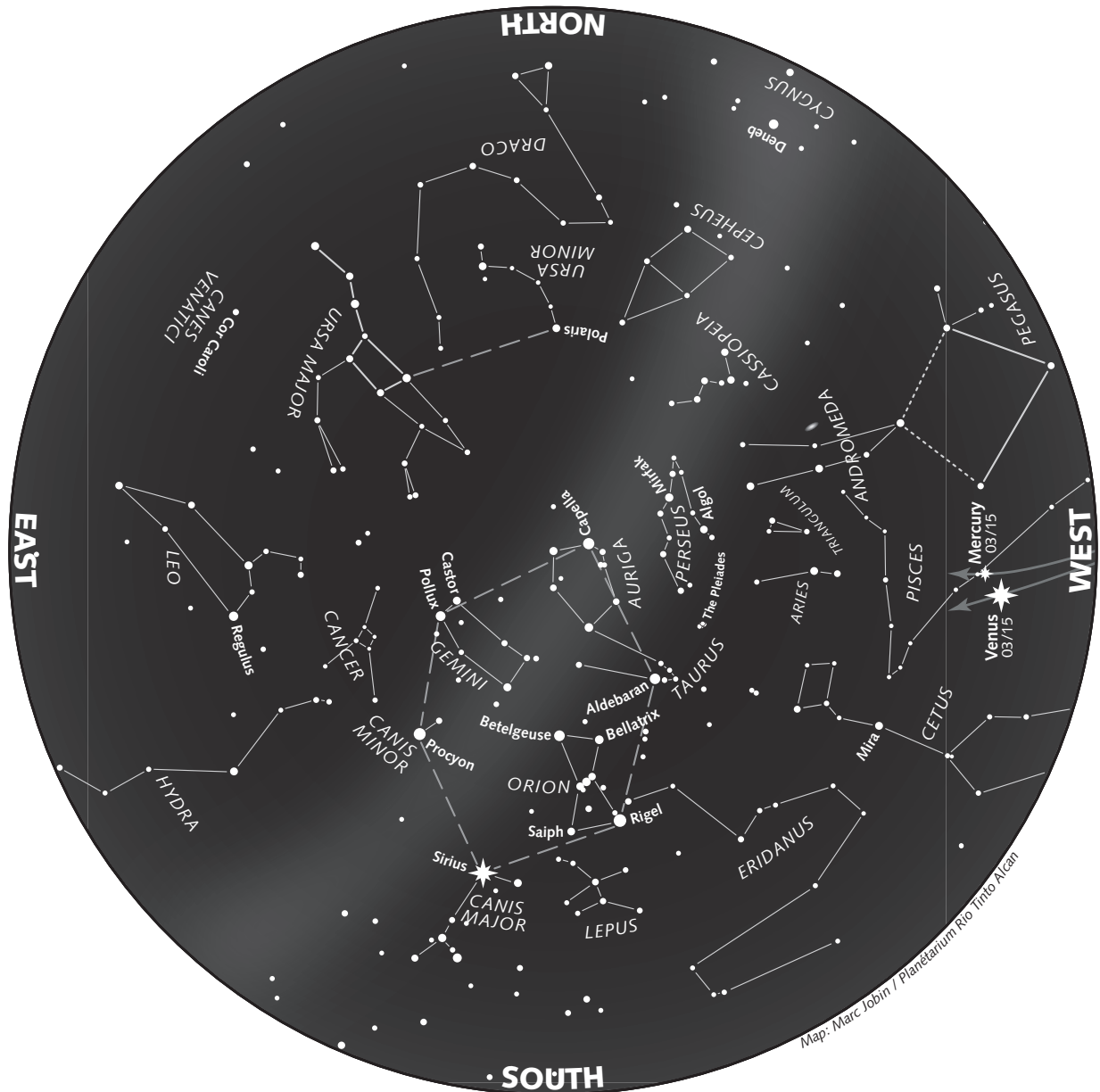


The Starry Sky — Winter 2017–18



How to Use this Map

The above map represents the night sky as it appears at the indicated times, and remains usable several hours before and after.

