

Saskatoon Skies

The Newsletter of the Saskatoon Centre of the Royal Astronomical Society of Canada

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Royal Astronomical Society of Canada
Saskatoon Centre Incorporated
Box 31086, RPO Broadway
Saskatoon, SK S7H 5S8

WEBSITE: <https://saskatoon.rasc.ca/>
E -MAIL: sk_centre@rasc.ca
FACEBOOK: [RASC Saskatoon Centre](#)
INSTAGRAM: [@RASCYXE](#)

To view *Saskatoon Skies* digitally, see our website:
<https://saskatoon.rasc.ca/newsletters.html>

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MEMBERSHIP? JOIN TODAY!

Regular: \$96.00 /year

Youth: \$52.00 /year

Family: \$90.50 + \$41/additional adult + \$21.10/additional youth

The Saskatoon Centre operates on a one-year revolving membership. You will be a member for the next 12 months no matter when in the year you join. Members are encouraged to renew early to avoid disruption in publications. Renew through the National Office at <http://www.rasc.ca/join>.

Benefits of Membership in the Saskatoon Centre

- knowledgeable & friendly amateur astronomers
- use of the Sleaford Observatory
- use of the U of S Observatory (after training)
- Saskatoon Skies Newsletter
- Observer's Handbook
- Journal of the RASC (electronic format)
- borrow the Centre's projector to give astronomy outreach presentations – contact Les Dickson at astrochem@sasktel.net
- rent the Centre's Telescopes <https://saskatoon.rasc.ca/telescopes.html>
- use of the Centre library
- SkyNews Magazine (bimonthly)

SASKATOON CENTRE'S MAIN OFFICERS:

President – Mike Dolan

Vice-President – *vacant*

Secretary – Rick Huziak

Treasurer – Donna-Lee May

National Council Rep – Les Dickson

Canadian Tire money - Darrell Chatfield

If you cannot attend a meeting but would like to donate your Canadian Tire money please email Darrell at novachat@sasktel.net.

NEWSLETTER INFO

Newsletter Editor – Colin Chatfield

Copy & Collate – Les & Ellen Dickson

Labels & Temps – Mark de Jong

Web Posting/Content Editor – Gord Sarty/Tenho Tuomi

Saskatoon Skies is published monthly by the Saskatoon Centre of the RASC. Distribution is approximately 100 copies per issue. Saskatoon Skies welcomes unsolicited articles, sketches, photographs, cartoons, and other astronomy or space science material. Submissions should be sent by e-mail to the editor at colcha@gmail.com in MS Word or text format. Images (new or old): any format, less than 30MB, sent by e-mail as attached files. Send any articles of interest to the night sky or astronomy. **Deadline for submission of all articles for an upcoming issue is the first Friday of each month!**

Saskatoon Skies is also posted on our Saskatoon Centre homepage as a .pdf file and can be downloaded free-of-charge. Members may choose to receive the newsletter by regular mail or via the Internet. Articles may be reprinted from Saskatoon Skies without expressed permission (unless otherwise indicated), provided that proper source credit is given. Saskatoon Skies accepts commercial advertising. Please email the editor at colcha@gmail.com for rates. Members can advertise non-commercial items for free.



Taken during the 2021 Draconid meteor shower by Tammy Vallee on top of Whistler Mountain, Jasper, AB. Canon 6D MKII, Sigma lens, 15mm, 22 seconds, f/2.8, ISO 3200

U OF S OBSERVATORY

The U of S Observatory is open to the general public every Saturday of the year. Admission is free. The observatory is located on campus, one block north of the Wiggins Avenue and College Drive entrance. On clear nights, visitors may look through the vintage 6-inch and tour several displays. Current events are recorded on the Astronomy Information Line at 306-966-6429.

Observatory Hours.

January – February	7:00 – 9:30 pm
March	8:00 – 10:30 pm
April – August	9:15 – 11:45 pm
September	8:30 – 11:00 pm
October – December	7:00 – 9:30 pm

Temporarily Closed. Check the website for updates!

