CENTRAL NY OUTDOORS

Stargazing in Upstate NY: What to see in the night skies July 21 to 28

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star 1.jpg

As far from a selfie as a non-selfie has ever been taken. *(Photo by Michael Collins, Apollo 11, July 21, 1969.)*

By Special to nyup.com, feedback@nyup.com

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This summertime weekly summary for planetary, satellite, constellation, and other observing opportunities covers the last full week of July. We welcome the return of the moon to our sunset skies this week at the same time that we celebrate the 48th anniversary of the Apollo 11 landing on the moon on the 20th - and the safe return from the surface of the late Neil Armstrong and the still ever social-media savvy Buzz Aldrin on July 21, 1969. The third name on that list, regretfully less-often mentioned because he stayed onboard the command module Columbia while the other two rode the Eagle module to the moon's surface, is Michael Collins. Of all of the documentation of this mission, the above photo might be the most memorable - especially in our current, selfie-crazed society. In this picture, the only person not accounted for in the entirely of human history - and, in fact, very likely the only multi-cellular organism not accounted for in the 4.5 billion year history of the Earth - is Collins, patiently monitoring the return of the other two to the Columbia module.

Lectures And Observing Opportunities In Upstate/Central New York

New York has a number of astronomers, astronomy clubs, and observatories that host public sessions throughout the year. Announced sessions from several respondent NY astronomy organizations are provided below for the remainder of July so you can plan accordingly. As wind and cloud cover are always factors when observing, please check the provided contact information and/or email the groups a day-or-so before an announced session, as some groups will also schedule weather-alternate dates. Also use the contact info for directions and to check on any applicable event or parking fees.

Astronomy Events Calendar

Organizer	Location	Event	Date	Time	Contact Info
Adirondack Public Observatory	Tupper Lake	Public Observing	July 21	1/2 Hour After Sunset	email, website
Adirondack Public Observatory	Tupper Lake	Public Observing	July 28	1/2 Hour After Sunset	email, website
Albany Area Amateur Astronomers & Dudley Observatory	Schenectady	Octagon Barn Star Party	July 28	8:00 - 10:00 PM	email, website
Astronomy Section, Rochester Academy of Science	Rochester	Open House at Farash Center	July 23	12:00 - 4:00 PM	email, website
Astronomy Section, Rochester Academy of Science	Rochester	RocheSTAR Fest 2017	July 28 - 29	daytime & nighttime	email, website
Baltimore Woods	Marcellus	Bob Piekiel & Summer Skies	July 21/22	8:00 - 11:00 PM	email, website
Clark Reservation State Park	Jamesville	Bob Piekiel & Summer Skies	July 28/29	8:00 - 11:00 PM	315-492-1590 website
Kopernik Observatory & Science Center	Vestal	Friday Night Lecture & Observing	July 21	8:00 PM	email, website
Kopernik Observatory & Science Center	Vestal	Friday Night Lecture & Observing	July 28	8:00 PM	email, website
Mohawk Valley Astronomical Society	Waterville	Public Stargazing @ Prospect Library & Quarry	July 22	7:45 - 11:59 PM	email, website

ISS And Other Bright Satellites

Satellite flyovers are commonplace, with several bright passes easily visible per hour in the nighttime sky, yet a thrill to new observers of all ages. Few flyovers compare in brightness or interest to the International Space Station. The flyovers of the football field-sized craft with its massive solar panel arrays can be predicted to within several seconds and take several minutes to complete.

This is an exceptional week for those interested in ISS flyovers, with a number occurring between sunset and midnight in addition to even more between midnight and sunrise. The 25th is a stand-out date with six total flyovers - four before sunrise and two well-placed after sunset. Properly equipped members of the amateur radio community can even add audio to their visual experiences by listening to transmissions from the ISS - see ariss.org or issfanclub.com for details.