Hold the map up to the sky in front of you and turn it so the direction you are facing appears at the bottom. Lines identify the constellations. The light-coloured area outlines the Milky Way.

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This Star Map is Accurate on...

(Eastern Daylight Time, except where mentioned otherwise)

September 21 at 1 a.m.

October 6 at midnight

October 21 at 11 p.m.

November 6 at 9 p.m. EST

November 21 at 8 p.m. EST

December 6 at 7 p.m. EST

The Sky This Winter

Again this winter, the bright planets Jupiter, Mars and Saturn appear only during the second half of the night. Keep your hopes up, though, because Venus will make a timid return in the evening in February.

Jupiter reigns after midnight

In the first half of winter, the bright planets don't show up till late at night. **Jupiter**, in particular, rules very late at night and at dawn. In December, the giant planet emerges above the east-southeast horizon around 4 a.m. At dawn, it shines higher toward the south-southeast.

Jupiter gradually moves away from the Sun. As the days go by, observe how the planet seems to rise to meet the dimmer Mars, whose orange glow appears to its upper right. The two planets cross on the **morning of January 6 and 7** when they're just over a quarter of a degree apart. Admire this duo around 6:30 a.m. at 25 degrees above the south-southeast horizon. On the **morning of January 11**, the crescent Moon lies less than 4 degrees from Mars and Jupiter, creating a beautiful trio in the light of dawn.

After rendezvousing with the red planet, Jupiter continues on its way, moves farther from the Sun and rises earlier and earlier. By late winter, the giant planet appears toward the east-southeast just before midnight and culminates in the south before dawn.

On the **morning of February 7**, the last-quarter Moon lies 7 degrees to the upper right of Jupiter. The next day, on **February 8**, the crescent Moon is found between Mars and Jupiter, forming a large triangle with the two planets. On the **morning of March 7**, the waning gibbous Moon appears only 3 degrees above Jupiter, and the duo culminates in the south around 5 a.m.

Seasonal Milestones

The **winter solstice** takes place on December 21, 2017 at 11:28 a.m. EST, and the **spring equinox** occurs on March 20, 2018 at 12:15 p.m. EDT. Winter will last exactly 88 days 23 hours 47 minutes.

On January 3, at 1 a.m. EST, Earth will reach **perihelion**, the closest point to the Sun on its orbit: The Earth–Sun distance will then be 147 097 233 km.

Daylight Time takes effect early on the morning of Sunday, March 11: Timekeeping devices move one hour ahead.

Phases of the Moon

(Eastern Standard Time,
except * = Eastern Daylight Time)

New moon	First quarter
December 18 at 1:30	December 26 at 4:20
January 16 at 21:17	January 24 at 17:20
February 15 at 16:05	February 23 at 3:09
March 17 at 9:12*	March 24 at 11:35*
Full moon	Last quarter
January 1 at 21:24	January 8 at 17:25
January 31 at 8:27	February 7 at 10:54
March 1 at 19:51	March 9 at 6:20
March 31 at 8:37*	April 8 at 3:17*

Mars meets its rival

The year 2018 is an important one for amateur astronomers. In July, **Mars** will be in opposition and closer to Earth than any other time since 2003. In theory, the best observation conditions for Mars in the past 15 years will occur then. But for now, the red planet is still far from Earth. This winter, it shines like an average orange star and is visible only very late at night and at dawn. For several weeks, the red planet seems even to hover around the same place above the horizon night after night. It can be seen low in the southeast around 3:30 a.m. and shines slightly higher in the south-southeast at dawn.

Look closely, though, and you'll see Mars moving quickly across the background of stars. After meeting Jupiter in January in Libra (see the section on **Jupiter**), the red planet crosses Scorpius and moves into Ophiuchus and finally Sagittarius, where it greets Saturn in early April. While in Scorpius, Mars moves close to the brightest star in this remarkable constellation, the red supergiant Antares, whose name comes from Ancient Greek and means "rival of Mars." **From February 7 to 16**, the planet passes less than 6 degrees to the north of the star (on the 12th, the gap is only about 5 degrees). This is an excellent opportunity to compare the two bodies, whose colour and brightness will be very similar. In the following weeks, Mars moves away from Antares and gradually becomes brighter.

