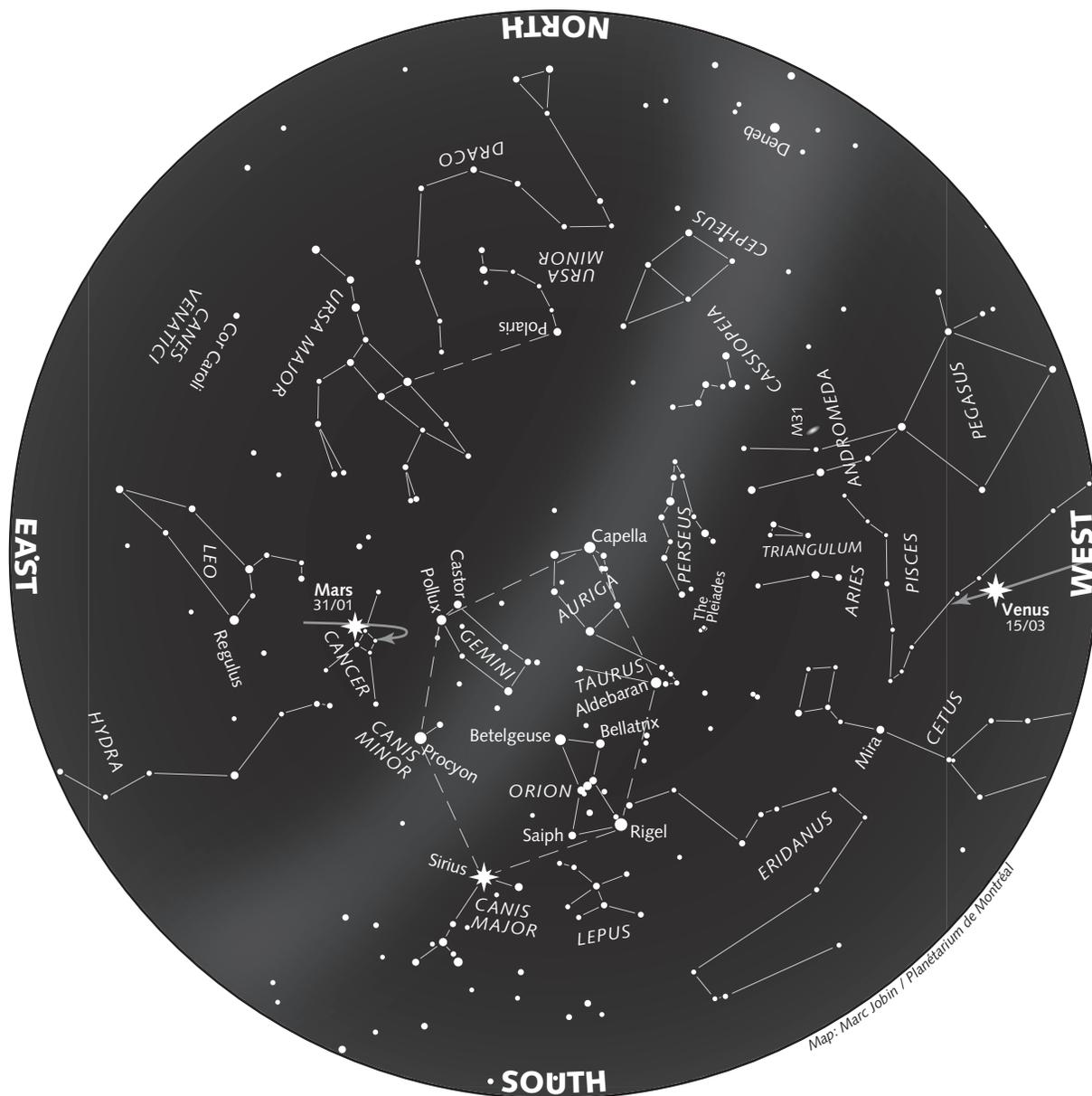


The Starry Sky — Winter 2009-10



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

At the start of winter, Mercury, Mars, and Jupiter illuminate the evening sky; Saturn rises around midnight, and Venus sinks into the dawn. Then, after the new year begins, it's Mercury's turn to rise at dawn, and by mid-February Venus appears in the evening. Meanwhile, a series of superb conjunctions awaits the ardent observer...

Mercury, twice in a month

The arrival of winter finds **Mercury** in the waning stages of a brilliant apparition. The tiny planet was at its greatest eastern elongation on December 18, and is now descending toward the glow of sunset. But Mercury isn't out of the picture yet. Until December 27, the normally elusive planet remains easy to find. Start scanning the southwest horizon at 16:45 for a bright star-like object. If you have difficulty, try using binoculars, or wait a few minutes for the sky to darken. Mercury sets about an hour and twenty minutes after the Sun!

