Wellington Astronomical Society
2020-02 eNewsletter

Wellington Astronomical Society Inc.
email Newsletter for February 2020

Contents

---

1. FEBRUARY 2020 SOCIETY MEETING

Kia ora and welcome to a new year and a new decade!

The Wellington Astronomical Society (WAS) is excited to have you journey with us into the new decade, starting with the WAS meeting on Wednesday 5th February at 7.30pm at Space Place, Carter Observatory, 40 Salamanca Road, Kelburn.

It will be the first WAS meeting of the year, after the usual break in January.

The meeting will consist of:

1. The Night Sky in February
2. Astronomy news
3. Main talk at 8pm

Aotearoa in Space - Tawhai Moss

A (very) short history of Aotearoa's involvement in space and the creation and role of the New Zealand Space Agency. Space is of immense strategic importance around the world, and New Zealand's unique location and conditions make it an attractive choice for an increasing amount of space activity. The New Zealand Space Agency is the front door for space activity in New Zealand – the lead government agency for space policy, regulation and business development.

Tawhai Moss is a Policy Advisor in the Space Policy and Regulatory Systems team (New Zealand Space Agency) at the Ministry for Business, Innovation and Employment where he works in space sector development, international science collaboration, and leads the space agency's outreach and education work.

---

2. EVENTS

WAS Astrophotography Group / Dark Sky Observing
Saturday 22nd February, 8 pm onwards, Star Field - John Whitby's dark sky site.

Come along to this Astrophotography / Deep Sky event at a dark sky site in the Wairarapa. With no Moon, you will see some amazing dark skies with the Milky Way standing out.

As this is a private property, you will need to register if you want to come along by contacting us through Facebook Messenger or by emailing president@was.org.nz. Include your email and mobile phone in the text if you are using Facebook Messenger. Directions to

the site and any updates will be emailed out. Preference will be given to members of the Society first. This event is free to all WAS members. Non-members are required to pay $10 per person. (To join the Society see https://www.was.org.nz/join-us/).

What to bring for astrophotography:

- A DSLR or mirrorless camera
- A wide-angle lens (preferably)
- A tripod to fix the camera to
- Warm clothes as it gets pretty cold at night
- Snacks and warm drinks if you want

With people taking photos, keep lights to a minimum (red lights if you can) especially car headlights (use parking lights). For those just interested in Deep Sky Observing, telescopes will be provided unless you want to bring your own.

Please contact Chris (021 890 222) or Antony (021 253 4979) for further details or cancellations. Updates will be available by the afternoon on the day of the event if the weather forecast is not looking good. This site is made available to the Wellington Astronomical Society through the generosity of John Whitby.

International Women & Girls in Astronomy Day - Wellington Waterfront (by the bridge over the lagoon near Frank Kitts Park) Saturday 29th February, 6:00 pm.

As part of celebrating International Women in Science (Astronomy) Day which takes place on the 11th February, the Wellington Astronomical Society is holding a Women and Girls in Astronomy

Day event at the Wellington waterfront.

Come along to this free event and see the Moon, and other spectacular objects in the night sky through a telescope. Meet many of the women members of our Society who will be operating the telescopes.

We are holding this event early so families, especially with young girls, can be inspired in Space and Science by looking through the telescopes.

---

3. SOCIETY NEWS

Denis Sullivan (- 25/12/2019)
We are sad to report that NZ has lost one of its well-known astronomers on Christmas Day. Denis Sullivan was a former Professor of Physics at Victoria University of Wellington. He has given many presentations at the monthly WAS Society meetings over the years and was well-known to many members of the Society, including lecturing some of us at University.

His research interests included pulsating white dwarfs, microlensing, and most recently extra-terrestrial planets. This year's Nobel Prize was awarded for the detection of the earliest known extra-terrestrial planets. Currently there are about four thousand known, but when Denis joined the field there was only a handful. Denis happened to be at the Mauna Kea observatory in Hawaii when the position of one of the possible early ones was circulated among astronomers. Denis and his son Tiri (at the time a graduate student) were able to independently confirm, by a different observational method, the existence of that planet, about number 3 or 4 at the time.

