

# Meteor Activity Outlook for August 5-11, 2023

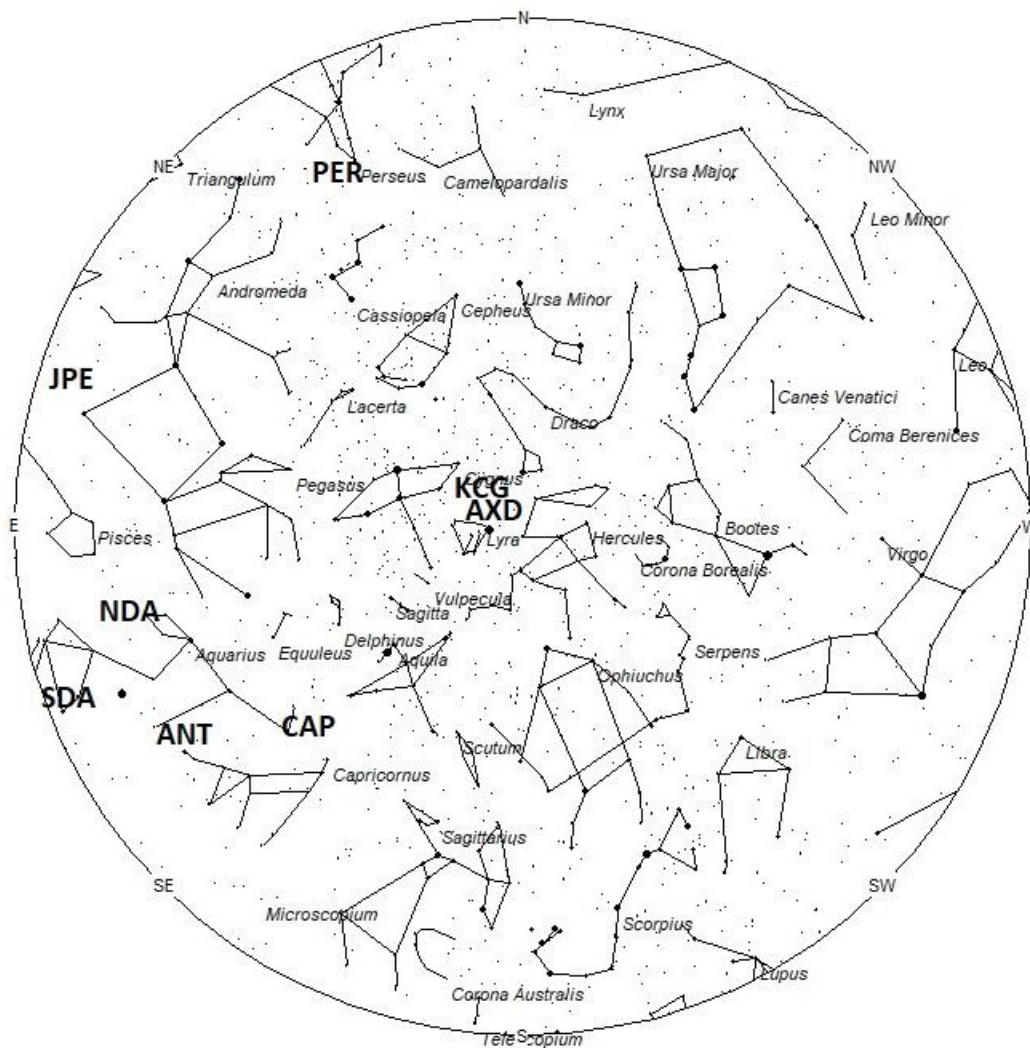


Dave Giordano captured this colorful fireball at 3:10am EST (8:11 UT) on November 22, 2022 from Carlisle, Massachusetts USA. For more information on this event visit: [https://ams.imo.net/members/imo\\_view/event/2022/9158](https://ams.imo.net/members/imo_view/event/2022/9158) ©Dave Giordano

