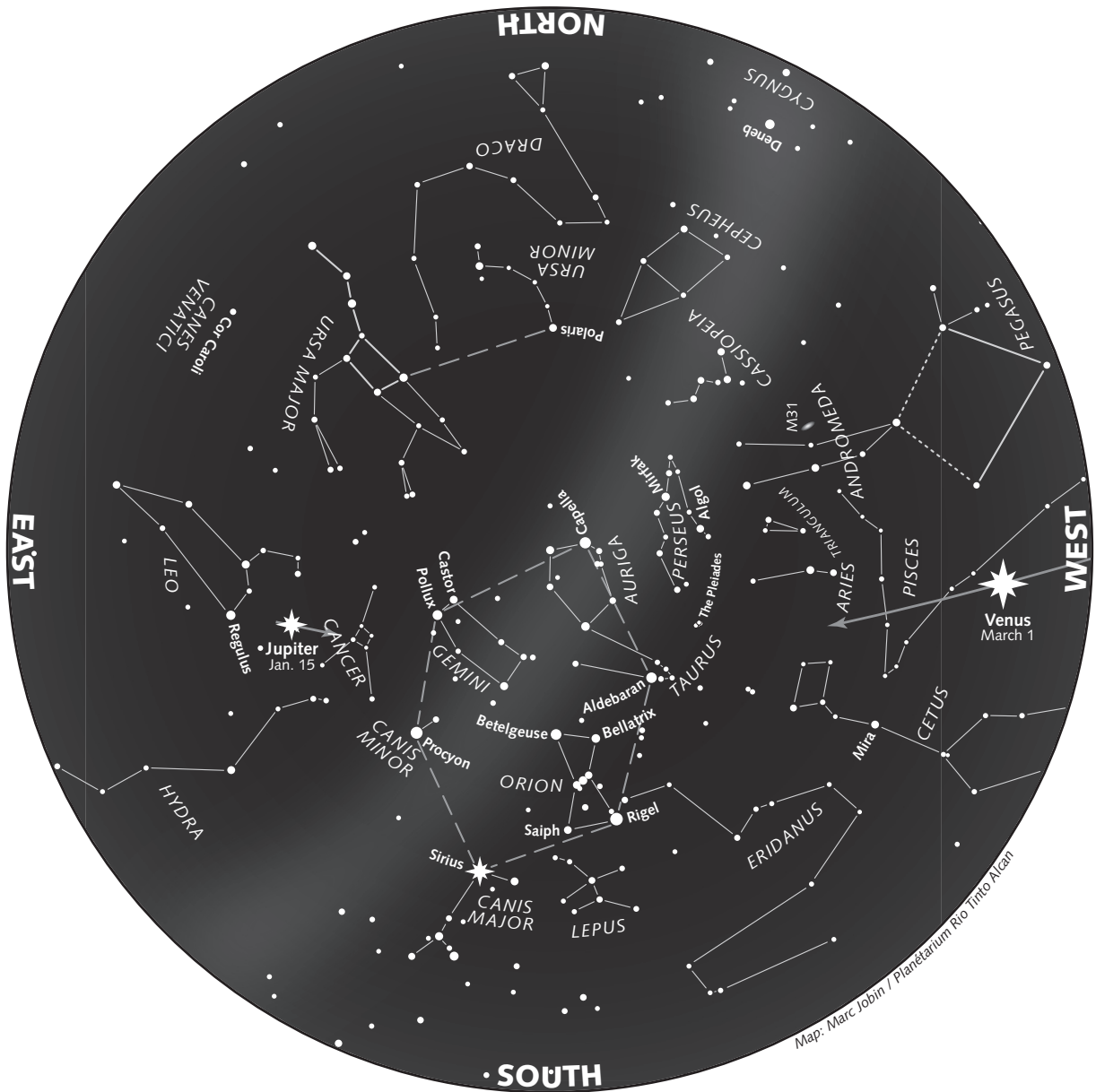


# The Starry Sky — Winter 2014-15



### 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 Standard Time)

- December 21 at midnight
- January 6 at 11 p.m.
- January 21 at 10 p.m.
- February 6 at 9 p.m.
- February 21 at 8 p.m.
- March 6 at 7 p.m.

# The Sky This Winter

The two brightest planets, Venus and Jupiter, vie for our attention in the evening this season.

Mercury also offers a brief period of visibility at dusk, while Mars gradually becomes lost in the Sun's glare. And Saturn finally reappears during the latter half of the night.

## Venus shines at twilight

As December nears an end, **Venus** gradually emerges as the Evening Star: The dazzling planet manages to penetrate the glow of twilight, low in the southwest about half-an-hour after sunset. But later this winter, Venus will definitely steal our attention at nightfall: As the weeks go by, Venus gains distance from the Sun, climbing well above the horizon and setting against an increasingly darker sky. In February, the brilliant planet sets more than two hours after the Sun; but by the end of winter, that time will increase to three hours and Venus will dominate the western sky for the better part of the evening.

