

Meteor Activity Outlook for April 22-28, 2023

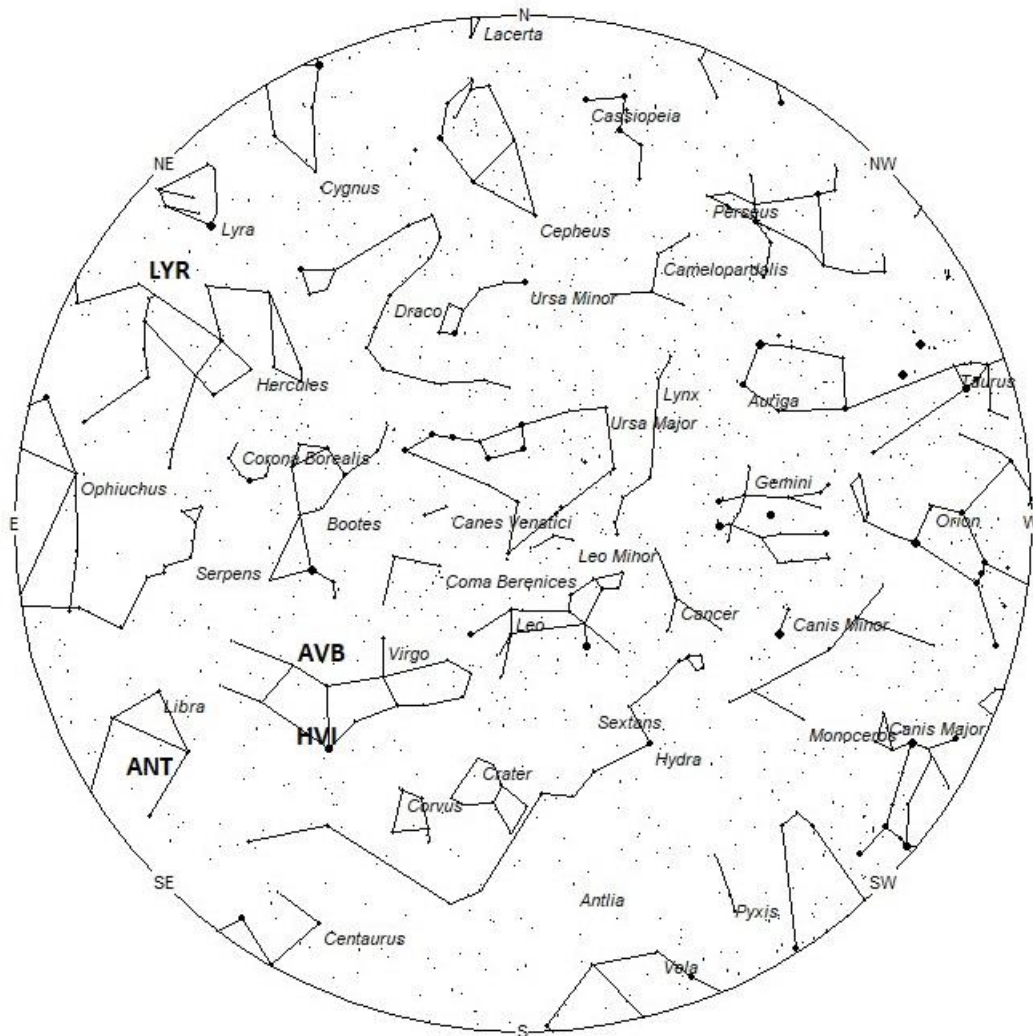


Paul Maggs captured this bright fireball using his GoPro camera on September 23, 2022, at 02:00 BST (01:00 UT) as seen from Easton, England. The bright star above the fireball is Vega and the bright object in the upper left corner of the frame is the planet Jupiter. ©Paul Maggs

