

Meteor Activity Outlook for June 26-July 2, 2021



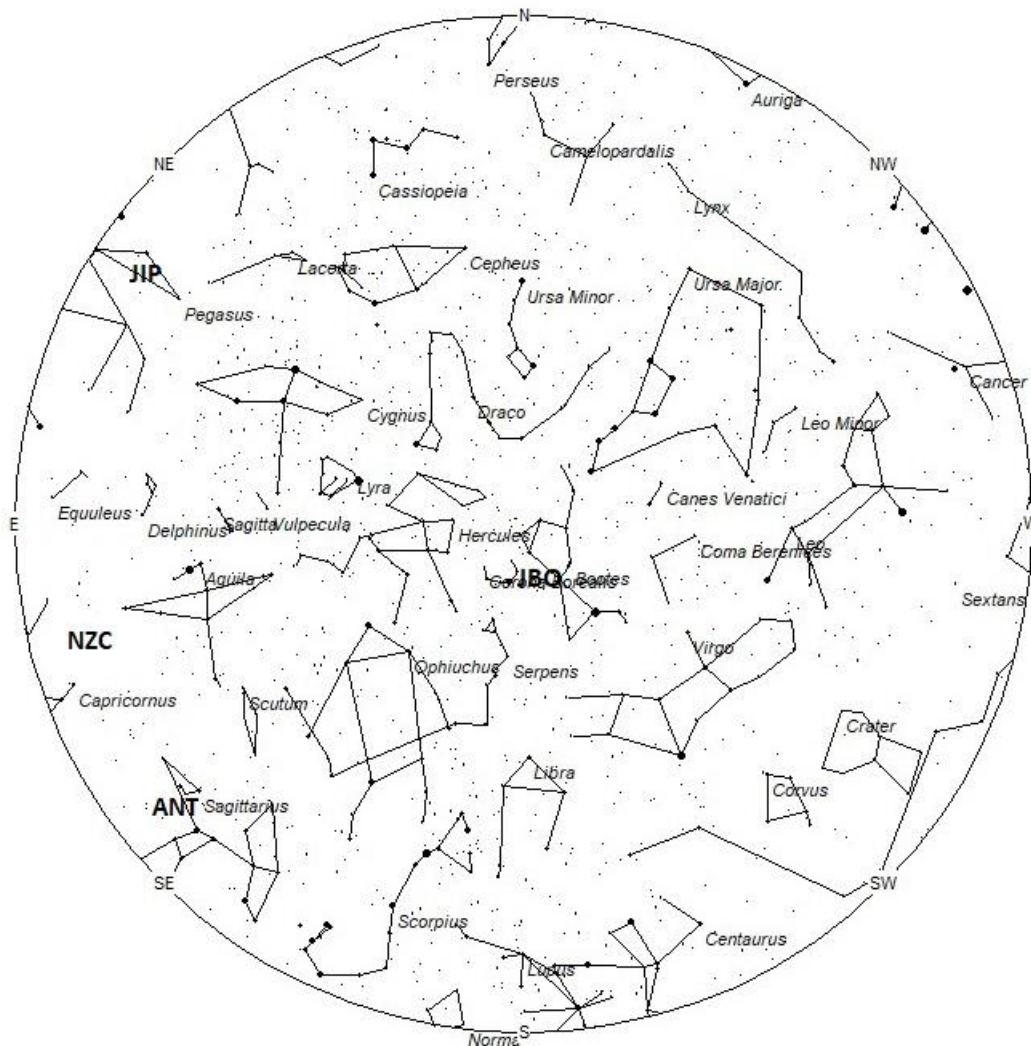
Scott Roberts captured this impressive fireball through clouds at 04:28 UT (22:23 MDT on May 27) on May 28, 2021, from northern New Mexico, USA. ©Scott Roberts

Meteor season finally gets going in July for the northern hemisphere. The first half of the month will be much like June with predominately slow rates. After the 15th though, both sporadic and shower rates increase significantly. For observers in the southern hemisphere, sporadic rates will be falling but the overall activity will increase with the arrival of the Southern delta Aquariids during the last week of the month.

