

AURORA

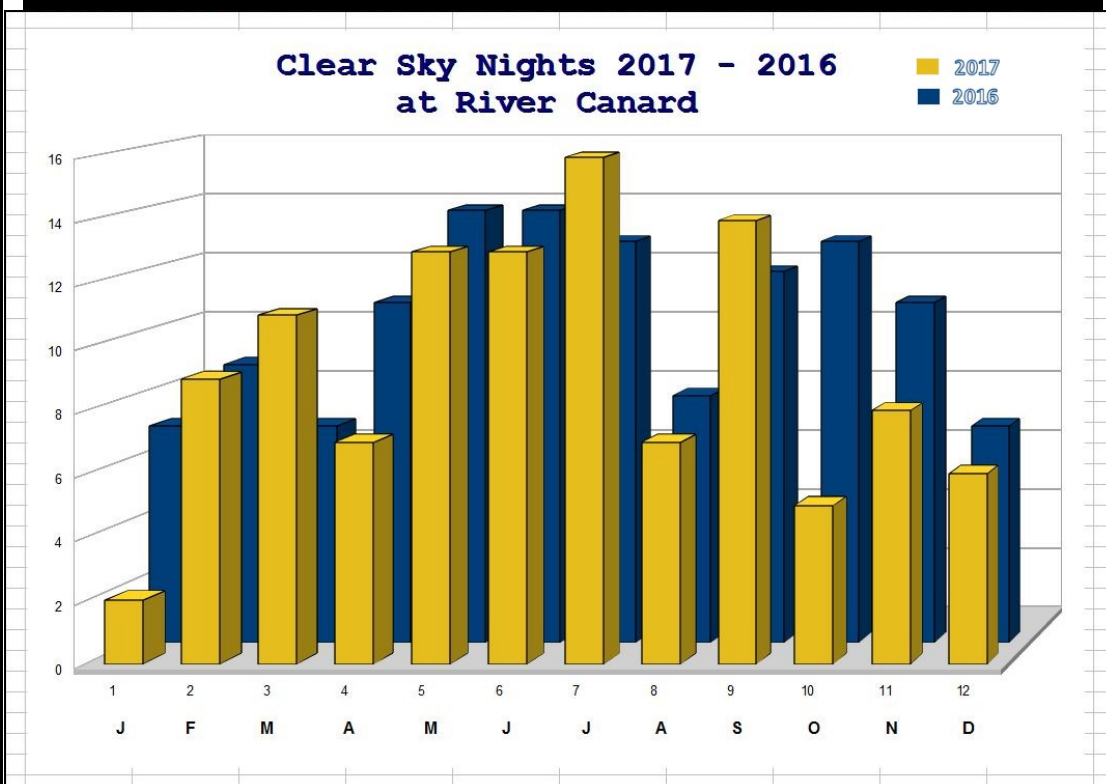


Volume 43, No. 6

The Royal Astronomical Society of Canada - Windsor Centre

March 2018

2017 Clear Sky Nights



Here is my tally of clear night skies for 2017 (yellow bars) from my location near River Canard, Ontario. In addition I have included the 2016 counts (blue bars) 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. 2017 brought 111 clear nights which is about 30% 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%. 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 the second year in a row that they are our best—are we seeing a new pattern? Since I have been keeping records we've experienced a high of 126 clear nights (last year set a new record) and as low as 83. 2017 was unusual too in that we experienced a new low of 5 clear nights in October which is typically one of our peak months of the year.

Here is hoping that 2018 will continue the trend from the last couple of years for all the great planetary viewing (Jupiter, Saturn and Mars) this Summer.

Art Rae

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Calendar of Events

Our next meeting...

Tuesday April 17, 2018
7:30 p.m.

at
Ojibway Park Nature Centre
5200 Matchette Road

Main Speaker...

G. M. Ross

Topic...

