

AURORA

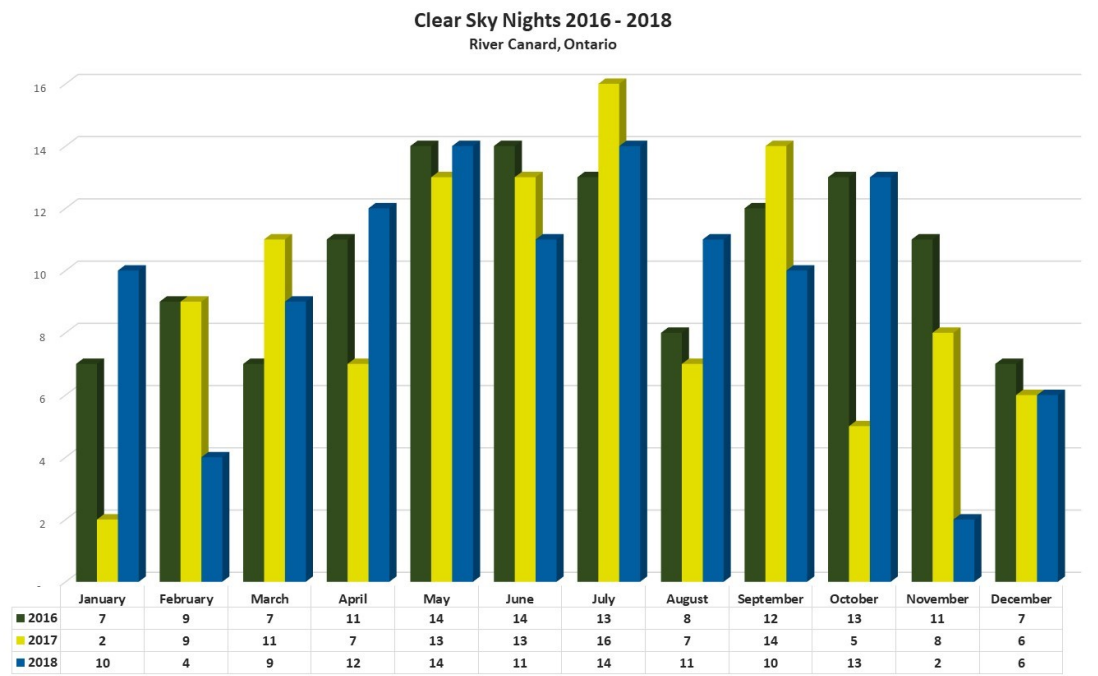


Volume 44, No. 6

The Royal Astronomical Society of Canada - Windsor Centre

March 2019

2018 Clear Sky Nights



Here is my tally of clear night skies for 2018 (blue bars) from my location near River Canard, Ontario. In addition I have included the 2017 (yellow) and 2016 (green) counts for reference.

This is an unofficial "look out the window" count of all the nights I saw what I considered a "clear sky". Seeing doesn't enter into it. But it gives an idea of what kind of observing year we had this past year. 2018 brought 116 clear nights which is about 32% of the nights for the year and a slightly above average year for my records. This is down significantly from the 2016 total of 126 clear nights or about 35% and up slightly from the 111 (30%) last year. If you thought we had a lot of clear skies in the May through July period you were right with about half the nights being clear. The period of May through July are typically good months but this is now three years in a row that they are our best - are we seeing a new pattern away from the September/October time of year? Since I have been keeping records we've experienced a high of 126 clear nights (2016 set a new record) and as low as 83. It is nice to see October which is typically one of our peak months of the year bounce back from the unusual low last year however November and December were particularly gloomy.

Here is hoping that 2019 will continue the trend from the last few years for clear Summer viewing with the upcoming Jupiter and Saturn oppositions and Mercury transit.

Art Rae

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Calendar of Events

Our next meeting...

Tuesday April 16, 2019
7:30 p.m.

at
Ojibway Park Nature Centre
5200 Matchette Road

Main Speaker...

To Be Determined

Topic...

To Be Announced

Activities...

