June 2021

# Skyletter

RASC Kingston Centre


### Tue/Wed, June 1/2

**Stephen** (20:34): The sky and the satellite both look good. I'll open the observatory and get the camera cooling. It should be a great night.
**Susan** (21:04): I sure hope so Steve. David and I spent the afternoon doing some remedial outrigger stabilization work. After 15 years things seem to be shaking a bit loose. Just patch work this year. I have ordered some plywood to replace the floor. Next year I may make some changes that will make it more senior–friendly for the future.
**Kim** (21:11): Please share the ideas. Also if you do any roof mods. The loss of the flippy board lessened the weight of our roof by 5 kg.
**Kevin**: 2.5" wheels (7 on each side) rolling on soft aluminum flats...mostly to contain the soft bits in the outrigger 2x8's.
**Hank** (21:13): Is it rolling bigger wheels on steel yet? If not it will be hard forever.
**Malcolm** (21:52): Is it dark yet?
**Rick** (23:52): Good indeed. I'm stealing from Steve's playbook—did a couple of hours unfiltered last night on M51, then did another couple of hours this evening to get some 2x2 colour images. Hopefully something good will come of several hours of missed photometry. However, I'm now back to my photometry, the scripts are running, and I'm off to bed.
**Malcolm** (01:10: Anyone else seeing fireflies? Seems early. Hmmm.

### Thu/Fri, June 3/4
### Stoopid Weather

**Rick** (22:48): I looked outside a few minutes ago and it was dead clear (OK, a little hazy, but lots of stars, really really dark). Checked the satellite loop and no cloud. Opened the observatory and it's overcast. See subject...
**Malcolm** (05:57): I had an e–mail composed last night but never sent it. Subject was sucker hole.
True story.
**Susan** (09:15): We were well into the fog by 22:30.
**Malcolm** (09:18): Weekend looks good! But there's no eclipse on the weekend.
**Rose–Marie** (10:02): Could hardly see the beach through the fog this morning. Still kind of hazy.
**Rick** (10:14): Yep, I finally decided that that is what the problem was so I shut everything down and went to bed. I got up about 01:30 to 'check the weather' (old man astronomer's euphemism for midnight bathroom trip) and it was clear out, but I decided not to trust it and went back to bed. And it was thick and gloomy this morning.

### Fri/Sat, June 4/5

**Stephen** (23:10): It's a fairly good night, a bit hazy but the seeing is fair. We may get a few clouds. I'll just have to hope for the best. I'm imaging in eastern Virgo again.
**Hank** (00:43): Just finished processing and heading to bed.
**Stephen** (00:49): There is a narrow band of cloud going through now. It probably won't last long and then I'll be back at it.
**Stephen** (01:06): The cloud has passed. I lost less than an hour. That's not bad.
**Susan** (08:16): There was very little visible at bedtime last night, so went right to bed. A bit disappointed to have to wait to get out to try my observing cart's latest modifications and a door with oiled hinges. With that oil and the outrigger stabilization work I expect some very silent running. Good for neighbour relations. Sunday perhaps?
**Mark D**: I found it to be very hazy here and could not make out the Eagle Nebula and others so packed it in.
**Stephen**: I had trouble with intermittent cloud that didn't show on the satellite shot. But I got some results in spite of it. So the night wasn't a waste.
**Malcolm**: Hazy for sure...
photopark.ca/Videos/i-pVXVgdH/A
**Rick**: Very nice. I really should do more time lapses. I noticed a very bright object about ¼ in made a curved trajectory in the left of the frame. Any idea what it was? Also a yellow flash inside the dome—somebody turn a light on?
I was imaging all last night both here and in California. I haven't had a chance to look at my own images, but the California ones must be at least reasonably good—they all plate solved which they won't if they're too much dimmed by cloud. I also spent ~1hr imaging Jupiter, actually the three Galilean moons Europa, Ganymede, and Io. Ganymede was supposed to eclipse Io from 11:25 to 11:41UT. 240 x 5s blue images.

I'm trying to do the photometry but, with no stars in the image, Maxim is getting confused and is unable to align the images. I mark the three moons (Io is the 'target,' Ganymede and Europa will be my 'reference stars') on the first image and then Maxim is supposed to find them in all subsequent images. But it only succeeds on about a dozen images. I don't want to go though and mark them all individually. I tried aligning all the images and Maxim had an out of memory error. So I chose a reference frame and the aligned all the images to that one, 50 frames at a time. Now I have to try the photometry again but Maxim doesn't provide for no alignment in the photometry tool so I'm not sure it will work yet. If not, I'll use AstroImageJ.

**Malcolm**: A plane overhead turning south into YKG is the curved trajectory. And I think a car turned on its headlights across the road for the illuminated dome. Their driveway points at the POD.

Imaging remotely too, but in Chile. I'm finding the 11 p.m. to 3 a.m. window here at home too late for me.

### Saturday, June 5

**Kevin** (07:31): We went outside at 05:20, 05:40, 06:00, and 06:20 to verify the actual real life position of the Sun and horizon where it would rise in 5 short days.

As it turns out, the observatory area is not good. A very large tree on the horizon in exactly the wrong spot. We did, however, identify a much better spot elsewhere in the yard...so now to continue to find and prep equipment, test it out, and look at the forecast for Thursday morning...ooohhh! 0% cloud! Woohoo!

**Rose–Marie** (07:53): SHHHHH! Don't be celebrating that 0% cloud forecast too soon, or you know what'll happen! *Gives Kevin a swat.*

### Sat/Sun, June 5/6

**Stephen** (21:01): There is clear sky coming. It will probably reach us some time tonight. And while I am tempted to wait up for it, tomorrow will probably be a much better night. I think I will pass on tonight and wait for tomorrow night.

### Sun/Mon, June 6/7

**Mark D**: Three nebulae from last night.

**Susan**: I thought that Mark was a beginner?

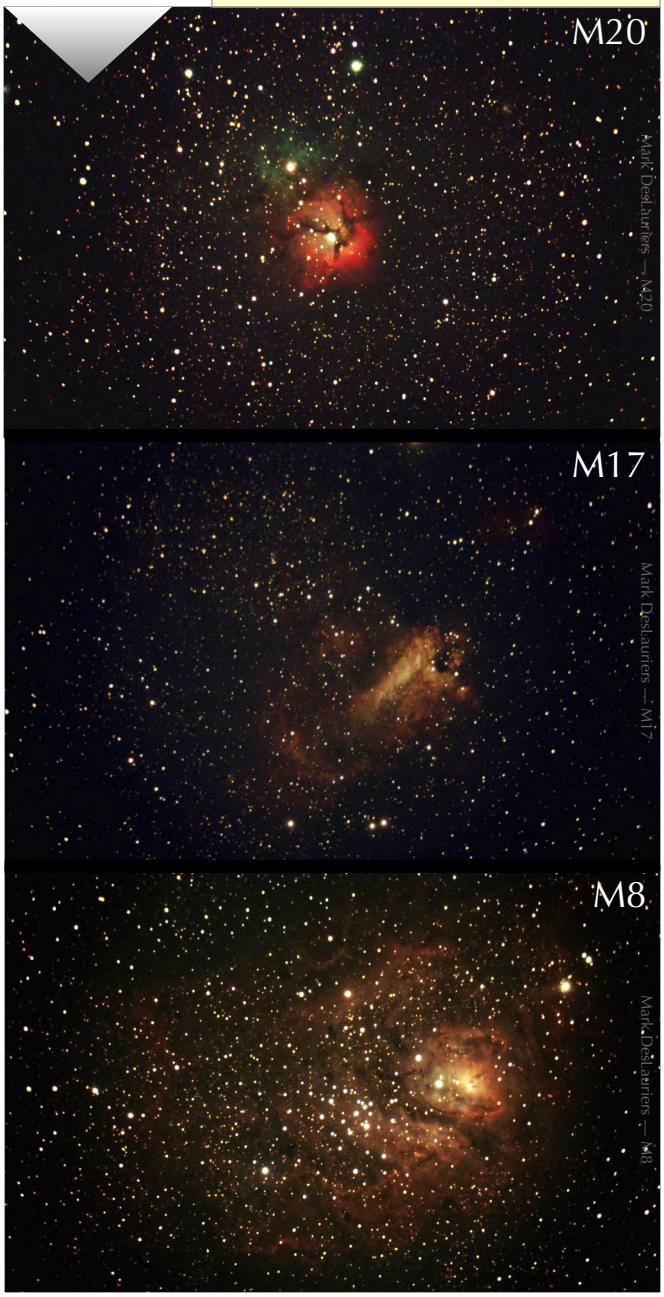
I have no lovely shots to show from last night but I sure enjoyed the sky. With a couple of new modifications including my new observing cart, I was happy to be out until my eyes gave out. I was very comfortable and cannot remember the last time I observed for almost four hours straight. A snack assist at 1:30 helped as well.

