

Meteor Activity Outlook for April 29 – May 5, 2023



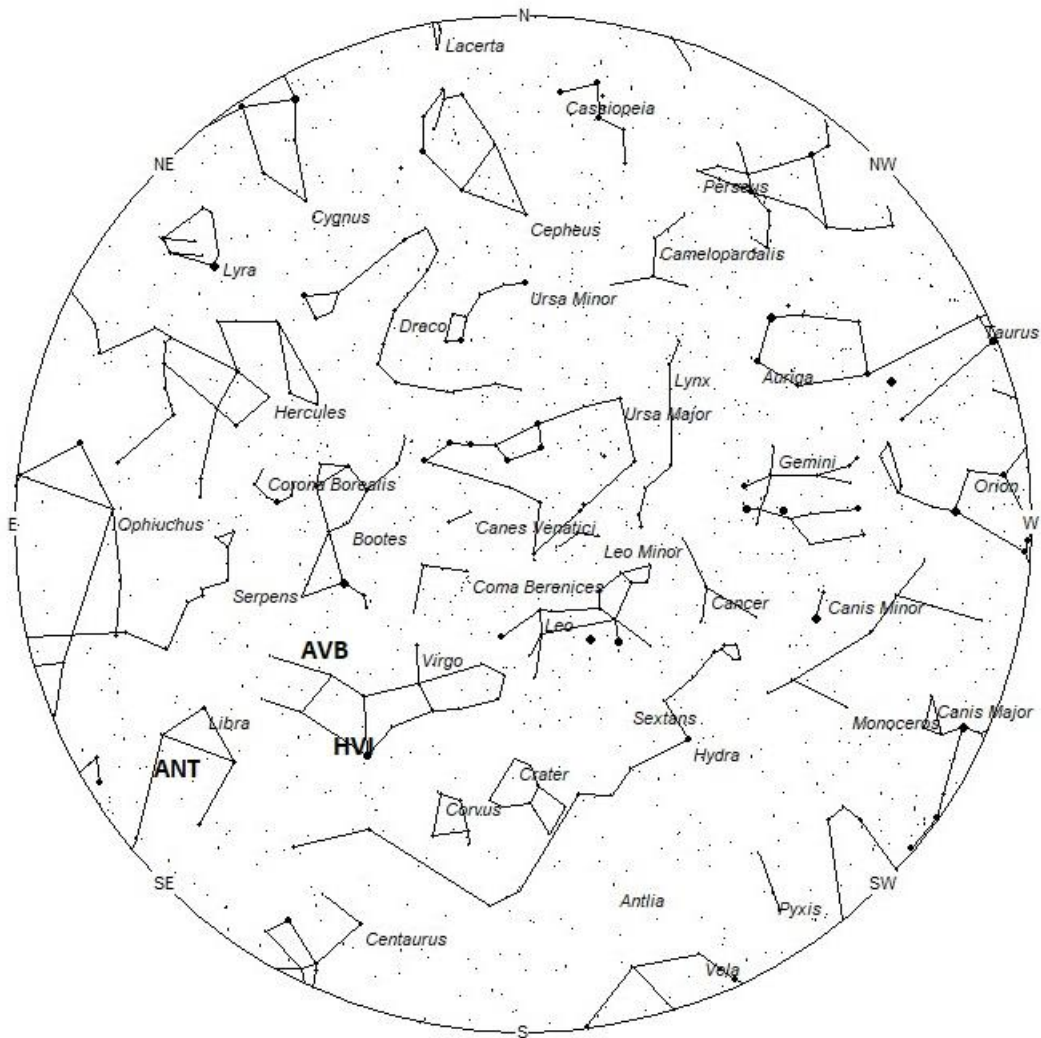
Daniel Bush captured this bright fireball on October 13, 2022, at 20:49 CDT (01:49 UT on Oct. 14) as seen from Albany, Missouri USA. The bright object in the upper right corner of the frame is the planet Jupiter. For more on this fireball visit: https://ams.imo.net/members/imo_view/event/2022/6969 ©Daniel Bush

May is the best month of the second quarter of the year to view meteor activity. The eta Aquariids are very active the first two weeks of the month then fade as the month progresses. These meteors are only visible in the few dark hours prior to dawn. The remainder of the night has low meteor rates. The only other showers of note this month are the eta Lyrids and the Anthelion radiant. These will add only 2-3 meteors per hour to the total count. Sporadic rates are low but steady as seen from the mid-northern hemisphere (45 N). Sporadic rates seen from the tropical southern latitudes (25 S) are strong and remain so the entire month.

