

THE NIGHT SKY

NOVEMBER 2023

One of the most common questions I get asked when showing someone the night sky is “How far can you see?”

And during November, we are perfectly placed to answer this question. The Great Andromeda Galaxy (M31), located low in the northern sky is the farthest object we can see with the naked eye. It is the closest of the large galaxies and contains approximately two hundred thousand million stars, about the same as our own Milky Way galaxy. You can see it as a faint smudge of light away from city lights.

The light from the Andromeda Galaxy takes over 2 and a half million years to complete its journey to the Earth. Just think about that. The light from the Andromeda Galaxy had already been travelling for a million years before the very first hominids roamed across the plains of east Africa.

By the time the very first ancestors of modern man started making stone tools in China and Africa, the light had completed over 85% of its journey. Travelling at 300,000 kilometres per second, the light raced across intergalactic space to the Milky Way galaxy. When the slaves of Egypt built the great pyramids 5000 years ago, the light from Andromeda was already well inside our own galaxy.

Almost 2800 years ago, Chinese astronomers observed an eclipse of the Sun. They would have also known of that little smudge of light in the night sky but would have been totally unaware of what it represented.

The Greek and Roman empires rose and crumbled; Christopher Columbus discovered the West Indies; and Galileo pointed his first telescope to the heavens. Still that light travelled. By the time Neil Armstrong walked on the Moon in 1969, only 54 years remained of its journey.

So, when you next go out on a clear November night and look at that smudge of light that we know as the Andromeda Galaxy, try to imagine that immense journey and all the history that has passed since then.

When early sky watchers gazed at the night sky, they saw the stately progression of the stars. The stars march across the sky together, always returning to view at the same time each year. That led to ideas about the nature of the stars: lamps hung from a dark dome, for example, or holes in the dome letting in

the light of heaven beyond.

There was a problem, though. A few especially bright lights moved at a different pace from the rest and even from each other. They sometimes reversed direction, or even stood still. They got noticeably brighter and fainter, too. The Greeks called these oddballs “planets”. A word that means “wanderers.”

And one of those planets is at its best for the entire year during November. The King returns! Look to the east about 9:30pm during early November, and you just can't miss the bright beacon in the sky that is the planet Jupiter. The king of all the planets, it rises soon after sunset in the early twilight, and is then visible all night. Jupiter is always an impressive sight in a telescope. It's typically the third-brightest object in the night sky, after the Moon and the planet Venus. But it's especially impressive right now, because it's approaching the closest point to Earth for the entire year.

In astronomical parlance, the planet is at opposition. That means it lines up opposite the Sun in our sky. It rises at sunset, climbs high across the sky during the night, and sets at sunrise. Planets are closest to Earth at opposition, so they appear brightest.

Another planet is also perfectly placed for evening observation, Saturn and its beautiful rings. Look for Saturn just to the right of the First Quarter Moon on the evening of November 20. The Moon is 365,214 kilometres away, whilst Saturn is a whopping 1,443,608,608 kilometres from us!

Have you ever looked at Moon with binoculars or a telescope? The wealth of detail is amazing. Mountain ranges and craters are clearly visible. The Moon's craters, mountains, and dark volcanic plains tell compelling stories. They tell us, for example, that the Moon was subjected to an intense cosmic bombardment during its first billion years or so. Boulders as big as cities smashed into the Moon, blasting large craters. Hot lava bubbled up to fill some of the bowl-shaped basins the impacts created.

The Moon is at Last Quarter on November 5th, New on the 13th, at First Quarter on the 20th, and Full on November 27th.

Happy stargazing!!