Firefly activity really picked up.

I was impressed by the number of satellites going through the eyepiece lately. Well, last night I was using binoculars for some bright variables and it was wild! One was going so slowly it was messing with my star hop at one point.

### Observatory Audit

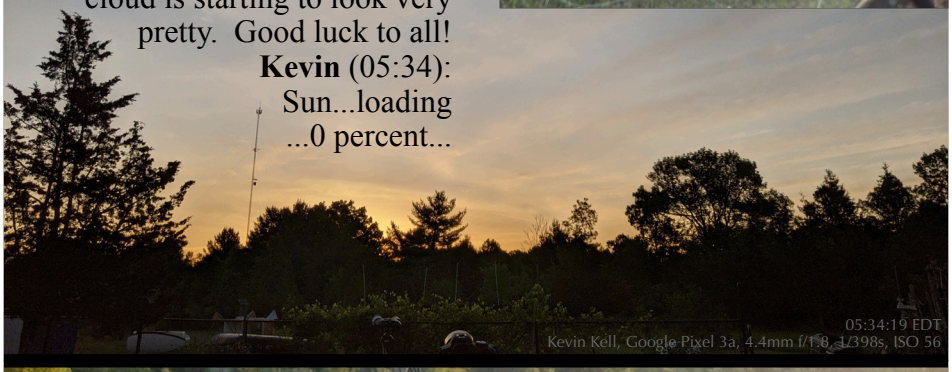
**Hank**: I have insured my most recent/most expensive scope purchases and decided to do an audit of all my current equipment for the same purpose. I did not think it would be this scary and guilt–ridden a project, wow! 30 years of astronomy as of July has come with quite a price and I have only recently bought a little better quality equipment. It could be worse as I could have become a stamp collector, you cannot even get face value for those. The only thing to do is to keep enjoying.★



## Thursday, June 10
## Annular Solar Eclipse

**Kevin** (05:01): Greetings oh solar worshippers! It is *ohmygod5am-inthemorning* and we are outside in the backyard, set up, and have coffee! There is some high light cloud everywhere but the sunrise cloud is starting to look very pretty. Good luck to all!

**Kevin** (05:34): Sun...loading ...0 percent...





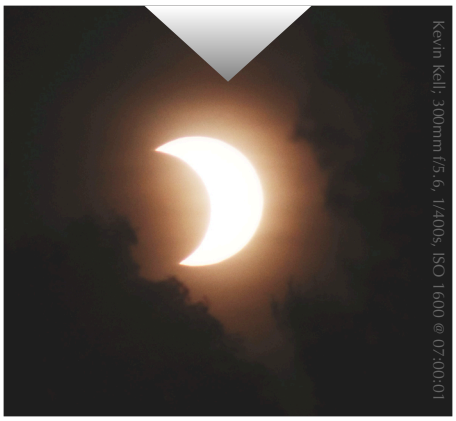
**Kevin** (06:07): Not bad.


**MarK** (05:40): Malcolm and I at Sydenham Lake.

**Elena** (05:41): It's great here!

**Kevin** (07:24): Geezzzzee! Got enough cameras?

**Kevin** (08:01): One of the images from the Canon T7i DSLR with 75–300mm lens at full zoom with Baader solar film...



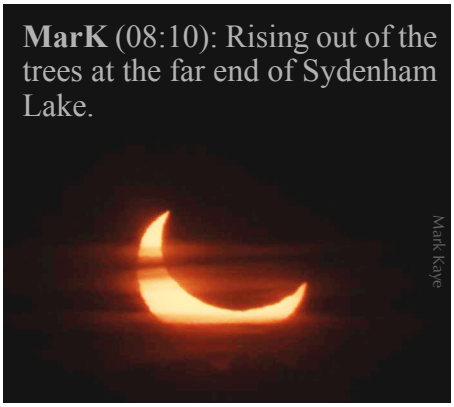

The partially eclipsed Sun was *just* clearing the trees on our eastern horizon here at SCGO.

**Malcolm** (08:36): Very nice Kevin.

**Hank** (10:02): Very nice Kevin and the one nice thing about horizon eclipses is the foreground provides scale.

**Kevin** (10:03): It looks like we are going to try and observe the ISS transit today...probably from the auction yard parking lot on the centre line of County Road 1.

**Brian**: The ISS solar transit at 17:54:40 EDT has a centre line close to Amherstview and Newburgh.




**MarK** (08:10): Rising out of the trees at the far end of Sydenham Lake.

## Eclipse report from Kingston's West End

**Dieter**: After sending out e–mails to my Kingston West End outreach list, and making solar viewers available for pick–up at my front door, I ended up watching the eclipse from the east end of the parking lot at Centre 70.

There was an assortment of folks there, some of whom were happy to be provided with eclipse viewers, so they could follow along. A few observers were from my outreach group; others had just gone there on their own accord, and one was a bus driver waiting in her bus to start her shift.

In addition to the eclipse viewers, I had one of my Stargazer Steve telescopes set up, and most who were present came to have a peek.

We had a lovely view, with occasional wisps of cloud interfering only minimally.

I continue to be impressed that even with only eclipse viewers or glasses, I experience such an event as awe–inspiring.

I have enjoyed hearing everybody else's reports, as well as seeing some of the great photos that were taken.★


**Malcolm** (09:37): Here's my haul of photos.

I drove 5 minutes from home down to the Sydenham Lake boat launch this morning to observe with Mark K.

Although I was disappointed with the clouds, in the end I can't really complain. I had a couple of mishaps but it was still a most enjoyable way to spend a morning.

**Hank** (10:06): Many nice images from you early risers, but no H–alpha? I am disappointed, guess I should have hauled my ass out there.

**Malcolm**: Because the landscape doesn't show up in H–alpha?

You can do H–alpha anytime, why would you do it during an eclipse? Yesterday at maximum eclipse 80% of your H–alpha target was obscured! (I jest but an element of truth).

I had a look at the Sun in H–alpha during an eclipse through my PST in 2006 and it didn't impress me as much as the actual eclipsing of the Sun. The more eclipsed the Sun, the less you could see.

I did shoot the 2017 eclipse with my Hα modded DSLR and the prominences looked amazing at totality but we had totality then, not yesterday. I did not bother to use the modded camera yesterday.

**Kim**: The scope was looking through the wall and did not have the Clark Kent glasses on to see.

**Hank**: Dang we had better try an X-ray scope then!

I too was poking fun, there was not a great deal of surface contrast to image and the larger prom may have been covered. I was up until 1 a.m. processing and posting my images from the 10th so four hours of sleep would not be enough to get up with.

**Rick**: You definitely should have been out there. I did get the Coronado out to take along but decided that contrast and

seeing at the horizon would be just too poor and I was proved correct. All it would have given is a dimmer featureless red crescent.

**Susan**: I have to confess that I left it up to chance to catch the eclipse. I only woke up at 6:30. I had to decide to stay out the evening/ morning before or get to bed to prep for the eclipse.

Did not get to email til late in the day, but David caught Malcolm's tweeted photos quite early in the day as I recall, nice.

Another miss yesterday...the transit! I should have put a post it somewhere when Brian sent the email. Next time.

