

Meteor Activity Outlook for June 29 - July 5, 2024

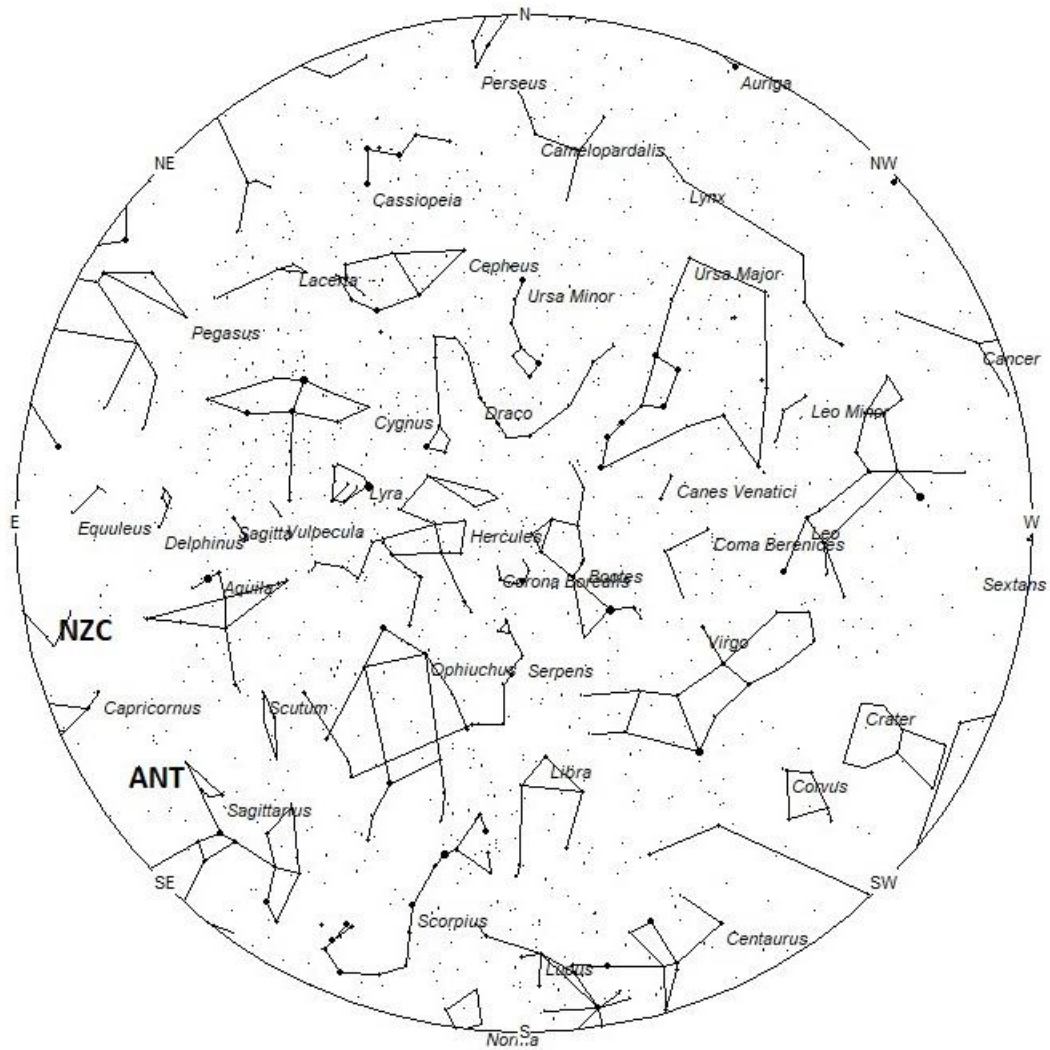


Mark Kirschner captured this brilliant fireball using his [AllSky Camera System](#) on January 24, 2024, at 04:06 EST (09:06 UT) from Northford, Connecticut, USA. The secondary streak to the left of the fireball is a camera artifact due to the extreme brightness of this object. ©Mark Kirschner