Denis was an excellent teacher, a very good speaker and also had a lovely sense of humour. It was always entertaining to have a conversation with him.

We extend our most sincere condolences to the Sullivan family and are deeply saddened by his loss to the astronomical community in Aotearoa NZ.

Astrophysicist Denis Sullivan using a photometer to collect information about light from distant white dwarf stars.

Central Star Party 2020 – Margaret Keane

What do astronomy enthusiasts do when they have spent hours, perhaps even days, making their way to a Star Party, and there are no stars?

Unfortunately, the weather did not cooperate with an event planned specifically for a dark sky, and you can imagine my chagrin upon returning home after the weekend, descending the Manawatu Saddle Road into, perhaps, the hottest, beachiest weekend of the whole summer!

Well, luckily for the folk at this year's Central Star Party, Tuki Tuki Camp is located smack dab in the middle of a wine district. Add some space movies, and you have yourself just a regular old party!

My first Central Star Party was a fabulous experience – with a programme scheduled perfectly for this night owl, paired with a relaxed holiday vibe; I had a wonderful long weekend away from it all. Highlights included the first movie night on Friday night – I don't know about anyone else, but Dark Star is my new favourite movie (think Napoleon Dynamite in 2001, A Space Odyssey) – and lecture after lecture about Time, Space Time, Einstein, Exoplanets, not to mention The Day the Universe Changed, all given by enthusiastic men and women sharing their time and talents, and the occasional dad, interrupting his lecture to attend to fatherly duties (cute!).

I met many wonderfully friendly fellow enthusiasts who helped to orient me into star gazing culture and celebrated "first light" through my newly bought binoculars on the one starry night we did have, returning to wine and banter once the skies closed in again.

So, would you think that would be enough to entice a return visit next year? You betcha! Central Star Party 2021, here I come!

Managed observing one star at least (the Sun) through Otto Gruebl's solar telescope.

WAS member Robin Warnes (left) and Hawkes Bay Astronomical Society President and Director of the ***Hawke's Bay*** *Holt Planetarium, Gary Sparks.*

A beautiful, elegant Māori star compass in Clive, Ātea a Rangi.

WAS RAG

The Wellington Astronomical Society Research Astronomy Group will be convening to hold its first meeting in 2020 on 12th February from 5:30pm to 7:30pm and held at WSP Research & Innovation, at 33 The Esplanade in Petone. There are five visitor's car parks (labelled 'WSP visitors'), which will likely be available at that time of the day. Alternatively, you can park nearby on either the Esplanade or on Hutt Road.

The outside sliding doors are locked after 5pm so our Council member, Murray Forbes, will be at the reception between 5:00pm to 5:30pm to let everyone in. If you arrive outside these times, ring him on (4)5870612 and he will let you in. When you arrive, for health & safety reasons, you need to sign-in. This is done using the large

touchscreen at reception. The sign-in process includes a safety induction. Murray will also run through this again before the meeting begins. If you have any questions or queries, please get in touch with Roland Idaczyk (roland@cno.org.nz).

WAS Meeting Presentations on Video
If you were unable to attend any of the Society meetings last year but are interested in watching our brilliant speakers deliver their presentations, you can find them online at https://www.was.org.nz/2019-meeting-presentations/. To access the videos, you will need the password: *WASvideo*.

WAS newsletters
Similarly, if you are interested in accessing WAS newsletters, going all the way back to 2007, you can find them on the following link: https://www.was.org.nz/was-monthly-newsletters/. The newsletters are accessible for anyone that is interested in reading them.