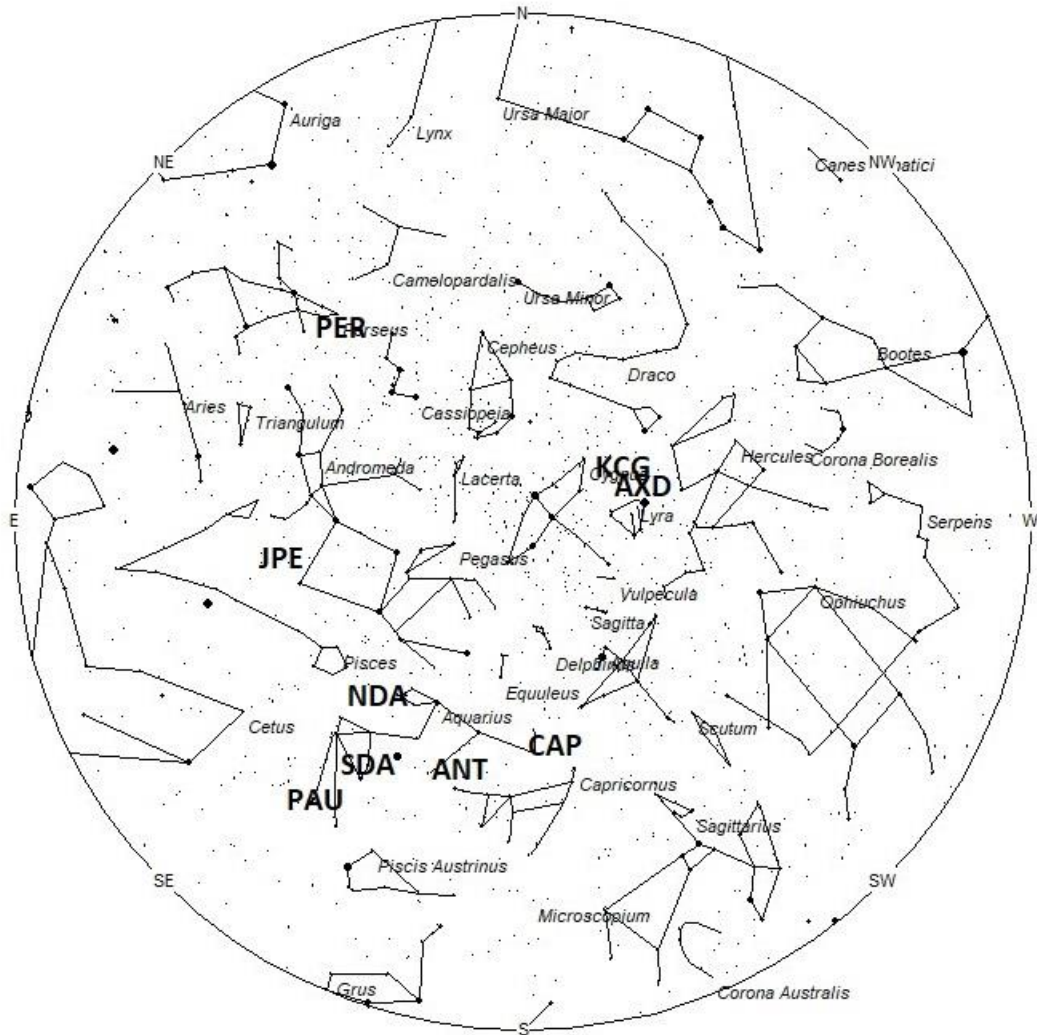
During this period, the moon reaches its last quarter phase on Tuesday August 8th. At this time the half-illuminated moon will rise near midnight local daylight saving time (LDST). This weekend the waning gibbous moon will rise during the late evening hours and will spoil the sky for the remainder of the night, obscuring all but the brighter meteors. The estimated total hourly rates for evening observers this week should be near 5 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 20 as seen from mid-northern latitudes (45N) and 15 as seen from tropical southern locations (25S). Morning rates are reduced due to interfering moonlight. 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. 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 August 5/6. 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