Anyway, it was great to hear that so many had photos and reactions to this shared experience.

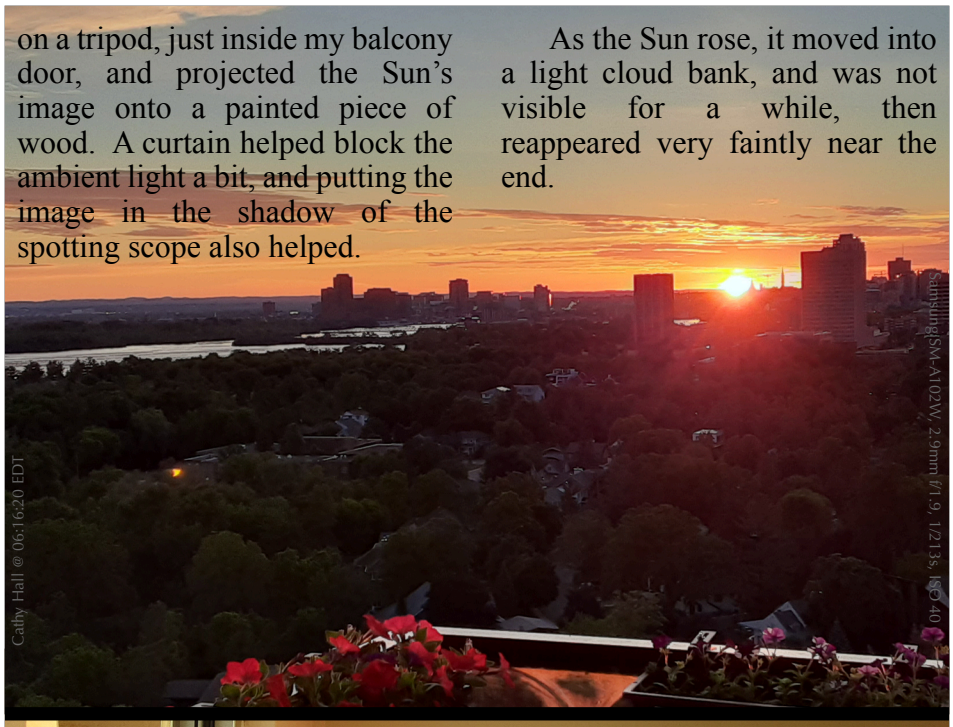
**Rose–Marie**: Well I'm enjoying everyone else's images. I had the camera and solar filter ready to go, but couldn't see the Sun at that hour. Down in the va–a–leee... valley so lowwww...ARGH. After 2 days of moving furniture and boxes of household items and books for 2 days in order to switch 2 bedrooms around, I didn't have time or energy to drive around to scout out a spot. I "coulda" rowed down the lake, but at my age and with all this work...no. These events always seem to happen when I am captive to some other agenda.

George and I were sitting here at the window looking out over the lake, we did see that the brightness of dawn did get dimmer for a time. It seemed to trigger the birds in a wilder and louder morning chorus for about half an hour.

**Cathy**: Attached are some photos of the partial solar eclipse Thursday morning from Ottawa, taken with my Samsung A10e phone camera...

I don't have a solar filter, so went the low–tech route. I set up my Bushnell 60mm spotting scope on a tripod, just inside my balcony door, and projected the Sun's image onto a painted piece of wood. A curtain helped block the ambient light a bit, and putting the image in the shadow of the spotting scope also helped.

As the Sun rose, it moved into a light cloud bank, and was not visible for a while, then reappeared very faintly near the end.






## Eclipse Report from Iroquois

**Mike H** (08:18): There was an abundance of stratus clouds from Morrisburg. I dropped into an open field north of Iroquois and got a few pics.

**Rick** (09:10): Very nice pictures. I didn't think to bring along an extra body and lens (or my phone—*he didn't take his phone*?!) to take pictures of the observing site and your's and Mark's pictures make me regret that. I did shoot a couple of pictures of the horizon cloud through the telescope so I could check focus before I put on the solar filter.



**Walter** (06:15, from Winchester): This is too early for an eclipse (or anything other than sleep really). Somehow I managed to get up and out by 5:30. I had to walk a couple of doors down the street, and stand in the middle of the street, but I was able to see the eclipse without tree branches. As the Sun got higher I was able to watch it branch–free from in front of my house (in wifi range!). Very convenient! By 6:00 clouds were partially blocking the Sun. Just checked now (06:10) and the cloud has thickened in the east and the Sun is an indistinct blob.

I used my SkyNews eclipse glasses and even got a couple of pix with my phone (holding the glasses over them). Not great, but a nice souvenir.

## Eclipse Report from Westport


**Rick** (20:15): Things went very much as planned for me this morning. I had to get up at 3 to move the Sky90 at Jupiter to take many, many pictures to try to (not just randomly) capture another Galilean moon mutual event—Callisto eclipsing Europa. I zipped into the house to eat a bit of early breakfast by which time it was the beginning of nautical twilight, so I shut down the Boltwood scope. Once that was done Europa's eclipse was over so I could shut that scope down and haul the scope & computer into the shop. Then jump into the car for the 20 minute drive to Westport (there were all kinds of people on the road—5 vehicles waiting at the construction lights on the Newboro bridge!)

I arrived at the Herlehy's Building Centre driveway to find a narrow band of thin cloud along the NE horizon and much of the rest of the sky covered in diffuse bands of cirrus, and a strong chilly wind gusting up the hill from the lake. At last it kept the mosquitos at bay. I estimated that the cloud on the horizon was low enough that the Sun would be well out of it before maximum eclipse so I was content and set up my equipment (80mm f/6 semi-apo refractor with Canon 60Da and 20cm f/5.6 Dobsonian, both with full aperture Baader mylar white light solar filters). The main problem presented by the horizon–hugging cloud was that it was so bright at the moments leading up to sunrise that I actually missed the first minute or two of sunrise.

I started with a few minutes video to capture the rest of the Sun rising out of the distant trees, then took a few dozen pictures at intervals over the next 40 minutes. I alternated shutter clicking and viewing the eclipse through the 20cm at 46X. Seeing was appallingly poor—I think the cool morning air over the warm lake was causing the turbulence so I shot a quick video in 640x480 crop mode to capture it. At its best I was briefly able to see a close pair of sunspots in the 20cm.

By 6AM the Sun was disappearing into a thicker band of cloud and I decided that was an excuse to give up, pack up, and go home for a nap.

Once the Sun was off the horizon the pictures are mostly pretty boring until it started into the higher cloud layer. The most attractive view, to me, was the silvery white crescent Sun overlayed with bands of thin cloud—I've tried to crop and enhance one of my pictures to give the effect [*top left*]. I've also included one pic at near max eclipse [*top right*] and a screen capture of one frame from the zoomed in video showing the bad seeing and dispersion effect [*bottom right*]. I'll show the videos or parts thereof at the next social.

All in all, I'm glad I took some pictures, but the views through the 20cm scope were much more impressive and enjoyable.

**John** (from Sharbot Lake): I thought I had found a spot in the yard where the Sun would rise between the trees and sure enough it did, but then went into the next tree right away. So I got a view of

things with lots of branches in the way and some clouds in the way, but still a good way to spend the morning.

Then later in the day I get a call from North Frontenac Telephone Co. that they have run a fibre optic line along Hwy 38 and would I like to sign up for some real high speed internet. So once I have run a conduit from the pole out front to the house with the new line I should be running near to 100 Mbps instead of less than 4 right now. I had put a deposit down for a Starlink system back when Malcolm was getting his shipped but now I have cancelled my order with the Dark Lord.

I hope this new line will be of help to many of the rest of you in the county.

### Thursday, June 10
### Jupiter at Dawn

**Kevin** (10:39): Whilst waiting for the Sun to rise there was this other bright object (mag –2.5) in the southern skies: Jupiter! So I did a few imaging runs with the Meade 102mm SCT and the ASI290MC camera.

The scope was still setup for wide–field (f/10) and did not have any Barlows (typically 2X or 2.5X) installed.