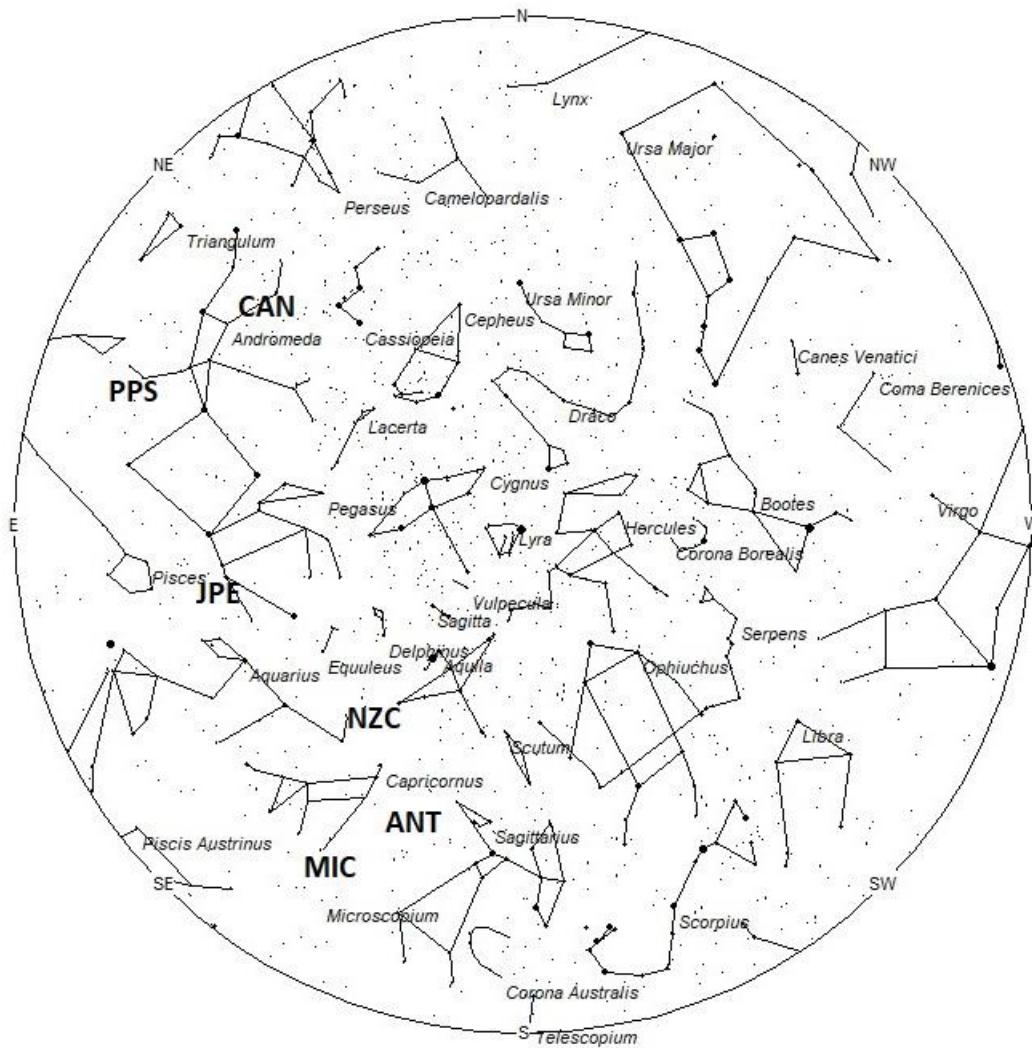
Meteor season finally gets going in July for the northern hemisphere. The first half of the month will be much like June with predominantly slow rates. After the 15th though, both sporadic and shower rates increase significantly. For observers in the southern hemisphere, sporadic rates will be falling 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 wanes from being half-illuminated to a very slender crescent. This weekend the moon will rise near 01:00 local daylight-saving time (LDST) and will illuminate the sky for the remainder of the night. Lunar interference will decrease with each passing night as its phase wanes. It will also rise approximately 45 minutes later each morning giving the meteor observer more time to view under dark conditions. The estimated total hourly rates for evening observers this weekend should be near 3 as seen from mid-northern latitudes (45N) and 4 as seen from tropical southern locations (25S) For morning observers, the estimated total hourly rates should be near 8 as seen from mid-northern latitudes (45N) and 9 as seen from tropical southern locations (25S). The actual rates seen will also depend on factors such as personal light and motion perception, local weather conditions, alertness, and experience in watching meteor activity. Morning rates are reduced during this period due to moonlight. 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.