---

4. ASTRONOMY NEWS

International Day of Women and Girls in Astronomy 2020

February 11th marks the celebration of the International Day of Women and Girls in Science (Astronomy), which was established

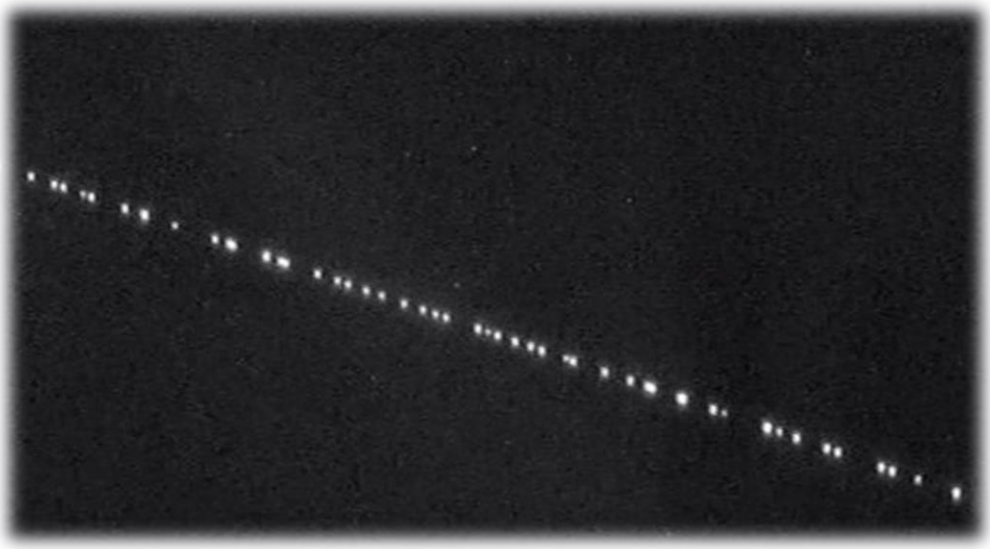
within the framework of the United Nations' International Day of Women and Girls in Science.

In 2019, we celebrated the achievements of women like Katie Bouman, who helped develop the algorithm that created the first-ever image of a black hole, and Christina Koch and Jessica Meir, who completed the first all-female spacewalk on 18th October.

Christina Koch also broke records for the longest space mission by a woman. She surpassed NASA astronaut Peggy Whitson's previously established record from 2017. The 40-year-old Expedition 61 flight engineer exceeded Whitson's record of 289 days, 5 hours and 1 minute on Saturday (Dec. 28) at 6:16 p.m. CST (0016 GMT on Dec. 29).

WAS would like to support more women in science and astronomy so if you know someone that may be interested in getting involved with the society, please encourage them to come along to the monthly society meetings or our observing events.

SpaceX 'dark satellites'



Astronomers have been concerned for some time now at SpaceX's intention to put 42,000 Starlink satellites into orbit around the Earth to provide internet to remote parts of the world. To alleviate astronomer's concerns, Elon Musk has stated that SpaceX will be applying a dark coating to future satellites.

Details of the coating have not been made public but there are a range of issues with this proposal, such as the interference with detecting and investigating occultations. The dark satellites have the potential to mimic these occurrences and it is feared that there will be difficulty in ascertaining the difference between the objects.

There are a range of other concerns, such as impact to radio astronomy, and whether the dark coating will actually work due to issues such as temperature variations and mechanical stability of the satellites.

You can read more about this here: https://www.businessinsider.com.au/spacex-darkened-starlink-internet-satellites-astronomy-explainer-2020-1?r=US&IR=T.

Moon dust

The dust on the moon is not like Earth's. Lunar dust is sharp and abrasive and as there is no wind on the moon, the dust does not erode, which means that they remain sharp, which can be very dangerous for humans and damaging to space suits and equipment.

However, the same element has recently been used to extract oxygen, which could be invaluable for lunar settlements. An experimental "oxygen plant" in the Netherlands has been created by the European Space Agency that can extract oxygen trapped within simulated Moon dust. The process extracts up to 96 percent of the oxygen in the imitation lunar soil and also leaves behind metals that might be valuable to future crewed missions that venture to the moon, Mars, and beyond.

