

# Meteor Activity Outlook for April 1-7, 2023



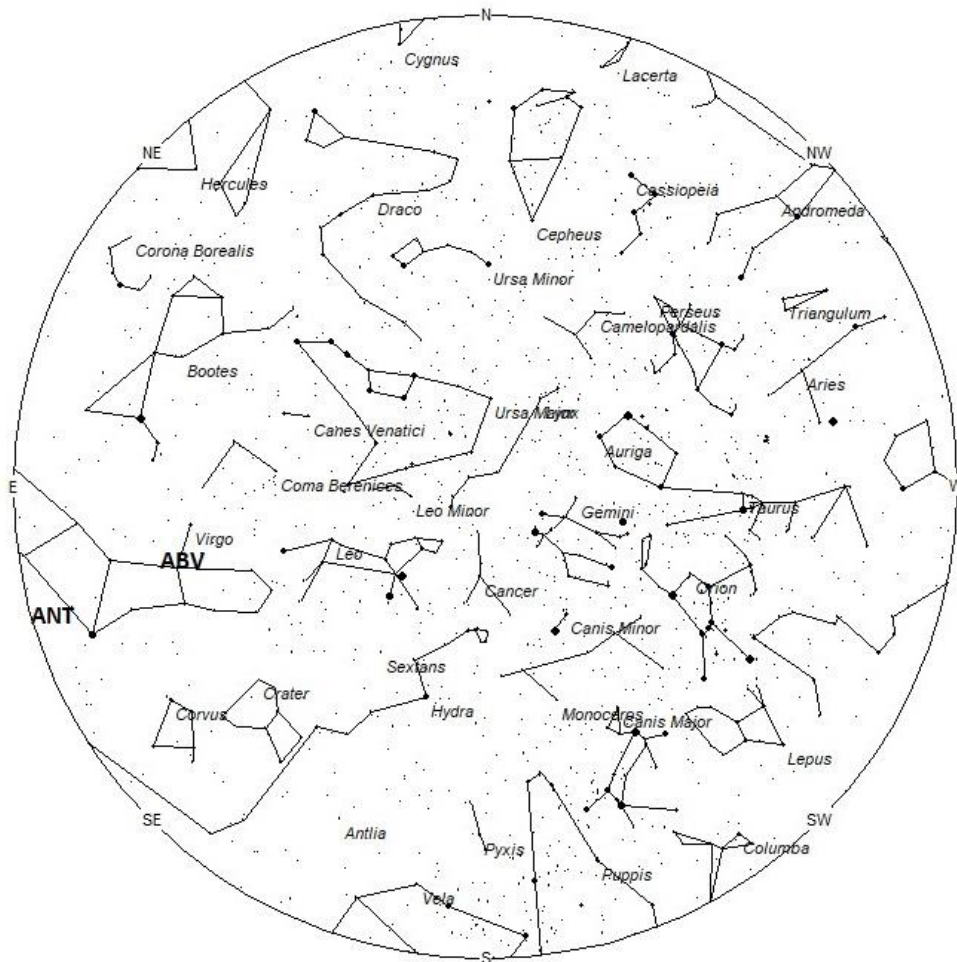
Stacey Balzum was out photographing an intense aurora display when this brilliant fireball shot through the field of view of the camera. This occurred on September 4, 2022, at 00:53 CDT (5:53 UT) as seen from Ada, Minnesota, USA. Stacey was using a UWA 8mm fish eye lens with a 167 degree field of view. For more information on this event visit: [https://ams.imo.net/members/imo\\_view/event/2022/5838](https://ams.imo.net/members/imo_view/event/2022/5838) ©Stacey Balzum

Meteor activity picks up a bit during April as the Lyrids become active during the month. The Lyrids are active from the 15th through the 29th, with a pronounced maximum on the 23rd. Sporadic rates during April are steady as seen from both hemispheres with southern observers enjoying more activity than can be seen from the mid-northern hemisphere. The eta Aquariids will become active the second half of the month, adding a few swift meteors to the late morning scene.