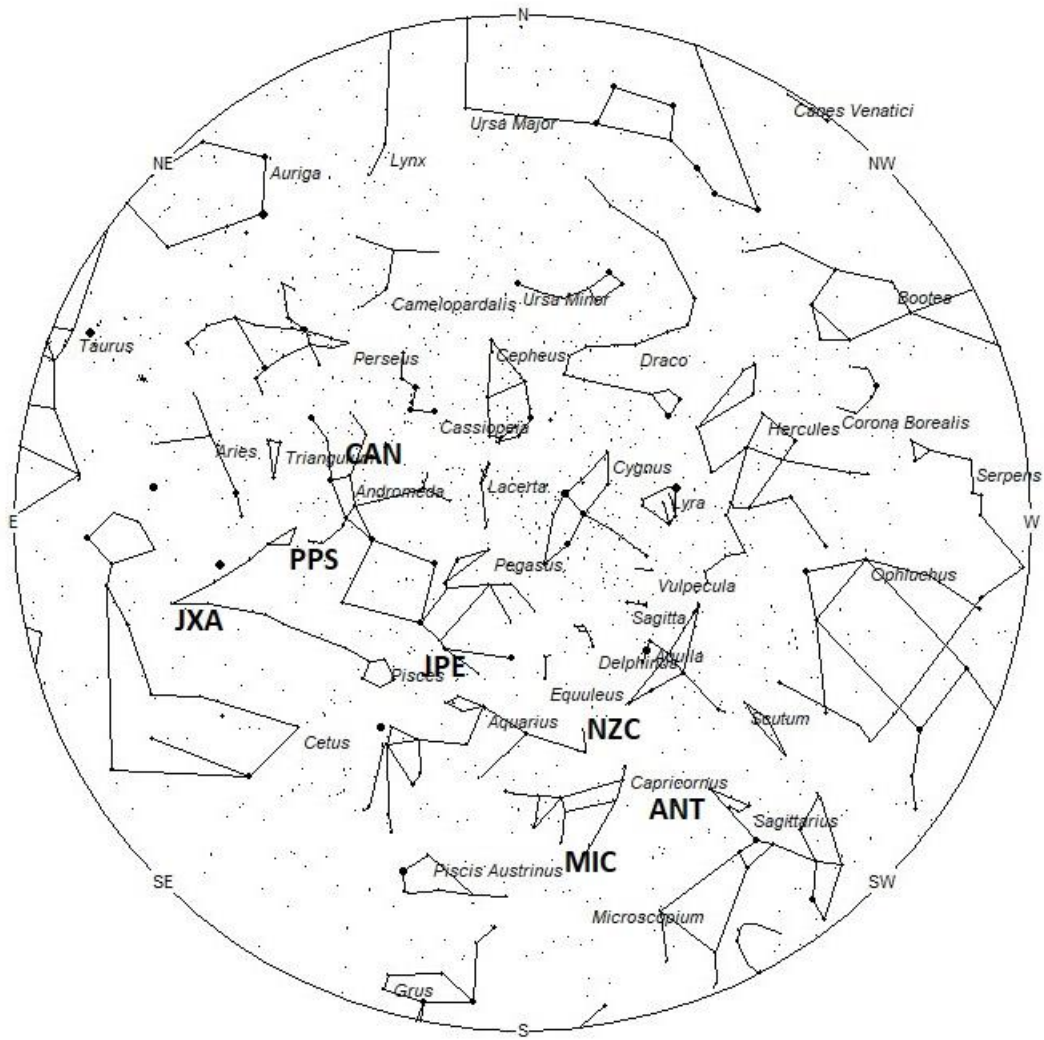
The radiant (the area of the sky where meteors appear to shoot from) positions and rates listed below are exact for Saturday night/Sunday morning June 29/30. These positions do not change greatly day to day so the listed coordinates may be used during this entire period. Most star atlases (available 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. I have also included charts of the sky that display the radiant positions for evening, midnight, and morning. The center of each chart is the sky directly overhead at the appropriate hour. These charts are oriented for facing south but can be used for any direction by rotating the charts to the desired direction. 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. Radiants that rise after midnight will not reach their highest point in the sky until daylight. For these radiants, it is best to view them during the last few hours before dawn. It must be remembered that meteor activity is rarely seen at its radiant position. Rather they shoot outwards from the radiant, so it is best to center your field of view so that the radiant lies toward 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