"Life On Other Worlds: 1947 to 17th Century with an Excursion into Antiquity"

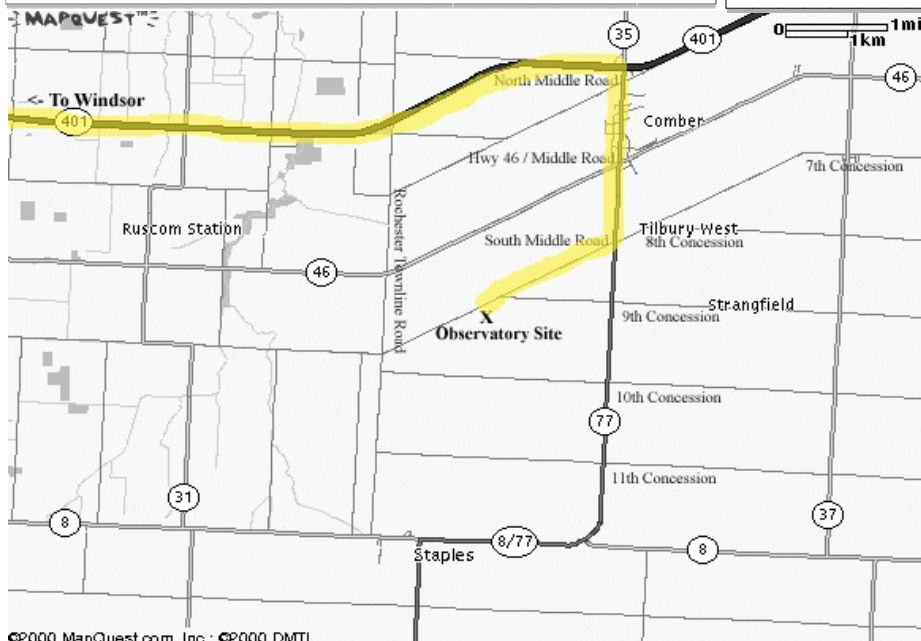
Activities...

Spring Equinox: Spring officially arrives for the Northern hemisphere at 12:15 p.m. EDT on Tuesday March 20th.

Moon and Aldebaran: On Thursday March 22nd the Moon will be in the Hyades Cluster and a 1/2 degree from Aldebaran. The Moon is back in the Hyades Cluster a month later on Wednesday April 18th.

Venus and Uranus: On Wednesday March 28th Venus and Uranus will be 4 1/2 arc minutes apart. They will fit nicely in a medium power (150x) telescopic view. Note that Venus is low in the West so you will have to view this event about 30 minutes after sunset around 8:15 p.m. EDT.

Moon, Mars and Saturn: On Monday April 2nd Mars passes 1 1/4 degrees below Saturn and on Saturday April 7th the Moon joins the pair and is 1 degree above them in the morning sky.



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 2018 Meeting Minutes by Dan Perissinotti

The monthly meeting of the **Royal Astronomical Society of Canada - Windsor Center** was held at the Ojibway Park Nature Centre on **Tuesday February 20, 2018**.

Windsor Centre **President, Mike Mastronardi** chaired the meeting and **called the meeting to order at 7:39 p.m.** and welcomed members and guests to the Ojibway Nature Centre.

Mike invited members to review **the minutes of the January 16th, 2018** meeting which were printed in the February Aurora newsletter. A **motion to accept the minutes** was made and the **MOTION CARRIED**.

Mike provided an overview of the meeting and introduced our main presentation.

Main Presentation

Mike was also giving the mail talk for the evening and his presentation was called: ***"Cosmic Coincidences"***.

The universe is built on **mathematical relationships** as much as it is **symmetry** and **patterns**. This relationship encompasses how the solar system, galaxies and eventually the universe ended up evolving, and how they appear to us. A **few quotes** from the presentation:

"The great book of nature can be read only by those who know the language in which it is written, and that language is mathematics" – Galileo Galilei

"There are more things in the heaven and earth, Horatio, than are dreamt of in your philosophy." – Hamlet (1.5.167-8), William Shakespeare, 1599

There is a **mathematical relationship** between the four inner small planets, and the four outer gas faint planets. Their orbital radii reflect each other throughout the asteroid belt. Ex. Mercury x Neptune = 1.208 Earth x Saturn (typical ratios) and Venus x Mars = 2.872, Mercury x Earth (typical ratios). Also, Venus x Mars x Jupiter x Uranus = Mercury x Earth x Saturn x Neptune.