On the **morning of February 8**, the crescent Moon lies between Mars and Jupiter, creating a large triangle with the two planets. The next day, on **February 9**, the crescent is found 4 degrees to the left of the red planet. On the **morning of March 9**, the last-quarter Moon lies 8 degrees to the upper right of Mars. The next day, on **March 10**, the crescent Moon is between Mars and Saturn, forming another large triangle with the two planets.

Saturn emerges at dawn

Saturn moves behind the Sun (conjunction) on December 21 and kicks off the season lost in our star's glow. But the planet soon pulls away and emerges a few days later in the morning sky. By the end of the first week of January, it begins to appear low on the southeast horizon 45 minutes before sunrise. The brighter Mercury is found slightly to its upper right. The two planets approach each other day by day, and on **January 13 at dawn**, Mercury (mag. -0.3) is only three-quarters of a degree under Saturn (mag. +0.5). Two days later, on **January 15 at dawn**, a thin crescent Moon comes on the scene and creates a compact triangle with Saturn and Mercury. Thereafter, the two planets separate.

The ringed planet continues to move away from the Sun and rises earlier and earlier. By mid-February, once dawn is well underway, Saturn can be found about 15 degrees high in the southeast. One month later, it shines about 20 degrees above the southeast horizon before disap-

pearing as daylight grows stronger. On the **morning of February 11**, the crescent Moon lies only 2 degrees above Saturn, low in the southeast in the first light of dawn. On the **morning of March 11**, the crescent is 4 degrees to the left of Saturn.

Mercury in the morning and evening

Mercury, the planet closest to the Sun, is visible alternately at dawn and at twilight, for periods of only a few weeks at a time. It makes a very good appearance in the morning sky as winter begins. **From December 21 to mid-January**, the tiny planet can be seen in the southeast in the light of dawn 45 minutes before sunrise. Optimal visibility occurs around December 29. Two days later, on January 1, Mercury reaches its greatest elongation, 23 degrees west (to the right) of the Sun. During this period, Mercury meets Saturn and the crescent Moon (see the section on **Saturn**). The tiny planet then goes missing a few weeks as it moves behind the Sun (superior conjunction on February 17).

Mercury reappears for an excellent period of visibility at twilight **from March 1 to 20**. It's much brighter at the start of this window and quickly dims after the 18th. The tiny planet rises to 11 degrees high on the west horizon 30 minutes after sunset. Mercury also remains less than 4 degrees from the brilliant Venus throughout this period. On **March 3 at twilight**, Mercury (mag. -1.2) is only 1 degree to the right of the Evening Star (mag. -3.9), low in the west 30 minutes after sunset. On the **evening of March 18**, admire the thin crescent Moon lying 4 degrees to the left of Venus and 8 degrees to the left of Mercury. The trio is found very low in the west 45 minutes after sunset.

Venus reappears at twilight

In early winter, **Venus** lies on the other side of the Sun (superior conjunction on January 9) and isn't visible. Moving away from the light of our star, Venus gradually emerges as the **Evening Star** in February and steadily rises on the west horizon at twilight. Its great brightness makes it easy to spot in the light of the setting Sun. On the **evening of February 16**, 20 to 30 minutes after sunset, look for a one-day-old crescent Moon less than 2 degrees above Venus and low on the west-southwest horizon. From March 1 to 20, tiny Mercury joins Venus and remains less than 4 degrees away. On the **evening of March 3**, 30 minutes after sunset, Mercury is only 1 degree to the right of Venus and low on the west horizon. On the **evening of March 18**, very low in the west and 45 minutes after sunset, the thin crescent Moon seems to hang in the sky 4 degrees to the left of Venus and 8 degrees to the left of Mercury.

Clear skies!

Research and text: **Marc Jobin**

Further details and more phenomena at
espacepourlavie.ca/en/monthly-sky