

# Meteor Activity Outlook for April 15-21, 2023

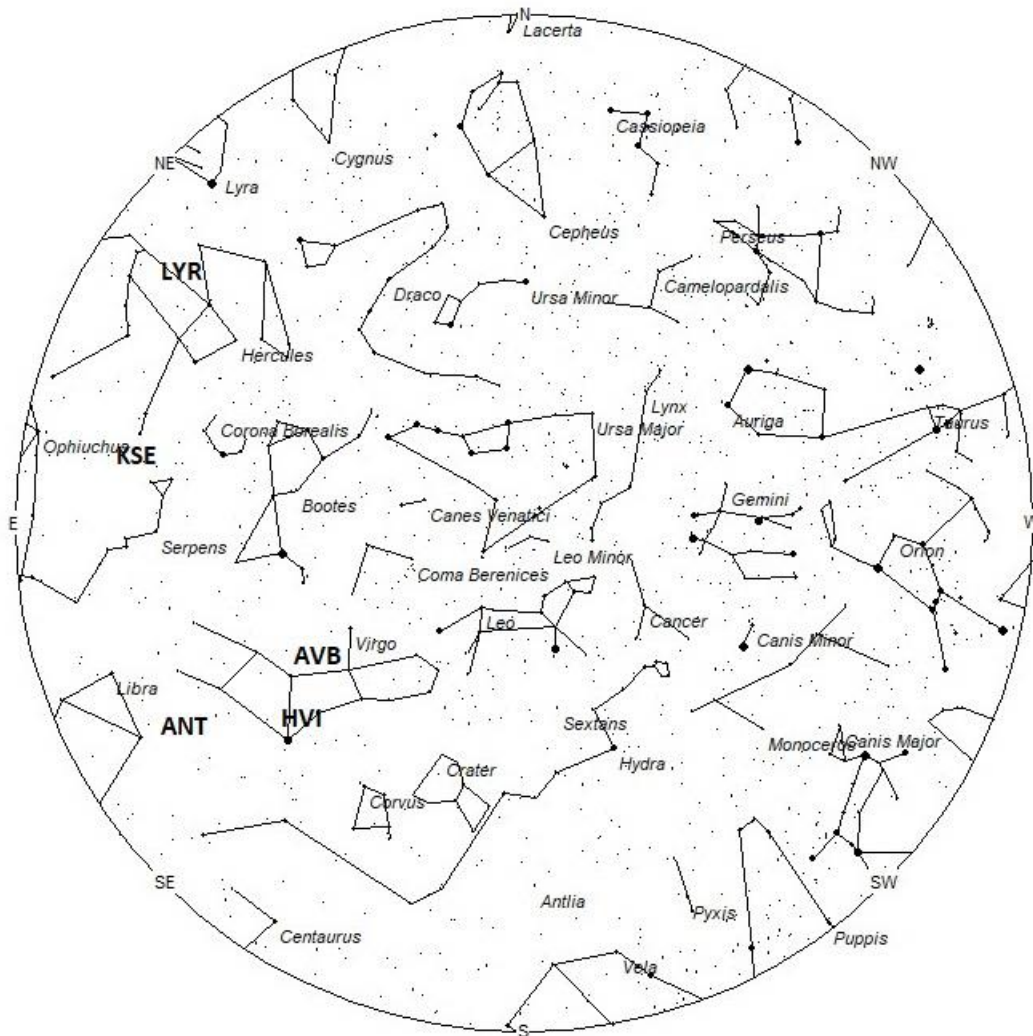


Ed Albin captured this incredibly bright fireball using his [AllSky7 camera meteor video system](https://ams.imo.net/members/imo_view/event/2022/6491) on September 26, 2022, at 00:04 EDT (04:04 UT ) as seen from Covington, Georgia, USA. To see other reports and photographs of this fireball visit: [https://ams.imo.net/members/imo\\_view/event/2022/6491](https://ams.imo.net/members/imo_view/event/2022/6491). ©Ed Albin