ISS Flyovers

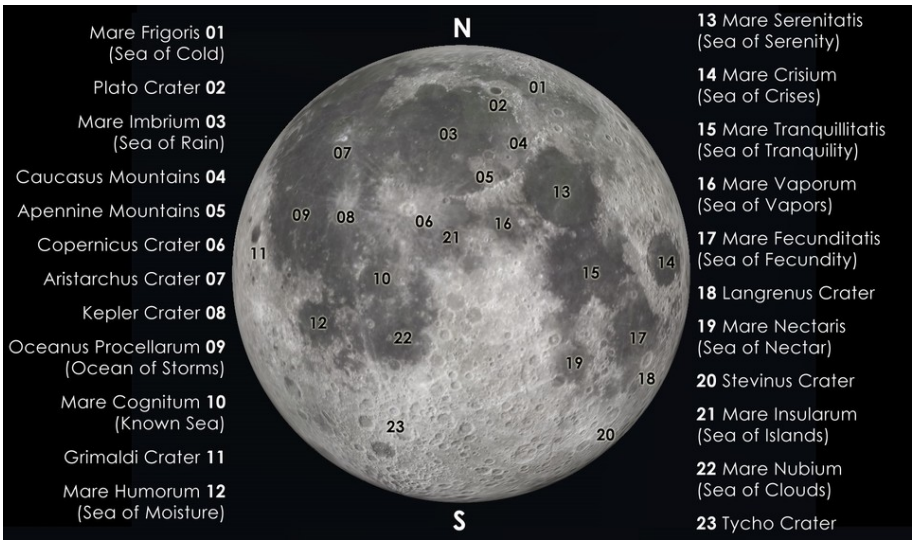
Date	Brightness	Approx. Start	Start Direct.	Approx. End	End Direct.
21-Jul	moderately	12:39 AM	N/NE	12:41 AM	NE
21-Jul	somewhat	2:12 AM	NW	2:17 AM	NE
21-Jul	moderately	3:49 AM	NW	3:55 AM	E
21-Jul	moderately	11:48 PM	NE	11:48 PM	NE
22-Jul	moderately	1:20 AM	NW	1:25 AM	NE
22-Jul	moderately	2:57 AM	NW	3:02 AM	E/NE
22-Jul	extremely	4:33 AM	NW	4:40 AM	E/SE
22-Jul	very	9:15 PM	S/SE	9:18 PM	E/SE
22-Jul	extremely	10:50 PM	W/SW	10:56 PM	NE
23-Jul	moderately	12:27 AM	W/NW	12:32 AM	NE
23-Jul	moderately	2:04 AM	NW	2:09 AM	NE
23-Jul	very	3:41 AM	NW	3:47 AM	E
23-Jul	extremely	9:57 PM	SW	10:04 PM	E/NE
23-Jul	moderately	11:34 PM	W	11:40 PM	NE
24-Jul	somewhat	1:12 AM	NW	1:17 AM	NE
24-Jul	moderately	2:49 AM	NW	2:54 AM	E
24-Jul	extremely	4:25 AM	W/NW	4:31 AM	SE
24-Jul	extremely	9:05 PM	S/SW	9:11 PM	E/NE
24-Jul	very	10:41 PM	W	10:48 PM	NE
25-Jul	somewhat	12:19 AM	NW	12:24 AM	NE
25-Jul	moderately	1:56 AM	NW	2:02 AM	E/NE
25-Jul	extremely	3:32 AM	W/NW	3:39 AM	SE
25-Jul	moderately	5:11 AM	W/SW	5:13 AM	S/SW
25-Jul	extremely	9:49 PM	W/SW	9:55 PM	NE
25-Jul	moderately	11:27 PM	W/NW	11:32 PM	NE
26-Jul	moderately	1:04 AM	NW	1:06 AM	N
26-Jul	moderately	10:34 PM	W/NW	10:39 PM	NE
27-Jul	moderately	12:11 AM	NW	12:15 AM	N/NE
27-Jul	very	9:41 PM	W	9:47 PM	NE
27-Jul	moderately	11:19 PM	NW	11:23 PM	NE
28-Jul	somewhat	12:56 AM	NW	12:57 AM	N/NW
28-Jul	moderately	10:26 PM	W/NW	10:31 PM	NE

Predictions courtesy of heavens-above.com. For updated nightly predictions, visit spotthestation.nasa.gov.

