Mars in Your Telescope

As Curiosity roams its desert landscape, watch Mars from your own backyard.

We're entering the best season we've had for observing Mars in seven years. That's not saying much. Mars comes to opposition every two years and two months, and the oppositions themselves go through a 15-year cycle of close and distant ones. This year the planet is at opposition on April 8th. In the middle two weeks of April, when it's closest to Earth, it will appear 15.1 arcseconds wide. That's bigger than it became during its last two apparitions, but far short of the 24.3″ we can expect in July 2018.

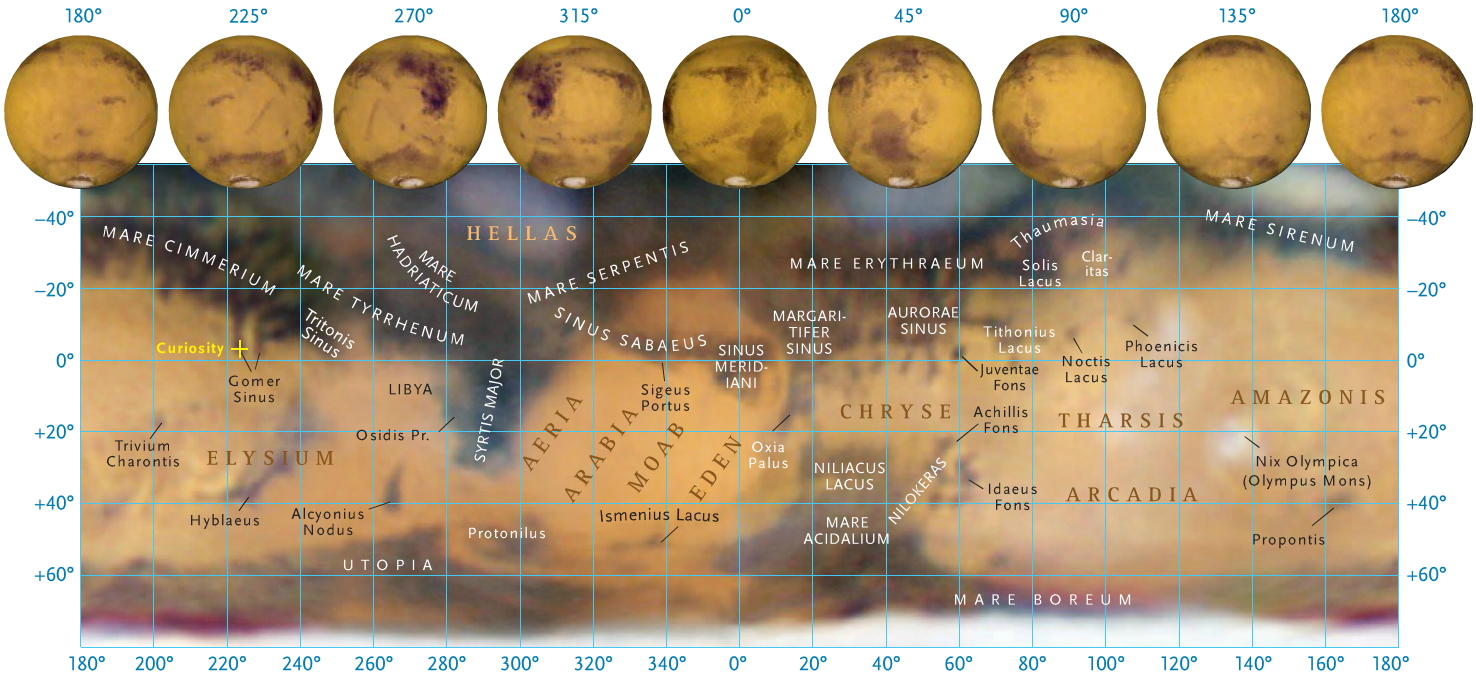
Mars is still just south of the celestial equator, in Virgo near Spica. During its closest oppositions it's always low in the south for mid-northerners. When it's highest it's always small. As if to spite us northerners, Mars, like Mercury, plays favorites with the Southern Hemisphere.

