



Earth only gets close enough to Mars to show really good views through a telescope every 15 or 17 years. This year, 2018, is such a year and the next won't be until 2035. Don't miss it! Grant Christie explains in this article from the 2018 New Zealand Astronomical Yearbook.

In 2018 we will be treated to particularly good views of the planet Mars. On 27 July Mars and Earth will be the closest to one another since 2003 and will not be this close again until 2035.

Both Mars and Earth orbit the Sun following elliptical paths, of which Earth's orbit departs from a circle by 1.7% whereas Mars deviates by 9.3%. This means that, on average, Earth overtakes Mars every 780 days, although the distance between the two planets varies significantly. It also means that our view of Mars through a telescope

is greatly affected – the closer Mars is, the bigger and brighter it appears and the more detail we can see through a telescope.

The average time between these close (perihelic) oppositions is 17 years, so astronomers have to be patient. Further, the close separation of the planets doesn't last very long – allowing only about six weeks either side of the date of opposition to enjoy the view.

So don't miss seeing Mars through a telescope in July-August of 2018 when the planets will be only

MARS THROUGH A TELESCOPE

Mars will change in size and brightness quickly as we reach the date of opposition. Mars will appear biggest when Earth and Mars reach their closest separation on 31 July 2018.



DATE	12 Feb	25 Mar	20 Apr	09 May	31 Jul	31 Oct	21 Nov	21 Dec	06 Feb
DIAM	6"	8"	10"	12"	24.3"	12"	10"	8"	6"
A.U.	1.566	1.173	0.938	0.781	0.385	0.781	0.932	1.169	1.570



THE MAST CAMERA (MASTCAM) ON NASA'S CURIOSITY MARS ROVER SHOWS A BROAD VIEW OF THE DESOLATE MARTIAN TERRAIN ON LOWER MOUNT SHARP. CREDIT: NASA/JPL-CALTECH/MSSS

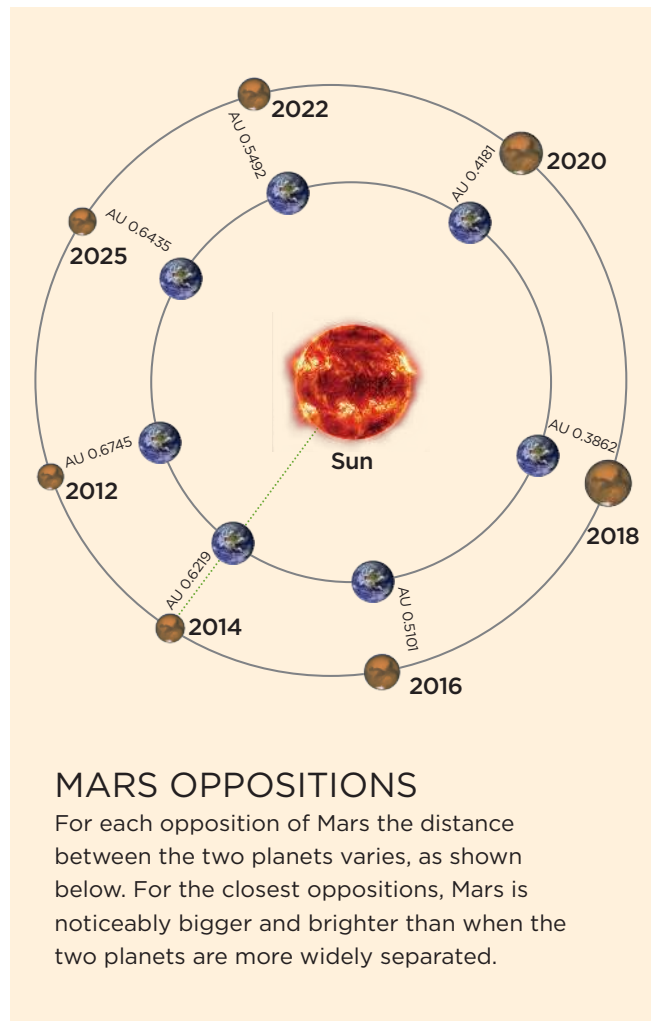
57.9 million kilometres apart because you will not get a better opportunity until 15 September 2035.

The 2003 opposition of Mars was especially significant because calculations showed that it was the closest the two planets had been in the last 60,000 years at 55.76 million kilometres. The 2018 opposition is not quite as favourable but Mars will only appear about 4% smaller than the 2003 view and will look amazing.

Close oppositions of Mars are best observed from the Southern Hemisphere because they occur during our winter when the planet is high overhead and viewable over most of the long night. Therefore, we have a box-seat view.

Previous close oppositions of Mars occurred in 2003, 1988, 1971 and 1956. In 1956 the Auckland Astronomical Society announced they would provide free telescope viewing of Mars from the summit of Maungawhau (Mount Eden) on the date of the close opposition. The public response was unexpected and overwhelming. The traffic jam in the surrounding roads created a major gridlock and a number of telescopes never made it to the summit. The police were not impressed by the chaos created and issued a stern warning to the Society against any further such stunts.

Today, we know enormously more about Mars, so there is less mystery surrounding the red planet. In 1956 it was widely thought there could be life on its surface. Modern robotic exploration has found no sign of life there yet but there are now serious plans to send the first human explorers. It is quite possible that by the time of the next close opposition in 2035, humans will have walked upon its surface.



MARS OPPOSITIONS

For each opposition of Mars the distance between the two planets varies, as shown below. For the closest oppositions, Mars is noticeably bigger and brighter than when the two planets are more widely separated.