies. FWIW.

Mark: That is U.S. subsidies. I guess cat videos are more important than dark skies.

Malcolm: Might as well accept it and get used to it.

Kevin W: "Oh Lord, grant me the serenity to be upset and complain about the things that I cannot change. .."—doesn't sound quite as catchy or peaceful (nor very science-y, for that matter).

A few weeks ago I saw a dim train/satellite convoy of those Starlink satellites right overhead—not perfectly spaced by the way—then, the ISS caught up and passed them, almost in the identical trajectory from my perspective, like a space race, or a space highway with the ISS in the space carpool lane... Maybe the 2022 Handbook could have a new Satellite Conjunctions and Races section?

From this morning's CBC news: reportedly Starlink may or may not get a bit of the \$150M rural Internet funding from the Canadian federal government.

Kim: We have been out for the last few clear nights taking pictures of the planets, and on Dec 2nd we saw a

train of them (Starlink) go over just past Cygnus.

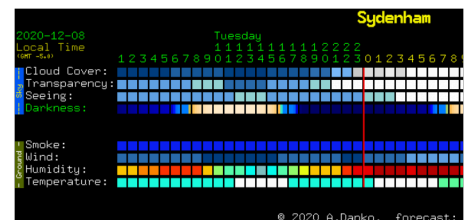
On subsequent nights we have seen a lot more straight line but shorter times of many satellites.★

Rose-Marie (23:16): I believe I had one early **Geminid** when I took BigWetNose out for a walk at 11:00 p.m. It will probably be the only one I'll see with this crappy weather report.

Stephen (01:05): I have cloud at 1 a.m. and the **moon** is up. Time to quit. I had a good run tonight. Much better than last night.

Rose-Marie (03:22): I have just been dragged outside by Rude-Beast who decided that I was sleeping too soundly and this would be a good time to demand to go out into the cold. 'tis clouded over; the last quarter moon is shining behind thin clouds.

Malcolm (08:10): LIES! ALL LIES! Snowing at present.

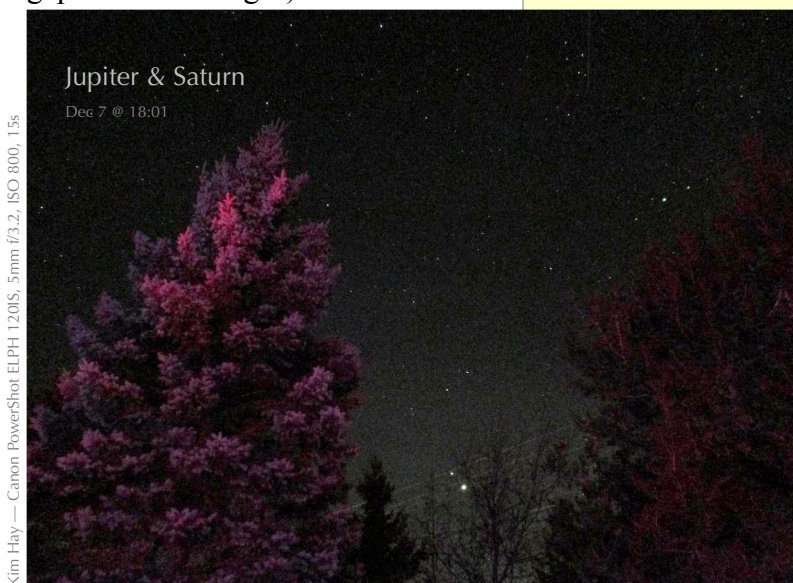


Mark (09:09): It is depressing. According to EC, it is sunny out right now and going to be all day. So why are there flurries happening under complete overcast?

Kevin: A nice **fireball** entered the atmosphere around 95 km up just north of Fort Drum in Upper New York State, heading N, and ending 36 km up just NW of Brockville Ontario (19:30:38 EST). We had been outside just prior to this, photographing **Jupiter** and **Saturn** but had gone in just before.



The event was detected by three meteor cameras (Yarker, Oak Heights, and Ottawa) in the University of Western Ontario's Southern Ontario Meteor Network.



Kim Hay — Canon PowerShot ELPH 120IS, 5mm f/3.2, ISO 800, 1.5s

SUN/MON, DECEMBER 13/14

Graeme (09:00): Looks like the sky gods are going to bless me with a 3-hour window! It may be a sucker's forecast but I hope it stands true. I'm charging all the batteries today to get some cool photos and time-lapses!