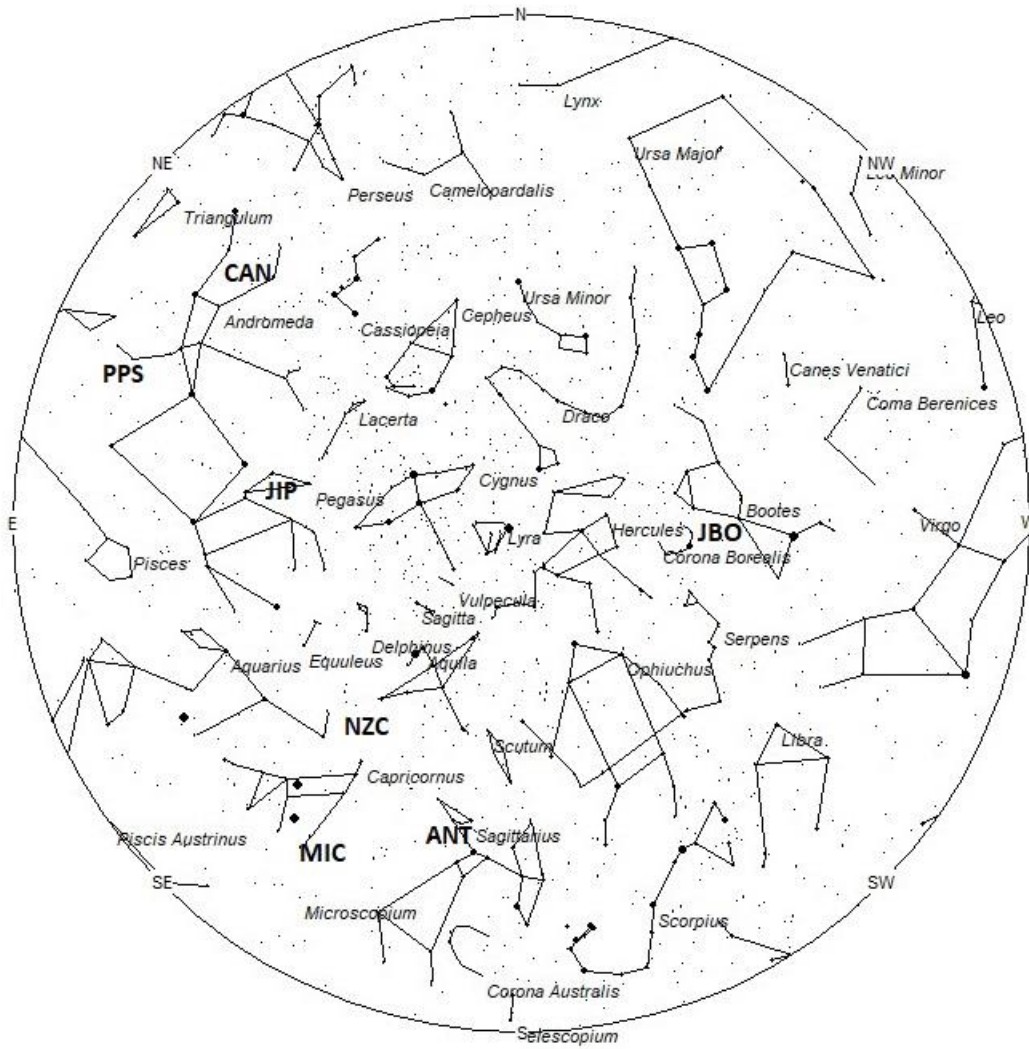
During this period, the moon reaches its last quarter phase on Thursday July 1st. This weekend the nearly full moon will lie above the horizon most of the night, spoiling viewing conditions for meteor observers. As the week progresses, evening conditions improve as the moon rises later with each passing night. This allows a small window of opportunity to view under dark skies between dusk and moon rise. The estimated total hourly meteor rates for evening observers this week is near 2 as seen from mid-northern latitudes (45N) and 3 as seen from tropical southern locations (25S). For morning observers, the estimated total hourly rates should be near 4 as seen from mid-northern latitudes (45N) and 6 as seen from tropical southern locations (25S). The actual rates will also depend on factors such as personal light and motion perception, local weather conditions, alertness, and experience in watching meteor activity. Rates are reduced by moonlight during this period. Note that the hourly rates listed below are estimates as viewed from dark sky sites away from urban light sources. Observers viewing from urban areas will see less activity as only the brighter meteors will be visible from such locations.

