

## Newsletter December 2025

# Happy Summer Solstice!

We hope you have all received your fridge magnet Christmas Season gift from the Dark Skies Group. If you haven't or would like extra ones for holiday homes, please reach out to us via our website.

Please take the time to read the fridge magnet and if you can, please put in place some of the suggestions that will keep our night sky pristine. Even since becoming a Dark Sky Sanctuary the measurements show light pollution in Glenorchy itself has INCREASED. This is a trend we need to reverse if we want to become a Dark Sky Community!

We have updated our website so that you can sign up to get this newsletter link delivered directly to your inbox, and you can also catch up on previous newsletters you might have missed. (Click on the news/blog page

<https://glenorchydarks skies.org.nz/>)

This month we will look at the solar system and start an in depth look at the planets, starting with Mercury.

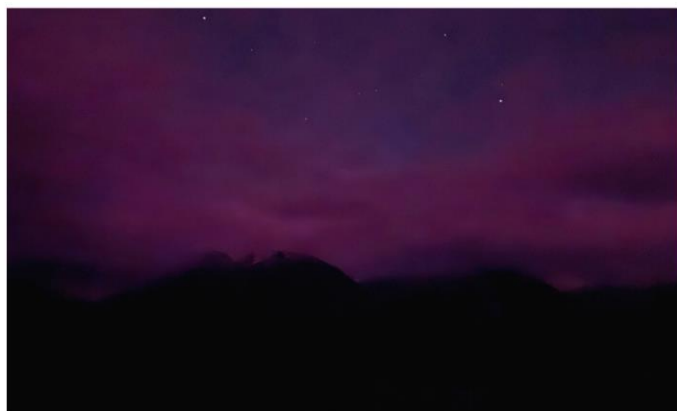
### Dark Skies Wānanga

We hosted the first NZ Dark Skies Wānanga on 8 November 2025 at the Headwaters EcoLodge. We had 20 of us and people came from as far as Christchurch and Invercargill to share experiences of working on Dark Sky projects and brainstorm ways that we could work together more to achieve our hope of becoming a Dark Sky Nation.

Our visitors were inspired by the energy of the projects here from moths and bats to fridge magnets and lighting audits. It's already led to more collaboration across the projects and we're hoping it'll become an annual event!

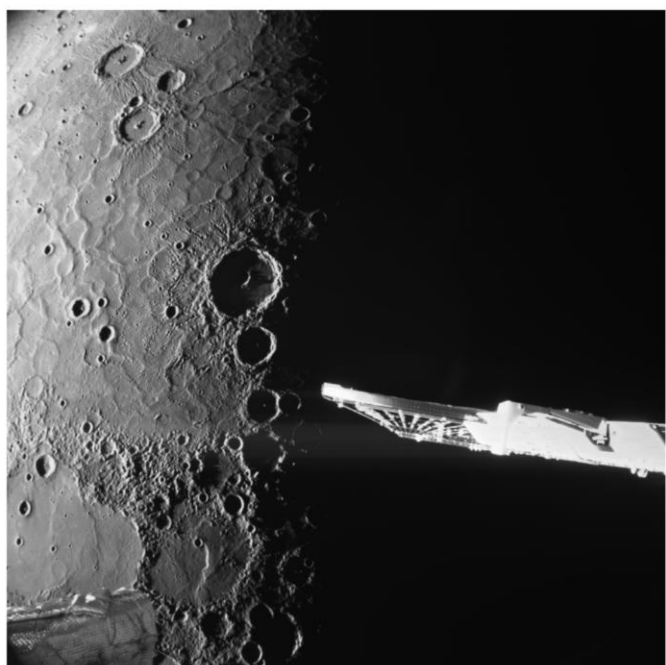
### Coming up this month:

- ✚ 4th Dec: Full Moon
- ✚ 7th Dec: Mercury at greatest elongation at dawn
- ✚ 4th to the 20th Dec: Geminids meteor shower, with the maximum on the 14th of Dec
- ✚ 20th Dec: New moon
- ✚ 21st Dec Summer solstice
- ✚ 25<sup>th</sup> Dec Christmas



We were treated to two nights of amazing auroras on the 12 and 13 of November. Look at those pinks and purples!

## Probing the Planets... Mission to Mercury.



The BepiColombo mission is a team effort between Europe's space agency (ESA) and Japan's space agency (JAXA). It launched in 2018 with two joined spacecraft: ESA's Mercury Planetary Orbiter (MPO), which will check out Mercury's surface and what's going on inside, and JAXA's Mercury Magnetospheric Orbiter (Mio), designed to study Mercury's magnetic environment.

This mission is a big deal — it's the second time a mission has been sent to orbit Mercury, and it's the trickiest one yet. Getting close to the Sun is tough, and Mercury itself is a tiny, harsh world that's hard to explore. The Sun's brightness makes Mercury difficult to spot from far away, and the Sun's powerful gravity makes it hard for spacecraft to slow down and settle into orbit around the planet.

So far, only NASA has sent missions to Mercury. Back in the 1970s, Mariner 10 zipped past

Mercury a few times, but it wasn't until 2011 that NASA's Messenger actually orbited the planet. When BepiColombo arrives in November next year, it'll dive deep into Mercury's secrets — what it's made of, how it formed, and what that might tell us about Earth and the other inner planets.

**HOT TIP** Check out [this link for more information](#) on Bepicolombo

## IN OTHER NEWS

*Photo credits: ESA*

The Artemis II test flight will send NASA astronauts on an approximately 10-day journey around the Moon and back. Targeted to launch in early 2026, the crew will lift off from the agency's Kennedy Space Centre in Florida inside NASA's Orion spacecraft on the agency's powerful (SLS) Space Launch System rocket to help confirm the systems and hardware needed for human deep space exploration.