Malcolm (11:13): Looks like the mother of all sucker holes but I'm game!

Kevin W (18:57): Still cloudy here.

Malcolm (19:08): Camera is running...will see what happens!

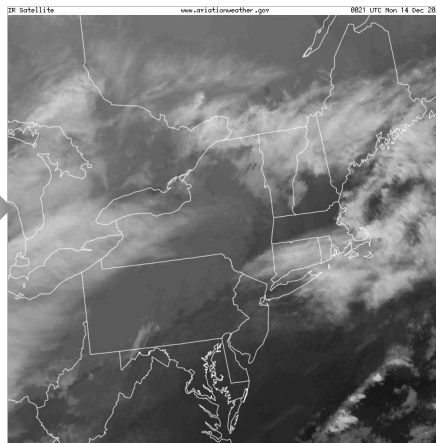
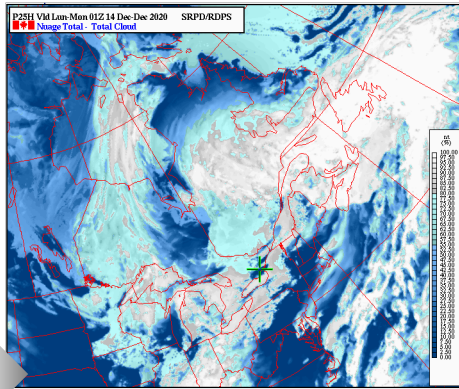
Malcolm (20:38): May not get any better than this tonight...

Graeme (23:15): It's been in/out later in the evening with 2-3 minute "holes" here and there. But is "clear" now and I'm seeing what I can get but the seeing is rubbish so this is a "I hopefully get one" situation with the time lapse.

Rose-Marie (04:07): At 4:00 a.m. BigWetNose just had me out. Nice and mild for this time of year, but totally clouded over.

Kim (06:17): We stayed up until well after 10 p.m. waiting for the predicted clearing...cloud. 5:30 a.m. cloud... Bust.

Malcolm (07:40): Pretty pathetic! I got two; this is the best (01:38).



MON/TUE, DECEMBER 14/15

Graeme (18:18): Skies are cleared, meteor shower is in progress.

Stephen (19:27): I'm set up. Imaging #500. NGC 7818 in Pisces

Kevin: We got a nice one in the N at 01:01:24. Nothing major after that. We got about 20 on AllSky2.

Stephen (19:37): Transparency is good. Seeing not so good. Guiding is terrible.

The wind is buffeting the scope.

Malcolm (19:46): tonight, I'm shoot-

ing the same shot as last night. Hoping for Geminid stragglers. 14mm lens/DSLR on a tripod. I

have had to add some weight to hold the tripod down in case of a strong gust.

Mark (20:26): But very windy here.

Graeme (01:05): I've just got cameras on sticks for now. It is too windy to open the Pod and try anything seriously (I could use the half dome for a shield but I'd like to get some Geminids if I can).

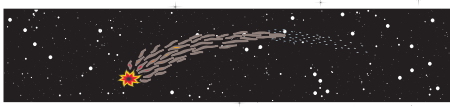
I caught one in the SiOnyx Aurora Pro which was nice (and lucky); will have to see what the fisheye time-lapse produces tomorrow (slightly different angle but same settings as last night's successful single capture between the clouds).

Stephen (01:52): Still windy here, affecting my guiding a bit but not too bad. Now I'm on to nebulae in Monoceros. It's a fairly good night!

Rick (02:12): Things are lovely here. Scarcely a breath of air over the scope, spectacularly clear. Though I notice some cloud very near to my N on the satellite image. Surprising that I've been able to capture non-stop since just before 7:30 when we got home from Kingston in spite of a few brief periods of thin cloud. I was half expecting to only get a half-dozen images before getting shut down.

So this is session number 140. Weather is going to have to be awfully darned good over the next couple of weeks for me to hit 150.

Malcolm Park — Nikon D810A, 14mm f/2.8, ISO 3200, 30s



Winchester Observatory, iPhone 8, 4mm f/1.8, ISO 2500, 64.5s

Malcolm: Yeah, it was nice here too. Bit cold. The camera ran nicely, and caught a few. Here's one of the better ones. E-mailing it has crunched it—all the colour in the meteor has been removed.