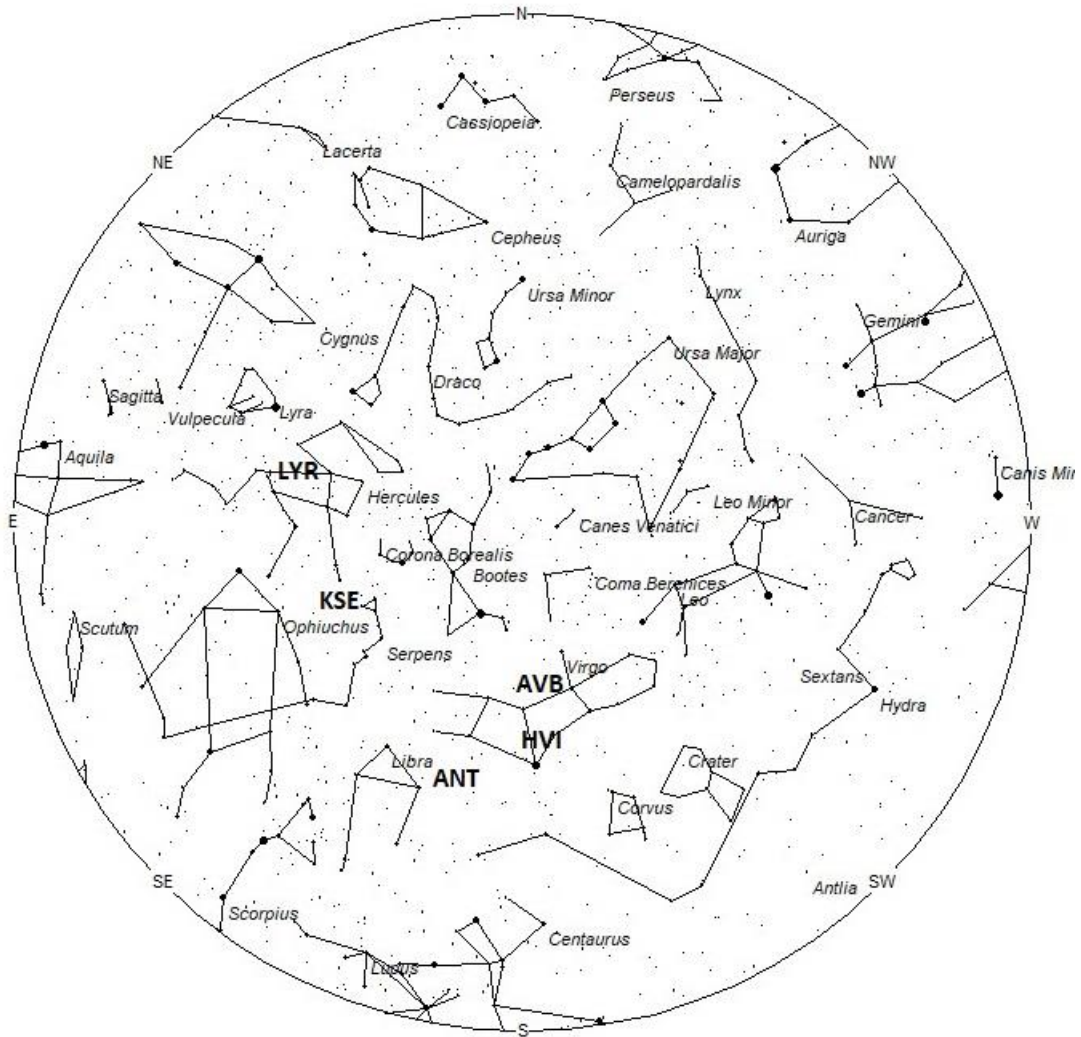
During this period, the moon reaches its new phase on Thursday April 20th. At that time the moon will be positioned near the sun and will be invisible at night. This weekend the waning crescent moon will rise during the morning hours and will only be a minor inconvenience to meteor observers out prior to dawn. The estimated total hourly rates for evening observers this week 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 6 as seen from mid-northern latitudes (45N) and 12 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. Late morning rates are slightly 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 April 15/16. 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