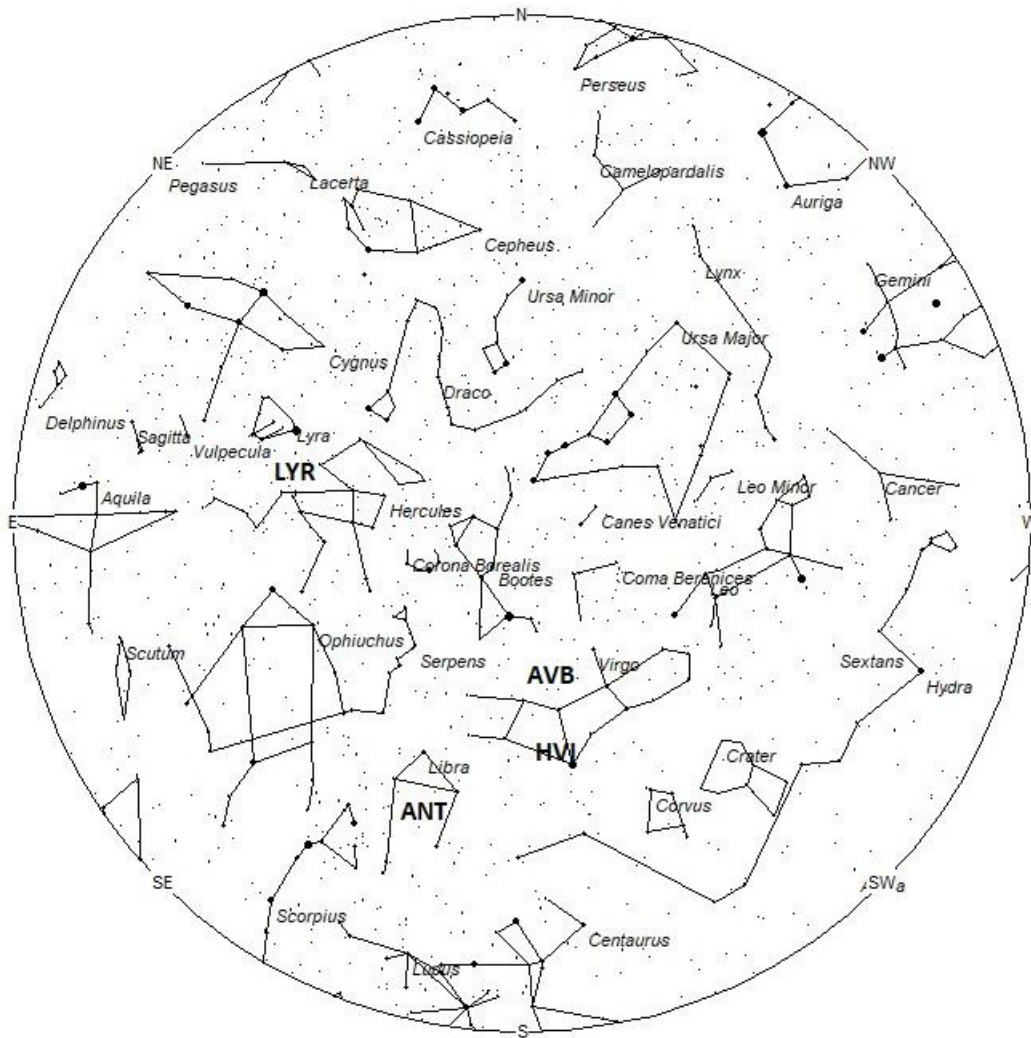
During this period, the moon reaches its first quarter phase on Thursday April 27th. At that time the moon will be positioned 90 degrees east of the sun and will be set near 0300 local daylight saving time (LDST). This weekend the waxing crescent moon will set during the evening hours and will only be a minor inconvenience to meteor observers out viewing during that time. 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 20 as seen from mid-northern latitudes (45N) and 16 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. 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 22/23. 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