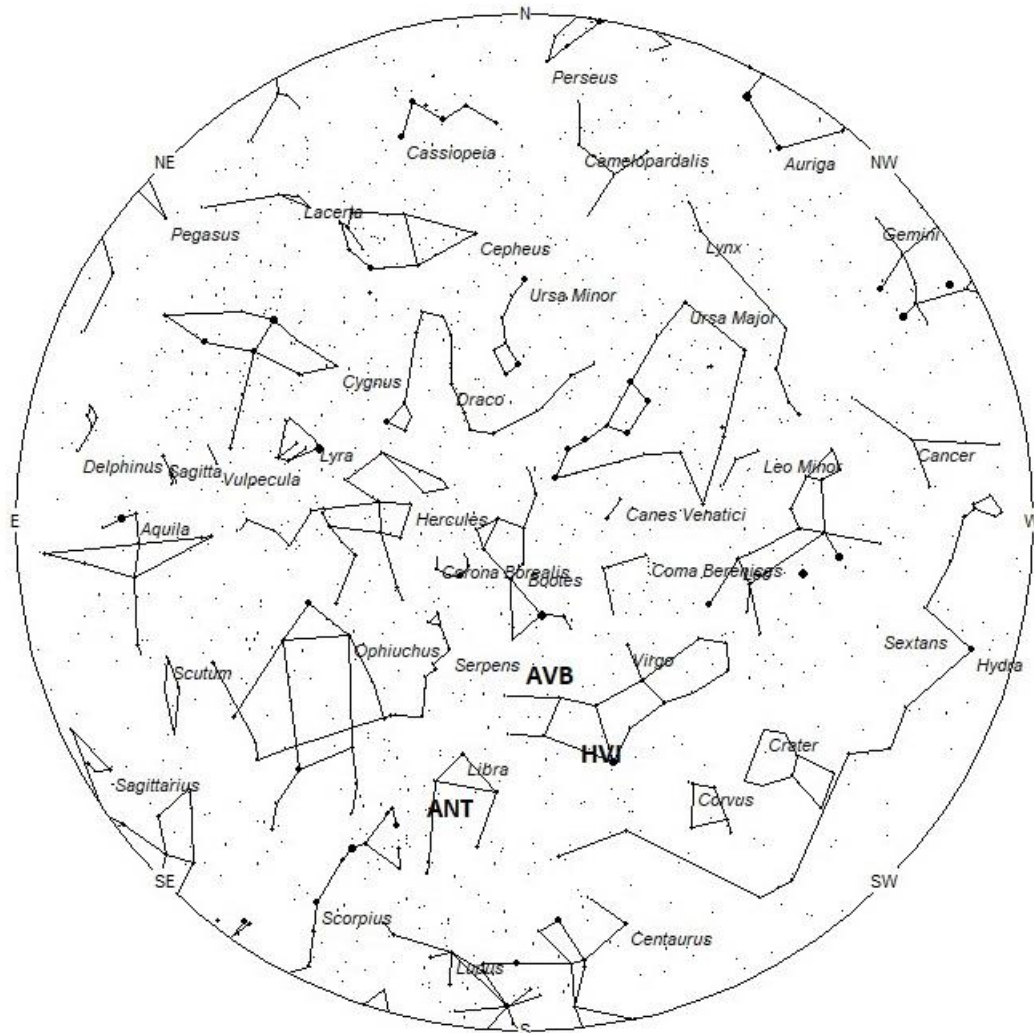
During this period, the moon reaches its full phase on Friday May 5th. At that time the moon will be positioned opposite the sun and will lie above the horizon all night long. This weekend the waxing gibbous moon will set during the early morning hours, allowing a small window of opportunity to view under dark skies between moonset and the start of 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 9 as seen from mid-northern latitudes (45N) and 15 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. Evening rates are reduced due to 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 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