Toward the end of December, Mercury disappears in the twilight and moves between the Sun and the Earth. However, **by January 15**, the tiny planet reappears, this time above the southeast horizon at dawn. For the following two weeks, Mercury is again easy to see: It rises about an hour and a half before the Sun! That's two prime apparitions in a month!

Seasonal Milestones

The **winter solstice** occurs on December 21 at 12:47 EST: The **spring equinox** will take place on March 20, at 13:32 EDT; Winter 2009 / 2010 will last exactly 88d 23h 45m.

On January 2 at 19:00 EST, the Earth is at **perihelion**, the point in its orbit closest to the Sun. The Earth – Sun distance will then be 147,098,091 km.

On Sunday morning March 14, at 02:00, we switch to **Eastern Daylight Time**; clocks are set one hour ahead.

Phases of the Moon

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

Last quarter	New moon
Dec. 8 at 19:13	Dec. 16 at 7:02
Jan. 7 at 5:39	Jan. 15 at 2:11
Feb. 5 at 18:48	Feb. 13 at 21:51
March 7 at 10:42	March 15 at 17:01*
First quarter	Full moon
Dec. 24 at 12:36	Dec. 31 at 14:13
Jan. 23 at 5:53	Jan. 30 at 1:18
Feb. 21 at 19:42	Feb. 28 at 11:38
March 23 at 7:00*	March 29 at 22:25*

On January 27, Mercury is at its greatest western elongation and begins to dip once more toward the horizon. The elusive planet quickly disappears in the glow of daybreak and vanishes before the second week of February. It won't reappear until the Spring.

Venus returns with a flourish

As winter begins, **Venus** exits the morning sky. The brilliant planet rounds the far side of the Sun on January 11, and finally reappears at dusk by mid-February. On February 13, the radiant planet is positioned about 3 degrees below Jupiter: The pair puts on a dazzling performance in the twilight, but the show has just begun...

Two evenings later, on February 15, the gap between Venus and Jupiter narrows to about 1 degree. A thin crescent Moon above the brilliant duo adds to the beauty of the scene. Then, **on February 16**, the conjunction between the pair finally culminates with the two brightest planets just ½ a degree apart! Look for Venus and Jupiter low in the west-southwest about a half an hour after sunset. This is a sight not to be missed!

After that, the distance between the two planets quickly widens: Venus sets progressively later, while Jupiter sets earlier. Throughout the remainder of the season, Venus continues to climb higher in the evening sky, and by winter's end it shines as the brilliant evening star, setting an hour and a half after the Sun!

Mars... it's back

As winter begins, we find the Red Planet moving in retrograde among the stars of Leo. But by January 8, this east to west motion will carry it across the border of Leo, into Cancer. This is where **Mars** will remain for the rest of the season; and where Mars will stage a spectacular comeback.

The rust-coloured Planet has been rising earlier and earlier above the eastern horizon as it approaches **opposition on January 29**. On that date, it will be in line with the Sun and the Earth, and will rise at sunset, remaining visible all night long. Coincidentally, that same evening,

the Moon will be full, and just to the right of Mars. Look in between the two with binoculars and you'll see the Beehive star cluster in Cancer. In fact, Mars, the Beehive, and the Moon should all fit within your field of view: The trio spans less than 7 degrees across!

Mars is closest to the Earth on January 27, when it will be 99.3 million Km away. But don't wait until then to observe it. From January 11 to February 11, the Red Planet's apparent diameter will be maximum for this opposition — 14 arc seconds across — not the largest it ever appears, but enough to reveal it's north polar cap, and other surface features in a small telescope.

Jupiter bids farewell

Throughout summer and fall, **Jupiter** has dominated the evening sky, so now it's time for a break. The giant planet has been setting earlier and earlier, and after mid-February it vanishes into the twilight. But before leaving the evening sky, Jupiter puts on a spectacular parting display with the planet Venus by its side. (See **Venus**.) The waxing crescent Moon appears above Jupiter on the evenings of December 21, January 18 and February 15.

Saturn in the evening

Toward the end of December, **Saturn** moves into the late evening sky and rises before midnight. Since early-fall, the ringed planet has resided among the stars of Virgo, where it rivals Spica the brightest star in the constellation. As winter progresses, Saturn rises earlier and earlier, and by season's end, it is high in the southeast by nightfall.

This is not a bright period for Saturn. Its rings are inclined about 4 degrees from edge-on, so they reflect less sunlight back toward the Earth. Though not prominent right now, Saturn and its rings always provide a dramatic sight in a small telescope. The waning gibbous Moon appears near Saturn on the evenings of January 6, February 2 and March 1.

Happy observing!

Research and text: **Louie Bernstein**