From January 8 to 12, Mercury will be less than a degree from Venus, which provides an excellent opportunity to spot the tiny planet; and on January 21, a thin lunar crescent will form a magnificent triangle with the two planets. A month later, on the evening of February 20, the lunar crescent will appear about a degree-and-a-half to the right of Venus, with Mars less than a degree above the dazzling planet.

## Jupiter at opposition

While Venus dominates the winter twilight, **Jupiter** rules the night. At the end of December, the giant planet emerges above the east-northeast horizon around 9:00 P.M. and culminates in the south at 3:00 in the morning. Jupiter arrives at opposition on February 6 and remains visible all night, rising at sunset and setting in the west-northwest at dawn. During mid-March, the brilliant planet is high in the southeast at twilight and culminates around 10:00 P.M.

This winter, Jupiter moves from Leo into Cancer as it continues to retrograde, westward (to the right) among the stars. Around midnight, the gaseous giant appears very high in the sky and is ideally placed for observing: The planet's light and dark cloud bands, and its four main moons, offer a splendid sight even through a small telescope.

On February 3 at twilight, Jupiter rises alongside the full moon, which is just six degrees to the right: This promises to be a spectacular sight!

## A brief apparition for Mercury

**Mercury**, the closest planet to the Sun, is only visible during brief periods a few times a year; most of the time it's hidden in the Solar glare. But now is your chance to observe it: At the end of December the tiny planet will emerge above the southwest horizon, 30 minutes after sunset. During the first week of January, Mercury rises to meet Venus, which serves as a brilliant beacon. For several days, the two planets appear in tandem, against the blush of twilight: from January 8 to 12, they will be less than a degree apart. Thereafter, Mercury pales from day to day as it approaches the Sun, but the furtive planet will still remain visible until January 22, before vanishing in the solar glare. On the evening of January 21, the crescent moon forms a beautiful triangle with Mercury and Venus; the triad will be visible above the west-southwest horizon 45 minutes after sunset.

## Saturn at night's end

**Saturn** currently straddles the border of Libra and Scorpius, a region of sky that never rises high above the horizon as seen from our latitude, which unfortunately hampers observations of the planet. On the other hand, the planet's rings are favourably open, inclined some 25 degrees toward Earth.

This winter, Saturn is only visible during the latter part of the night. Toward the end of December, it rises above the east-southeast horizon about 5:00 in the morning; at the beginning of February, it emerges around 3:00 A.M.; and by mid-March, it rises 30 minutes after midnight. From mid-February to the end of winter,

the ringed planet culminates in the south at dawn: This is the best time to observe it.

Saturn is the brightest object in this part of the sky, which makes it easy to identify. But in case you have any doubt, a thin lunar crescent will appear less than a degree above the ringed planet on the morning of January 16; and the waning gibbous moon will be less than a degree-and-a-half above the planet once more on the morning of March 12.

## Mars on the way out

It's been 9 months since the last opposition of **Mars**, yet despite its increasing distance from Earth, which makes it appear small and faint, the Red Planet is still visible this winter. Toward the end of December, look for it shining in the south-western twilight, about an hour after sunset. However, as the weeks pass, Mars slips northward and moves closer to the horizon: In February, Mars is in the west-southwest, and by March it's in the west. The Sun will finally close in on the Red Planet during the first weeks of spring.

Though its journey is done, Mars still has a few interesting encounters left: On February 20, the Red Planet forms a trio with dazzling Venus and a thin crescent moon; the following evening, February 21, Venus and Mars are less than half-a-degree apart. Finally, on March 21, Mars and the lunar crescent meet one last time: the two will be a degree-and-a-half from each other.

Clear skies!

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## Phases of the Moon

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

Full moon	Last quarter
Dec. 6 at 7:27	Dec. 14 at 7:51
Jan. 4 at 23:53	Jan. 13 at 4:46
Feb. 3 at 18:09	Feb. 11 at 22:50
March 5 at 13:05	March 13 at 13:48*
New moon	First quarter
Dec. 21 at 20:36	Dec. 28 at 13:31
Jan. 20 at 8:14	Jan. 26 at 23:48
Feb. 18 at 18:47	Feb. 25 at 12:14
March 20 at 5:36*	March 27 at 3:43*

## Seasonal Milestones

The **winter solstice** arrives on December 21, 2014, at 6:03 P.M. EST, and the **spring equinox** will take place on March 20, 2015, at 6:45 P.M. EDT. Winter will last exactly 88 d 23 h 42 min.

On January 4 at 2:00 A.M. EST, Earth reaches **perihelion**, the point in its orbit closest to the Sun. The Earth – Sun distance will then be 147 096 204 km.

We switch to **Eastern Daylight Time** during the night of March 7 to 8: Clocks advance one hour.