To read more about the process, visit:
http://www.astronomy.com/news/2020/01/how-to-make-air-from-moondust

A correction by Alan Gilmore based in Tekapo to an article adapted from The Conversation that appeared in our December 2019 newsletter **December Solstice: The Astronomy of Christmas**. Alan regularly provides us with the monthly Night Sky information for our media feeds.

Alan says: However, the author of the article on the December Solstice, adapted from The Conversation, got an important detail wrong. (S)he says
"As an historical aside, it was the discrepancy between the length of the solar year and the length of a year as defined by the Julian calendar that prompted the conversion to the presently used Gregorian calendar. The precession of the equinoxes was known about and had caused a discrepancy of a few days which prompted the council of Nicaea to change our calendar system." Mostly wrong!

The discrepancy was between the so-called solar year and the Julian year but has nothing to do with precession.

Our calendar year is called the 'tropical year', not the solar year. It is the time from the Sun's crossing of the equator to when it crosses the equator again. During the year precession moves the equator but the tropical year includes that shift. It is 365.24219 days long.

The Julian calendar took a tropical year to be 365.25 days long. That made the Julian year 0.00781 day or 11.25 minutes too long. So, over a century, the Julian year was 0.781 day too long. That's three days per 400 years. Since March 21 was taken as the date of the equinox, and used for calculating Easter, church festivals got out of step with the seasons. After 1500 years the Julian calendar was 11.7 days out of line. That was why Pope Gregory XIII commissioned a group of astronomers and mathematicians to come up with a better calendar.

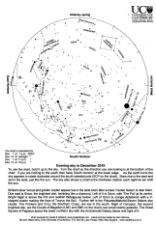
The Gregorian calendar makes the correction at century years. Only if the century number is divisible by 4 is it counted as a leap year. So 2000 was a leap year, so was 1600, but 1700, 1800 and 1900 weren't leap years. Skipping three leap years in 400 years makes

the Gregorian year 365.2425 days long. It subtracts the three day error per 400 years that was in the Julian calendar. The Gregorian calendar was adopted over Roman Catholic Europe in 1582 October 4 = 1582 October 15, the 11 days skipped to get it in line with the real equinox date. The rest of Europe adopted it gradually in a hodge-podge of dates that must annoy historians.

---

5. NIGHT SKY FOR FEBRUARY 2020

The Night Sky for February 2020 courtesy of the University of Canterbury.



NASA Night Sky Notes February 2020

Betelgeuse and the Crab Nebula: Stellar Death and Rebirth

Famous star **Betelgeuse** and the ghostly supernova remnant known as the **Crab Nebula** showcase what happens when giant stars reach the end of their lives. Find out more about the death of stars in this issue of NASA's Night Sky Notes!

This month's article is available in both **Microsoft Word** and **Adobe Acrobat** formats. The finder chart is available in both high-resolution **print** and **web** friendly files; the Crab Nebula image is also available for both **print** and **web**. You can download all these items in a **ZIP file,** or individually from the **Night Sky Network website**.

---

6. CONTACTS

The following members were elected to Council at the November 2019 AGM:

President: Antony Gomez (president@was.org.nz) - 021 253 4979
Vice President: Andrew Fuller (vice-president@was.org.nz)
Secretary: Matt Boucher (secretary@was.org.nz)
Treasurer: Duncan Hall (treasurer@was.org.nz)

Membership Secretary: Shazia Gazi (membership@was.org.nz)
Newsletter Editor: Shazia Gazi (editor@was.org.nz)
Website: Peter Woods (webmaster@was.org.nz)
Telescope custodian: Chris Monigatti
Research Group coordinator: Roland Idaczyk

Council: Murray Forbes, John Homes, Gaby Perez, Isabella Eftimov, Margaret Keane, Grace Esterman

Postal Address:
Wellington Astronomical Society,
PO Box 3181,
Wellington 6140, New Zealand

Website: www.was.org.nz
Instagram: @was.nz
Facebook page: Wellington Astronomical Society.
Facebook group: WAS – Wellington Astronomical Society (for members)
Facebook Astrophotography group: WAS Astrophotography Group (for members).