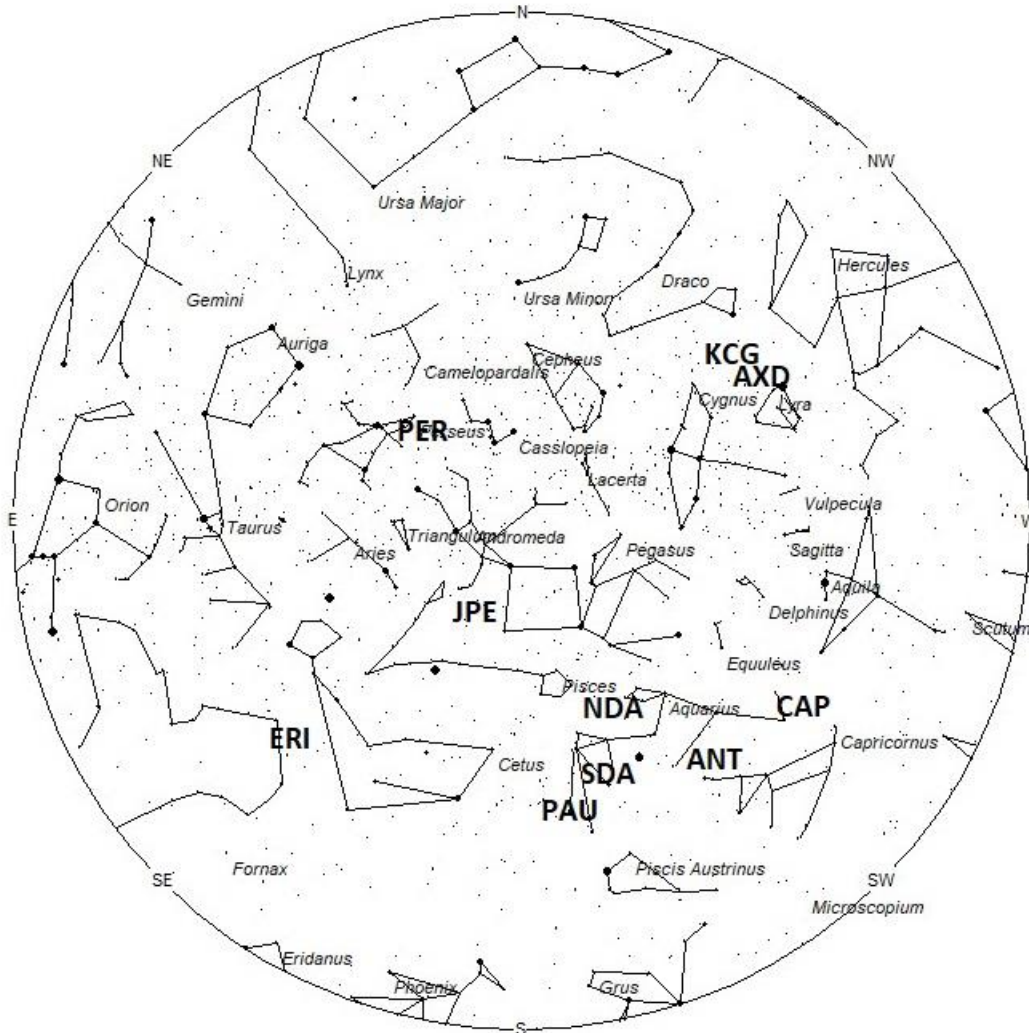
meridian, depending on your latitude. Radiants that rise after midnight will not reach their highest point in the sky until daylight. For these radiants, it is best to view them during the last few hours before dawn. It must be remembered that meteor activity is rarely seen at its radiant position. Rather 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-Savings Time