Mike also discussed other **fundamental constants** in the universe that if they were not the exact figures they are our universe would not exist or be empty of any stars, galaxies or elements.

Prior to the break Steve Pellarin asked for a **photo submission** from the membership. These photos will be used for **promotional information in the form of banners**.

After the **coffee break** a **50/50 draw** was held and the lucky winner went home with \$10.50.

Director of Observing Report

Steve Mastellotto was welcomed to the floor and opened the D of O Report with a question period on some **local observing and members' photographs, outings, and stories**.

Activity since last meeting included the Meteorite fall Northwest of Detroit on January 16th, Lunar Eclipse on January 31st, SpaceX Tesla Roadster launched into orbit around the sun (was supposed to orbit Mars), Point Pelee Dark Sky Night on February 17th.

Upcoming events include:

Mercury – from March 2nd through the 5th, it will be near Venus in the Western sky just after sunset. On Saturday the 3rd, they will be 1 degree apart.

Venus – emerging in the evening sky

Mars – in the morning sky in Scorpius and Sagittarius, at opposition July 27th

Jupiter – prominent in the morning sky, at opposition May 9th

Saturn – prominent in the morning sky

Uranus – low in the southwest after sunset, difficult to see

Neptune – in conjunction with the sun on March 4th

Zodiacal Light – visible for the first two weeks of March in the western sky just after sunset. Dark night sky conditions are required

Moon – will join the sky with Venus and Mercury on Sunday March 18th

Spring Equinox marks the beginning of Spring for the northern hemisphere, on March 20th at 12:15 p.m. EDT

Some deep sky observing for March include the constellation **Gemini**, which host **M35**, which can be seen with binoculars. Some telescope objects in Gemini include, **Castor** (visually a double star, through measurements and studies, a star system with 6 stars), **The Eskimo Nebula**, and various **open clusters**. Hunting challenge; **The Medusa Nebula – SH2-274**.

Steve proceeded to answer questions from the audience and Mike thanked Steve for his presentation.

REMINDER: 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 **Tuesday, March 20th, 2018 at 7:30 p.m.**

Meeting adjourned at **9:25 p.m.** February 20, 2018.

At The Eyepiece: Leo by Mike Ethier

In February of 1782, astronomer J. A. Koch noticed that a certain star in Leo was observable with the naked eye for the first time in his experience. His charts from two years earlier had marked it as 7th magnitude. He continued to observe the star and it soon faded. By early 1784 it was down to about 10th magnitude. He dutifully sent in his observations, and was soon given credit for the discovery of the fourth Mira-type variable then known, and only the fifth variable known overall.

R Leonis is one of the most popular variable stars in the sky today, a pulsating red giant 5 degrees west of Regulus. It sits just south of 19 Leonis, magnitude 6.3, and then makes a triangle with two much fainter and closer stars, a magnitude 9 star immediately preceding it, and a 9.6 magnitude star south preceding. These two stars help viewers estimate the magnitude of R Leonis when near minimum. It is deep orange in colour, even at its brightest. It moves between 5.8 magnitude and around 10 magnitude over a period of 312 days. Binoculars will easily show the changes. Each year when I return to my observing work in Leo, I always check out R Leonis first, then continue to watch it over the very short spring astronomy viewing window. After a few seasons it has become like an old friend. I have never seen it from Hallam with the naked eye, and it is easy to confuse with 19 Leonis. However, from a very dark sky, both stars should be visible when R is at maximum, which will occur in April of 2018. Randy Groundwater and I observed it the evening of March 3rd of this year with binoculars and a 6" reflector, and estimated its magnitude at 6.5, so it is already getting close to maximum. Visit the excellent AAVSO website for much more information about this wonderful variable star.