Lunar Phases

New:	First Quarter:	Full:	Third Quarter:
Jul. 23, 5:45 AM	Jul. 30, 11:23 AM	Aug. 7, 2:10 PM	Aug. 14, 9:14 PM

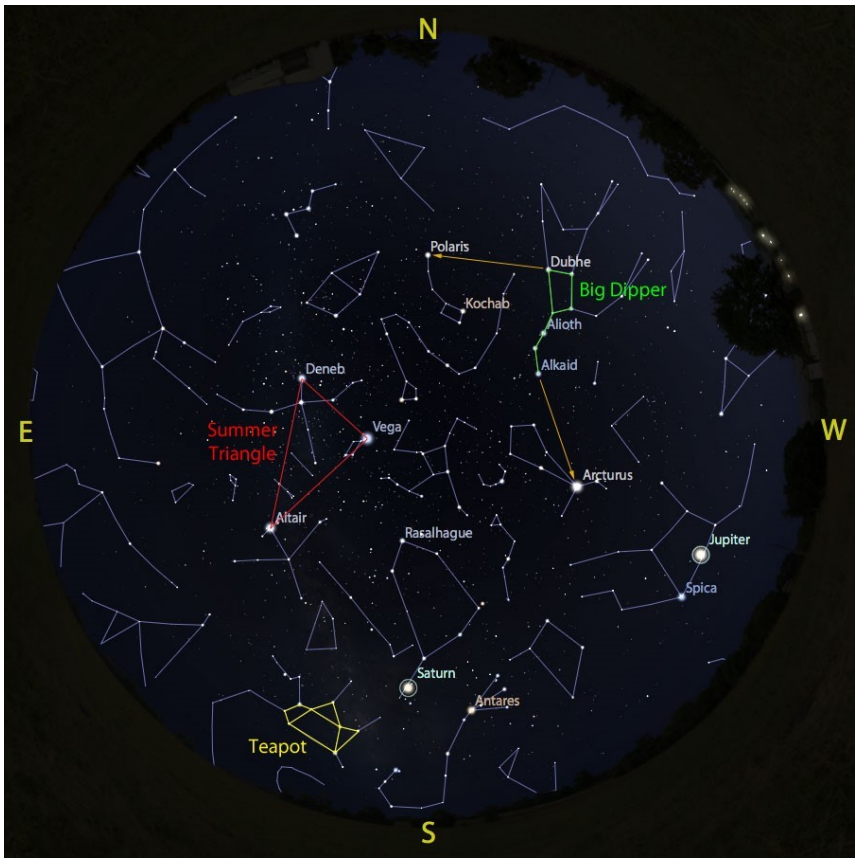
The Moon's increasing brightness as Full Moon approaches washes out fainter stars, random meteors, and other celestial objects - this is bad for most observing, but excellent for new observers, as only the brightest stars (those that mark the major constellations) and planets remain visible for your easy identification. If you've never tried it, the Moon is a wonderful binocular object. The labeled image identifies features easily found with low-power binoculars.



Lunar features prominent in low-power binoculars.

Observing Guides

Items and events listed below assume you're outside and observing most anywhere in New York state. The longer you're outside and away from indoor or bright lights, the better your dark adaption will be. If you have to use your smartphone, find a red light app or piece of red acetate, else set your brightness as low as possible.