Radiant Positions at 1am Local Daylight-Savings Time



Radiant Positions at 4am Local Daylight-Savings Time

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

The **August xi Draconids (AXD)** was discovered by Masahiro Koseki in his study of SonotaCo video observations 2007–2018. These meteors were long considered part of the kappa Cygnids but Koseki states that they are clearly distinct\*. This stream is active from August 4–28 with maximum activity occurring on the 15th. The radiant is currently located at 18:30 (277) +43, which places it in northwestern Lyra, 4 degrees northwest of the zero-magnitude star known as Vega (alpha Lyrae). To best see these meteors, face low toward the north near 2300 LDST, when it lies on the meridian and is located highest in the northern sky. With an entry velocity of 19 km/sec., the average August Draconid meteor would be of slow velocity. Rates this week are expected to be less than 1 no matter your location. Due to the high northern declination these meteors are difficult to observe from the southern hemisphere.

\*The activity of meteor showers recorded by SonotaCo video observations 2007–2018, Masahiro Koseki, 2021, <https://www.meteornews.net/2021/02/09/february-2021-special-issue-of-emetornews-online/> Page 147

The **kappa Cygnids (KCG)** are active from August 1–27, with maximum occurring on the 14<sup>th</sup>. The radiant is currently located at 18:44 (281) +44. This area of the sky is located in northern Lyra, 5 degrees northeast of the zero magnitude star known as Vega (alpha Lyrae). This position is close to the radiant of the August xi Draconids so care must be taken to separate these two showers. To best see these meteors face low toward the north near 2300 LDST when it lies on the meridian and is located highest in the northern sky. With a high northern declination, these meteors are difficult to view from the southern hemisphere. Expected hourly rates this week are less than 1 no matter your location. With an entry velocity of 21 km/sec., the average meteor from this source would be of slow velocity.

The **alpha Capricornids (CAP)** are active from July 7 through August 15, peaking on July 31<sup>st</sup>. The radiant is currently located at 20:36 (309) -08. This position lies in extreme southeastern Aquila, 4 degrees southwest of the 4<sup>th</sup> magnitude star known as 3 Aquarii. Current rates are expected to be near 1 per hour no matter your location. These meteors are best seen near 01:00 LDST, when the radiant lies highest in the southern sky. With an entry velocity of 21 km/sec., the average meteor from this source would be of medium-slow velocity.

The large **Anthelion (ANT)** radiant is currently centered at 21:44 (326) -15. This position lies in northeastern Capricornus, 3 degrees north of the 3<sup>rd</sup> magnitude star known as Deneb Algedi (delta Capricorni Aa). This location is fairly close to the alpha Capricornid radiant so care should be taken when reporting these meteors. This radiant is best placed near 02:00 LDST when it lies on the meridian and is highest in the southern sky. Rates at this time should be near 1 per hour as seen from the northern hemisphere and 2 as seen from south of the equator. With an entry velocity of 30 km/sec., the average Anthelion meteor would be of medium-slow velocity.

The **Northern delta Aquariids (NDA)** are a conglomeration of at least two weak radiants that peak 10 days apart. These meteors were first mentioned by Luigi G. Jacchia in his book *The Moon, Meteorites and Comets*. The NDA's are active from August 2–17, with the first peak occurring on the 12th. The radiant currently is located near 22:42 (341) -02. This area of the sky is located in

northern Aquarius, 2 degrees southeast of the 4th magnitude star known as eta Aquarii. To best see these meteors look high in the northern sky near 0300 LDST, when it lies on the meridian and is located highest in the southern 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 velocity.

The **Southern delta Aquariids (SDA)** are active from a radiant located at 22:57 (344) -15. This area of the sky is located in central Aquarius, 1 degree northeast of the 3rd magnitude star known as Skat (delta Aquarii). This radiant is best placed near 0300 LDST, when it lies on the meridian and is located highest in the southern sky. Hourly rates at this time should be near 2 as seen from the northern hemisphere and near 3 as seen from south of the equator. With an entry velocity of 40 km/sec., the average meteor from this source would be of medium velocity.