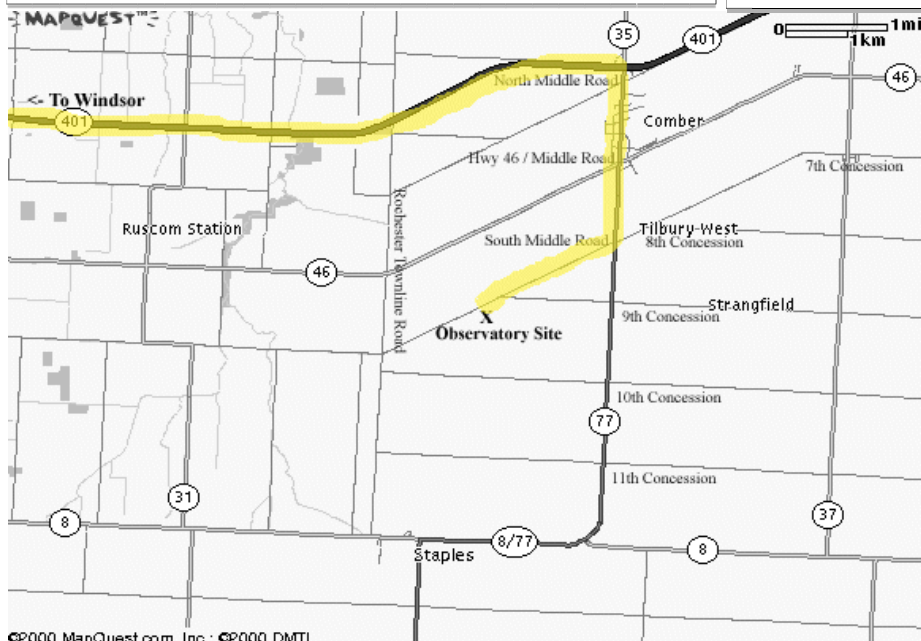
Spring Equinox: Spring officially arrives for the Northern hemisphere at **5:58 p.m. EDT** on Wednesday March 20th.

Mars and The Pleiades: On the evenings of **March 30 and 31** Mars will be 3 degrees from the Pleiades star cluster.

Venus and Mercury: On **Tuesday April 16th** Venus and Mercury will be 4 degrees apart low in the dawn sky.

Earth Day: On **Sunday April 28th** come out to Malden Park from 10:00 a.m. to 3:00 p.m. to celebrate Earth Day 2019 with over 40 environmental exhibits.

Science Rendezvous: On **Saturday May 11th** from 10:00 a.m. - 3:30 p.m.. The event will be in the Education Gym and CAW Centre at the University of Windsor. Weather permitting there will be telescopes set up outside for safe Solar observing.



Hallam Observatory Site

Directions: The map at left shows the Comber area and it includes the major highways (401, 77, 8 and 46) that are in the area of the observatory.

The most direct route from Windsor is "highlighted" on the map which is to take Highway 401 East to Highway 77 South to South Middle Road. Turn right onto South Middle Road and go about 1 kilometer and just after the point where Concession 9 joins it (it is hard to see this intersection) you will find the observatory site on the South side (left) of the road. 3989 South Middle Road.

If you hit the Rochester Townline Road (you come to a stop sign) you have gone too far.

Submissions

Aurora is published monthly except for July, August and December. The September, October, January, March and May issues are full newsletters (usually 6 pages) with a number of member submitted articles. The November, February, April and June issues are short flyers (2 pages).

Submitted articles can be of any length from a paragraph to multiple pages. I can scan pictures and/or diagrams (both prints and film) to support your article and the originals will be returned to you.

Submission deadline is the 1st of the month.

Editor: Steve Mastellotto Email: mmastellotto@cogeco.ca

Membership

The Windsor Centre of The Royal Astronomical Society of Canada meets on the 3rd Tuesday of every month (except July and August) at the Ojibway Park Nature Centre. In addition to regular meetings the centre hosts a number of observing nights, a picnic and a December social. Members receive a copy of the Observer's Handbook, a subscription to SkyNews magazine and access to the Centre's library and telescopes. Optionally the RASC Journal is available in print form—online version free.

Annual Membership Fees: Please see the RASC website at www.rasc.ca for current rates.

Contact Nancy Ng (mysticdog2012@gmail.com) or visit our website at: <http://www.rascwindsor.com> for more information.

February 2019 Meeting Minutes by Sandy van Gaalen

The monthly meeting of the **Royal Astronomical Society of Canada - Windsor Center** was held at the Ojibway Park Nature Centre on **Tuesday February 19, 2019**.