Website - <https://artsandscience.usask.ca/physics/facilities/observatory.php>

Facebook - <https://www.facebook.com/usaskobservatory/>



*Two image panorama of the aurora over the Northeast Swale.
Taken November 4th, 2021 around 5:00am, by Tara Magee*

RASC CALENDAR OF EVENTS & MEETING INFO

Dec 13th

RASC General Meeting - 8:00pm (info below)

Mike Dolan

Observer's group viewing starts at dusk at the Sleaford Observatory dark site. Get there early and set up for a great night of observing! Members and their guests only.

For a complete list of club events, please visit: <https://saskatoon.rasc.ca/activities.html>

December RASC General Meeting

for all members and guests

Join us on December 13th, 2021 at 8:00PM (Executive meeting at 7:00pm)

Webinar (info below)

7:00pm - **RASC Executive Meeting** (Members may attend the executive meeting as observers if they wish)

A Zoom registration link and phone-in numbers will be emailed to Members.

After that, the procedure to register and join the meeting is the same as for the webinar (explained below).

8:00pm - **NOTE:** links to register to attend the webinar will be emailed out as well so we know who is planning to attend. After registering, an email invitation will be sent with a link to join via computer or a number to phone in. When joining via computer, participants will have to first download and install the Zoom app, if they have not done so already.



8:30pm - **Main Program -**

Mike & Ron - "Astronomy Jeopardy" One doesn't need to be an astrophysicist to play another rousing game of Astronomy Jeopardy; just show up and have fun. It will be filled with fun facts and interesting trivia.

Colin Chatfield & Tara Magee "What's up this month"

SPEAKERS FOR MEETINGS

Rick Huziak

The Centre always needs speakers for meetings - plain and simple. Email rickhuziak@shaw.ca to volunteer to give a short or long talk. We want to hear about what you are doing! Thanks in advance.

COMET LEONARD

Tenho Tuomi & Tim Yaworski



Comet C/2021 A1 (Leonard) below globular star cluster M3 morning of December 3, single one minute exposure at ISO 3200 with Canon T5i camera and 305mm Newtonian telescope

Comet Leonard is shaping up to be the brightest naked eye comet of this year, but unfortunately it will be a morning comet, and the window of opportunity to see it at its best will be short.

It will start December at magnitude 7, rising shortly after midnight and high in the sky before morning twilight at 7 am. It will brighten and move rapidly to the east, and by December 11 it will be magnitude 4 but very low in the east in morning twilight. It will be brightest on December 13 but below the horizon for us.



A first glance in the field of Comet Leonard from Tim Yaworski's imaging session at the December Imaging Night at Sleaford



Tim Yaworski captured Comet Leonard in the early hours of Dec 4 at the Sleaford Imaging Night. Zenithstar 61 refractor, ZWO ASI553 camera

OBSERVERS GROUP COORDINATOR(S) NEEDED

Larry Scott

The Saskatoon Centre of the RASC is seeking one or more volunteers to take over the Observers Group Coordinator/Yard Monkey position currently held by me (Larry Scott). This position has many perks - fresh air and exercise in beautiful surroundings; works in close proximity to many bird species, butterflies, racoons, deer and gophers; the appreciation of your fellow club members; free parking; and more! Below is a list of opportunities for energetic club members that need to be passed on or not as the club sees fit.

If possible I would continue doing this for years but I'm planning a move in a few years and simply won't be here. My hope is to give the club time to consider its options and that I can pass on some tips to whomever(?) comes next.

Observers Group Coordinator

- Set schedule for Observers Group based on dark skies(new moon) and not on a long weekend.

(Also Messier Marathon)

- Interpret weather reports to base a go/no go decision the day of Observers Group and notify club members.

Yard maintenance

- Mow grass or blow snow as required so yard is useful and combustibles near buildings are kept to a minimum.

- Care and feeding of snow blower and lawn mowers. ***Important***

Key Master

- Give tours of Sleaford to club members and hand out keys to the kingdom.

Sleaford Open House

- Set a date

- Nag George for posters.

- Distribute posters

- Nag everyone to show up.

Starting in 2006 I began hosting Observer's Group meetings and as the years went on I accumulated some other responsibilities as listed above. Not sure if everything will be picked up by the members but I am hoping someone will step up to host the Observers Group and assist with these other responsibilities. Cheers for now, hope to see some of you out at Sleaford before I'm gone.