Jupiter is *tiny* in this image; diameter was only 42 arcsec.

16k frames taken at 9ms over 180 seconds. Processed with PIPP to centre and reduce file size (17GB each!), AutoStakkert!3—used the best 25%, then into RegiStax for wavelet processing.

**Rick**: Very nice result Kevin. Except you didn't catch the moons! That's where things were happening.

I had a few minutes today to attempt photometry on my 240 images from this morning but AstroImageJ was doing stupid things with the resulting graph—another setting I've screwed up somewhere. I'll have to take the data and plot it in LibreOffice Calc.

**Kevin**: That is an issue... once equipment is set up for one event, one does *NOT* simply walk into ~~Mordor~~ err, change it for another opportunistic imaging event...you leave it alone! I was simply surprised and happy that they turned out as well as they did through the cloud and only at FL = 1000 mm.

**Rick**: It is a pain. I have the iOptron on the pier overlooking the lake, all nicely polar aligned and I am loathe to take it off for any reason, even something as major as a partial solar eclipse. I sent my Gemini controller off for repair and should have it back in a couple of weeks. Then I'll install the Titan (and the Hankscope—I can't wait!) on the lakeside pier and once again have the iOptron for portable use.

**Kim** (14:24): If you can get out, do so, there is a very large prom in the southern hemisphere. Not the same one Hank had yesterday.

**Hank** (14:47): I am with the kids at the park, on duty right now.

### Thursday, June 10
### ISS Solar Transit

**Kevin**: Successful image capture of the ISS transit!

This time we used the Sony Handycam camcorder with a custom 35mm slide converted to Baader film filter on a tripod. The focus was set to infinity and the exposure was manually overridden to underexpose, as Mark Kaye mentioned. Often the auto-exposure would compensate the wrong way and blow out the Sun. A tiny darker ISS would not be picked up then.

We used an "atomic clock" app on an Android smartphone, volume turned all the way up. It gives big print text time and audio tocks as well. Very useful. The Handycam has a great zoom lens that allows for the full solar disk plus as much more border as you want. About 30 seconds before the event (we had high confidence in the atomic clock Android time) the record button was hit.

Kim was watching visually and did see it right on time. I did not see anything on the camcorder display. I waited another 20 seconds or so and then stopped the recording.

After the event, the recording format was .mpg and I have been searching for a converter to get back to .avi, as that is what is used in the IrfanView process to get individual frames out of it.

Still searching. I found one workaround using VLC Media Player, but the output is strange: two identical frames instead of one frame, as the video progressed.

We got 24 frames (but they were duplicated, so only 12 real frames). At 30fps and a duration of 1.3s we should have had 39 frames? So something is amiss.

After all of that I had also intended to have the timestamp recorded in the image but forgot.

Lastly, we zoomed in on the centreline location, switched to satellite view, identified the parking lot of the old auction house and parked there. The image results show us *not* to be on centreline by a bit.

The ISS crossed from lower right to upper left just above the centre.

**MarK**: A program that I have found that is very handy for working with ISS transit videos is VSDC video editor. It is free for non–commercial use, some of the expert items are not available, but I

have not needed those functions. Working in video programs may be intuitive to someone in the video industry, but I found that I had to fumble around a bit to make sense of what it could do. But I know that it works with the video format that is created by our Canon and allows me to save it as many formats, including .avi.

**Rick**: So—no pictures?

What's the atomic clock app? It sounds like something that would be great for lots of close-timed astronomical events. I can easily imagine waiting for an ISS transit, waiting, waiting, waiting, sigh, check my watch one more time, oops missed it. Someone should write an app that speaks the time—perhaps speaks the time every minute on the minute then counts off seconds until the next minute. There are dozens of 'talking clocks' but the few I checked don't do what I want and who wants to go through a hundred of the silly things.

I wonder if your duplicate frames is because of interlaced video?

I have a couple of solar transits in my calendar in the next few weeks—I may try using one of my planetary cameras to see if I can get higher frame rates, though my computer is so slow I'm not sure I can even match the DSLR's 30 fps.

**Kevin**: No pictures until the processing aspect is resolved.

Atomic clock app on the Android store. It uses NTP servers on the internet, calculates lag, applies it. Best source of time while remote in the field audio and video. This one does exactly what you ask except speak the time. You still have to glance at it to ascertain the minute.

Interlaced frames, could be, or could be just an artefact of the conversion of video file format. I'm unsure yet.

### Thurs/Fri, June 10/11
### Clear—NOT!

**Rick** (21:27): I was hoping to get a few hours of observing before it clouded over but I see the cloud has already arrived. Ah well, after only 3 hours sleep last night and a long very busy day I'll appreciate a good night's sleep.

**Stephen** (22:02): We have to go to Brockville tomorrow morning. I had already looked at the satellite and decided it wasn't worth setting up. There will be other clear nights.

### Fri/Sat, June 11/12
### Clearing?

**Stephen** (20:49): It's hard to tell from the satellite images. It should be clearing sometime tonight. I don't know if it will be sooner or later. I've had a long day. Got up at 6 to go to Brockville. Didn't get home until 4. My usual wake up time is 10–11. It will be hard to stay up if the clearing is late.

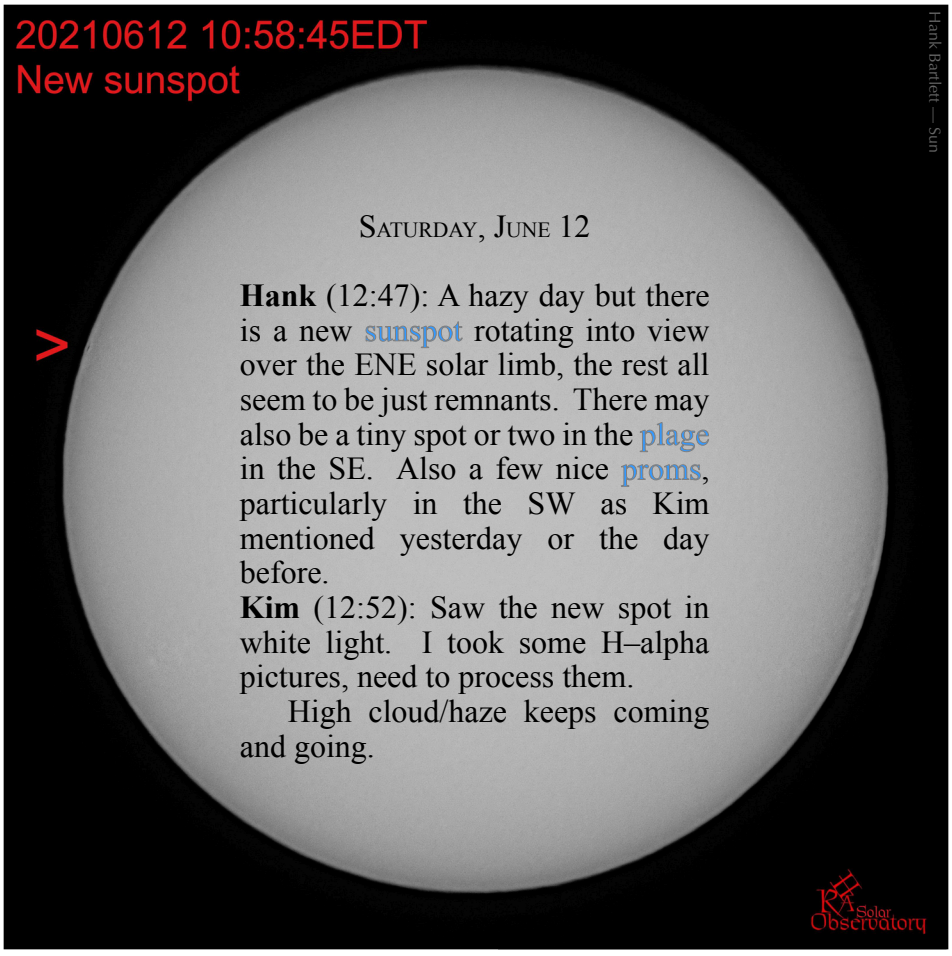
**Hank** (20:51): Scrubbing a session is no doubt hard but look after your health over–all.