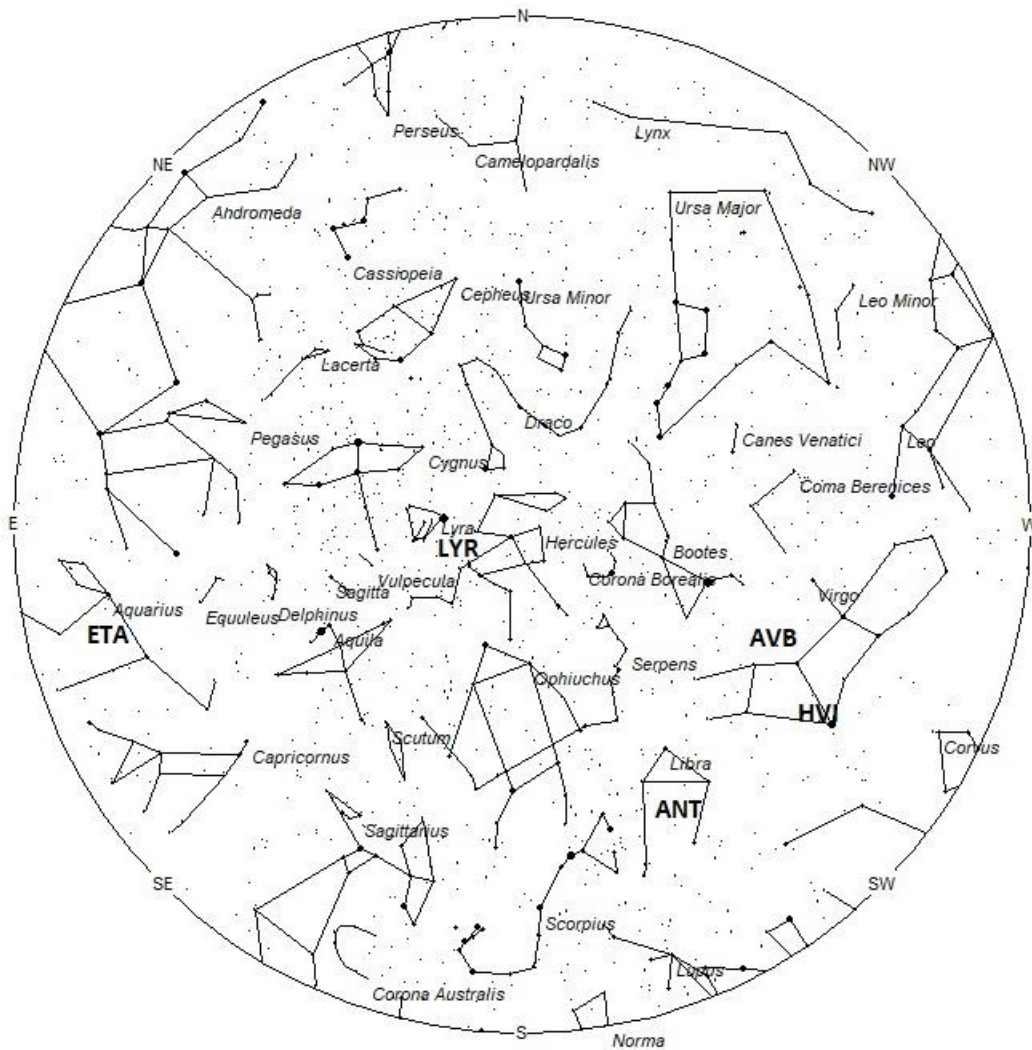
from the radiant, so it is best to center your field of view so that the radiant lies at the edge and not the center. Viewing there will allow you to easily trace the path of each meteor back to the radiant (if it is a shower member) or in another direction if it is sporadic. Meteor activity is not seen 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 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 **pi Puppids (PPU)** are predicted to reach maximum activity on April 24th from a radiant located at 07:22 (110) -45. This area of the sky is located in central Puppis, 2 degrees south of the 3rd 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 1st. The radiant is currently located at 13:28 (202) -10. This area of the sky is located in southern Virgo, 1 degree northeast of the 1st magnitude star known as Spica (alpha Virginis). This area of the sky is best seen near midnight 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 20km/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 18th. The current location of this radiant is 13:37 (204) +04. This position is located in northeastern Virgo, 4 degrees north of the 3rd magnitude star known as Heze (zeta Virginis A). This radiant is best placed near midnight 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 19 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 15:00 (225) -17. This position lies in central Libra, 3 degrees southeast of the 3rd 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 **Lyrids (LYR)** are active from April 16-29 and expected to reach maximum activity on April 23rd. The radiant is currently located at 18:12 (273) +33. This area of the sky is located on the Hercules/Lyra border, 7 degrees southwest of the zero magnitude star known as Vega (alpha Lyrae). 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 near 10 per hour as seen from the Northern Hemisphere and 3 as seen from south of the equator. With an entry velocity of 47 km/sec., the average meteor from this source would be of medium-swift velocity.

The **eta Aquariids (ETA)** are active from April 15 through May 27 with maximum activity expected on May 6th. The radiant is currently located at 21:58 (329) -05. This area of the sky is located in central Aquarius, 5 degrees south of the 3rd magnitude star known as Sadalmelik (alpha Aquarii A). 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 two weeks away. With an entry velocity of 65 km/sec., the average meteor from this source would be of swift velocity.

As seen from the mid-northern hemisphere (45N) one would expect to see approximately 5 **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 8 per hour as seen from rural observing sites and 3 per hour during the evening hours.

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
					Local Daylight Saving Time	North- South	
pi Puppids (PPU)	Apr 24	07:22 (110) -45	15	19:00	<1 - <1		III
h Virginids (HVI)	May 01	13:28 (202) -10	20	01:00	<1 - <1		IV
alpha Virginids (AVB)	Apr 18	13:37 (204) +04	19	01:00	<1 - <1		IV

Anthelions (ANT)	-	15:00 (225) -17	30	02:00	2 - 3	II
Lyrids (LYR)	Apr 23	18:12 (273) +33	47	05:00	10 - 3	I
eta Aquiriids (ETA)	May 06	21:58 (329) -05	65	09:00	2 - 2	I

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.