The radiant (the area of the sky where meteors appear to shoot from) positions and rates listed below are exact for Saturday night/Sunday morning June 26/27. These positions do not change greatly day to day so the listed coordinates may be used during this entire period. Most star atlases (available at science stores and planetariums)

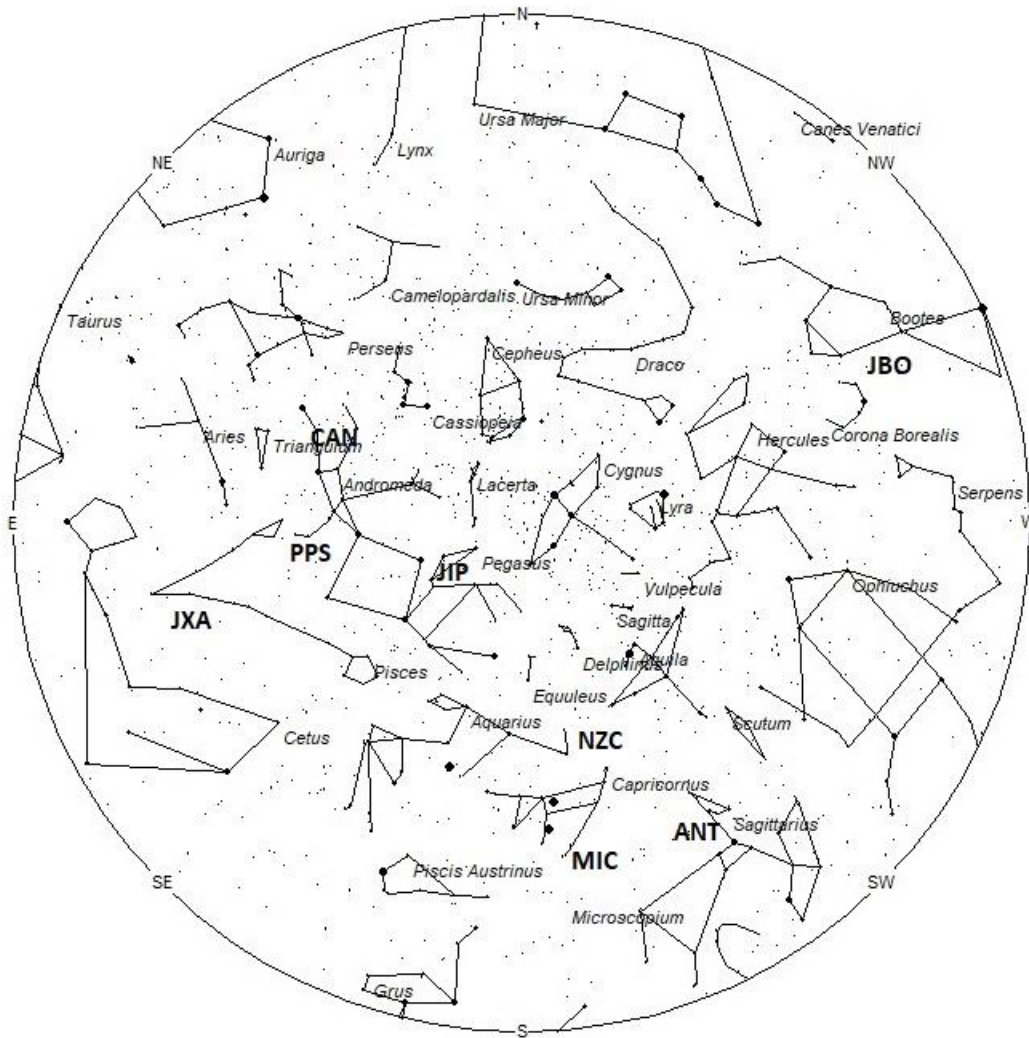
will provide maps with grid lines of the celestial coordinates so that you may find out exactly where these positions are located in the sky. A planisphere or computer planetarium program is also useful in showing the sky at any time of night on any date of the year. Activity from each radiant is best seen when it is positioned highest in the sky, either due north or south along the meridian, depending on your latitude. It must be remembered that meteor activity is rarely seen at the radiant position. Rather they shoot outwards from the radiant, so it is best to center your field of view so that the radiant lies at the edge and not the center. Viewing there will allow you to easily trace the path of each meteor back to the radiant (if it is a shower member) or in another direction if it is sporadic. Meteor activity is not seen from radiants that are located far below the horizon. The positions below are listed in a west to east manner in order of right ascension (celestial longitude). The positions listed first are located further west therefore are accessible earlier in the night while those listed further down the list rise later in the night.