A dew heater was all I needed, although with that wind it seemed unlikely that frost was going to form, but I don't take the chance. I also wrap the camera in a rain bag, in case there is any precipitation that would affect the body.

Susan: It cleared here much earlier than expected and it was very nice. Yes, a bit windy, had to move some annoying rattling stuff in the observatory. I was stunned that it never seemed too cold even with the wind. There was a bizarre whack of cloud that rolled in just before 22:00 but it was mostly gone by 22:10. I have to say that I was so involved at the eyepiece that I forgot to look for meteors. Even so, any other night I would have seen a couple of sporadics; last night, nothing.

Rick: The cloud sounds similar to what I had—lost one single image to cloud. I think very roughly about that time.

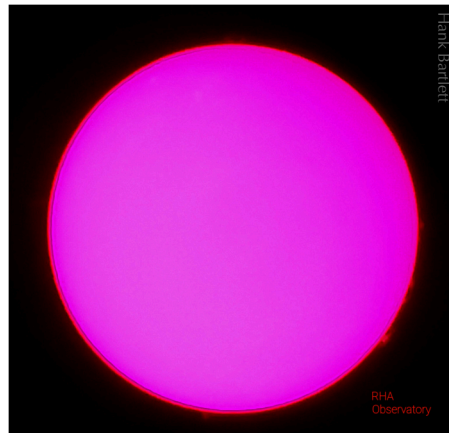
Malcolm: **Geminids** were few and far between last night but I think its always fun to watch the sky turn.

TUESDAY, DECEMBER 15
COSTA RICA SOLAR

Hank (11:06): Like a an old fart would, I thought I could bring my 10 year old netbook and use the old programs to achieve results near what I do now. I forgot that the yellow/orange **sun** back then came from the camera exposure, not processing. I fought to get it right last night but it didn't happen. I am



not disappointed in the images, especially as they are SM40 single stack scope by cell phone. Keith, I hope you were able to observe all of those proms yesterday; have not been out yet today, it was clear first thing, cloudy now.



I am hoping to observe the J/S conjunction from Playa Grande on the Pacific coast next week. I am certain there are some among you that think we are crazy or even reckless taking this trip but we are being very cautious and not staying in any hotels or doing excessive touring. All we do is through a friend's travel company so we know we are being taken care of and safe.

We are having a good time and travel went very well on both ends. Of course CR is happy to have tourists as the situation is dire here. Many have lost their entire life

savings and that includes some of the richer ones as well. See you all next year.

Keith (12:50): Do not worry Hank, just enjoy the holiday while you can! Finally that odd-looking yellowy globe showed up today, have not seen it for some time, but you are correct some very nice proms, especially the one in the NE, a huge arc, and the spots are so large but do

not show in the white.

Hank (13:29): I have not observed yet today, very hot here so maybe after lunch. I could not see the **sunspots** in white light in the Mak either.

Kevin (13:32): Holy frickin' amazing! Not more than a few years ago, one of our own would go on safari and after a time of silence, we would begin to wonder what jungle carnivore managed to do away with another astronomer. Now here today, he is not only in contact, but showing images of his fruit drink with umbrella!

Mark D (16:29): Hope you are having a great time and Merry Christmas to you and your family.

Kim: I found the sunspots in the SCT with the 1000 Oaks filter, but in the 80 mm with the Baader film I could not see them. I did pick them up in H-alpha.

Can you use the shelter to sit in and observe the sun to keep the heat off you?

TUE/WED, DECEMBER 15/16

Stephen (21:49): I gave it a good go. I got one image run done. But now there is too much cirrus cloud. I can't find my targets. I'm packing it in. Hopefully Thursday will be better.

Walter (22:36): Sky holding here!

Susan: May I have a beach photo please?

Funny you say it was too hot...I came in from the obs last night saying my toes were frozen and then confessed to David I felt like a wimp when I saw that it was only -8C.

Kevin: Absolutely...we were out around 18:00 at -8C and went in around 19:00 and it was already -11C. Overnight it hit -14.5C. Brrr!

I'll have to start thinking again about keeping the outside laptop warm enough. Maybe just a blanket would keep it self-heated enough. I got some telescopic Jupiter imaging, some DSLR **Jupiter** and **Saturn**, and some compact camera Jupiter and Saturn.