NARROWBAND IMAGING

Tim Yaworski

The December narrowband imaging night at the Sleaford Observatory was held on Friday, December 3rd.

Nine people were in attendance, led by Tim Yaworski. Jeff Swick was also slated to attend but unfortunately had to leave early when he arrived only to find he forgot to pack the tripod for his telescope.

Those who attended included members and visitors.

The evening started just after sunset with a fly-by of the International Space Station and the temperature gradually dipped to -12° C.

Being a new moon the skies appeared clear initially, but a very high dew point hampered the seeing a bit, which was barely a problem for imaging though.

The imagers were focussed on deep sky objects mainly; ranging from M42, M45, Horsehead and Flame Nebulas, Heart and Soul Nebula, and the like.

Two of the imagers, the couple Justin and Lorie, had attended the November imaging night as a guest of Tim's. That positive experience prompted them to join the Saskatoon Centre as full members.

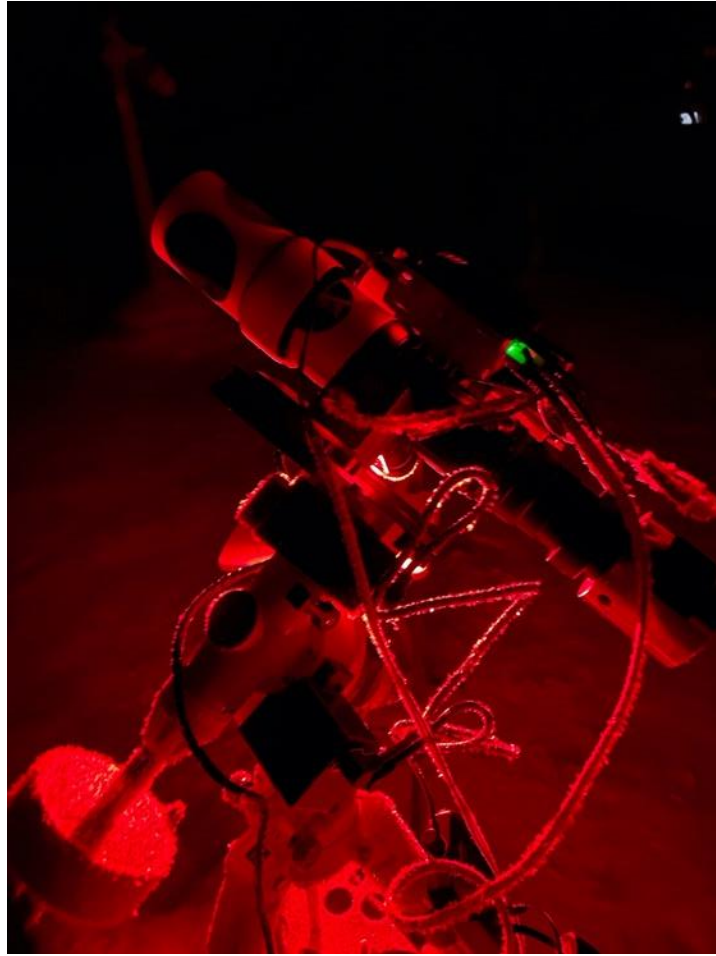
Another Tim attended the Friday session as Yaworski's guest to get some tutoring on the setup and operation of an 8" Dobsonian he recently received. Before he left he said he as well would join our centre as a member.

As the hour approached midnight, aurora started to take over the northern horizon and grew in intensity for several hours. Thankfully it stayed away from the areas the imagers had their scopes pointed.

By 02:00 it was just Tim, Justin and Lorie left as they continued to collect data on their various objects. Around 04:00 Tammy Vallee stopped by with the hope of imaging Comet Leonard. Tim was lucky enough to be able to capture images of the comet that evening.

After 04:30 Tim was the last hold-out and locked up and secured the gate by 05:45.

We are looking forward to the next session, potentially in January.