The **Piscids Austrinids (PAU)** are an obscure shower, not well seen from the northern hemisphere. Recent studies by the IMO Video Network shows little activity. Other studies have indicated that this shower is active later than previously thought. We will go along with that idea until more information is available. It is now thought that this radiant is active from August 1<sup>st</sup> through the 10th, with maximum activity occurring on the 8th. Using these parameters, the current position of the radiant would be 23:27 (352) -21. This area of the sky is located in southeastern Aquarius, 1 degree south faint star known as 98 Aquarii. This position is also 10 degrees northeast of the bright star known as Fomalhaut (alpha Piscis Austrini). To best see these meteors, look southward near 04:00 LDST. Current hourly rates should be less than 1 no matter your location. With an entry velocity of 43km/sec., most activity from this radiant would be of medium velocities.

The last of the **July Pegasids (JPE)** are expected this week from a radiant located at 00:34 (009) +18. This area of the sky is located in central Pisces, 4 degrees south of the faint star known as 55 Piscium. This radiant is best placed near 0500 LDST, when it lies on the meridian and is located 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 63 km/sec., the average meteor from this source would be of swift velocity.

The **Perseids (PER)** are active from a radiant located at 02:33 (038) +56. This position lies in northwestern Perseus, 2 degrees west of the 4th magnitude star known as Miram (eta Persei). This area of the sky is best placed for viewing during the last dark hour before dawn when it lies highest in the northern sky. Maximum activity is not until August 13th so rates this weekend are expected to be near 8 as seen from the northern hemisphere and 3 as seen from south of the equator. This will increase with each passing night this week. With an entry velocity of 59 km/sec., the average meteor from this source would be of swift velocity. Viewers in the southern hemisphere have a limited view of this shower as the radiant only rises just before dawn.

The **eta Eridanids (ERI)** are active from a radiant near 02:40 (040) -13. This position lies in eastern Cetus, 2 degrees northwest of the 4th magnitude star known as pi Ceti. This source is active until September 10<sup>th</sup>, with maximum activity occurring on August 7<sup>th</sup>. Current rates are expected to be near 1 per hour no matter your location. These meteors are best seen during the last dark hour prior to dawn when the radiant lies highest above the southeastern horizon in a dark sky. With an entry velocity of 64 km/sec., the average meteor from this source would be of swift speed.

As seen from the mid-northern hemisphere (45N) one would expect to see approximately 10 **sporadic** meteors per hour during the last hour before dawn as seen from rural observing sites. Evening rates would be near 3 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 2 per hour during the evening hours. Rates are reduced due to moonlight during this period.

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.

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 1 but noting parameters such as the radiant distance and the elevation of each meteor, one can compute the probability of shower association. Most showers discovered by video means have rates less than 1 meteor per **night** away from maximum, so the showers listed in these articles are not as weak as they seem. Rates and positions are exact for Saturday night/Sunday morning except where noted in the shower descriptions.

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	
August xi Draconids (AXD)	Aug 15	18:30 (277) +43	19	23:00	<1 - <1	IV
kappa Cygnids (KCG)	Aug 14	18:44 (281) +44	21	23:00	<1 - <1	II
alpha Capricornids (CAP)	Jul 31	20:36 (309) -08	21	01:00	1 - 1	II
Anthelion (ANT)	-	21:44 (326) -15	30	02:00	1 - 2	II
Northern delta Aquariids (NDA)	Aug 12	22:42 (341) -02	40	03:00	<1 - <1	IV
Southern delta Aquariids (SDA)	Jul 31	22:57 (344) -15	40	03:00	2 - 3	I

Piscids Austrinids (PAU)	Aug 08	23:27 (352) -21	43	04:00	<1 - <1	IV
July Pegasids (JPE)	Jul 11	00:34 (009) +18	63	05:00	<1 - <1	II
Perseids (PER)	Aug 13	02:33 (038) +56	59	07:00	8 - 3	I
eta Eridanids (ERI)	Aug 107	02:40 (040) -13	64	07:00	1 - 1	II

**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.