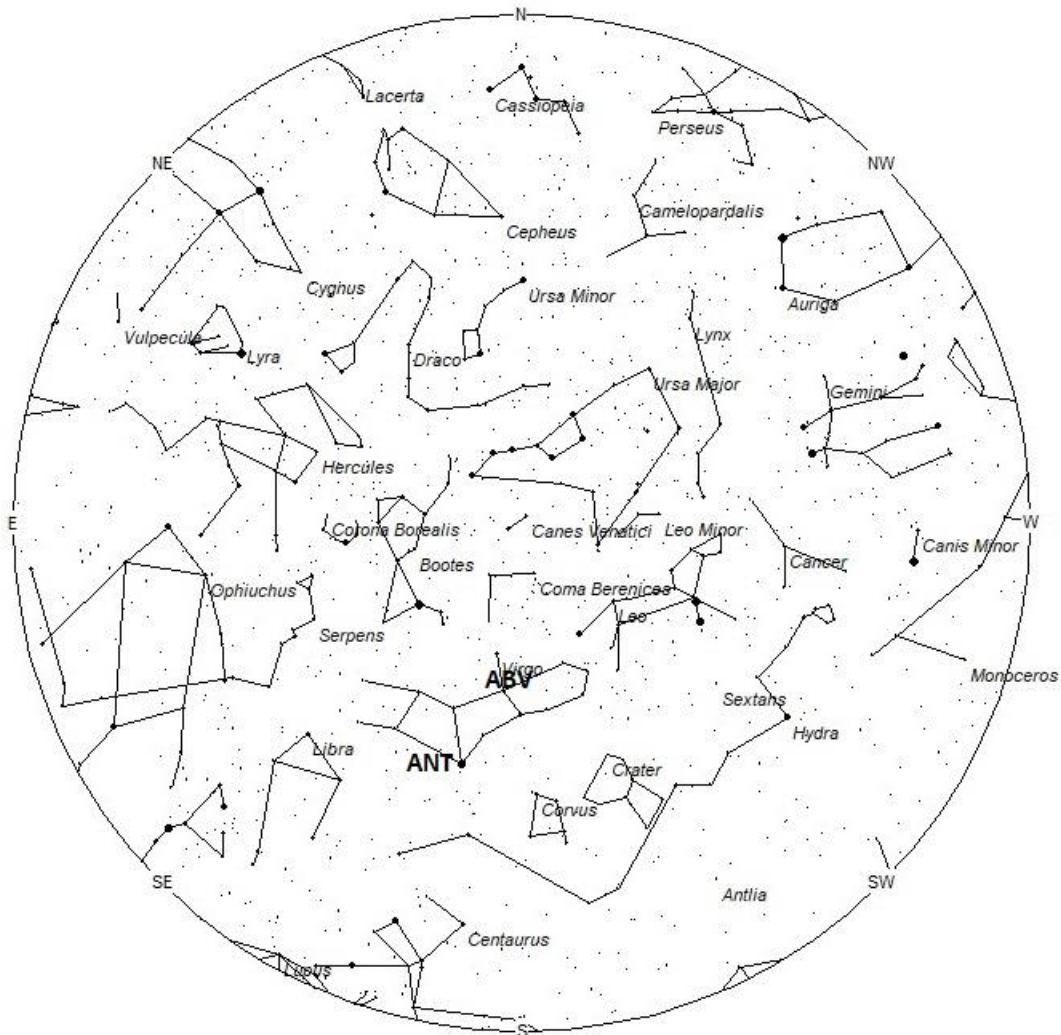
During this period, the moon reaches its full phase on Thursday April 6th. At that time the moon will be positioned opposite the sun and will lie above the horizon all night long. This weekend the waxing gibbous moon will set during the early morning hours allowing a short opportunity to view meteor activity under dark skies between moonset and dawn. The estimated total hourly rates for evening observers this week should be near 2 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 4 as seen from mid-northern latitudes (45N) and 6 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 and early morning rates are reduced due to bright 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 April 1/2. 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