The accumulation of hoar frost on Tim Yaworski's telescope is an indication of the dew point during the 12 hour imaging night



As imagers were setting up for the night, the ISS and a much lower, but fainter, airplane pass over the Sleaford Observatory at 17:55 on Dec 3rd



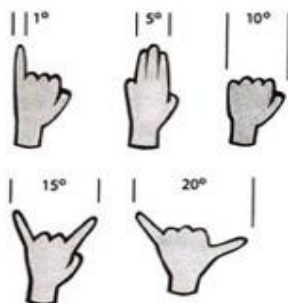
Pictured from upper left to bottom right: Jupiter, Saturn, and Venus. Taken Nov 30th at 6pm by Mike Dolan with his cell phone

DECEMBER NIGHT SKY EVENTS AND INFO

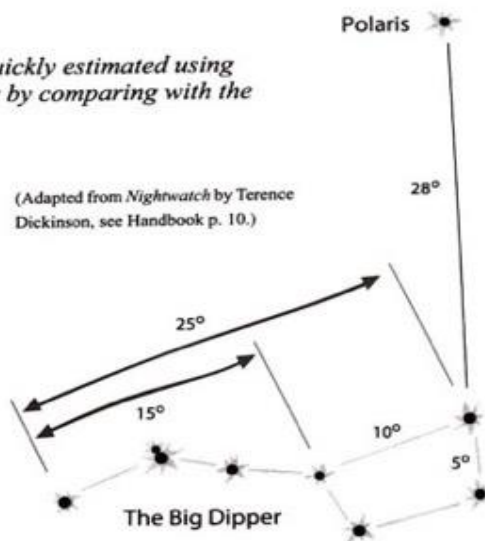
Images on the next few pages taken with permission from the 2021 Observer's Handbook. It can be obtained by joining the RASC here <http://rasc.ca/join> or ordered from <https://secure.rasc.ca/Portal/Shop/RASC/Store/StoreMain.aspx?Category=CURRPUB>

HANDY SKY MEASURES





















Angular measure in the sky can be quickly estimated using the fingers of an outstretched arm, or by comparing with the star separations in the Big Dipper.