**Rick** (21:29): Satellite imagery looks like it should already be pretty much clear here but it's still overcast. I'm worried that there is low cloud that isn't showing on the sat pics.

**Rick** (22:14): Looks like there is more cloud forming in the lee of the main deck so it may be at least a few hours before we clear. I'm not willing to wait that long, although I have to wait until about 11 before I can start up the remote scope, so I'll check again then before I hit the sack.

**Stephen** (11:48): I gave up early and went to bed.

I don't know about tonight




### Saturday, June 12

**Hank** (12:47): A hazy day but there is a new sunspot rotating into view over the ENE solar limb, the rest all seem to be just remnants. There may also be a tiny spot or two in the plage in the SE. Also a few nice proms, particularly in the SW as Kim mentioned yesterday or the day before.

**Kim** (12:52): Saw the new spot in white light. I took some H–alpha pictures, need to process them.

High cloud/haze keeps coming and going.

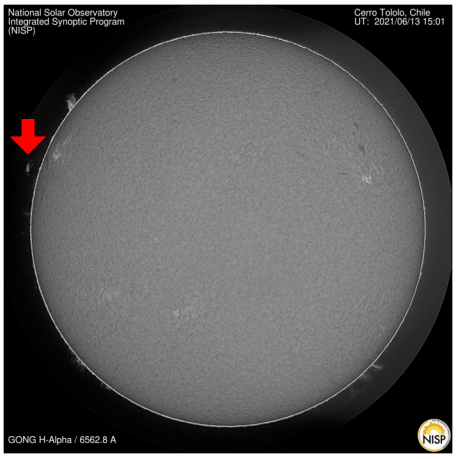
either. EC is forecasting clear but the Clear Sky Chart is not so sure. EC doesn't always take into account high cirrus. I'll just watch the satellite data and hope for the best.

### Sat/Sun, June 12/13

**Stephen** (17:18): It looks like tonight is going to be a wash out.
**MarK** (17:54): Too bad as the humidity has been quite reasonable today.

### Sunday, June 13

**Kim** (11:08): Very nice prom just hanging in space in the NW hemisphere.




**Hank** (11:24): Yes a floating prom! Started to image it about 30 min ago and then the clouds rolled in. Doing some white light right now, then switching back to H-alpha.

### Mon/Tue, June 14/15
### Sparklies!

**Rose–Marie** (00:13): Having fun with the camera tonight. Malcolm, you catching any of this storm? Some lovely lightning going on.
**Malcolm** (04:05): I was aware of it but couldn't pull myself together. Maybe just too tired after a long day.
**MarK** (08:56): From here, it was a weird storm. Robin & I noticed it before 2200, but the sky out the front window (NW) was still clear. It went on and on for an hour and a half and we did not get any rain. We had several really close bangs, but not until about midnight did we get any rain. Then we got about 7mm over the next couple of hours.
**Mark D**: Big quarter–sized hailstones here. Lots of rain in Centreville.
**MarK**: Yikes, I am happy to say that if we had any hail, I did not notice it and the vegetable garden is not showing any damage. I hope all your plants are okay.
**Kevin**: last night...letsee...

- Power outage—check.
- Hail—check.
- High winds—check.
- At least a dozen lightning strikes <1 sec away—check.
- Bad sleep—check.
- Still have all observatories in place—check.

**MarK**: Good to hear. We had one lightning event, a large surge that made all of our UPSs upset for a few seconds and made the lights flash. No damage, thankfully.
**Malcolm**: We clearly had a power failure: my PC was off this morning.
**John**: All we got here in Sharbot Lake was some very light rain overnight. Our power went off for 10 sec or so around 11 PM but that was all.
**Rick**: We had a brief thunder-shower pass by about 2AM dropping ~5mm of rain (need a new larger and more accurate rain gauge). It dampened the ground and the gypsy moth caterpillar poop. It is so sticky that I can't work outside—my shoes get so gummed up with poop and mud that I can't safely climb a ladder, can't go into the house or the shop without taking shoes off outside the door, can hardly walk on the deck without slipping and falling.
**Rose–Marie**: I'm surprised to hear you didn't get more, the storms that passed south and then over top of us were headed east, probably went just north of you. I'm going to have to plot out which direction you are from here.


**Rose–Marie** (14:31): Got some good ones. The big one...oh yeah, the house shook.
**Kim**: Very nice Rose–Marie. I had my eyes closed and the flashes were still super bright. Then there was the Bang and Boom shaking. Interesting storm.
**Hank**: Wow! Beautiful Rose–Marie.
**John**: Wow, that was a good storm you had. Great shots.
**Malcolm**: Wowza!
**Mark D**: Great shots Rose–Marie and what a view.
**Mike H**: Awesome shots! I love lightning shots.

### Tue/Wed, June 15/16

**Malcolm** (17:17): Kp 5! And clear tonight!
**Rose–Marie** (21:07): ...and we're down to 4 as twilight settles in.
**Malcolm** (21:30): And what a long twilight it is…
**Malcolm** (23:06): I'm down at the Sydenham waterfront and there's a nice big tree blocking the street light.

It's reasonably dark, I am seeing the Milky Way. There's a light over at Trousdale's Home Hardware that's annoying, but otherwise it's nice looking north over the lake. I'm getting some faint green and purple in 20s exposures very low on the horizon so I'm going to let the camera run for a while and see if it develops.

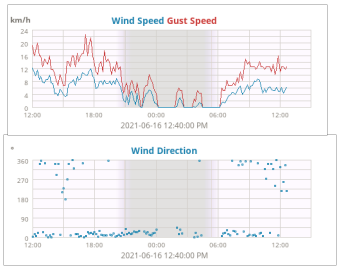
But nothing naked eye so far.
**Malcolm** (23:14): Pinks and greens on camera.
**Hank** (23:16): Oh man, now I am going to have to put on warm clothes and take a shot.
**Malcolm** (23:22): Very low over the water. Not impressive stuff.

It's Kp 4 so can't expect much. I'm happy as it my first event this cycle.
**Malcolm** (23:23): Need a perfect horizon.
**Rose–Marie** (06:47): I was out looking around 10:00 p.m. or so, Moon was still up. It was a tiring day so I opted for sleep. I'm hoping for clear these next couple nights—I want to do a star trails shot at moonset, see if I can get the orange glow.

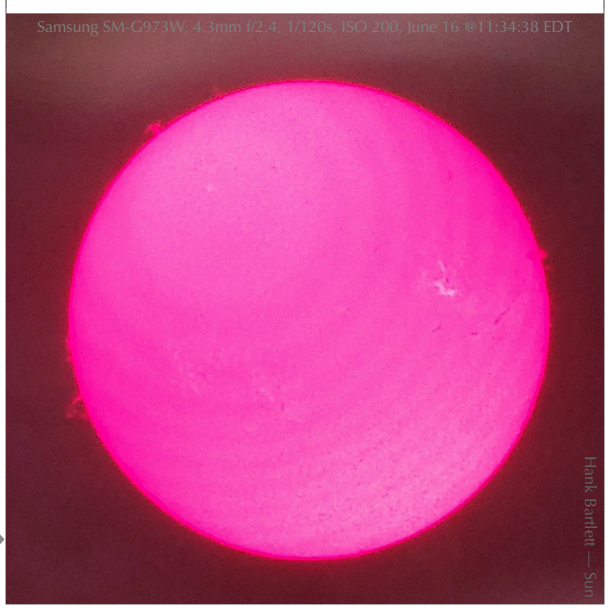
### Wednesday, June 16

**Hank** (11:37): Beautiful Sun this a.m., good seeing and transparency. Here are a couple of quick cell phone grabs.

**Keith** (12:58): Hi, Hank, do not know what the wind is like down in the Burgh but blowing like crazy up here, scopes are going in all directions, damn!
**Kevin** (13:00): Pretty quiet here, steady for last few hours but now changing direction.