Windsor Centre **President, Mike Mastronardi** chaired the meeting and **called the meeting to order at 7:35 p.m.** and welcomed members and guests to the Ojibway Park Nature Centre.

Mike invited members to review **the minutes of the January 15, 2019** meeting which were printed in the February Aurora Flyer. A **motion to accept the minutes** was made by **Dr. Susan Sawyer-Beaulieu**, seconded by **Randy Groundwater**. **MOTION CARRIED.**

Mike then provided an overview of the meeting.

Main Presentation

Mike invited **Lichun (Jack) Zhu** to the front of the room for his presentation - *"Astronomy Observation with Raspberry Pi building a robotic controlled astronomy telescope!"* Jack provided an awesome overview of the many hours of work to automate his telescope. His motivation came from a purchase of an amateur scope which enticed him to build a telescope which is **remote controlled** and the speed, movement can be controlled. The **star location/pointing** and tracking is still under development. Basic tracking is provided by the standard motors on the mount. Jack provided **detailed information on the hardware** required for this project along with the various operating systems and programming tools such as **python language, Restful API, JavaScript, raspistill / raspivid static images and Ffmreg video stream** used to develop the interface software and tools used for image and video capture. Jack presented a **number of pictures** he has taken with this telescope and had the **telescope and hardware on display** for members to look at and ask questions during the break.

Short Presentation

Tom Sobocan did a presentation on the **Apollo 8 which 50th Anniversary** was last December 2018. Tom provided many pictures of the astronauts, Earthrise, etc. with details about the missions, path of the Apollo and Legacy of Apollo 8 along with some videos.

Coffee Break and 50/50 draw. Monica won the 50/50 draw.

Reminder that **Science Rendezvous** will be held on **May 11, 2019** at the **University of Windsor**.

Director of Observing Report

The **February Director of Observing Report** was provided by **Steve Mastellotto**. Steve discussed observing activities over the last month including numerous **awesome pictures** taken by our members of the **total lunar eclipse** (Paul, Steve, Nancy, Susan, Juliana, Pete, Mike, Starr and Randy **including videos** put together by Susan and Starr. There were also pictures of the **Venus, Moon, Jupiter conjunction** by Mike, Steve, Art and Nancy. Everyone discussed the unusually clear string of weather we had as well as the brutally cold temperatures. **Wide field astrophotos** were also shown from Nancy Ng and Jeff Peacock.

Steve showed a **finder chart** for **Comet C/2018 Y1 (Iwamoto)**

as well as a photo by Starr. A photo of **M76 (The Little Dumb-bell)** by Brian Simpson was shown that he captured using **narrowband filters** from his Lasalle home.

Steve wrapped up the astrophoto slideshow with two images of **The Fox Fur Nebula**. The data was captured using the Chil-escape telescope and was offered to anyone around the world to process as part of a competition and Mitch Arsenault and Steve took a shot at processing the data.

Steve discussed the **all-sky meteor camera** that was installed on the **Point Pelee visitor center** roof last fall and he showed a couple of images captured using the equipment. He also discussed the **International Space Station** and how it sometimes crosses the face of the **Moon or Sun**. **Websites were shared** that are used to predict when this may occur locally and examples of **ISS crossing the Moon** by Steve and the **Sun** by Brian as well as a **video of an ISS crossing of the Sun** by Starr were shared.

Steve wrapped up his presentation with a discussing of the following coming events...

Moon Phases:

- Full "supermoon" (largest of the year) February 19
- Last Quarter February 26
- New Moon March 6
- First Quarter March 14
- Full Moon March 20

Lunar Conjunctions:

- Jupiter on February 27 – 2 degrees
- Saturn on March 1 – 2 degrees
- Venus on March 2 – 4 degrees

Jupiter double shadow transits:

- March 25 – Ganymede and Europa
- April 1 – Europa and Ganymede (after sunrise)
- June 4 – Ganymede and Io (Jupiter rising)

Hallam Private Observing Nights

- February 25 - Scouts (15-20)
- March 5 - Scouts

Point Pelee Dark Sky Night - April 6 cohosted with RASC Windsor

Reminders: Astro Luncheon at **Skippy's Restaurant** every second Wednesday of the month, at noon. Located at 954 University Ave West, Windsor.

