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Comet Tsuchinshan-ATLAS Soars at Dusk

Catch this icy solar system visitor at its brightest this month.

Assuming this highly anticipated comet survived perihelion last month, Tsuchinshan-ATLAS (C/2023 A3) should be at its best during the peak of the autumn color season. On October 1st it's briefly visible at dawn just 5° above the east-southeast horizon 45 minutes before sunup from latitude 40° north. By the 5th, the comet will be even lower, but it should shine at its peak brightness, somewhere between zero and 1st magnitude.

After a week hidden in the Sun's glare, the comet practically leaps into view at dusk starting on the 11th, when observers with an unobstructed western horizon might catch it just a few degrees high in twilight. Be sure to pack binoculars. Not only will they help pluck the misty visitor from the gloaming, but they'll also reveal what may be an impressive tail.

From our Earthly perspective, the comet is nearly in line with the

Sun — a favorable viewing angle that maximizes the amount of forward scattering, which enhances the tail's brightness and length. It may even be possible to photograph the appendage poking above the horizon after the coma itself has set.

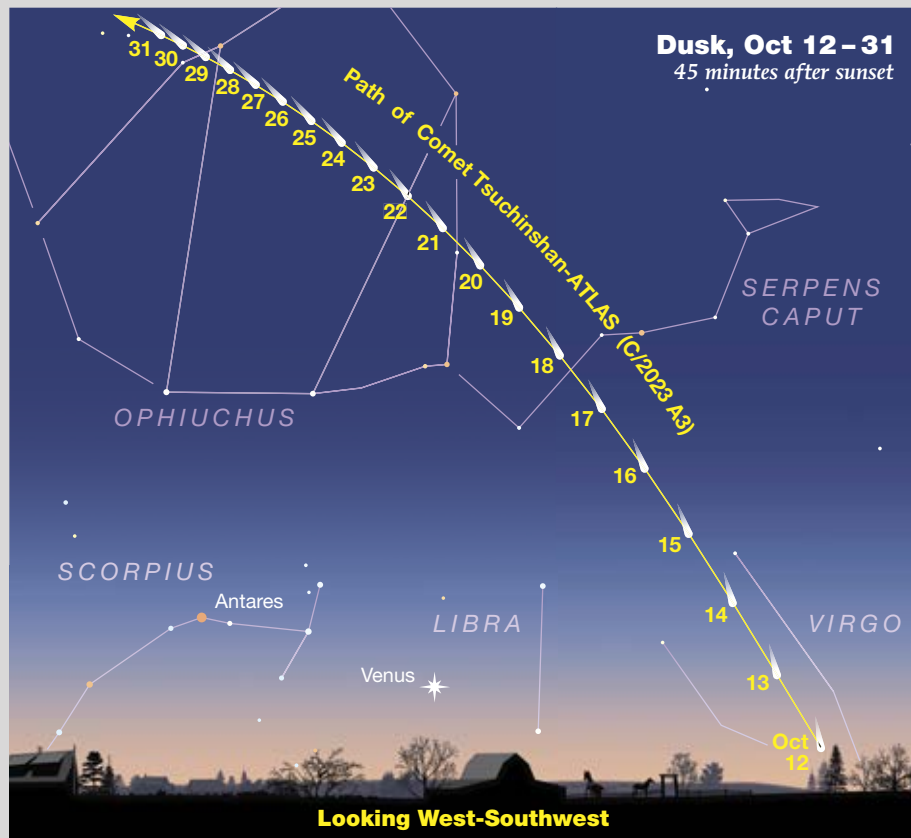
Tsuchinshan-ATLAS climbs higher as it drifts northeast at a pace of more than 5° per day around the time it has its closest approach to Earth at a distance of 70.6 million kilometers (43.9 million miles) on the 12th. Two nights later, it hangs a comfortable $6\frac{1}{2}^\circ$ high at the end of evening astronomical twilight as seen from mid-northern latitudes. And it keeps climbing.

Of course, the trade-off for the comet's improved altitude is its gradual dimming as it drifts away from the Sun. It tumbles from its peak brightness at the start of the month to around 5th magnitude by Halloween. A naked-eye comet lingering for more than a month is a gift, but this one comes with a catch. Unfortunately, the Moon compromises the view until about the 20th, when it exits the evening sky.

Viewing circumstances are best at mid-northern and tropical latitudes due to both the shorter twilights and the comet's steady track to the northeast. For Southern Hemisphere skywatchers, Tsuchinshan-ATLAS clears the western horizon at twilight's end starting around October 16th and quickly climbs in the northwest.

As it makes its way across the autumn sky, on the night of October 15th (near 0h UT on the 16th) the comet coasts just 1.2° south of the 5.7-magnitude globular cluster M5, in Serpens. The pairing makes for a sumptuous sight in a wide-field telescope as well as a sweet photo opportunity. On the 28th, Tsuchinshan-ATLAS glides between the bright open cluster IC 4665 and the 11th-magnitude globular cluster NGC 6426 in Ophiuchus.

Gravitational perturbations from the planets during its visit have reworked the comet's orbit so it's now weakly hyperbolic. It may never return to the inner solar system again. And if it does, expect a *very* long wait!



▲ The comet's position is shown for 0h UT on the dates indicated.