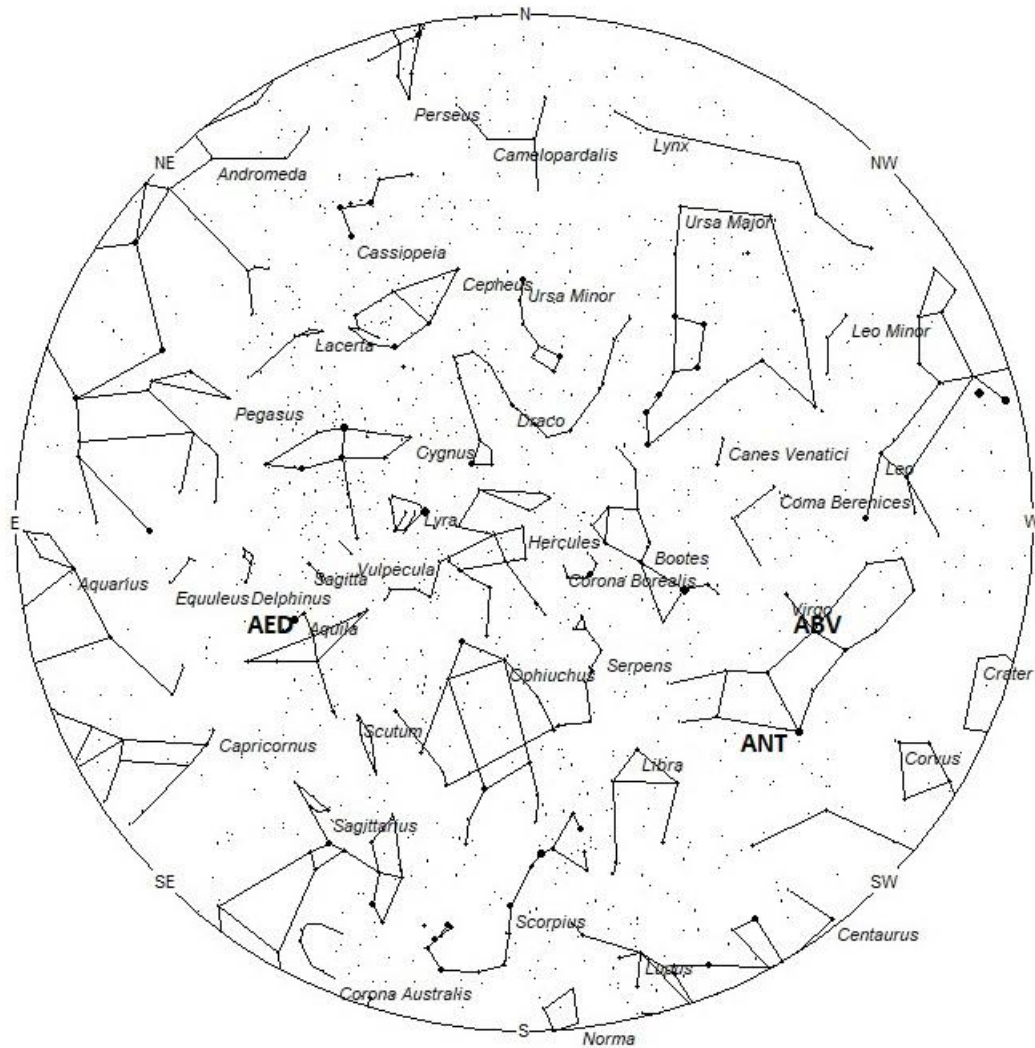
the sky. I have also included charts of the sky that display the radiant positions for evening, midnight, and morning. The center of each chart is the sky directly overhead at the appropriate hour. These charts are oriented for facing south but can be used for any direction by rotating the charts to 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 listed below are 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 9pm Local Daylight Saving Time



Radiant Positions at 1am Local Daylight Saving Time



Radiant Positions at 5am Local Daylight Saving Time

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

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 12:52 (193) +04. This position is located in central Virgo, just west of the 3<sup>rd</sup> magnitude star known as Minelauva (delta Virginis). This radiant is best placed near 01:00 local daylight saving time (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 22 km/sec., the average meteor from this source would be of very slow velocity. This source is 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 13:40 (205) -11. This position lies in southern Virgo, 4 degrees east of the 1st magnitude star known as Spica (alpha Virginis). Due to the large size of this radiant, these meteors may also be seen from western Libra as well as Virgo. 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 no matter your location. With an entry velocity of 30 km/sec., the average Anthelion meteor would be of slow 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 20:02 (301) +07. This position lies in northeastern Aquila, 2 degrees southeast of the 1<sup>st</sup> magnitude star known as Altair (alpha Aquilae). With an entry velocity of 61km/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 **delta Pavonids (DPA)** were discovered by Michael Buhagiar from Australia in the 1970's. These meteors are active from March 11 through April 16, with maximum activity occurring on March 31st. The current position of the radiant lies near 20:44 (311) -63. This area of the sky lies in eastern Pavo, 4 degrees north of the 3rd magnitude star known as beta Pavonis. 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 3 **sporadic** meteors per hour during the last hour before dawn as seen from rural observing sites. Evening rates would be near 1 per hour. As seen from the tropical southern latitudes (25S), morning rates would be near 6 per hour as seen from rural observing sites and 2 per hour during the evening hours. Evening and early morning rates are 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 per **night** away from maximum, so the showers listed in these outlooks 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	
alpha Virginids (AVB)	Apr 18	12:52 (193) +04	22	01:00	<1 - <1	IV
Anthelions (ANT)	-	13:40 (205) -11	30	02:00	1 - 1	II
April epsilon Delphinids (AED)	Apr 09	20:02 (301) +07	61	08:00	<1 - 1	IV
delta Pavonids (DPA)	Mar 31	20:44 (311) -63	58	09:00	<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.