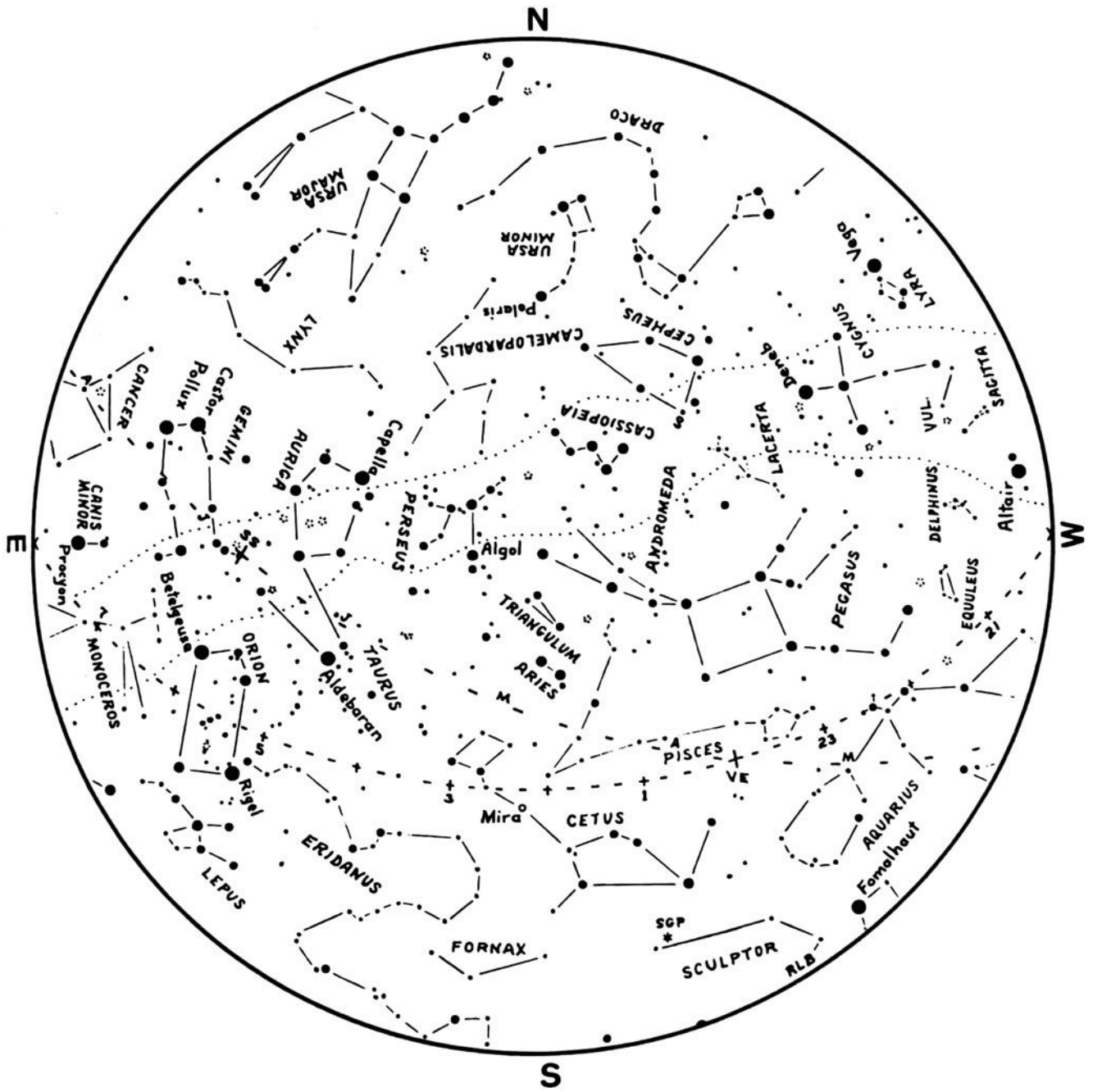


(Adapted from *Nighthwatch* by Terence Dickinson, see Handbook p. 10.)



RASC OBSERVER'S HANDBOOK 2020

Time (UT)			DECEMBER EVENTS		Jupiter's Satellites	
d	h	m			West	East
Wed.	1	22	Neptune stationary			
Thu.	2		Mercury at aphelion		1.0	
		11 43	Algol at minimum		2.0	I
Fri.	3	0	Mars 0.7° S of Moon, occultation†		3.0	III
		7	Venus greatest illuminated extent		4.0	IV
Sat.	4	7 43	New Moon (lunation 1224)		5.0	II
		10	Total Solar Eclipse (p. 137)		6.0	
			Moon at perigee (356 794 km) Large tides		7.0	
Sun.	5	8 32	Algol at minimum		8.0	
Mon.	6				9.0	
Tue.	7	1	Venus 1.9° N of Moon		10.0	
Wed.	8	2	Saturn 4° N of Moon		11.0	
		5 21	Algol at minimum		12.0	
Thu.	9	6	Jupiter 4° N of Moon		13.0	
Fri.	10	13	Pallas 0.5° S of Moon, occultation‡		14.0	
Sat.	11	1 35	First quarter		15.0	
		2 10	Algol at minimum		16.0	
Sun.	12				17.0	
Mon.	13	22 59	Algol at minimum		18.0	
Tue.	14	7	Geminid meteors peak		19.0	
Wed.	15	6	Uranus 1.5° N of Moon		20.0	
Thu.	16	19 48	Algol at minimum		21.0	
Fri.	17				22.0	
Sat.	18	2	Moon at apogee (406 320 km)		23.0	
		11	Venus stationary		24.0	
Sun.	19		Mars at descending node		25.0	
		4 35	Full Moon		26.0	
		14	Moon 1.8° N of M35		27.0	
		16 37	Algol at minimum		28.0	
Mon.	20		Venus at ascending node		29.0	
Tue.	21	15 59	Solstice		30.0	
Wed.	22	13 26	Algol at minimum		31.0	
		16	Ursid meteors peak			
Thu.	23		Mercury at greatest heliocentric lat. S			
Fri.	24					
Sat.	25	10 15	Algol at minimum			
Sun.	26	18	Mars 5° N of Antares			
Mon.	27	2 23	Last quarter			
Tue.	28	7 04	Algol at minimum			
Wed.	29	1	Mercury 4° S of Venus			
Thu.	30	10 27	Double shadow transit on Jupiter			
Fri.	31	3 53	Algol at minimum			
		20	Mars 0.9° N of Moon, occultation††			