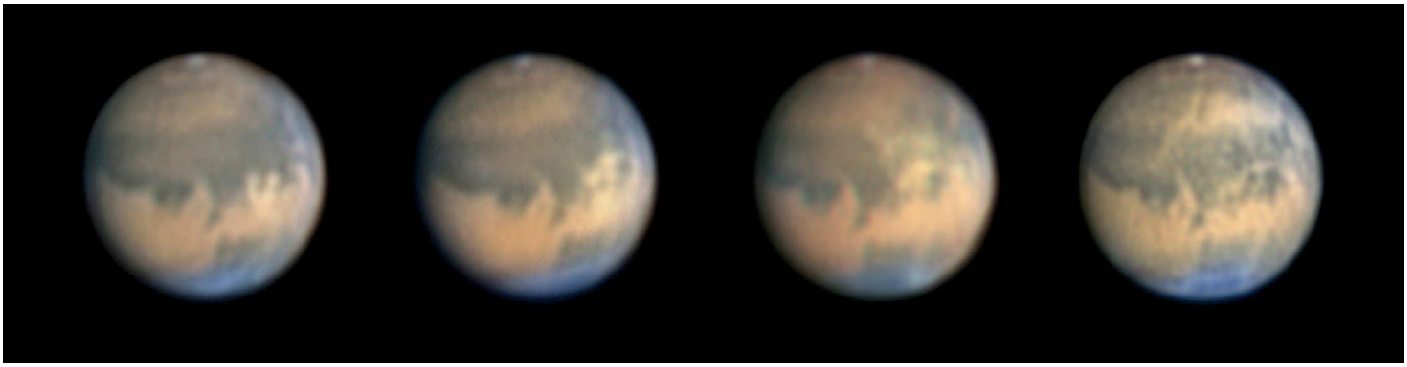
But it can't hide. In February Mars enlarges from 9.0″ to 11.6″, then to 14.7″ by the end of March. Already a good 6-inch telescope during good seeing will show Mars's North Polar Cap, some of its surface markings, and perhaps white clouds. The Martian northern hemisphere is tipped far toward Earth this season, so we'll have a good view of the cap shrinking away to its minimum size as Martian northern summer advances. Watch the dark ring that comes into better view around the cap as it retreats. See page 54 for more on watching for changes on Mars, including clouds, features in the shrinking cap, and possible dust storms.

The map below names many of the main *albedo features,* the dark and light surface markings. An albedo map of Mars, though, is never quite to be trusted. Many albedo features have changed in the decades since they were named, and sometimes they change from one Martian year to the next as windblown dust covers and uncovers parts of the underlying surface. A striking example is on page 54.

But most persist. The barely detectable smudges you detect at the eyepiece take on meaning and excitement if you can identify and name them and mark their rotation around the planet on subsequent nights. Mars spins just a little slower than Earth, once in 24 hours 37 minutes. So if you observe it at the same time each night, you'll see it making one slow, retrograde rotation in about 38 days.

Use this map to find the names of surface features you see. Most telescopes on most nights will show only the largest dark regions. South is up, and Martian west longitude is labeled along the bottom. Damian Peach assembled this map from many images he took in 2009–10. The globes, from *WinJupos,* are tipped correctly for the current apparition. Each globe displays the central-meridian longitude that is directly below it on the map.

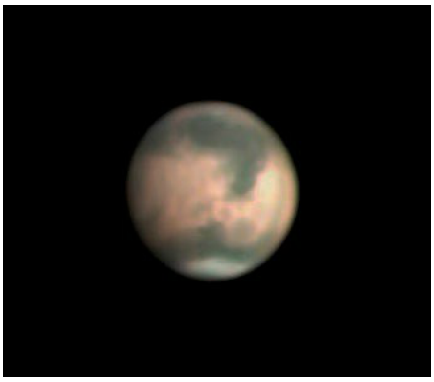




To find which side of Mars is facing Earth at the time and date you observe, you can use our Mars Profiler at **skypub.com/marsprofiler**. Match the central-meridian longitude it gives with the longitudes at the bottom of the map and above the globes. It also tells you Mars's magnitude, angular diameter, and more.