5 degrees north of Regulus is Eta (η) Leonis, a star so bright that if it were the same distance from us as Regulus, it would appear in our sky 3x as bright as Jupiter! Eta can be used to help locate R Leonis, as they are both about the same distance from Regulus (R is preceding; Eta is north).

Messier Of The Month

Spring 2018 marks the beginning of my sixth year observing in Leo, and I've been dragging loyal readers along with me. Leo has five galaxies with Messier numbers, and so far I have only written about two of them, M 65 and M 66. Those galaxies are part of the famous Leo Triplet (see previous March newsletters for other articles on Leo). Readers with good memories will remember that the March 2016 article discussed three other Leo triplets, all of them fainter and more challenging. This month's Messier object is also part of an interesting galaxy triplet.

Messier 105 (NGC 3379) has two fainter, very close galaxies in the same field of view. In addition, M 105 is also part of a much wider triplet with M 95 and M 96. All of these galaxies are actually linked by distance in space (approximately 31 million light years), and are often referred to as the M 96 Galaxy Group. Like family trees, this large group is also part of a larger group, called the Leo I Cloud. M 105 was discovered by Mechain in 1781.

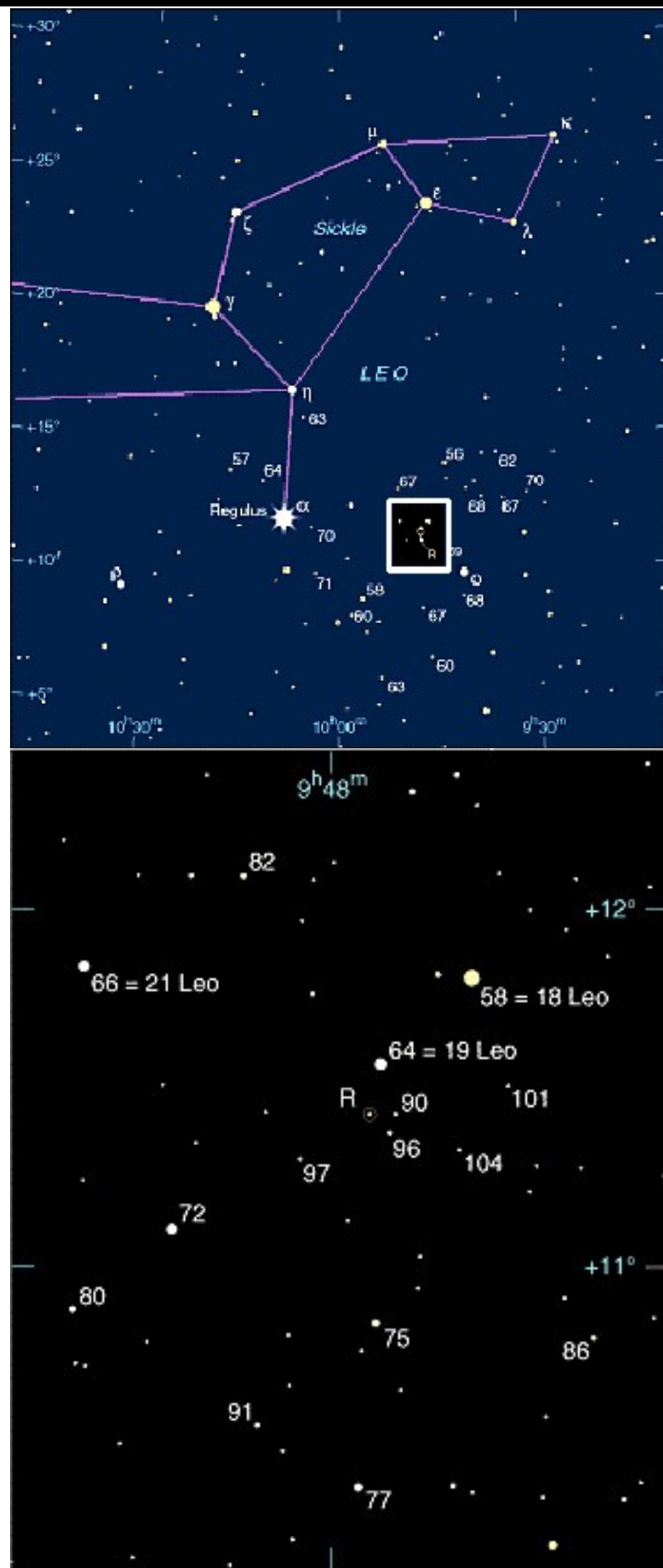
Tonight we will have a look at M 105 and its two close but dimmer companions, saving the remaining two Messier objects for a later time.