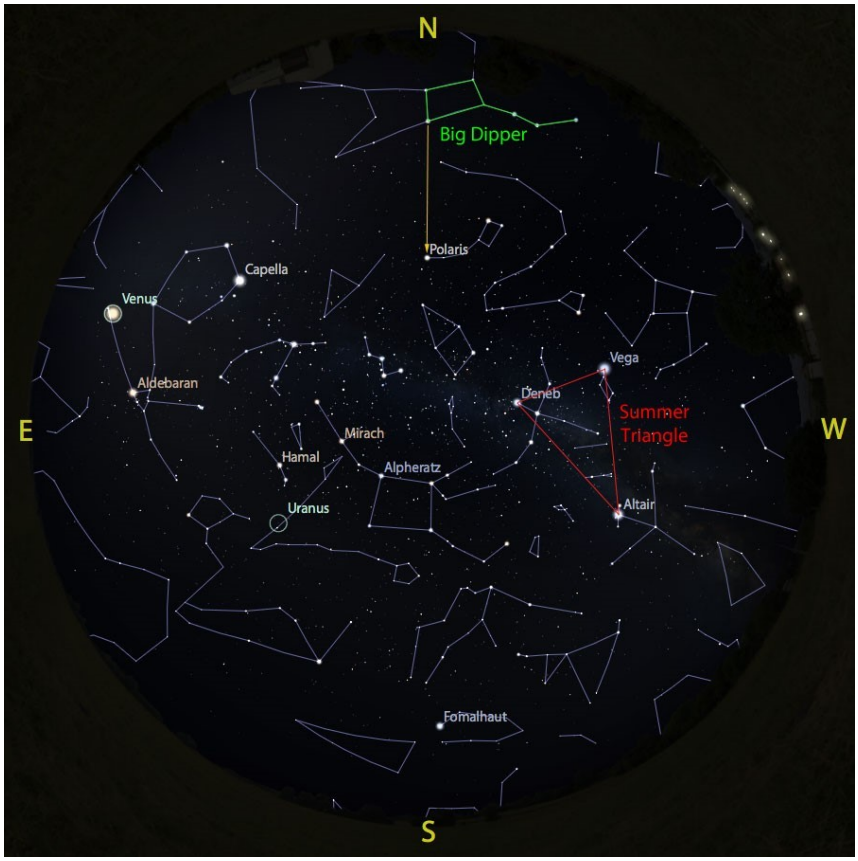


The sky at 10 p.m. from July 21 to 28, accurate all week except for the changing Moon position.

Evening Skies: The two most prominent shapes in the sky, the Big Dipper and the Summer Triangle, are joined by a third shape you will hopefully come to recognize just as easily. The body of Sagittarius, close to the southern horizon from our view in New York all summer and into fall, can have its dots connected to look just like a teapot sitting flat above the tree line. Once you find Saturn and

Antares, simply look around low and to the east for this prominent shape - the handle to the far east may be the first component to jump out at you.

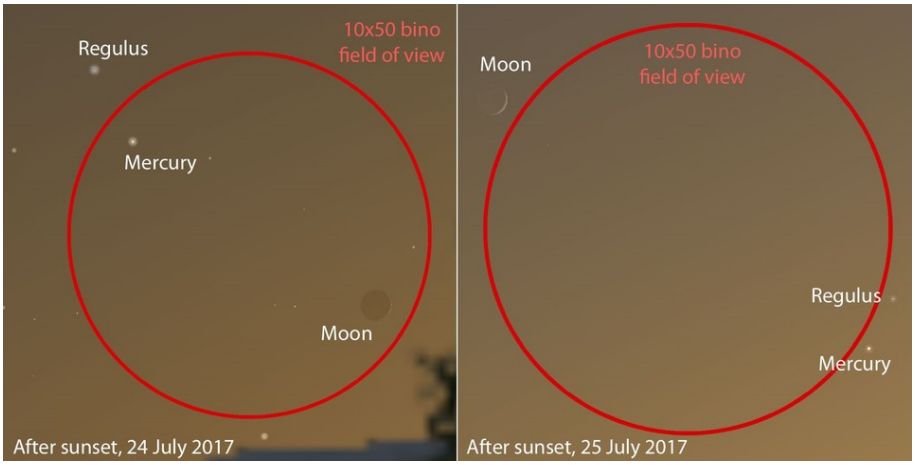
The Big Dipper is a bright and easy guide for finding Polaris, the north star. From its handle, you can "arc" down to Arcturus. Jupiter, which stands out soon after sunset, is close to the bright star Spica in Virgo and to the southwest of bright Arcturus in Bootes. Saturn is also visible as dusk approaches, rising soon after the bright orange star Antares in Scorpius.