Kim: Today is worse, I will take your heat Hank. It's -12C and the wind is from the N. -19 wind chill. Ottawa is -16C (-23 wind chill). Brrr.

Hank (13:50): Just setting up, 29C feels like 33C. Just came back from a walk to the Super Alex, groceries and a 6pk of Pilsen!

Kevin: This is the best 5% of the 4000 frames taken in 180s, taken at 17:28 EST. Jupiter is only 13° above the horizon and has an apparent diameter of 33.4 arcsec—much smaller than just a few months ago.

In addition there was the outer edges of a cloud front coming up from the south, adding to the poor transparency and poor seeing.

Roger: Starting at 5 p.m. I put my son's Canon 60D outside with my Rokinon 8mm fish-eye. I then took a series of 20s exposures at ISO

6400 and let it run until the battery ran out.

It lasted about 5 hours. I put the resulting 873 jpegs into a movie at 20 frames per second. [https://youtu.be/TLd8nFB_3NY] I've found one meteor so far. It's at the 29 second mark, and can be found in Gemini.

Kevin: Love the time lapse productions! A bunch of questions after the 'Wow!' came to mind:

- Who is your light pollution dome in the left side?
- You have lakers going by still?
- Dew shield, heater? I am collecting equipment to do this as well; have not yet quite got there.

Roger: That light dome is Iroquois, about 5 km away. In truth, it's far better than the one behind the camera, although I have it on good authority that the corn starch plant in Cardinal is going to shield its lights. Do you know if there are any guidelines for "certificates of merit"



weather: no electronics involved to freeze up, just the fingers.

Susan: I am a pencil person but was using my phone for time checks and it was acting funny. Will return to my stop watch I guess, as it is also dimmer.

Yes, the sky failed me by 20:45. I thought I'd moved the scope as my star field was missing, silly me. Only 1 sporadic noted.

Walter: I imaged until 2 a.m., then there was a 1-hour hold to wait for Cancer, *etc.* to come along, by which time there was a deterioration in transparency so I packed it in for the night. (The computer woke me up after 6 consecutive plate solve failures.) 198 variables (mostly Miras) were imaged. Forgot to add Nova Per 2020 to the plan—d'oh!

Rick: I was quite surprised to get in a whole night of imaging. I awoke at ~0715 this morning to heavily overcast skies and expected that I had a pile of blank images. But it looks like the cloud moved in just at the beginning of nautical twilight so I only lost one last image. I shot a bunch of relatively short (30, 60, 120s) B and V exposures of a handful of open clusters to prepare HR diagrams as the basis for a future talk.

Then I did a 1-hour run of 55s exposures of ZZ Psc to see if I can detect its 3–10 minute periods. The combination of multiple periods make it so erratic that I'm not sure if what I got is variation or just scatter. Guess I'll have to try a



longer run to see if I can get something coherent.

With those sets plus my normal longer shots (200–400s) I got a total of 260 images—probably my best night ever.

WED/THU, DECEMBER 16/17

Mike H: North of Kingston definitely has been clear compared to Morrisburg. We were cloudy last night.

Kim: Cloudy in Yarker.

THU/FRI, DECEMBER 17/18

Kevin: Last evening showed some clearing with a lot of cloud coming in, so it was a short observing session as soon as it got dark enough.

I am sad to say that Jupiter season is pretty much over, as evidenced by this image of Jupiter (yes, its Jupiter!). It was something like 10° altitude, looking over Lake Ontario, not frozen yet so still a warm spot that has a LOT of turbulent air.



Rick: C'mon Kevin. I know a fried egg when I see one. And that one looks exactly like the ones I cook. Unfortunately.

Hank: I think you photoshopped that Kevin.

Susan: Hank, if it is cloudy here we are relying on you for a conjunction report. I sure hope it is not too hot!

Hank: We went to the beach when we got here this afternoon and it is a clear horizon for sunset to the water. As this area gets so little rain it should be that way on the 21st. It is a few minutes walk so I will have to test it out tomorrow to see if it is feasible. There is a lot of family distraction now that all 7 of us are here at the beach house.

Francesco (18:05): Tonight I challenged the freezing weather. Outside was pretty clear so I took my 6" and went in the middle of McCullough Park and...oh maaaaan! Amazing view of both Jupiter and Saturn in my field of view (25mm eyepiece). The moon was also pretty amazing.