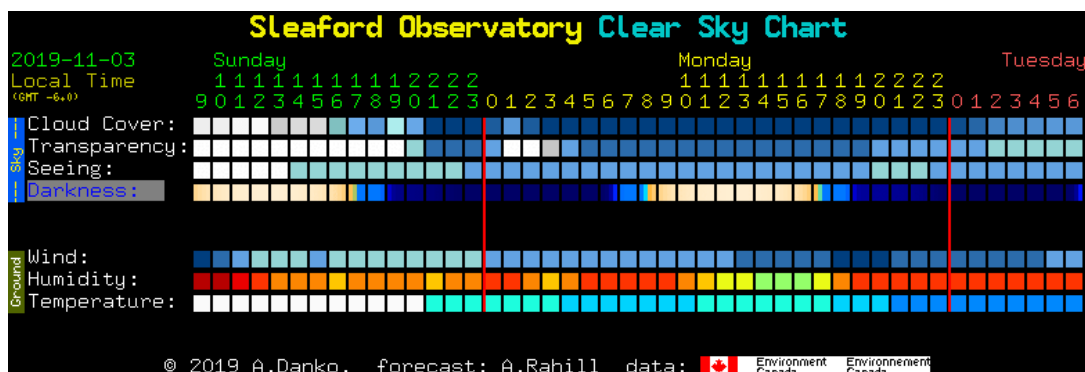


CLEAR SKY AND WEATHER INFO

To find clear skies, visit the Clear Dark Sky website -

<https://www.cleardarksky.com/csk/>

Once there, one can enter your location to find clear skies. The chart will appear as follows:



Environment Canada provides weather information for astronomy -

www.weather.gc.ca/astro



Saskatchewan Light Pollution Abatement Committee -

<http://myotherlife.net/slpac/>



www.darksky.org

BOOKS FOR SALE

All books are in either new, or like new condition. Retail price in brackets. Please email at novachat@sasktel.net or text/call 306-222-0515 if you want a particular book to make arrangements. All books being sold by Darrell Chatfield.

“Deep-Sky Observers Handbook”	Volume 1-5	Enslow-Lutterworth	\$40.00
“International Encyclopedia of Astronomy”	1987	Patrick Moore	Color \$10.00
“Backyard Astronomers Guide”	T. Dickinson & Alan Dyer	2008	Color \$25.00
“Atlas of Deep Sky Splendors”	1978	H. Verhenberg (50.00)	B & W \$22.00
“Amateur Astronomers Catalog of 500 Deep Sky Objects”	Vol 1	1980	B & W \$15.00
R. Morales			
“Observing the Constellations”	1989	J. Sanford	Color charts \$10.00

2022 RASC OBSERVER’S CALENDARS

The 2022 RASC Observer’s Calendars are available for ordering. They are \$20 (plus tax and shipping) each. If you previously ordered one through our Centre Treasurer, those orders cannot be filled. Please order directly from the RASC website:

<https://secure.rasc.ca/store/product/2022-observer-s-calendar>



MINUTES OF NOVEMBER MEETINGS

Rick Huziak

Minutes of the Monthly Executive Meeting - RASC Saskatoon Centre Monday, November 15, 2021 - 7:00 pm Online (ZOOM)

Attendees: Mike Dolan, Ron Waldron, Les Dickson, Rick Huziak, Jeff Swick, Mark de Jong, Darrell Chatfield, Tara Magee, Colin Chatfield, Grant Ursaki, Roy Beimuts (late).

Regrets: Donna-Lee May.