## Meanwhile... New Zealand's Rocket Lab reports that...

NASA and UC Berkeley's Space Sciences Laboratory ESCAPE - Escape and Plasma Acceleration and Dynamics Explorers - mission lifted off from Cape Canaveral Space Force Station on Blue Origin's New Glenn rocket. The twin Explorer spacecraft we built are on their way to Mars!

After launch and payload separation, the ESCAPE spacecraft successfully established contact with Rocket Lab and UC Berkeley's spacecraft operators, beginning early checkouts including orientation stabilization and solar array deployment.



# Learn the night sky

## This month...

The Moon will be full on December the 4th and the New Moon is on December the 20<sup>th</sup>. Dark night begins at 11:37 on the 1st of December and begins at 12:04pm by the end of the month on the 31st of December. The summer solstice (The longest day) is on the 21st of December. We have to be really keen to stay up late enough to see the darkness this time of year!

## In the Morning sky this month

Mercury reaches its greatest elongation on December the 7th, and becomes a lot easier to see.

## In the Evening Sky

The solar maximum continues with stunning aurora displays we saw during November. There are various phone apps that will tell you when an aurora is likely. The Glendale app is one of the best.

The Pleiades (Matariki) star cluster is now due north and easily seen after dark. Well worth a look through binoculars as the cluster is actually made up of over 1000 stars. As an open cluster, the stars in the Pleiades were all born around the same time from a gigantic cloud of gas and dust. The brightest stars in the formation glow a hot blue and formed within the last 100 million years. They are extremely luminous and will burn out quickly, with life spans of only a few



hundred million years, much shorter than the billions of years our sun will enjoy.

The Hyades and Pleiades are two prominent open star clusters in the constellation of Taurus the Bull. They are both visible to the naked eye and often appear together, forming the "Golden Gate of the Ecliptic" because the Sun, Moon, and planets pass through this area. The Hyades is known for its V-shape and is closer to Earth, while the Pleiades, is younger and more compact.

In the Northern hemisphere the Hyades look like a V and is seen as the horns of Taurus the bull, whereas in the Southern hemisphere the V is inverted and becomes the triangular sail



of Te Waka O Rangi with the star Aldebran marking one end.

In Greek mythology, the Hyades were the five daughters of Atlas and half-sisters to the Pleiades. After the death of their brother, Hyas, the weeping sisters were transformed into a cluster of stars that was afterwards associated with rain.



# Let's talk about Mercury



Named for the Roman God of trade and commerce, Mercury is also the messenger of the other Gods, because of his speed. He is usually pictured with wings on his helmet and feet.

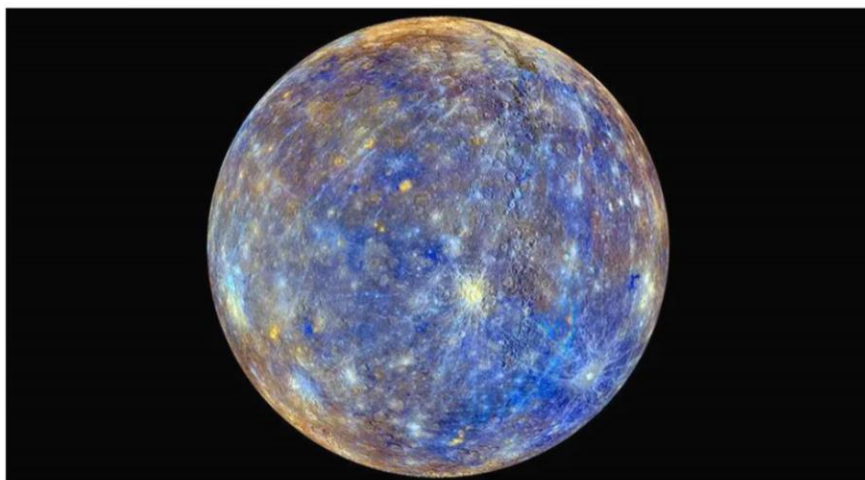
Mercury might be the smallest planet in our solar system, but it has some seriously cool quirks. For starters, it's the closest planet to the Sun, which means it's roasting hot during the day—think surface temps soaring up to  $430^{\circ}\text{C}$  - but because Mercury has almost no atmosphere to hold in heat, night time temperatures plunge to a bone-chilling  $-180^{\circ}\text{C}$ . Scientists believe there could be ice on Mercury's poles. Talk about extreme!

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***FUN FACT** Mercury is made up of 70% metallic material and 30% silicates*

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Mercury's surface looks a lot like our Moon's, covered in craters from all kinds of space debris smacking into it. Mercury has a magnetic field, just like Earth, which is pretty surprising for a planet its size. Scientists think it's due to a partially liquid iron core that's still churning away beneath the surface.



**Another fun fact:** A solar day on Mercury, which is the time from one sunrise to the next, is about 176 Earth days long. This is due to a combination of its slow rotation on its axis (which takes 59 Earth days) and its rapid orbit around the Sun (which takes about 88 Earth days). As a result, one day on Mercury lasts for two Mercurian years!

Despite all its extremes, Mercury is one of the most fascinating worlds zooming around our Sun. Next time you peek up at the sky just before dawn or right after sunset; try spotting this speedy little planet!

Mercury is easiest to see when it reaches the greatest elongations (when it's farthest from the sun) and will vary each year. Mercury will reach its greatest elongation this year – greatest distance from the sunrise – on December 7, 2025. Look east at dawn. It'll disappear from the morning sky in late December.