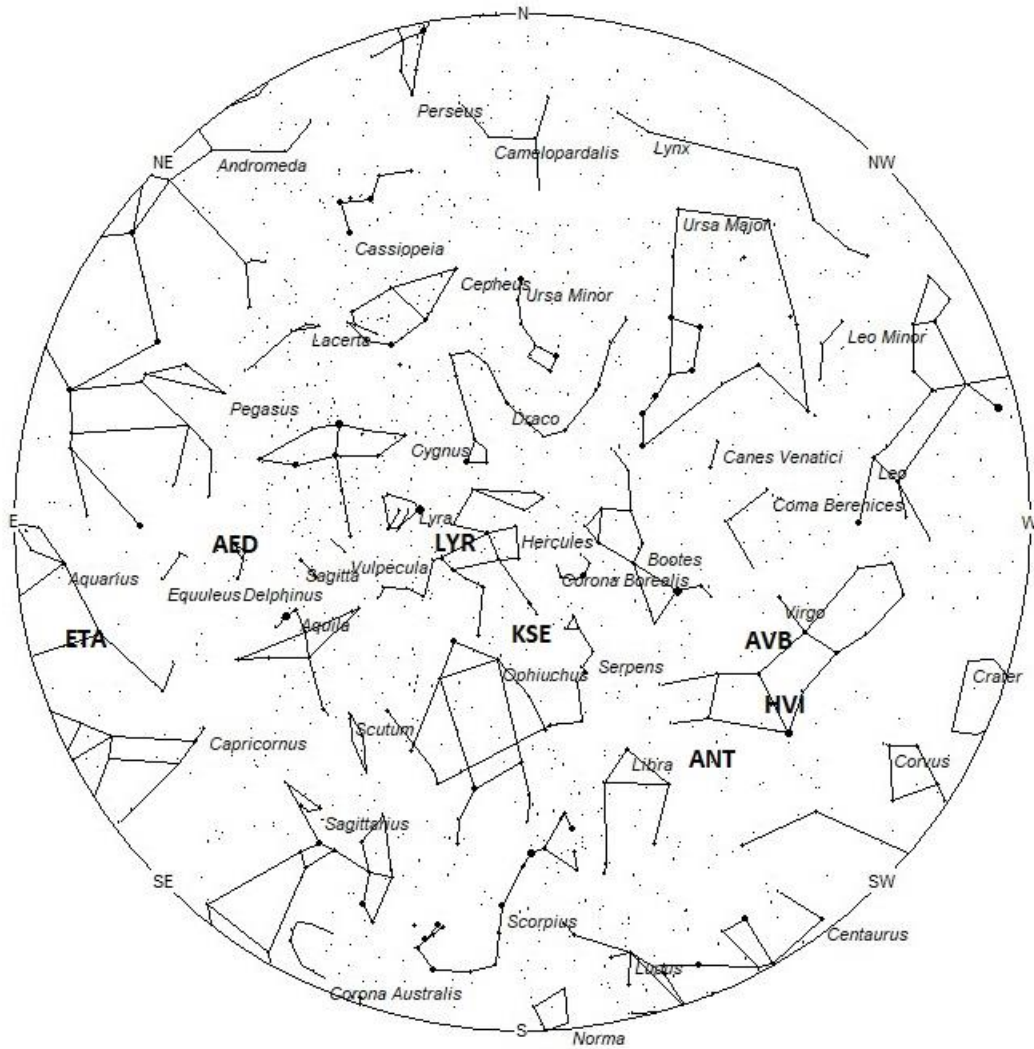
radiant is best seen when it is positioned highest in the sky, either due north or south along the meridian, depending on your latitude. It must be remembered that meteor activity is rarely seen at its radiant position. Rather they shoot outwards from the radiant, so it is best to center your field of view so that the radiant lies 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 10:00pm Local Daylight Saving Time



Radiant Positions at 1:00am Local Daylight Saving Time



Radiant Positions at 4:00am Local Daylight Saving Time

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

The **pi Puppids (PPU)** are predicted to reach maximum activity on April 24<sup>th</sup> from a radiant located at 07:22 (110) -45. This area of the sky is located in central Puppis, 2 degrees south of the 3<sup>rd</sup> magnitude star known as sigma Puppis. This area of the southern sky is best seen as soon as it becomes dark. Rates are variable but expected to be less than 1 per hour no matter your location. These meteors are best seen from the far Southern Hemisphere where the radiant lies much higher in the sky compared to observers further north. With an entry velocity of 15 km/sec., the average meteor from this source would be of very slow velocity.

The **h Virginids (HVI)** were discovered by members of SonotaCo. These meteors are active from April 20-May 04 with maximum activity predicted on May 1<sup>st</sup>. The radiant is currently located at 13:21 (200) -09. This area of the sky is located in southern Virgo, 2 degrees northwest of the 1<sup>st</sup> magnitude star known as Spica (alpha Virginis). This area of the sky is best seen near 01:00 local daylight saving time (LDST) when it is located highest in the southern sky. No matter your location, rates are expected to be less than 1 per hour. At 21km/sec. these meteors would produce meteors of very slow velocity. This source is also far enough from the core of the anthelion radiant to be noticed but care must be taken to differentiate between the two radiants.

The **alpha Virginids (AVB)** were first mentioned by R. B. Southworth and G. S. Hawkins in their publication known as Smithsonian Contributions to Astrophysics (1963). These meteors are active from April 6 through May 1 with maximum occurring on April 18<sup>th</sup>. The current location of this radiant is 13:21 (200) +04. This position is located in central Virgo, 4 degrees east of the 3<sup>rd</sup> magnitude star known as Minelauva (delta Virginis). This radiant is best placed near 01:00 LDST when it lies on the meridian and is highest in the southern sky. Rates at this time should be less than 1 per hour no matter your location. With an entry velocity of 20 km/sec., the average meteor from this source would be of very slow velocity. This source is also far enough from the core of the anthelion radiant to be noticed but care must be taken to differentiate between the two radiants.