1. Call to order – 7:01 pm. – Mike Dolan.
2. Approval of the October Executive Minutes as printed in the November 2021 newsletter. **Moved:** Darrell Chatfield. **Seconded:** Ron Waldron. **CARRIED.**
3. Call for **additional announcements/items** to add to agenda. See below (Budget for committees & financial and Report to National query added).
4. **Old business:**
 - Discussion of **Maintenance of our Centre/SSSP Websites** – Rick Huziak. Gord Sarty or Rick Huziak will do updates of executive list within a week.
 - **National Award Nominations suggestions** – Rick Huziak. Names were bantered around.
 - **Spring planning for Observatory building** to house the refurbished 16-inch telescope. Suggest a committee be struck (in January) to plan a type of observatory, budget this and do a build plan - Ron Waldron. Ron will head “16-inch Observatory Committee”. Volunteers - Jeff Swick and others TBD. **Agreed.**
 - **Future direction of Writing/Updating Centre Bylaws** – Les Dickson. Les would like to get Minutes binder from Donna-Lee May this month. Status of Centre Operations Manual from National should be looked into.
5. **New business:**
 - **Binocular donation** (Celestron 15x70) – where should we store them, or should they be rental? – Mike Dolan. Mike suggests either outreach or SSSP door-prize. **Moved:**

by Ron Waldron. Binocs stay at Stechishin Crescent (Mike's house) to be used for outreach, until it is decided what to do with them. **Seconded:** Mark de Jong. **CARRIED.**

- **Accounting of Sleaford Keys / Re-keying the locks at Sleaford** – Mike Dolan, Darrell Chatfield. Because the key list is currently inaccurate, rekeying Sleaford Observatory locks is in order. **Moved:** Mike Dolan: That Darrell Chatfield direct the rekeying of Sleaford Observatory in the Spring and present a budget for the cost. **Seconded:** Les Dickson. **CARRIED.**
 - **Review & acceptance of the Committees** by the new Executive – Rick Huziak / Mike Dolan. Committees should make work plans and submit for budgets to the Executive for the coming year.
 - When are the **Financial and Centre reports** due to National Office? – Rick Huziak. Mike will check.
 - **Centre Handbook** –ask for input from all executive members – Mike Dolan. Rick suggests Executive and Centre Handbooks should be separate since some executive material is not for public consumption. The Secretary should keep the Handbook up to date yearly.
 - **Upgrade of electrical outlets at Sleaford** – Mike Dolan/ Jeff Swick. Darrell Chatfield – three plugins are available on the shed. U of S (Daryl Janzen) has agreed to split the cost of plugs extended from the Roll-off Observatory. Darrell will cost out and provide a budget to Donna-Lee. **Internet is weak** – ask Daryl Janzen – he may install a range booster.
 - **Heater in the Warm-up Shelter** questioned – Jeff Swick. Rick & Darrell explained the heating system.
6. Call to adjourn – 7:58 pm. **Moved:** Les Dickson. **CARRIED**

**Minutes of the RASC Monthly General Meeting - RASC Saskatoon Centre
Monday, November 15, 2021 - 8:00 pm Online (ZOOM)**

17 members attending on-line at the beginning of meeting.

1. Sharing / Networking Time – all members (8:00 – 8:15 pm)

2. **Call to order** - 8:15 PM– Mike Dolan
3. **Call out to new members/guests** – none.
4. **Adoption of October General Meeting minutes** as printed in the November 2021 newsletter. **Moved:** Grant Ursaki. **Seconded:** Darrel Chatfield. **CARRIED.**
5. **Financial Report** pending Donna-Lee May’s return – no report.
6. **Reports:**
 - **SSSP 2022 organizing meeting** will start up week on Nov. 15. – Les Dickson
 - **Monthly Observing Group** – Ron Waldron. Observer’s Group meets at Sleaford monthly all year around.
 - **Narrow-band Imaging Group** – Jeff Swick. The group met at Sleaford in early November. Eight to nine imagers were out!
 - **Sleaford Committee:** Darrell reports Sleaford main breaker is 200A so there is sufficient power for a telescopes and car block heaters.
7. **New business:**
 - **Summary of Executive Meeting:** Mike Dolan.
8. **Programs:**

The Upcoming Sky – Colin Chatfield / Tara Magee – Colin and Tara summarized what is happening in the sky for the next month.