Mike thanked everyone for coming out to the meeting and reminded everyone that the **next regular membership meeting** would take place on **March 19, 2019 at 7:30 p.m.** with Gary Ross of Michigan doing the main presentation

Meeting adjourned. February 19th, 2019.

At The Eyepiece: Observation Planning - Method 3 by Mike Ethier

So far in previous articles we have darted around the sky using brighter deep sky objects as our guides. We have star-hopped in all directions from M 103 (or any other bright object of your choosing) using Method 1, not searching for anything in particular except for "what's out there." This adds some randomness to an observing session, and can lead to little discoveries that can become your very own. Next, using Method 2 we planned to view a series of specific objects immediately surrounding a brighter one (oc 2232), all within easy star hop distances. There are too many observers who merely dart from one bright object to another, and I'm hoping that a few of these folk will learn to slow down a bit and explore beyond those irresistible larger target objects.

Method 3 is for serious stargazers only, and requires patience and careful preparation. My preferred method of observing is by constellation. The entire thing, including important single, variable, double and multiple stars. NGC and a few IC objects. Some non-NGC and non-IC objects. The complete constellation in all its glorious detail, or as much of it as my current scope can possibly locate. I always have one or two constellations chosen for each season. Several years ago I undertook the onerous task of preparing Leo for upcoming sessions. Since Leo has over 350 NGC objects in it (not counting IC and the other lists), I am not going to suggest that you begin with this one. I spent about 8 hours preparing that list over several winter nights, as there are always plenty of cloudy nights to work on such projects.

I suggest beginning with a few smaller constellations, and the summer sky has some nice options. Lacerta, Sagitta, and Vulpecula are good choices to try out Method 3 for the first time. However, I have chosen Lyra as my example. It is up all summer and most of the autumn, so there is plenty of time to study it in depth. Here is the easy step method:

1) Choose a constellation (Lyra).

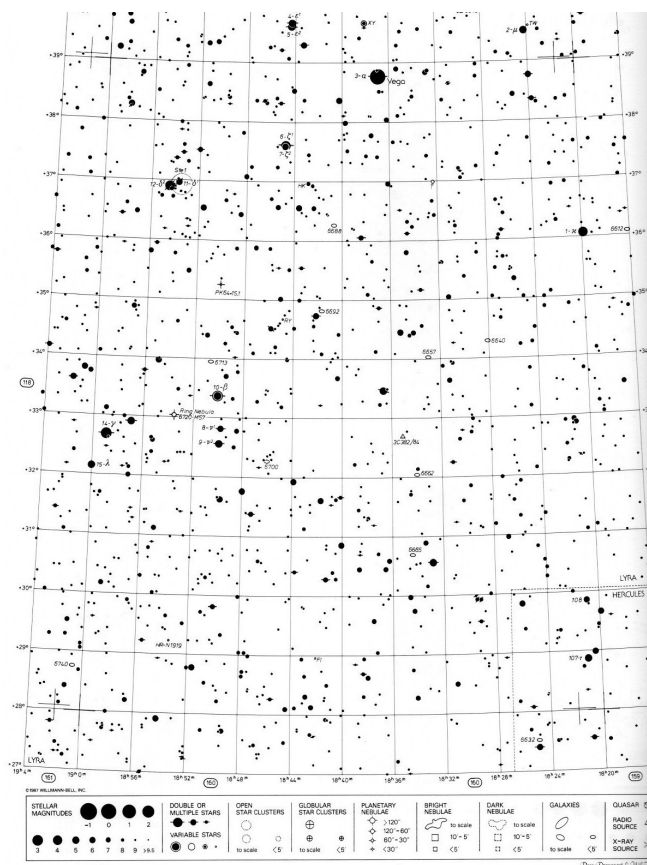
2) Gather your information sources. I use Uranometria 2000, 2nd ed., revised (All Sky), and its complementary Deep Sky Field Guide. I use Burnham's Celestial Handbook (Vol. Two required for Lyra) and Observing Handbook and Catalogue of Deep-Sky Objects, by Luginbuhl and Skiff. I also use the internet, including the Washington Double Star Catalogue, and Stella Dopia.