It is nice outside. I took a look at the Sun in white light—nice spot. Had to chase earwigs away though.
**Hank** (13:05): Definitely windy but sheltered here in the valley some. I had to close the entrance door to stop the wind coming down in and out the door. Once I close that door the wind tends to pass over the walls. Currently the solar scopes are next to the west wall and more protected from the prevailing wind. Seeing was very good at the time and transparency was excellent. Just starting processing now, the arching prom appears to be collapsing a little in comparing current Gong.


**Hank** (13:08): Wind is the main reason I have moved to 1600 ISO, which allows for shorter exposure. Cool graphs! I am well blocked here on the north side by the neighbour.

### Wed/Thu, June 16/17

**Rose–Marie** (02:54): Kevin, check that AllSky camera from about 2:42 a.m.! The usual call of nature to us middle–ageds had me up and about. I went out to the living room and was admiring Scorpius, seeing Capricornus appearing from behind the pine trees—suddenly this huge bright meteor came down through Scorpius' tail. Wow, I haven't seen one that bright in quite a while! Check the AllSky, it came down from the north headed south, fizzled out just above the horizon, gave a wee spark at the end.
**Kevin** (07:16): Hmm, missed that part did you? The AllSky1 camera was in the house during last night's social: it failed last weekend and I am testing out the components and redesigning the enclosure to bring the temperature of the camera sensor down from

50C+ in the daytime:

1. A more open enclosure to allow better airflow
2. Replace a wooden mount with a metal mount, to better act as heat sink and radiator.

Checking AllSky2...Scorpius was in the south around midnight. No event seen at that time.

**Susan** (11:17): Well that would have been nice to see. Unfortunately I packed it in at 2 a.m. Got all wimpy and cold at 10C.

But while I was out...WHAT A SKY! So steady. I was really sad that I did not have the stamina to stay or the sense to go in for my winter coat.

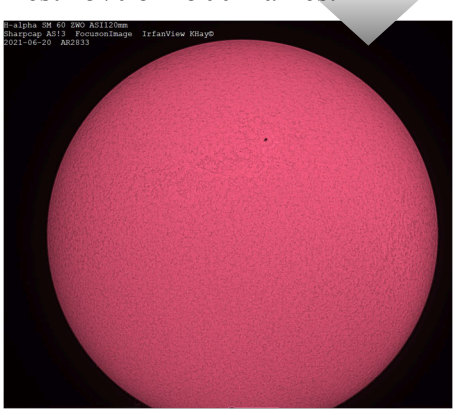
### Thu/Fri, June 17/18

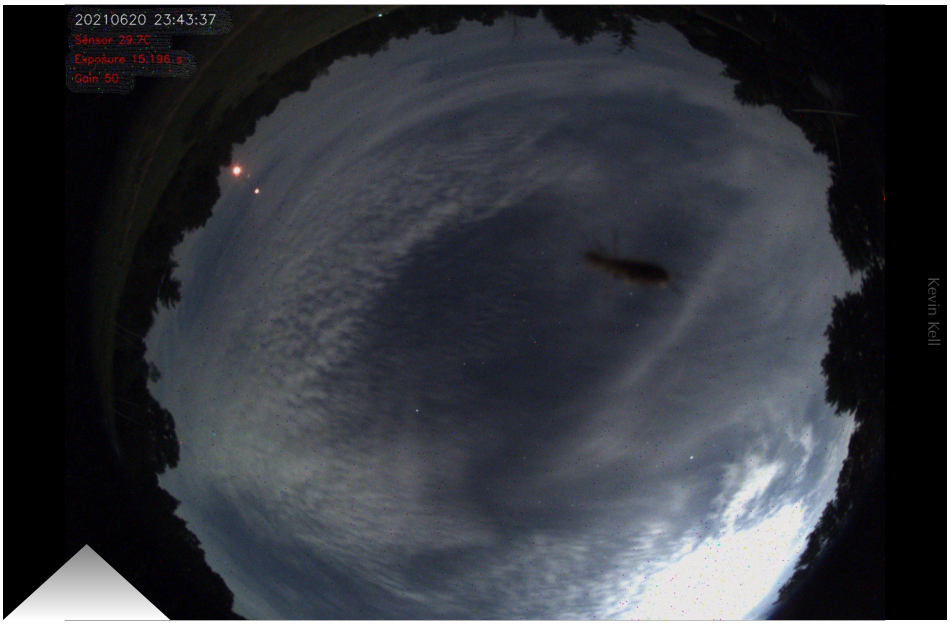
**Kevin**: Here is one at 22:25 EDT. A fast moving bright meteor, a 3–second event in total. North is up.

**Rick**: Whew—it nearly hit the Moon!


### Sunday, June 20

**Kim**: Here is a picture that I got late in the day of the sun. I have colourized it to look like H–alpha. Best 25% of 1500 frames.






### Monday, June 21

**Kevin**: The AllSky1pi camera system is back in operation again. It broke about 7 days back, I suspect from overheating with the camera sensor going over 50C. starlightcascade.ca/allsky1

The camera housing was cut down in size and the fixed sealed bottom was replaced with mesh. The camera mount itself was reduced in size, exposing more of the metal camera body to cooling air. At first look, it seems that the new camera sensor temperature is about +10C over ambient, which is better than the previous +20C.

This is the ZWO ASI120MC camera (not cooled). We will probably still add an additional heat sink and maybe a powered circulating fan to help out.

Here is proof of the pudding, or earwig as the case may be...

Now to move onto creating dark frames at various temperatures and automate which one to apply depending on the sensor temperature.

**Rose–Marie**: Now it works. Woulda been nice to catch that big meteor I saw a few nights ago.

### Tuesday, June 22

**Hank** (16:16): I am out now and waiting, got some white light, then it clouded again. There are some holes approaching so I will wait it out awhile.

### Wed/Thu, June 23/24

**Malcolm**: I spent a few hours puttering around last night and had some success. Despite the Full Moon, it was actually a good time to work on a few things. Earlier in the day, I decided to switch out my refractor for my RC. The RC with camera, focuser and filter wheel, cables, Pegasus Power Box, and guide scope easily exceeds the mount listed capacity (AP Mach-1) of 50 lbs. But I had read that the Mach–1 was conservatively rated and could handle more. I put this to the test before I left the County and it seemed to be OK. The main difference now is I have applied sound cable management to the setup, with cables running up through the mount. No more cable drag.

Also, I learned from experience that if I change the order in which I mount the counterweights I can get better balance. Previously I

followed best practices and put the heaviest weights on first (I have three different weighted weights). 8 in total, I think. I found back then that I was just slightly out of balance and unable to correct it without completely re–ordering the weights. This time, I alternated heavy, lighter all the way down the shaft. This brought me much closer to balance but keeping as much weight up close to the top as possible.

Once it was dark enough, I started to work on Polar alignment. I used the PHD2 Polar Drift Align tool. It got me to within 1.4 arc minutes. That seems pretty good, but I was wondering if any of you would try to improve on that or if I should be satisfied. My focal length is effectively 1700 mm with the reducer/flattener so about 0.5° FOV.

Next task was to find focus, as after putting these parts all together focus was sure to be off. And of course, I couldn't control where I was pointing because I hadn't plate solved yet, being out of focus. So I pointed at the Moon first and centred the out of focus image and synced on the Moon. Then I selected Arcturus and did a go–to to see if I could reach focus without changing the spacer configuration. Fortunately, I didn't have to add or remove a spacer, and I found focus well inside the step range of my focuser.

Figuring out the step size was the next requirement. The focuser has 7000 step range, but how many steps per move to do a V-curve? This was achieved with a little trial and error, and I settled on 100 steps. Once the software (SGP) knows the number of steps per move, and I tell it how many data points to use (I am using 9) and how long to expose a focus frame for, its good to go. Focusing was the big success story of my night.

