Planet viewing

After a summer-long absence, the planets visible to the naked eye are returning to the evening skies. Venus will be the only planet visible in the evening skies as we start off the new school year. Venus slowly returns to the evening skies as it moves from inferior conjunction (between the Earth and Sun) toward greatest eastern elongation next January. Between September and January Venus will set later and later, eventually setting nearly four hours after the Sun. Joining Venus briefly in the evening skies of late September and early October, and again during late January and early February, will be the swiftly moving planet Mercury.

The near-twin outer planets, Jupiter and Saturn, move back into view in the evening skies as the school year progresses. Start watching for Saturn and then Jupiter to appear over the eastern horizon after sunset this fall. Due to the combined orbital speeds of the Earth and these two giant soupy planets Jupiter will slowly move away, eastward from Saturn, and both planets will gradually rise closer to sunset. By November Saturn and Jupiter will have reached opposition and will be rising at sunset and both will be very visible throughout the night hours.

Mars will appear quite small in the evening skies as it slowly moves closer to Earth. It will reach opposition with Earth on June 13, when it will be the closest its been to Earth for some years. Throughout this school year Mars will slowly be moving eastward across the boundaries of the zodiacal constellations Leo, Virgo, and finally into the region of Scorpius the Scorpion. Mars will be very close to a bright reddish star Antares, known as the heart of the scorpion. Antares literally means "the rival of Mars," which it may have earned long ago when it was first noted that the red star and red planet were in close proximity.

A partial solar eclipse that will be visible from the southern United States will also mark the end of the millennium. (More on this in the November/December issue.)

In terms of space explorations the *NEAR* mission to asteroid Eros and the *Mars Global Surveyor* missions both come to a close. Duck (just kidding!) as the *Ulysses* spacecraft continues on its way to another polar orbit around the Sun, and the *Stardust* spacecraft has an Earth flyby.

Possibly the highlight of the year will come when the *Cassini/Huygens* spacecraft makes its fly-by of Jupiter for a gravity assist boost toward an encounter with Saturn in 2004. Depending on the condition of the *Galileo* spacecraft (already in orbit at Jupiter), the two spacecraft may link up to share data during the flyby.

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September

10—*Galileo* spacecraft orbital trim maneuver.
21—September equinox, fall begins in Northern Hemisphere (1:29 P.M. EDT).

Visible evening planets

Venus sets about 30 minutes after sunset and is visible very low over the western horizon.
Mercury becomes visible below Venus during the last week of the month.
Jupiter rises before midnight and is visible over the southern horizon at sunrise.
Saturn rises ahead of Jupiter and is visible west of Jupiter over the southern horizon at sunrise.

Visible morning planets

Mars rises about an hour before the Sun and passes by the star Regulus in Leo the Lion during this month.

October

6—Mercury reaches greatest eastern elongation.
29—Remember to fall back one hour for the end of Daylight Savings Time.
30—Mercury reaches inferior conjunction (not visible).

Visible evening planets

Venus sets about an hour after sunset and is very

noticeable over the western horizon.
Mercury becomes visible below Venus during the first week of the month.
Jupiter rises during mid-evening and is visible over the southwestern horizon at sunrise.
Saturn rises ahead of Jupiter and is visible west of Jupiter over the southwestern horizon at sunrise.

Visible morning planets

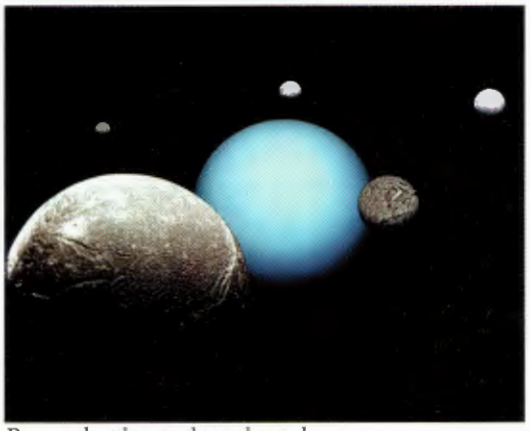
Mars rises about an hour before the Sun and is barely visible over the eastern horizon during this month.

November

15—Mercury reaches greatest western elongation.
17—Leonids meteor shower peak night (Moon interferes).
19—Saturn at opposition, rises at sunset and is visible all night.
28—Jupiter at opposition, rises at sunset and is visible all night.

Visible evening planets

Venus sets about two hours after sunset and is very noticeable over the western horizon.
Jupiter reaches opposition this month, rises at sunset and is visible all night.
Saturn reaches opposition this month, rises at sunset and is visible all night.



Peruse the planets throughout the year.

Visible morning planets

Mars rises two hours before the Sun. It appears quite dim because of its great distance from Earth.