3) Decide which objects you wish to attempt. The owner of a 6" telescope will choose differently than the owner of a 10" scope. Burnham's lists 3 1/2 pages of double stars. Go through the list and mark in pencil which ones you would like to view. Several will be too faint or too close to be of much interest

to anyone except the owners of very large telescopes. There is also a page of variable stars, including one of the most famous in the sky (Beta). I like to choose variables based on several criteria, including interest to amateurs, colour (T Lyra is mentioned as being "very red,") and length of period. There are 4 NGC objects for Lyra listed in Burnham, including 2 Messier objects. Luginbuhl and Skiff list 6 NGC objects. However, Uranometria lists 28!

4) Once you have decided what to view, it's time to plot them on your atlas (Uranometria). I use a fine point mechanical pencil. All of the NGC objects (28)

are listed on the Uranometria charts for Lyra. There will be other types of objects, too. If you are only planning to see some of them, underline (in pencil) which ones you are interested in observing, or lightly circle them. If you think writing in pencil in a star atlas is Satanic, either get over it or purchase two copies - one to keep pristine, for whatever reason, and one that will detail your on-going voyage through the heavens. The variables and major stars will already be labeled, too. All you have to do is add in the names of the dimmer double stars, in their correct positions. The positions listed in Burnham's are off a bit, but after a few stars are plotted you will figure out by how much and easily match the right ascension and declination given with the actual star on the map (you should not have to draw any actual stars - they should already be there, just unlabeled). I also circle the name/number of any star that I will be observing. This is a fun way to begin knowing your way around Lyra. With the atlas marked in pencil with the objects you wish to view, you are now ready to prepare your observing list on paper.



*Sky atlas - Uranometria 2000.0 Volume I (First Edition)
chart of the Lyra area of the sky.*

5) It is now time to prepare your observing list, the one you will take outside with you. My Leo list is long enough to make into a small book. My Lyra list is 4 or 5 pages. Yours will depend to what depth you wish to explore the constellation, as well as the size of your mirror. You may set up your list anyway you choose, but I recommend leaving room on the left side of the page to jot down the full object's name and any information you have about it. Double stars will have magnitudes and separation distance, which is essential to know in the field. I usually don't write down position angles, as I prefer to find that out myself at the eyepiece. Variables will have their minimum and maximum brightness listed, and their period. NGC objects will have sizes, magnitudes, and, for clusters, perhaps how many stars there are in it. List the objects and their stats down the left side, saving the rest of the page for field notes. Indicate the required chart number from your atlas, and leave diagram space on the right side for clusters, galaxies, etc. I use a shot glass to draw blank circles on

At The Eyepiece (continued)

my field note sheets - bottom of the glass for smaller NGC objects, and the top end for larger ones. I tend to begin observing a section of the constellation at a bright star or object, and star hop from there until I have seen and reported on everything in the vicinity (like Method 2, previous article). Then I go on to another location, seeing everything near it, and so on through the constellation. If you have marked your atlas properly, you will be writing up your to-do list in the exact order you wish to peruse the constellation, and it will include a nice mix of objects.

I always have several constellations on the go. For summer I am doing detailed double star work in Delphinus, Sagitta, and Hercules. My main autumn one is Cetus; my winter ones are currently Orion and Perseus. In this way, I always have hundreds of objects awaiting observation.

Whichever method you use (Method 1, 2, 3 or a combination of them, as I do), you will soon learn to appreciate the less bright and flashy objects. You will train your eye to see details you never thought were there. You will gradually become knowledgeable about vast areas of the sky. You will get to know your scope even better. And you will still have lots of fun on cloudy nights, preparing your lists and transferring your rough notes into your official observing logbook. If you have questions or comments, please feel free to e-mail me. mdethier@mnsi.net

Messier of the Month

I have nearly concluded my years-long journey exploring the deep sky objects of Leo. It has been an epic voyage of discovery that has included over 360 NGC objects, including five in the Messier list. I have previously reported here on M 65, 66, and 105. The first two make a famous triplet with eg 3628. M 105 makes a triplet with eg 3384 and 3389. These last three galaxies are part of the Leo I group, sometimes also called the M 96 group. It lies about 37 million light years away.