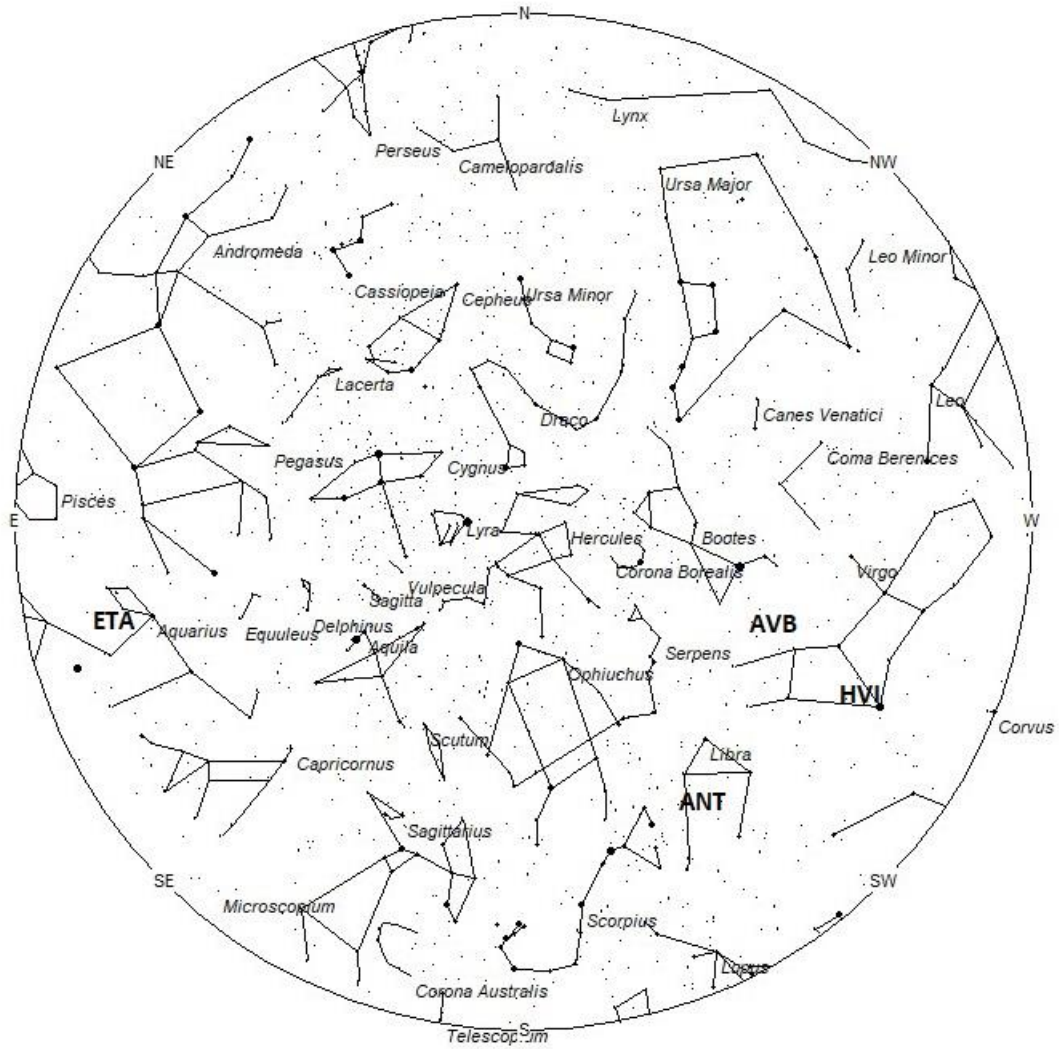
but can be used for any direction by rotating the charts to the desired direction. A planisphere or computer planetarium program is also useful in showing the sky at any time of night on any date of the year. Activity from each radiant is best seen when it is positioned highest in the sky, either due north or south along the meridian, depending on your latitude. 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 last of the **pi Puppids (PPU)** are predicted this weekend from a radiant located at 07:36 (114) -46. This area of the sky is located in central Puppis, 3 degrees southeast 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 13:34 (204) -11. This area of the sky is located in southern Virgo, 2 degrees northeast of the 1st 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 18km/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 13:52 (208) +04. This position is located in northeastern Virgo, 2 degrees northeast of the 4th magnitude star known as tau 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 18 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 15:28 (232) -19. This position lies in central Libra, 4 degrees southwest of the 4th magnitude star known as Zubenelhakrabi (gamma Librae A). Due to the large size of this radiant, these meteors may also be seen from eastern Virgo, and western Scorpius as well as Libra. This radiant is best placed near 02:00 LST 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 slow 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 22:16 (334) -03. This area of the sky is located in north-central Aquarius, 1 degree southwest of the 4th magnitude star known as Sadachbia (gamma Aquarii Aa). These meteors are not visible prior to 0200 LDST 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 near 3 as seen from the Northern Hemisphere and near 5 as seen from south of the equator. 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 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 7 per hour as seen from rural observing sites and 3 per hour during the evening hours. Rates during the evening hours are reduced by interfering moonlight.

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	
pi Puppids (PPU)	Apr 24	07:36 (114) -46	15	19:00	<1 - <1	III
h Virginids (HVI)	May 01	13:34 (204) -11	18	01:00	<1 - <1	IV
alpha Virginids (AVB)	Apr 18	13:52 (208) +04	18	01:00	<1 - <1	IV
Anthelions (ANT)	-	15:28 (232) -19	30	02:00	1 - 2	II
eta Aquariids (ETA)	May 06	22:16 (334) -03	65	09:00	3 - 5	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.