Following that, I tried plate solving and was having a lot of difficulty. PlateSolve 2 (PS2) wouldn't solve, but Astrometry.net would. Something was wrong with my settings, but I couldn't figure it out. I went back in to have a look at my settings this morning (it was 1 a.m. when I packed it in, too tired to continue). I found that my image scale in the SGP camera settings dialog box was set to 1.1"/px. This seemed high, and then it hit me. I had used 4x4 binning to generate a quick test frame after focusing, and I had solved that image and used its image scale in my settings. Doh!

So another problem solved (so to speak), and I will do another plate solve next time for a 1x1 binned image to confirm the image scale, and all should work then.

I also found a couple of little things in settings, like I had the wrong controller set in the AP driver, so I fixed that.

I changed some minor settings in PS2 also that might give me better results. I increased the exposure time, and I increased the Max Star Size sigma value by 30% hoping sensitivity will improve.

Near the end of the night, I ran the PHD2 guiding assistant to measure all parameters and change settings where advised. PHD2 makes recommendations for guiding algorithms such as minimum move in either RA or DEC, and so I went with the recommended values. All seemed to go well.

Next chance I get I will re–run PEMPRO/PEC and that should have the mount ready for some deep sky, long focal length imaging runs.

**Rick**: Phew, I need a nap just reading about it. I think 1.4 arcmin polar alignment error is fine—you probably can't get it much better than that. Does PS2 not get the plate scale from the FITS header? That's how Maxim/PinPoint do it—binning is automatically corrected for.

I had a less strenuous night. My Gemini controller arrived back from repair (blown serial chip) on Tuesday, so that afternoon I installed it on the Titan and confirmed that it worked, computer connected instantly. Beauty! Then I went out and removed the iOptron from the lakeside pier. By then it was supper time and, since it wasn't going to be clear Tuesday night, I left it at that. Good thing I did—it was raining (unforecast) when I was getting ready for bed.

Wednesday morning I installed the Titan on the pier, installed the power supply. First problem—the mount uses a ciggy lighter connector for power, as does my Pegasus Power Box and the power supply only has one outlet. I need either a splitter, a new power supply, or just cut both lighter plugs off and replace them with something more modern than an 8–track. I think my power supply is rather underpowered now that I have dew heaters and everything is powered from the Power Box instead of individual wall warts, so I might do both the last two.

Once it got dark I installed the Sky90 with diagonal and eyepiece to do an initial sync on the sky and rough polar alignment. But first I spent a few minutes looking at the nearly Full Moon—WOW! I polar aligned using the Gemini polar alignment assistant—Gemini slews back and forth between two stars while I alternate azimuth and altitude adjustments on the mount. It is supposed to get me within about a degree. By that time ~11PM it had clouded over quite heavily so I had to give up for the night. (This business of darkness at 10PM means you can't even get started until bedtime!)

Next clear evening I will install the Sky90 with a camera on it and polar align using a mount model. Essentially you do a 5–6 star alignment, the Gemini calculates how far off the polar alignment is in both alt and az and you make a correction. Repeat once to confirm it, and tweak it closer if necessary. That is supposed to get within a few arcmin. I may also try the 3–image technique: take images near the equator at hour angle –1.5, 0, and +1.5 hours. Plate solve the images. If the outer two aren't at the same declination then there is an azimuth error, if the middle image differs from the outer two then there is an error in altitude. Or I may break down and try PHD2—never used it before for polar alignment. I like the Boltwood Technique the best, but I can't see the pole from that pier.

**Stephen**: Last night was a maintenance night for me as well. I knew that I had botched the balancing when I did it a few days ago. So I redid it last night. Then I checked my collimation. It was spot on. I also checked that my main camera and guide camera were co–focused. Again spot on.

Then I checked my polar alignment. I had buggered that up last time I rebalanced. CGEM has a good routine for polar alignment. First you sync on a star about half way up the meridian. I chose Arcturus. The mount moves to where it should be if it was polar aligned. Then I manually move the mount to centre the star. I do that repeatedly until there is no residual. This time I only had to do it twice.

Later I tried guiding and the guider was spot on. No guiding in Dec at all! RA guiding was pretty good so I think I got the balancing right as well.

**Malcolm**: Re plate scale: SGP/PS2 work in tandem, in SGP you have equipment profiles. Under equipment profiles you need to fill in the fields yourself. These are fields like pixel dimensions, angle, image scale. I get image scale and angle by doing a plate solve on Astrometry.net. I used a 4x4 binned image by mistake the first time. Well at least the angle was correct. Once all the settings are entered in their proper fields, they become elements of the FITS header, but until you complete the settings (a one–time only exercise) you can't plate solve.

If your equipment changes, you set up another equipment profile. That's what I was doing last night. The image I used to get the image scale was not captured using the image profile settings (they were incomplete). It was a quick frame and focus shot and as such there was no FITS header. It was just a JPG.

**Mark D**: This all sounds very complicated. Please excuse my ignorance. I just use use my StarSense camera do 3 plate solves and Bob's your uncle.

The target is pretty much in the centre of my FOV. Take 8–second exposures for a minute or two and you have an image. Move on to the next.

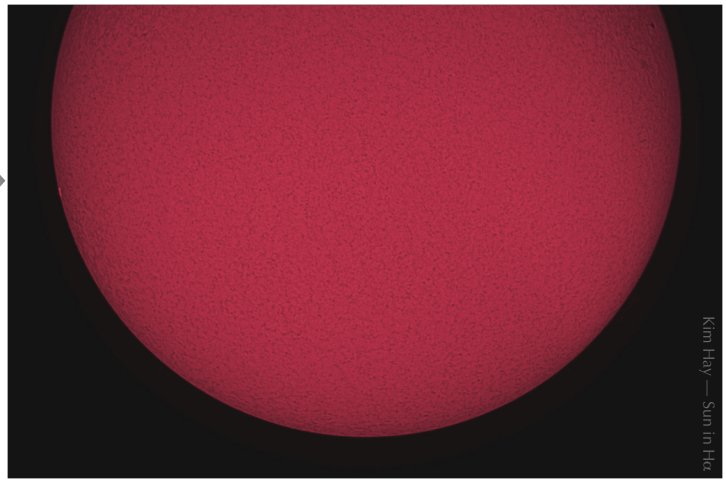
All the rest is witchcraft to me.

**Malcolm**: Lol. Whatever works.

## Thursday, June 24

**Kim** (16:56): Whoa, that wind was wicked but I did manage to get out and view the Sun.

My main question is Hank/Keith, did either of you get out? There was an active region coming on the SE hemisphere. It was flaring.




**Hank** (17:10): I got out early this morning but have not reviewed my images yet, busy day. Yes, the SE region came into view yesterday but I didn't know it was flaring, thanks. I will get to the images this evening.

Your image looks great, nice flare!

**Keith** (17:50): I did not get out Kim, my Minitower ran into a small calibration problem, almost repaired.

**Hank** (23:22): Just got to my H–alpha images and YES I did get that flaring in the ESE [*next page*]. A much better Sun than I thought today. I was in a hurray as Di had an appointment to make and I did not do any visual, just imaging, but then that means it happened.

**Rose–Marie**: Nice. Supposed to be a couple sunspots coming around there that were recently active.

**Keith**: Well, I am back up and running, but no Sun!

## Saturday, June 26
## Nova Herculis 2021

**Rick**: Susan asked the other night if I've been observing the nova. Well I've been using the remote scope almost exclusively on it so I'm now up to 1468 observations. More than any other observer at the moment. Woo hoo!