Kim (18:08): Great going Francesco. We just came in as well from looking at the planets and the moon. So pretty. I did not have my scope out as we have cloud moving in.

Graeme (18:15): Got a shot of the moon, now getting warmed up to try for some imaging until 11 p.m. tonight when clouds are forecasted to arrive.

Steve (19:02): It was cloudy when I set up at 5:15. So I had a short nap. The clouds had evaporated by 6. Now I'm having a good night. I'll keep going as long as it holds.

Rick (19:08): It has cleared off here as well so my script is now running. Looks very good for the moment. The satellite images don't show much so I suspect the cloud is low and relatively invisible. That means little warning as to when it might move back in.

Walter (19:10): Fired up an imaging session at dusk. CSC says clear all night, while the satellite loop is a bit iffy.

Hey, I just remembered I need to add Nova Per 2020 to my plan! Still time to do that.

Rick (19:11): Oop, just checked a different satellite and it looks like we're really good for at least several hours.

Keith (19:27): I have clouds already!

Malcolm (19:34): Inconceivable!

Dieter (20:52): It was a lovely evening to view the **two planets** and the **moon**. We were not as brave and ambitious as you, Francesco, and stuck with our eyes. Hopefully the weather will cooperate for the conjunction on the 21st.

Steve (00:24): I'm having a great night. No sign of clouds. I'm getting some really nice **galaxies** in Camelopardalis. I'll switch over to Monoceros and Cancer in a little while. Not quite sure of what I will do there yet. I'll see how my mood strikes me.

Walter (10:19): It stayed clear all night and CSC shows clear until about 3 a.m. tonight!

Malcolm: If you sponsor your local clear sky chart, Attila adds the euro model to your forecast chart. It gives you some more information; I am not here to tell you that it's right or wrong! But just send him 20 bucks or whatever as a sponsor and you're done; that's all there is to it!

As you can see on my CSC there is a discrepancy between the Canadian data and the euro data.

Walter: "A man with a watch knows what time it is. A man with two watches is never sure." I think the same thing applies to forecasts!

Susan: Had a great night! My toes held out for 2.5 hours before they dragged me into the warmth of the house.

Walter: Control room was a steady +21C all night. Not a Hank level of heat, but better than observing outside!

Susan (16:21): Three sources now showing better than average sky before midnight. That is 6 targets for me and 200 for you indoor photo folks!

Rick (16:33): And the seeing looks not too bad. I will get out one of the dobs and try for **Sirius**' white

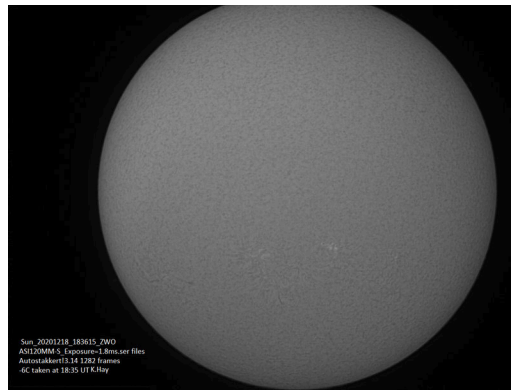
dwarf companion. If (when) I don't see it in the dob and if the seeing seems very good then I may try it with the Boltwood. And after not seeing it there I'll go back to the dob for some other targets. (Yes, yes, I know—looking through a telescope, what will I think of next!)

Kim: Are you the real Rick or has there been a body invasion?

FRIDAY, DECEMBER 18

Kim (17:09): I was able to get out to see the sun before it went behind the trees. This is one image of the whole **sun**, as much as I can get; I need a couple of small spacers. Also took images of the prominences but they are not processed yet.

Still a steep learning curve.



Mike: Nice shot Kim! I just got my PST piggybacked on my telescope in time to find the **sun** behind my house.

Graeme: Nice shot, I love the surface detail and showing the small sunspot in the middle.

Kim: Thanks Mike and Graeme. That is an active region decaying group **AR2793**. It was not visible in white light.

Rick: Very nice Kim, very crisp, nice contrast. Though I don't think much of the lack of activity—not your fault of course.

Susan: Kim, you are well prepared when this cycle really takes off! Great photo/detail.