December

13—Geminid meteor shower peak (Moon interferes).
21—Winter solstice (8:39 A.M. EST).
25—Partial solar eclipse visible from southern United States.
25—Mercury reaches superior conjunction (not visible).
30—*Cassini/Huygens* spacecraft Jupiter flyby.

Visible evening planets

Venus sets two to three hours after sunset and is very noticeable over the western horizon.
Jupiter is over the eastern horizon at sunset and is visible most of the night.
Saturn rises about an hour before Jupiter and is visible above and to the right of Jupiter at sunset, over the eastern horizon.

Visible morning planets

Mars rises about two hours after midnight and is visible over the southeastern horizon at sunrise.

January

3—Earth at perihelion (147,097,300 km).
3—Quadrantid meteor shower peak.
9—Total lunar eclipse occurs during daytime for North and South America (not visible for us).
15—*Stardust* spacecraft Earth flyby.
17—Venus reaches greatest eastern elongation.
28—Mercury reaches greatest eastern elongation.
31—End of primary mission for *Mars Global Surveyor*.

Visible evening planets

Mercury is visible over the western horizon, setting about 30 minutes after the Sun at the end of the month.
Venus sets about three hours after sunset and is very noticeable over the western horizon.
Jupiter rises before sunset and is visible most of the night.
Saturn rises before sunset and is visible most of the night.

Visible morning planets

Mars rises after midnight and is visible over the southern horizon at sunrise.

February

13—Mercury reaches inferior conjunction (not visible).
14—End of *NEAR* mission.

Visible evening planets
Mercury is visible over the western horizon, setting about 30 minutes after the Sun during the first week of the month.
Venus sets more than three hours after sunset and is very noticeable over the western horizon.
Jupiter is visible over the southwestern at sunset and sets after midnight.
Saturn is visible over the southwestern horizon at sunset and sets after midnight.
Visible morning planets
Mars rises after midnight and is visible over the southern horizon at sunrise.

March

11—Mercury reaches greatest western elongation.
20—March equinox, spring begins for Northern Hemisphere (6:32 A.M. EST).
30—Venus reaches inferior conjunction (not visible).
Visible evening planets
Venus sets two hours after sunset and but is visible very low over the western horizon.
Jupiter is visible over the southwestern horizon at sunset, and sets about four hours later.
Saturn is visible over the southwestern horizon at sunset, and sets about three and a half hours later.
Visible morning planets
Mars rises after midnight and is visible over the southern horizon at sunrise.

April

23—Mercury reaches superior conjunction (not visible).
28—Astronomy day—This year's theme, Bringing Astronomy to the People.
Visible evening planets
Jupiter is visible low over the southwestern horizon at sunset, and sets about 30 minutes after Saturn.
Saturn is visible very low over the southwestern horizon at sunset, and sets about one hour later.
Visible morning planets
Venus rises about one hour before the Sun and is visible very low over the eastern horizon.
Mars rises at midnight and is visible over the southwestern horizon at sunrise.

May

22—Mercury reaches greatest eastern elongation.
25—Saturn is in conjunction with the Sun (not visible).
Visible evening planets
Jupiter is visible very low over the southwestern horizon at sunset, and sets about 30 minutes later.
Mars sets/rises before sunset and is visible over the southwestern horizon at sunrise.
Visible morning planets
Venus rises about two hours before the Sun and is visible low over the eastern horizon.

June

8—Venus reaches greatest western elongation.
13—Mars is at opposition, rises at sunset and is visible all night.
14—Jupiter is in conjunction with Sun (not visible).
16—Mercury reaches inferior conjunction (not visible).
21—Summer solstice, summer begins for Northern Hemisphere (2:39 A.M. EDT).
Visible evening planets
Mars reaches opposition, rises at sunset and is visible all night.
Visible morning planets
Venus rises about two hours before the Sun and is visible low over the eastern horizon.

Internet resources

Ulysses Solar Exploration: *ulysses.jpl.nasa.gov/*
Galileo Spacecraft at Jupiter: *www.jpl.nasa.gov/galileo*
Daylight Savings Time: *www.treasure-troves.com/astro/DaylightSavingTime.html*
Winter Solstice: *www.treasure-troves.com/astro/WinterSolstice.html*
Cassini/Huygens Spacecraft: *www.jpl.nasa.gov/cassini*
Autumnal Equinox: *www.treasure-troves.com/astro/AutumnalEquinox.html*
Eclipse: *sunearth.gsfc.nasa.gov/eclipse*
Stardust Spacecraft: *stardust.jpl.nasa.gov/*
Mars Global Surveyor: mars.jpl.nasa.gov/mgs
NEAR Spacecraft: *near.jhuapl.edu/*
Vernal Equinox: *www.astro.virginia.edu/~eww6n/astro/VernalEquinox.html*
Astronomy Day: *www.astroleague.org/al/astroday/astroday.html*