The center of the large **Anthelion (ANT)** radiant is currently located at 19:24 (291) -22. This position lies in eastern Sagittarius, 4 degrees southeast of the 3th magnitude star known as Albaldah (π Sagittarii A). This radiant is best placed near 0200 LDST, when it lies on the meridian and is located highest in the sky. Rates at this time should be near 1 per hour as seen from the northern hemisphere and 2 per hour as seen from south of the equator. With an entry velocity of 30 km/sec., the average Anthelion meteor would be of slow velocity.

The **Northern June Aquilids (NZC)** were discovered by Zdenek Sekanina in 1976. These meteors are active from June 26 through July 22 with maximum activity occurring on July 15. The radiant is currently located at 20:21 (305) -07. This area of the sky is located in southern Aquila, 5 degrees north of the double star known as alpha Capricornii. This radiant is best placed near 0300 LDST, when it lies on the meridian and is located highest in the sky. Hourly rates at this time should be less than 1 no matter your location. With an entry velocity of 40 km/sec., the average meteor from this source would be of medium-slow velocity. An interesting fact about this source is that it may be related to the Northern delta Aquariids of August. Where and when this source ends coincides with the start and position of the Northern delta Aquariids.

The **Microscopiids (MIC)** were discovered by G. Gartrell and W. G. Elford, in their study of Southern Hemisphere meteor streams. This stream is active from June 25 through July 16 with maximum activity occurring on July 6. The radiant is currently located at 20:41 (310) -28. This area of the sky is located on the Capricornus/Microscopium border, 2 degrees southwest of the 4th magnitude star known as omega Capricornii. This radiant is best placed near 0300 LDST, when it lies on the meridian and is located highest in the sky. Hourly rates at this time should be less than 1 no matter your location. With an entry velocity of 40 km/sec., the average meteor from this source would be of medium-slow velocity. This shower is synonymous with the Southern June Aquilids (SZC).

The **July Pegasids (JPE)** are active from July 4th through August 9th with maximum activity occurring on July 10th. The radiant is currently located at 22:30 (338) +07. This area of the sky is located in southwestern Pegasus, 3 degrees southwest of the 3rd magnitude star known as Homan (zeta Pegasi). This radiant is best seen near during the last dark hour of the night when the radiant lies highest in the southern sky. Rates are expected to be less than 1 per hour this week no matter your location. With an entry velocity of 65 km/sec., the average meteor from this source would be of swift velocity.

The **phi Piscids (PPS)** have been found to be comprised of two components with separate activity periods. Component A is active from June 13 through July 5 with maximum activity occurring on June 25th. Current rates are expected to be near 1 meteor per hour just before dawn. The position of the radiant lies near 00:46 (011) +22. This position lies on the Pisces/Andromeda border, 2 degrees southwest of the 4th magnitude star known as eta Andromedae. This area of the sky lies highest in the northeastern sky during the last hour prior to dawn. With an entry velocity of 67km/sec., these meteors are swift.

The **c-Andromedids (CAN)** were discovered by Sirko Molau and Juergen Rendtel using video data from the IMO network. Activity from this source is seen from June 21 through July 28 with maximum activity occurring on July 12. The radiant currently lies at 01:08 (017) +43, which places it in central Andromeda, 5 degrees east of the Great Andromeda Galaxy, which is visible to the naked eye as a small oval cloud. This area of the sky is best seen during the last dark hour before dawn when the radiant lies highest in the northern sky. Observers in the northern hemisphere are better situated to view this activity as the radiant rises much higher in the sky before dawn compared to southern latitudes. Current rates would be less than 1 per hour no matter your location. With an entry velocity of 57 km/sec., the average meteor from this source would be of swift velocity.