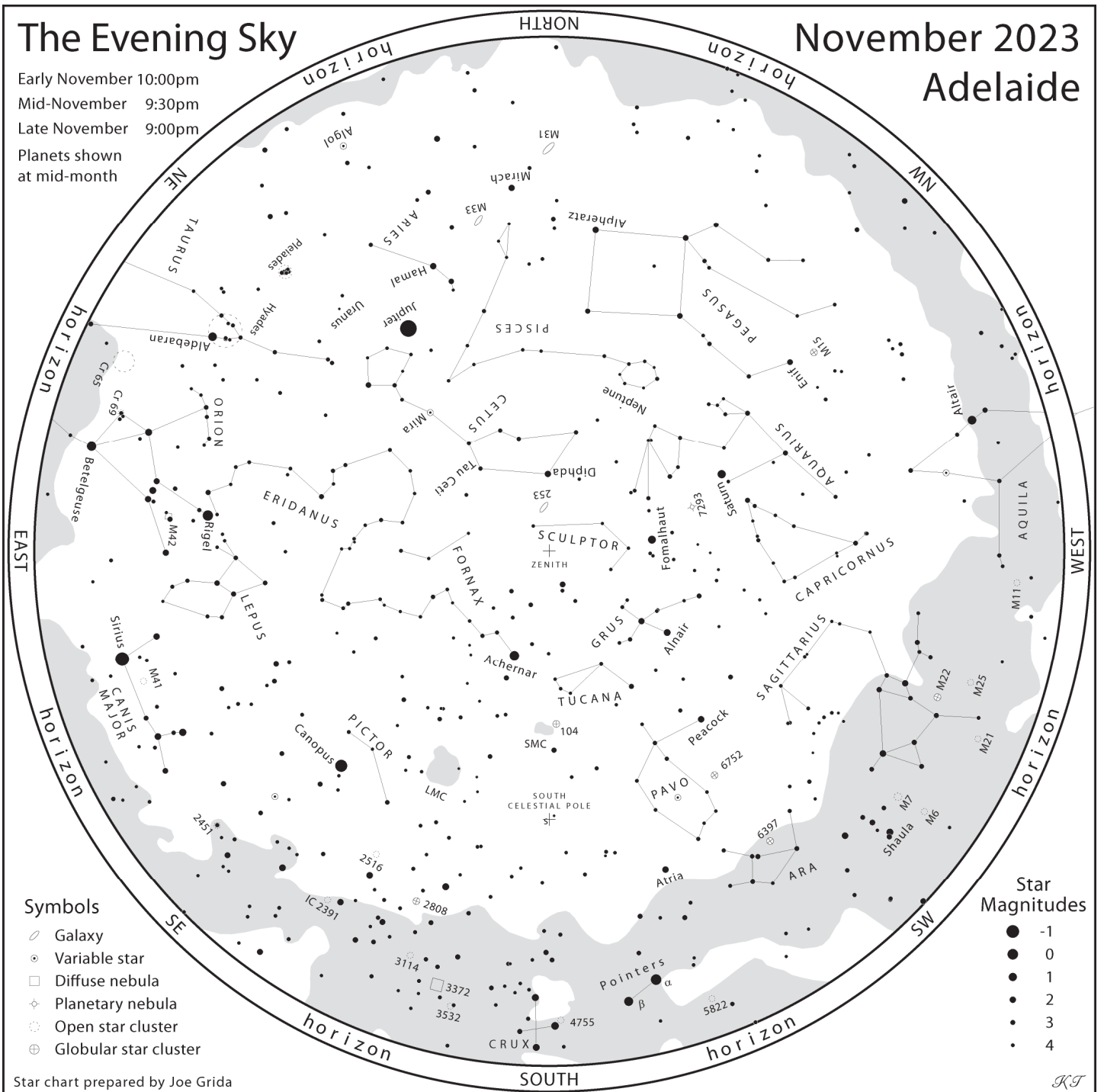


Prepared for guests of
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The Evening Sky

November 2023 Adelaide

Early November 10:00pm
 Mid-November 9:30pm
 Late November 9:00pm
 Planets shown
 at mid-month



Symbols

- Galaxy
- Variable star
- Diffuse nebula
- ◇ Planetary nebula
- Open star cluster
- ⊕ Globular star cluster

Star Magnitudes

- -1
- 0
- 1
- 2
- 3
- 4

Star chart prepared by Joe Grida

KT



NOVEMBER'S DEEP SKY HIGHLIGHT

M31—The Andromeda Galaxy

Distance: 2.5 million Light Years

M31 has played a pivotal historical role in astronomy. Early observers saw the soft, foggy patch of glowing light as just another spiral nebula but weren't yet equipped with the knowledge to appreciate its nature. The true nature of M31 began to become clear in 1923. In that year Edwin Hubble, using the just completed 100 inch Hooker telescope at the Mount Wilson observatory, made his monumental discovery of Cepheid Variable stars in M31 and in one stroke forever changed the astronomical paradigm of the universe as we know it.

Appropriately interpreting the cepheid data, Hubble was the first to appreciate the faint nebula in Andromeda as an "island universe", an immense galaxy in its own right, similar to our Milky Way. Hubble's work opened the door to the modern interpretation of the universe which we now know consists of countless galaxies all receding from each other.