Saskatchewan Starry Skies - a Personal Perspective – **Ron Waldron**

This digital presentation takes the viewers down memory lane exploring the sun, the moon and the Milky Way galaxy under the dark skies of Saskatchewan. Full disclosure though, the ending is a bit of a twist and surprise.
9. Call to adjourn – 9:26 pm. **Moved:** Cam McLelland. **CARRIED**



*Aurora from the Northeast Swale in Saskatoon
from October 31st, 2021 by Colin Chatfield*

OBSERVING CERTIFICATES AND CLUBS

RASC OBSERVING PROGRAMS AND CERTIFICATES

The RASC offers four observing certificates for **members** who observe all objects in each of the following observing lists in this chapter:

- THE MESSIER CATALOGUE (p. 314)
- THE FINEST NGC OBJECTS (p. 318),
- THE DEEP-SKY CHALLENGE OBJECTS (p. 322),
- DEEP-SKY GEMS (p. 324).

See www.rasc.ca/certificate-programs for details and contact the RASC Observing Committee Chair at rasc.ca/contact/observing for further information.



The RASC also offers the **Explore the Universe Certificate** for novice observers (who do not have to be RASC members), the **Explore the Moon Certificate** for beginning members, and the **Isabel Williamson Lunar Observing Certificate** for intermediate to advanced members. In addition, **Astroimaging certificates** are available for those members with a photographic bent. See www.rasc.ca/astro-imaging-certificate

RASC OBSERVER'S HANDBOOK 2020

Join the Club! Observe all 110 Messier, 110 Finest NGC, 400 Herschel I or II, 140 Lunar, 154 Sky Gems or 35 Binocular objects, or Explore the Universe and earn great OBSERVING CERTIFICATES!

MESSIER CLUB

Certified at 110 Objects:

*R. Huziak, G. Sarty,
S. Alexander, S. Ferguson,
D. Chatfield, T. Tuomi, L.
Scott, G. Charpentier, B.
Johnson, L. Dickson,
B. Burlingham, Norma Jensen,
Donna-Lee May*

Ron Waldron	108
Marcel Müller-Goldkuhle	94
Wade Selvig	75
Wayne Schlapkohl	43
Ellen Dickson	34
Graham Hartridge	9

CHATFIELD BINOCULAR CERTIFICATE

Certified at 35 to 40 Objects:

T. Tuomi, R. Huziak

Jim Goodridge	12
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FINEST NGC CLUB

Certified at 110 Objects:

*R. Huziak, G. Sarty,
D. Chatfield, T. Tuomi*

Larry Scott	110
Scott Alexander	97
Norma Jensen	83
Sandy Ferguson	23
George Charpentier	13

EXPLORE THE UNIVERSE

Certified at 55 to 110

Objects: *T. Tuomi,*

Wayne Schlapkohl	55
Jim Goodridge	35

ISABEL WILLIAMSON LUNAR OBSERVING CERTIFICATE

Certified at 140 Objects:

T. Tuomi, N. Jensen

EXPLORE THE MOON CERTIFICATE

T. Yaworski

HERSCHEL 400 CLUB

Certified at 400 Objects:

*R. Huziak, D. Chatfield,
T. Tuomi*

Gordon Sarty	251
Scott Alexander	117
Larry Scott	45
Sandy Ferguson	18

HERSCHEL 400-II CLUB

Darrell Chatfield	400
Tenho Tuomi	378
Rick Huziak	246

LEVY DEEP-SKY GEMS

Certified at 154 Objects:

Tenho Tuomi	150
Darrell Chatfield	70

The Messier, Finest NGC and David Levy's Deep-Sky Gems lists can be found in the *Observer's Handbook*.

The Explore the Universe list is available here <http://www.rasc.ca/explore-universe>

On-line Messier and Finest NGC lists, charts and logbooks:

<http://www.rasc.ca/observing>

On-line Herschel 400 List:

<http://www.astroleague.org/al/obsclubs/herschel/hers400.html>

Binocular List is at: https://www.usask.ca/rasc/Chatfield_Binocular_List.pdf

"Isabel Williamson Lunar Observing Program Guide":

<http://www.rasc.ca/sites/default/files/IWLOP2015.pdf>

Program details can be found at: <http://www.rasc.ca/williamson/index.shtm>