The **July chi Arietids (JXA)** were discovered by two investigating teams in Europe using video data from European video Meteor Network Database (EDMOND), SonotaCo, 2013; and CMN, 2013. Activity from this stream is seen from June 26 through July 22 with maximum activity occurring on July 7. The radiant currently lies at 01:36 (024) +03, which places it in southeastern Pisces, 2 degrees southwest of the 4th magnitude star known as nu Piscium. This area of the sky is best seen during the last dark hour before dawn when the radiant lies highest in a dark sky. Current rates are expected to be less than 1 no matter your location. With an entry velocity of 68 km/sec., the average meteor from this source would be of swift velocity.

Sporadic meteors are those meteors that cannot be associated with any known meteor shower. All meteor showers are evolving and disperse over time to the point where they are no longer recognizable. Away from the peaks of the major annual showers, these sporadic meteors make up the bulk of the activity seen each night. As seen from the mid-northern hemisphere (45N) one would expect to see during this period approximately 6 sporadic meteors per hour during the last hour before dawn as seen from rural observing sites. Evening rates would be near 2 per hour. As seen from the tropical southern latitudes (25S), morning rates would be near 7 per hour as seen from rural observing sites and 3 per hour during the evening hours. Locations between these two extremes would see activity between these listed figures. Morning rates are reduced due to moonlight.

The list below offers the information in tabular form of the showers that I feel are within reach of the visual observer to discern. Hourly rates are often less than one, so these sources are rarely listed as visual targets in most meteor shower lists. If you are like me and wish to associate as many meteors as possible with known sources, then you will appreciate these listings. Before listing meteors from these obscure sources, you should attempt to prove these meteors belong to them and are not chance alignments of sporadic meteors. You can note parameters such as duration, length, radiant distance and the elevation of each meteor to help compute the probability of shower association. It should be remembered that slow meteors can be seen from fast showers, but fast meteors cannot be produced from slow showers. Slower showers are those with velocities less than 35/km per second. Slow meteors can appear from fast showers when they appear close to the radiant or low in the sky. The table located on page 22 of the [IMO's 2024 Meteor Shower Calendar](#) is a big help in aiding in the identification of meteors. If you record the length and duration of each meteor, you can use this chart to check the probability of the meteor belonging to a shower of known velocity. If the angular velocity is similar to the figure in the table, then your meteor probably belongs to that shower. Rates and positions are exact for Saturday night/Sunday morning.

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	
Anthelions (ANT)	-	19:24 (291) -22	30	02:00	1 - 2	II
Northern June Aquilids (NZC)	Jul 15	20:21 (305) -07	40	03:00	<1 - <1	IV
Microscopiids (MIC)	Jul 05	20:41 (310) -28	40	03:00	<1 - <1	IV
July Pegasids (JPE)	Jul 10	22:30 (338) +07	56	05:00	<1 - <1	II
phi Piscids (PPS)	Jun 25	00:46 (011) +22	67	08:00	1 - <1	IV
c- Andromedids (CAN)	Jul 12	01:08 (017) +43	57	10:00	<1 - <1	IV
July chi Arietids (JXA)	Jul 07	01:36 (024) +03	68	10:00	<1 - <1	IV

You can keep track of the activity of these meteor showers as well as those beyond the limits of visual observing by visiting the [NASA Meteor Shower Portal](#). You can move the sky globe to see different areas of the sky. Colored dots indicate shower meteors while white dots indicate sporadic (random) activity. The large orange disk indicates the position of the sun so little activity will be seen in that area of the sky.

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

- **Class I:** the strongest annual showers with Zenith Hourly Rates 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. These weak showers are also good targets for video and photographic work. Observers with less experience are urged to limit their shower associations to showers with a rating of I to III.