Hank: I am getting caught up on

emails and just saw your image Kim, very NICE! I am looking forward to more. Hot here, so a lazy day. Did some solar this morning, mostly trees here so limited access to the **sun** for about two hours. My images today seem heavy with Newton's rings for some reason.

FRI/SAT, DECEMBER 18/19

Rick (16:25): Well, we aren't there yet but, given the forecast for the coming week, I thought I would take the opportunity to check them out today as this might be the closest I'll get to see them. With the trees surrounding the observatory they are only visible from about 15:30 to 16:30. Sure enough they are there. At 136x and a 36' field of view they are both visible, but only just. **Saturn** I could only see with a dark red filter for the first 20min. The rings are visible, with the gap between them and the disk seen well, **Jupiter** shows the two equatorial **belts** with a hint of a couple of other belts and possibly something dark (great red spot?) in the SE. I did eventually see Saturn without a filter but it was extremely difficult. Without Jupiter to focus on I would never have seen Saturn. Separation is currently just over 20 arcmin.

Graeme (19:03): I went down to the shore and got some shots just in case clouds do foil the day of.

John (08:13): Went out last night for about 1.5 hours and spent time with **Jupiter**, **Saturn**, and the **moon**. Looking forward to seeing the planets even closer, knocking on wood.

SATURDAY, DECEMBER 19

Susan: This afternoon after several months of observing practice I submitted my AAVSO results on **V1112 Per**! Very exciting!

A couple of days ago I found

CELESTRON 15x70 BINOS
ON SALE @ CANADIAN TIRE

Rick (Dec.18): Regular \$200, on for \$65. These are not outstanding binoculars but at the price I don't think they can be beat. However, try out the pair you want to buy to ensure they are collimated/aligned *i.e.* both halves looking in the same direction. I know one person who got a pair that weren't properly aligned and had to be returned.

Hank: I bought a pair a few years ago and left them with Bridie in Costa Rica. They are still aligned BUT they are filmed and moldy inside the objectives. I am trying to open them to clean but they are not cooperating.

Rick: Yeah, I think Costa Rica may be a little too humid for them. My pair is still great.

Hank: I was able to spin the objective assembly off and clean the prisms and primary lens on the inside but the objectives are of course screwed and glued, so no luck separating them yet. Any tips anyone?

Rick: Do you mean that there is mold between the elements of the objectives? With inexpensive binos you may be out of luck. Ideally there should be a ring with little notches in it to hold the objectives in their cells. You may be able to use a screwdriver in the notch to unscrew it. But it may be glued in place with a small dab of glue at one spot which you could try to cut through the glue. But it will probably have seeped in between the ring and the cell. And with plastic parts you can't use a solvent to soften the glue.

Honestly at this price point I think you just replace rather than repair. You could cut them apart and use the objectives for home-made finder or guide scopes?

Hank: On the back of the objectives, either a long swab or a tool to fit into both ring slots may give enough torque to break the glue but I doubt that. You are right, the ring is plastic.

I tried flexing it to break the glue seal but the more I look, it appears they used glue in more than one place. I need to find a thin bar of metal to cross the objective and fit into both slots and maybe break it free. I understand them putting a dab but there is more than that for sure. I left them back in El Bosque and will use my 10x50s in the meantime but may bring the 15x70s home for repair if Bridie will part with them. The humidity where she is is crazy! Here at Playa Grande it would not be an issue.

Heading to bed, too many Black Russians after a long day of travel, I hope you have a good night.

Mike: Thanks for the info on the binos Rick. I picked up a pair several years ago, I had to look through several pairs to find a pair with good collimation and OK optics. I still have them, but I finally bought a high-end Celestron 60mm set. Well worth the money spent.

If you can find a good pair for \$65 it is a bargain and will be particularly good for locating many of the Messier objects.

Kim: I have these binoculars that I purchased on a bus trip with Belleville. Susan was with me and she has the same pair.

All of the rubber parts on the outside housing broke off this year. I had contacted Celestron about getting a replacement kit for them but they don't have that anymore, so the design has changed a bit.

I think in Canada we have the opposite effect as Hank. The cold tends to affect these. I could not move them last night to focus on the planets nor get a crisp edge on the moon. I have brought them in to put some grippy cloth on the outside and perhaps grease up the centre attachment.

I will bring out the Zeiss binos that were my Dad's—great binoculars.