The sky at 4 a.m. from July 21 to 28, accurate all week except for the changing Moon position.

Morning Skies: Venus is unmistakable in the early morning sky, second only to the Moon in brightness before sunrise. Venus has passed through the head of Taurus the Bull these past few weeks and will pass by the horn star Zeta Tauri on July 27.

Planetary Viewing



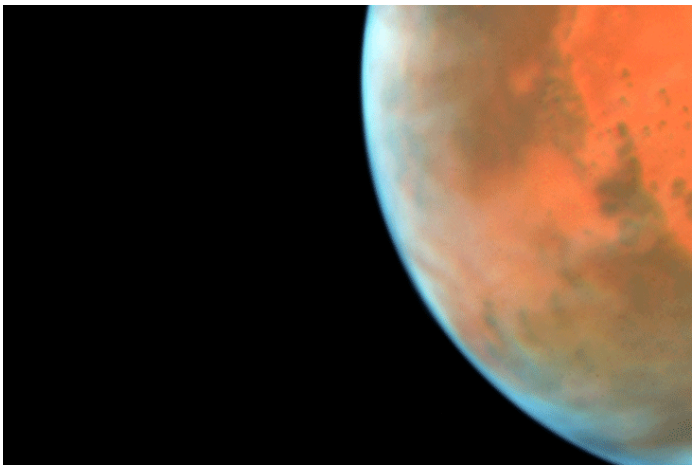
Mercury and the Moon on the 24th and 25th of this month.

Mercury: While technically visible after sunset this week, Mercury is very low on the horizon and awash in scattered sunlight. Observers with binoculars might consider scanning the western horizon before 9:15 p.m. to find it, but DO NOT risk doing so until after the sun has set, as even a moment of magnified sunlight will permanently damage your vision. You can use the Moon as an observing aid on the 24th and 25th of this month to look for both Mercury and the bright star Regulus in Leo the Lion. For the patient, Mercury becomes a good early morning target in August.

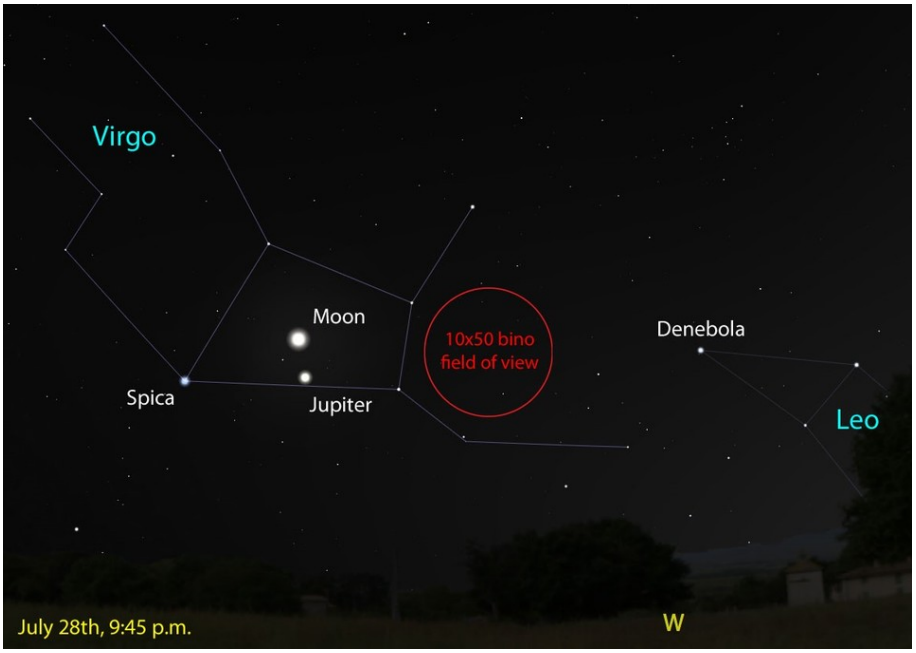
Venus: Venus remains unmistakable in the early morning and even into sunrise, rising around 3:30 a.m. all week. With good, steady binoculars, you should be able to see Venus as either half-lit of as a wide crescent - and you can follow the changing phase of Venus as it and the Earth make our way around the Sun.