Radiant Positions at 10pm Local Daylight Saving Time



Radiant Positions at 1am Local Daylight Saving Time



Radiant Positions at 4am Local Daylight Saving Time

These sources of meteoric activity are expected to be active this week.

Detailed information on each source will continue next week when viewing conditions improve.

SHOWER	DATE OF MAXIMUM ACTIVITY	CELESTIAL POSITION	ENTRY VELOCITY	CULMINATION	HOURLY RATE	CLASS
		RA (RA in Deg.) DEC	Km/Sec	Local Daylight Saving Time	North- South	
June Bootids (JBO)	Jun 27	14:56 (224) +28	18	22:00	<1 - <1	III
Anthelion (ANT)	-	19:12 (288) -22	30	02:00	1 - 2	II
Northern June Aquilids (NZA)	Jul 15	20:21 (305) -07	40	03:00	<1 - <1	IV
Microscopiids (MIC)	Jul 06	20:41 (310) -28	40	03:00	<1 - <1	IV
June iota Pegasids (JIP)	Jun 25	22:36 (339) +30	61	05:00	<1 - <1	IV
phi Piscids A (PPS)	Jun 24	00:46 (011) +22	67	08:00	<1 - <1	IV
c- Andromedids (CAN)	Jul 12	01:08 (017) +43	57	08:00	<1 - <1	IV
July chi Arietids (JXA)	Jul 07	01:36 (024) +03	68	09:00	<1 - <1	IV

Shower: named for the constellation or closest star within a constellation where the radiant is located at maximum activity.

Maximum: the date on which the maximum activity is expected to occur.

Celestial Position: the area in the sky where shower meteors seem to appear from. This position is given in **right ascension** (celestial longitude) and **declination** (celestial latitude). The radiant must be near or above the horizon in order to witness activity from a particular shower.

Velocity: the velocity at which shower meteors strike the Earth's atmosphere. The velocity depends on the angle meteoroids (meteors in space) intersect the Earth. Meteoroids orbiting in the opposite direction of the Earth and striking the atmosphere head-on are much faster than

those orbiting in the same direction as the Earth. This velocity is measured in kilometers per second.

Culmination: the time at which the radiant lies highest above the horizon. This is usually the best time to view meteor activity from each source unless this occurs during daylight or an outburst is expected at a different time. When a radiant culminates in daylight it is best seen during the last hour of total darkness prior to dawn or after dusk.

Hourly Rate: the number of meteors one can expect to see each hour from dark sky sites. This differs from the zenith hourly rate which calculates the hourly rate one should see if the radiant is located exactly overhead and the limiting magnitude equals +6.5 (a very dark sky). Actual counts rarely reach this figure as the zenith angle of the radiant is usually less and the limiting magnitude is usually lower than +6.5.

Class: A scale developed to group meteor showers by their intensity:

- **Class I:** the strongest annual showers with ZHR's normally ten or better.
- **Class II:** reliable minor showers with ZHR's normally two to ten.
- **Class III:** showers that do not provide annual activity. These showers are rarely active yet have the potential to produce a major display on occasion.
- **Class IV:** weak minor showers with ZHR's rarely exceeding two. The study of these showers is best left to experienced observers who use plotting and angular velocity estimates to determine shower association. Observers with less experience are urged to limit their shower associations to showers with a rating of I to III. These showers are also good targets for video and photographic work.