**Susan**: I guess that is a bit more than my two.

### Sunday, June 27

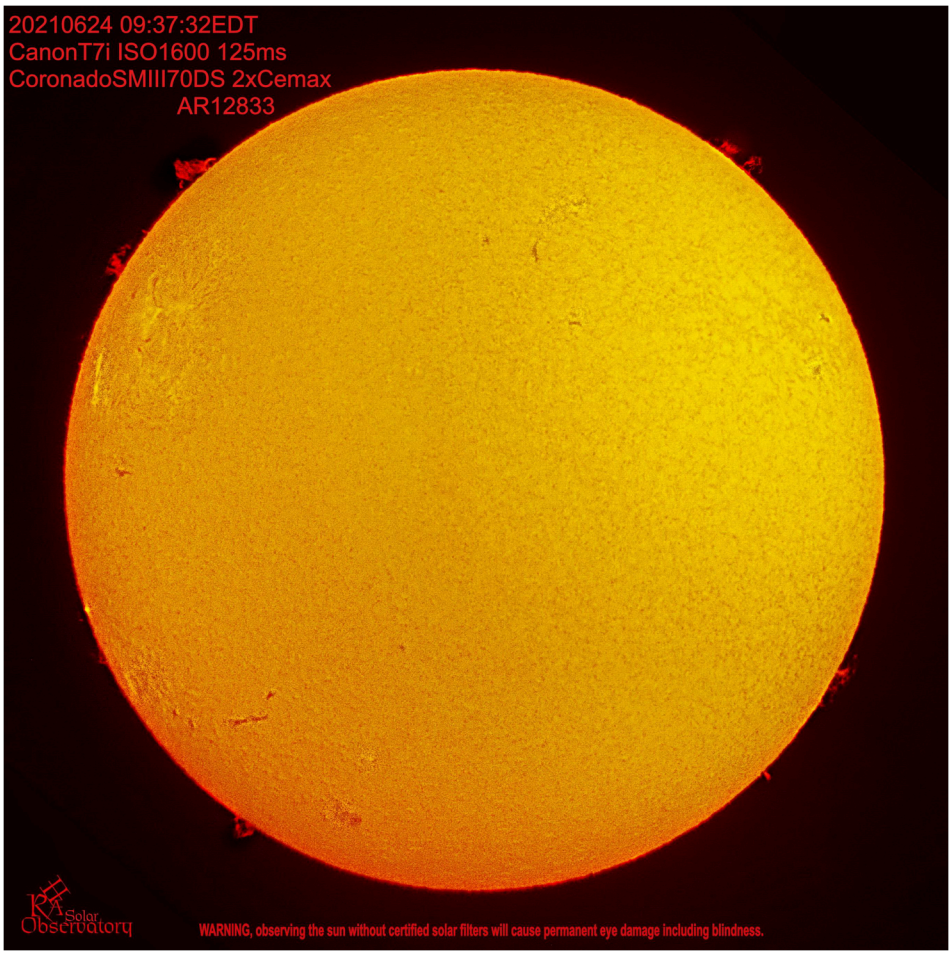
**Hank** (12:10): A little gusty but just had a good imaging run, AR12835 is nice but solar energy is very low. Process images later after the Jays game. Get out there if you can.
**Keith** (12:34): I was just looking also, not much in the way of proms but lots of good looking filaments, just cannot take photos, needed to adjust for each filament but I have no way to stack.

### Monday, June 28

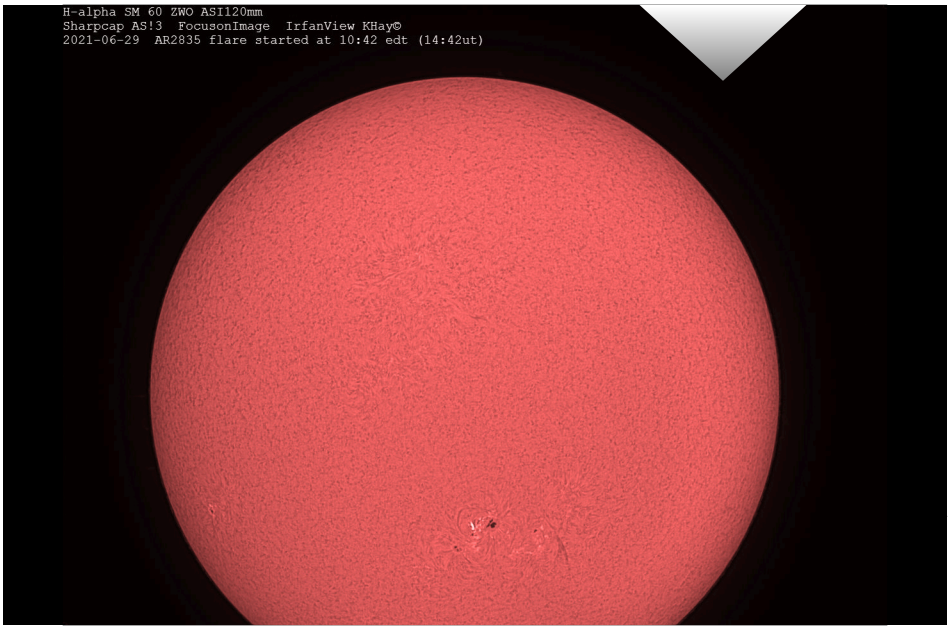
**Hank** (13:05): Another good session just completed. Even if you only have white light, AR 12835/36 is a nice sight so get out there.

### Tuesday, June 29

**Kim** (10:44): The Sun is flaring right now in AR2853, if you can go out and image, despite the cloud.
**Kim** (10:47): And it's over. I did get a couple of images; will process and send one along a bit later.




**Hank** (15:13): Unfortunately I was not home. Looking forward to your images.
**Kim**: Attached is the image that I took of the Sun in H–alpha and the solar flare in AR2835 from 1442–1452 UT. ZWO ASI120mm SM60 using SharpCap, AutoStakkert!3, FocusOn Image Viewer, Irfan–View. Best 25% of 500 frames.
**Hank**: Very nice Kim, yes it is so exciting to watch the Sun in action.




### Wednesday, June 30

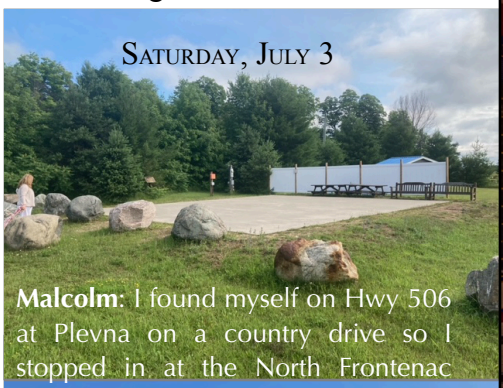
**Hank** (14:43): Just squeezed an imaging session between and through the clouds. I moved the camera for white light and just missed the peak of a C class eruption. I did get it visually but as "Kevin says." [*No photo, it didn't happen.*] I switched the camera back and dark cloud was coming so I closed up JUST before the rain started to fall. Unprocessed last Hα image attached [*next page*], eruption in upper left. Some nice proms as well!
**Hank** (23:17): The birthday party is over and I am just getting to review my images with regard to the C3.6 flare today in AR12835. The flare maximum time was

18:15:00 UT and the image I shared was 18:15:07 UT, the previous image was 18:14:59 UT but is a little clouded, either way I managed to catch very close to the max and I am processing that 18:15:07 image now.

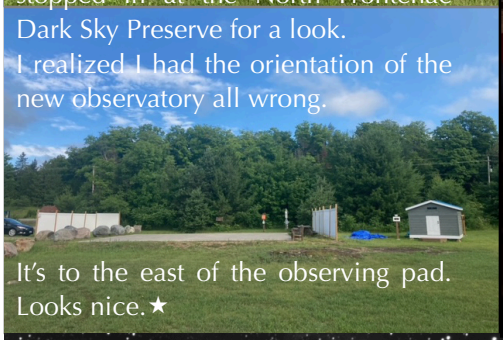
**Rose–Marie** (08:08): I am enjoying all these images. Now if I could just get the time to look at it. It seems the Sun only comes out when I'm travelling back and forth with another load.

**Hank** (10:55): Thank you Rose–Marie, it was a wonderful day. This sunspot is a good one that you need to see, so make some time before it is gone.

C3.6 Flare in AR 12835



**Malcolm**: I found myself on Hwy 506 at Plevna on a country drive so I stopped in at the North Frontenac Dark Sky Preserve for a look. I realized I had the orientation of the new observatory all wrong.


It's to the east of the observing pad. Looks nice.★

Winchester Observatory Control Room

2x300 RHα; NYAA Remote Access Telescope

3x300 L; NYAA Remote Access Telescope