Mars: Mars will not return to our pre-midnight skies until this time next year, but will become a morning target this mid-August. Thanks to the Hubble Space Telescope and some image processing, we were all treated to a sequence of stills showing the Martian moon Phobos in its orbit, taken on May 12th of last year and freshly released to the public on July 20th of this year. Keen observers will note not only the brightness of this tiny moon, but the amazing surface details that Hubble can achieve from Earth's orbit.

Below: Mars and a fly-by of its tiny moon Phobos. From NASA/ESA/STScI.



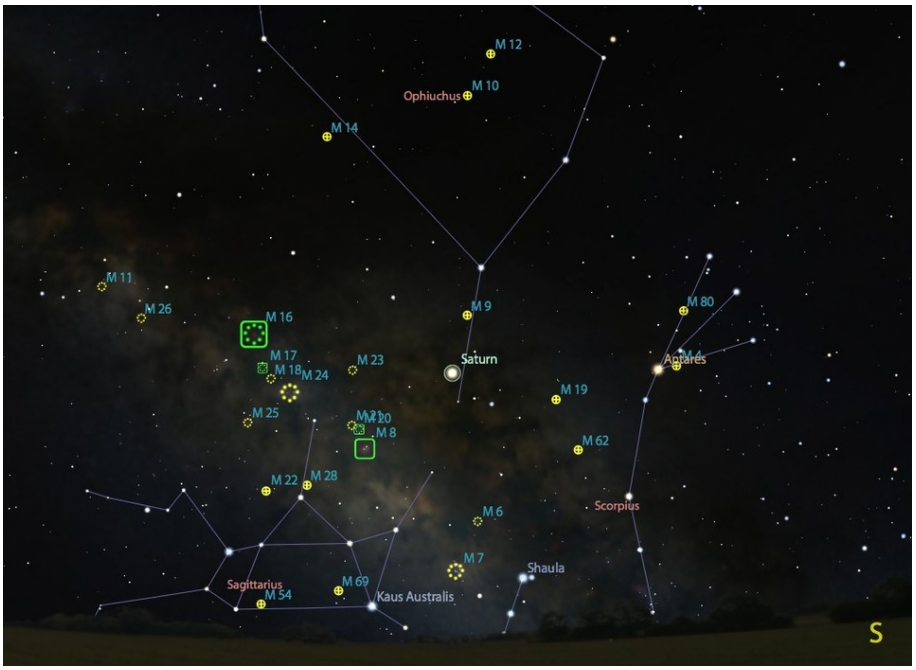
Jupiter: If you look south soon after sunset, Jupiter will be the brightest object you'll see this summer (or second-brightest if the Moon is out). Low power binoculars are excellent for spying the four bright Galilean moons - Io, Europa, Ganymede, and Callisto - and several online guides will even map their orbits for you. Jupiter is to the west of the bright star Spica in Virgo, roughly a full fist-width if you measure with your arm fully-extended. Finding both will be easy on July 28, when the crescent moon rides just above Jupiter in the western sky.



Jupiter and the Moon on July 28th in Virgo.

Saturn: Still on the western edge of the brightest part of the Milky Way, Saturn is going to spend the next 18 months making its way to the eastern edge, all the while giving us an excellent observing target from late Spring to mid-Autumn. Saturn does have one interesting close approach on the evening of the 21st - there is one fly-by of the ISS just to the southeast of Saturn between 10:05 and 10:10 p.m. This flyover will be either very faint or completely invisible due to the orientation of the ISS solar array - and because Earth will be blocking nearly all of the sunlight these panels would otherwise reflect.

As a refresher from the June 30th to July 7th article, those looking in the direction of Saturn with binoculars are treated to a host of Messier ("M") Objects - all residing between ourselves and the center of the Milky Way galaxy above the spout of the Sagittarius teapot. A good star chart and some guide stars will help you determine just which object you're looking at.



Saturn, Antares, and the great assortment of

Messier Objects towards the Milky Way center.

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