Rose-Marie: A few years ago I bought a pair of these binocs when they were on sale for \$50.00. I absolutely

love them. Now, they came with a really cheesy plastic attachment to put onto a tripod, so I made a little wood platform with padding, attached the binocs with velcro, and added a quick release plate for my tripod.

Roger: It is possible to re-collimate these binoculars. There are a couple of screws underneath one of the rubber grips.

I've found that on mine, the lenses are also slightly eccentric, so loosening one of the objectives will also provide enough adjustment.

These adjustments are also sufficient to re-collimate them if they get knocked.

A further enhancement should be to fill the gaps in the tripod adapter with the steel epoxy putty to stiffen it up. Some people have also stated that putting a few finishing nails in the mix stiffens the adapter up even more.

Rick: One of my projects for the future is a Messier sprint. Rather than trying to see them all in one night the goal is to try to see them all in as little time as possible. Choose 3 or 4 nights spread around the year and then try to star hop every one above the horizon as quickly as possible. With practice I figure it might be possible at an average of 15s per object (including finding, chart reading *etc.*). The 15x70s will be my instrument of choice.

Mike: A Messier sprint would be fun! We did a Messier marathon with London Centre in 2018. The weather was perfect, we did get about 45 minutes of cloud which gave us a needed break. I got 82 objects but by 5 a.m. I just couldn't continue. I was too tired, I would look at the star chart, then look at the sky and have to look back at the star chart again to remember what stars I had to navigate from. I think this was March 9th as March/April are the only months it works.

I like the idea of a sprint as the marathon is a long grind.★

that at -8C my pond liner [ob'y outrigger] covers were quite flexible. Today they went back on as we will probably get some ice of some sort.

Kevin: Congrats, way to go, and attaboy!

Kim: Great to hear that you have uploaded your observations. What is your observer code? Congratulations!

Susan: Just look for the outliers.

MON/TUE, DECEMBER 21/22
JUPITER-SATURN CONJUNCTION

MarK (17:49): Went west in the vain hope that the approaching clear skies might get here in time. Cloudy at Blue, cloudy in Gtown. So much for the big event. At least I can ski...

MarK (19:26): No luck here, but the moon is now breaking out of the clouds.

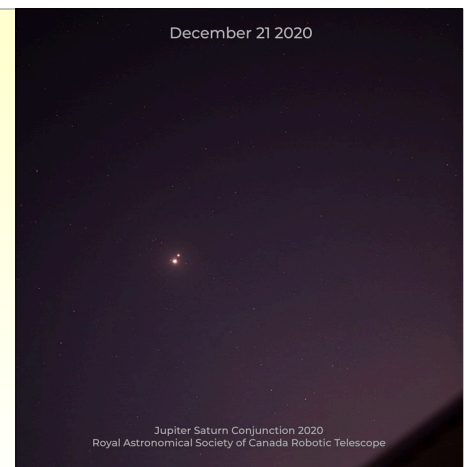
Keith (19:37): I think you are seeing a plane breaking through the clouds, not the moon!

Hank (19:50): Here is a picture of a camera screen picture of what my horizon was like tonight after three previous CLEAR horizons. FRICKIN FRACKEN HOBBY!



Hank (22:26): GIC, Great Invisible Conjunction. Excuse me if this info is duplicate as communicating with just cell is confusing.

Attached is an image of my horizon tonight [above] which ducked after three clear horizon nights, and the one successful



Jenna [from the RASC-RT-Science list]: Last night, as you all know, was the Jupiter/Saturn conjunction. We hosted the scope with Explore Scientific and took the day's photo of the planets on the air. As such, at least up until the conjunction, the time lapse is complete!

I will ask operators to continue with this procedure until the 28th (or until no longer possible, whatever comes first) if the weather allows and if you're comfortable. It'd be nice to see Jupiter continue past Saturn for a while in the gif!

HUGE thank you to everyone on the team for working together on this. It required coordination between teams and operators beyond what we have done in the past. It was time well spent, I think, and I hope you have all enjoyed the process.

If you are operating and you begin running into problems with Jupiter and Saturn at the roof line, please let me know and I'll officially end the project and send around the very final gif.

Happy imaging everyone; if we don't talk before then, happy holidays!★

observation we did get of **Scorpius** on the walk back to Casa Colibri—darn near stepped on it.

Susan: Scorpius! Great resolution of the background asteroid field despite the light pollution.