M 95 and 96 are relatively new objects to me; I have no history observing them before my view in the 12" scope from Hallam on April 11th, 2016. At 60x and 100x M 95 appears like a massive, unresolved globular cluster, or even a comet. It is easy to see why Messier might have wanted to eliminate this as a possible bright comet. At 136x it is big, oval, has an intensely bright middle, and a very large core area, which is faintly barred. At 187x, 200x, and 250x the core is blazing! The position angle makes a rough V-shape with a pair of stars, preceding. Overall, the galaxy is very large, has a big, bright middle, and a lot of faint outer haze at higher power.

M 96 is notably brighter than M 95. It is also closer to M 105. All three bright galaxies can be easily swept at low powers. M 96 also appears more obviously oval than M 95. At 136x it has a nearly blinding middle section, itself very oval. This is obviously the central bar! The central area is very large. I also viewed it at 187x, 200x, and 250x. A very large and broad oval haze surrounds the central area. Like M 95, it is very comet-like. The position angle is similar to M 95. I hope to report later on my attempts to locate this pair of galaxies with Space Eye, my 2" refractor.

M 95 (eg 3351): 7'.4 x 5': visual mag. 9.7; surface brightness 13.5.

M 96 (eg 3368): 7'.6 x 5'.2: visual mag. 9.3; surface brightness 13.1.

For Sale

BAADER PLANETARIUM GmbH

BAADER AstroSolar® Safety Film (OD 5.0)
FOR PRODUCTION OF OBJECTIVE-SOLAR-FILTERS (VISUAL & PHOTO)
FOR TELESCOPES, BINOCULARS, PHOTO- AND VIDEO-CAMERAS

AstroSolar® Safety Film 5.0 ...
used for self-made filters and collimated Baader Solar Filters

NEBULA LINE TRANSMISSION %
Hydrogen-beta 486nm 94
Oxygen III 496nm 90
Hydrogen-alpha 656nm 6-7

Vixen PORTA
ALT-AZIMUTH MOUNT



Lumicon OIII filter (premium) for 2" eyepieces - \$100; Lumicon H Beta filter ("Horsehead") for 1 1/4" eyepieces - \$75; Baader Astro-Solar filter - unused, unopened package - \$35. Vixen Porta alt-azimuth mount. Slow motion controls, adjustable height tripod (shown fully retracted) with accessory tray. This is a smooth, solid & stable mount for smaller telescopes up to about 7 kg. - \$180. Contact Randy Groundwater at randygroundwater@icloud.com or 519-969-8552.

2019 Hallam/Point Pelee Events List by Mahayarrahh-Starr Livingstone

April 6 - **Point Pelee Dark Sky Night** (RASC Hosted)

April 13 - **Hallam Private Viewing** OPEN (2 Guests so far)

April 27 - *Backup Hallam Private Viewing Date*

April 28 - **Hallam Private Viewing** (4 Guests)

May 4 - *Backup Hallam Private Viewing Date*

May 11 - **Hallam Private Viewing** OPEN

May 25 - *Backup Hallam Private Viewing Date*

June 1 - **Point Pelee Dark Sky Night** (RASC Hosted)

June 8 - **Hallam Private Viewing** OPEN

June 29 - *Backup Hallam Private Viewing Date*

July 6 - **Hallam Private Viewing** OPEN

July 27 - *Backup Hallam Private Viewing Date*

August 3 - *Backup Hallam Private Viewing Date*

The Perseid meteor shower will reach its maximum rate of activity on 13 August 2019. Some shooting stars associated with the shower are expected to be visible each night from 23 July to 20 August. August 10th would be the best time for a Saturday since August 15 is a full moon.

August 10 - **Point Pelee Dark Sky Night (RASC Hosted - The Perseid Meteor Shower)**

August 22 – 25 *Starfest Weekend*

August 31 - **Hallam Private Viewing** OPEN

September 7 - *Backup Hallam Private Viewing Date*

September 28 - **Hallam Private Viewing** OPEN

October 5 - *Backup Hallam Private Viewing Date*

October 26 - **Hallam Private Viewing** OPEN

November 23 - **Hallam Private Viewing** OPEN

November 30 - **Hallam Private Viewing** OPEN

Astrophotos



Leo Triplet (M65, M66 & NGC3628 by Mahayarrahh-Starr Livingstone; M13 by Mitch Arsenault; Venus - Moon - Jupiter by Nancy Ng.