If you haven't yet tried your hand at modern planetary imaging, now's a fine time. Planetary video cameras have become cheap, and the software (such as *RegiStax*) can be found for free.

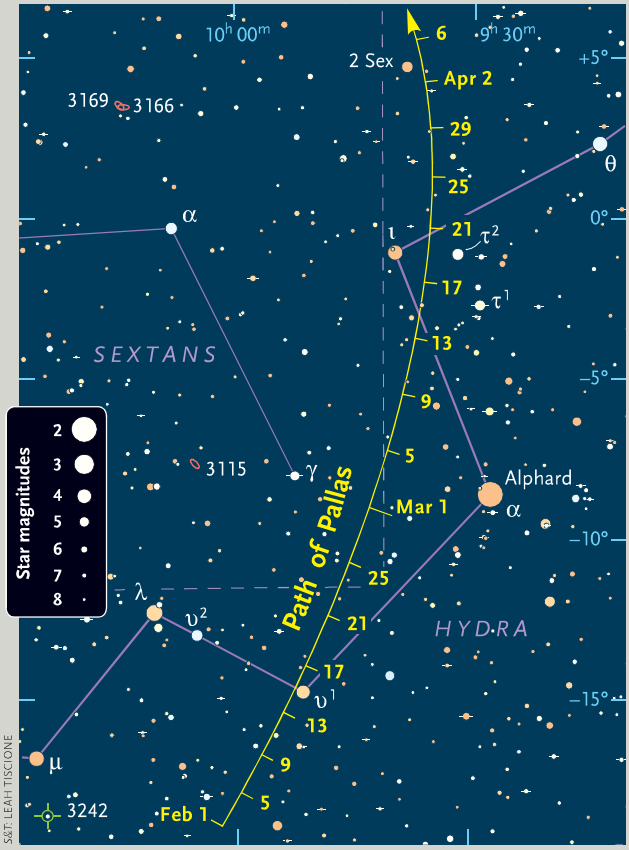
The International Society of the Mars Observers (**www.mars.dti.ne.jp/~cmo/ISMO.html**) receives many amateur observations and images. Also check the Mars Section of the Association of Lunar and Planetary Observers (**alpo-astronomy.org**) and the International MarsWatch (**elvis.rowan.edu/marswatch**). These websites have more information on observing the planet, what's happening as the apparition proceeds, recent images, and instructions for uploading your own.

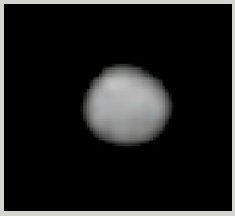


Stacked-video imaging blows past anything you can see by eye. Mars was a tiny blob just 4.3″ wide last September 26th when Don Parker in Florida took this image with a 16-inch reflector. This is the "interesting" side of Mars, with dark Syrtis Major pointing down to Utopia. South is up.

Above: Big dust storms aren't very likely during the Martian northern hemisphere summer, but stacked-video imaging brings even small ones into view. These 2005 images from Sean Walker record spotty yellow dust clouds moving and changing from one night to the next.

Asteroid Number Two Rides Hydra





***Left*: The big asteroid 2 Pallas is sweeping north along the body of Hydra near 2nd-magnitude Alphard. It's magnitude 7.3 on February 1st, 7.0 for 10 days before and after its February 22nd opposition, and 7.6 by April 1st. Watch it creeping north from night to night. (The date ticks are for 0:00 Universal Time.) *Above*: Pallas shows a slightly flattened profile in this ultraviolet Hubble image. It's about 550 km (340 miles) wide, essentially tying 4 Vesta for second place in size after 1 Ceres. It was the second asteroid discovered.**