NGC 3379 (Messier 105): 5.4' x 4.8': Vis. 9.3; SB 12.8

NGC 3384: 5.5' x 2.5': Vis. 9.9; SB 12.6

NGC 3389: 2' x 1.3': Vis. 11.9; SB 13.2

(Continued on page 5)



At The Eyepiece: Leo (continued from page 4)

These galaxies make up another fine Leo triplet. They can all be seen in a 6" scope, though 3389 is very faint. In the 12" they all fit into the field of view from 60x up through 200x. Thus they are much closer together than the more famous Leo Triplet of M 65, M 66 and NGC 3628 (see the March 2015 article for these objects - our club website has all back issues of Aurora archived), thus making them perhaps more fun to view. M 105 is round, big, and a very bright object. Even at 200x and 250x M 105 is still very bright, showing a large, nearly blinding core, a large area surrounding this of somewhat lesser brightness, and plenty of fainter haze around that.

3384 is nearly as bright as the Messier galaxy, and it is curious that it was not given a Messier number as well. To me it is as bright, or very nearly so, as nearby M 95. Its core is much smaller than M 105, and its surrounding haze is dimmer though extensive. At 200x and 250x the core is very bright, and the surround-

ing haze is oval and quite wide. 3389, though much fainter than its two companions, is also a beauty in a 12" scope. Even at low power it is very elongated, and well positioned preceding 3 nearby stars that form a rough line. The galaxy is long and lovely at 136x, seen best with averted vision. 200x shows it very long, quite wide in the center, and though it is pretty bright, its glow is ghostly. To me it gives the impression of a cloaked spaceship!

And so I look forward to my annual spring pilgrimage to Leo. I always begin with R Leonis, then I enjoy long, lingering looks at the main Leo Triplet, followed by views of the M 96 group. After that, it's back to searching deep into March and April skies for the remaining NGC objects in this outstanding area. When Leo is ready to disappear into the twilight of late May skies I will have a final look at *R*, and wave goodbye until the next year.

Clear skies to all!



Member Astrophotos



Page 5 Top: Venus and Mercury on Sunday March 11th by Nancy Ng. Nancy captured this shot across the street from Hallam Observatory; *Page 5 Bottom:* LRGB Image of NGC 891 by Steve Mastellotto - 10.5 hours total exposure captured with a 16-inch f/8.9 RCOS at the Sierra Remote Observatories; *Page 6 Top Left:* LRGB Image of NGC 4631 The Whale Galaxy by Steve Mastellotto - 12 hours total exposure with the same equipment as above; *Page 6 Top Right:* HaLRGB Image of Barnard 33 The Horsehead Nebula by Steve Mastellotto - total exposure of 25 hours with the same equipment as above; *Page 6 Bottom Right:* Messier 81 and 82 by Mahayarrahh-Starr Livingstone using the AT111 at Hallam Observatory with no autoguiding and 18 x 2 minute exposures at ISO 1600; *Page 6 Bottom Left:* On the same night of Nancy's (and Starr's) image Randy Groundwater captured Mike Ethier at work with his telescope in silhouette with Orion riding high in the sky; *Page 6 Middle Left:* Also on Sunday March 11th (at 9:40 p.m. EDT) but from his home Brian Thomas captured the Winter Milky Way using a Canon 5D, Rokinon 14mm wide-angle lens set to f/5, a 25 second exposure at ISO 4000.