The large **Anthelion (ANT)** radiant is currently centered at 14:36 (219) -15. This position lies in western Libra, 4 degrees northwest of the 3<sup>rd</sup> magnitude star known as Zubenelgenubi (alpha Librae). Due to the large size of this radiant, these meteors may also be seen from eastern Virgo as well as Libra. 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 2 per hour as seen from the Northern Hemisphere and 3 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 **kappa Serpentids (KSE)** were discovered by A.F. Cook from data provided by B. A. Lindblad, R.E. McCrosky, and A. Posen. These meteors are active from April 11-22, with maximum activity occurring on the 16<sup>th</sup>. The radiant currently lies at 16:30 (248) +18. This area of the sky actually lies in southern Hercules, 2 degrees southeast of the 4<sup>th</sup> magnitude star known as gamma Herculis. With an entry velocity of 46km/sec., the average meteor from this source would be of medium-fast velocity. These meteors are best seen near 04:00 LDST, when the radiant lies on the meridian and is situated highest in the southern sky. Hourly rates this week are expected to be less than 1.

The **Lyrids (LYR)** are active from April 16-29 and expected to reach maximum activity on April 23rd. The radiant is currently located at 17:40 (265) +35. This area of the sky is located in eastern Hercules, 4 degrees southeast of the 3rd magnitude star known as pi Herculis. This radiant is best placed during the last hour before dawn when it lies nearly overhead in a dark sky. Rates this weekend will be less than 1 no matter your location. With an entry velocity of 44 km/sec., the average meteor from this source would be of medium-swift velocity.

The **April epsilon Delphinids (AED)** were discovered by P. Jenniskens and R. Rudawska from CAMS and SonotaCo meteoroid orbit surveys published in 2014. This weak source is active from March 31 through April 20, with maximum activity occurring on April 9<sup>th</sup>. The radiant currently lies at 20:52 (313) +16. This position lies in eastern Delphinus, 2 degrees west of the 4th magnitude double star known as gamma Delphini. With an entry velocity of 60km/sec., the average meteor from this source would be of fast velocity. These meteors are best seen during the last dark hour prior to morning twilight when the radiant lies highest in the eastern sky. Current hourly rates would be less than 1.

The **eta Aquariids (ETA)** are active from April 15 through May 27 with maximum activity expected on May 6<sup>th</sup>. The radiant is currently located at 21:38 (325) -07. This area of the sky is located in western Aquarius, 1 degree southeast of the 3rd magnitude star known as Sadalsuud (beta Aquarii). These meteors are not visible prior to 0200 LST and are best seen just before the start of dawn when the radiant lies highest in the eastern sky. Hourly rates are expected to be low this week as maximum activity is still three weeks away. With an entry velocity of 64 km/sec., the average meteor from this source would be of swift velocity.

The last of the **delta Pavonids (DPA)** are expected this weekend from a radiant that lies near 22:26 (337) -66. This area of the sky lies in western Tucana, 1 degree south of the 4th magnitude star known as zeta Tucanae. These meteors are best seen during the last dark hour prior to dawn when the radiant lies in the southeastern sky. With an entry velocity of 58km/sec., the average meteor from this source would be of fast velocity. Expected rates are less than 1 per hour during this period. These meteors are poorly seen from the Northern Hemisphere.

As seen from the mid-northern hemisphere (45N) one would expect to see approximately 4 **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 9 per hour as seen from rural observing sites and 3 per hour during the evening hours. Late morning rates are slightly reduced by 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.

<b>SHOWER</b>	<b>DATE OF MAXIMUM ACTIVITY</b>	<b>CELESTIAL POSITION</b>	<b>ENTRY VELOCITY</b>	<b>CULMINATION</b>	<b>HOURLY RATE</b>	<b>CLASS</b>
		<b>RA (RA in Deg.) DEC</b>	<b>Km/Sec</b>	<b>Local Daylight Saving Time</b>	<b>North- South</b>	
pi Puppids (PPU)	Apr 24	07:22 (110) -45	15	19:00	<1 - <1	III
h Virginids (HVI)	May 01	13:21 (200) -09	21	01:00	<1 - <1	IV
alpha Virginids (AVB)	Apr 18	13:21 (200) +04	20	01:00	<1 - <1	IV
Anthelions (ANT)	-	14:36 (219) -15	30	02:00	2 - 3	II
kappa Serpentids (KSE)	Apr 16	16:30 (248) +18	46	04:00	<1 - <1	IV
Lyrids (LYR)	Apr 23	17:40 (265) +35	44	05:00	<1 - <1	I
April epsilon Delphinids (AED)	Apr 09	20:52 (313) +16	60	08:00	<1 - <1	IV
eta Aquariids (ETA)	May 06	21:38 (325) -07	64	09:00	<1 - <1	I
delta Pavonids (DPA)	Mar 31	22:26 (337) -66	58	10:00	<1 - <1	IV

**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.