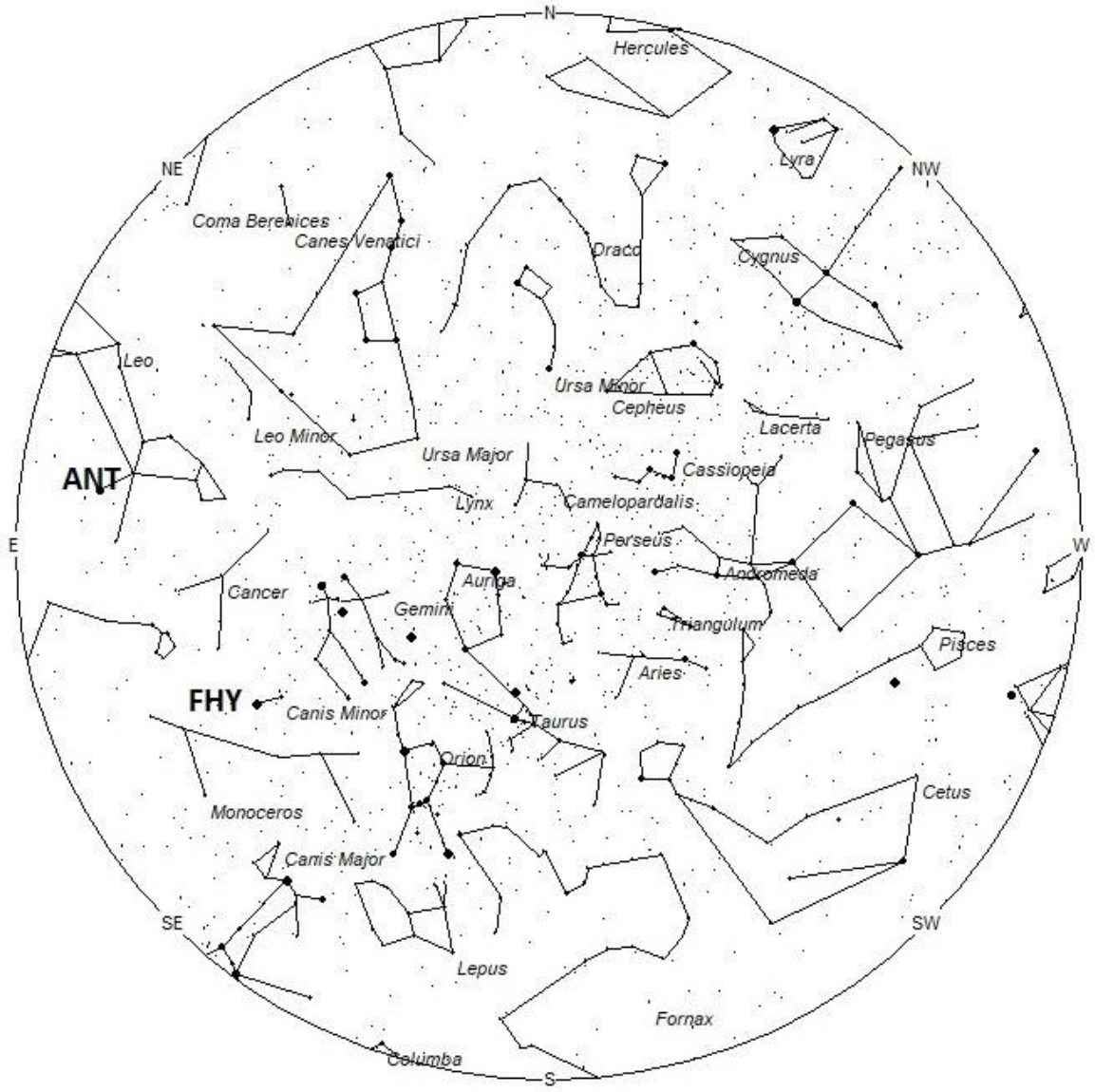
Meteor Activity Outlook for February 8-14, 2025

Gregory Gage captured this impressive fireball on October 5, 2024, at 23:45pm EDT from Sistersville, West Virginia, USA. © Gregory Gage

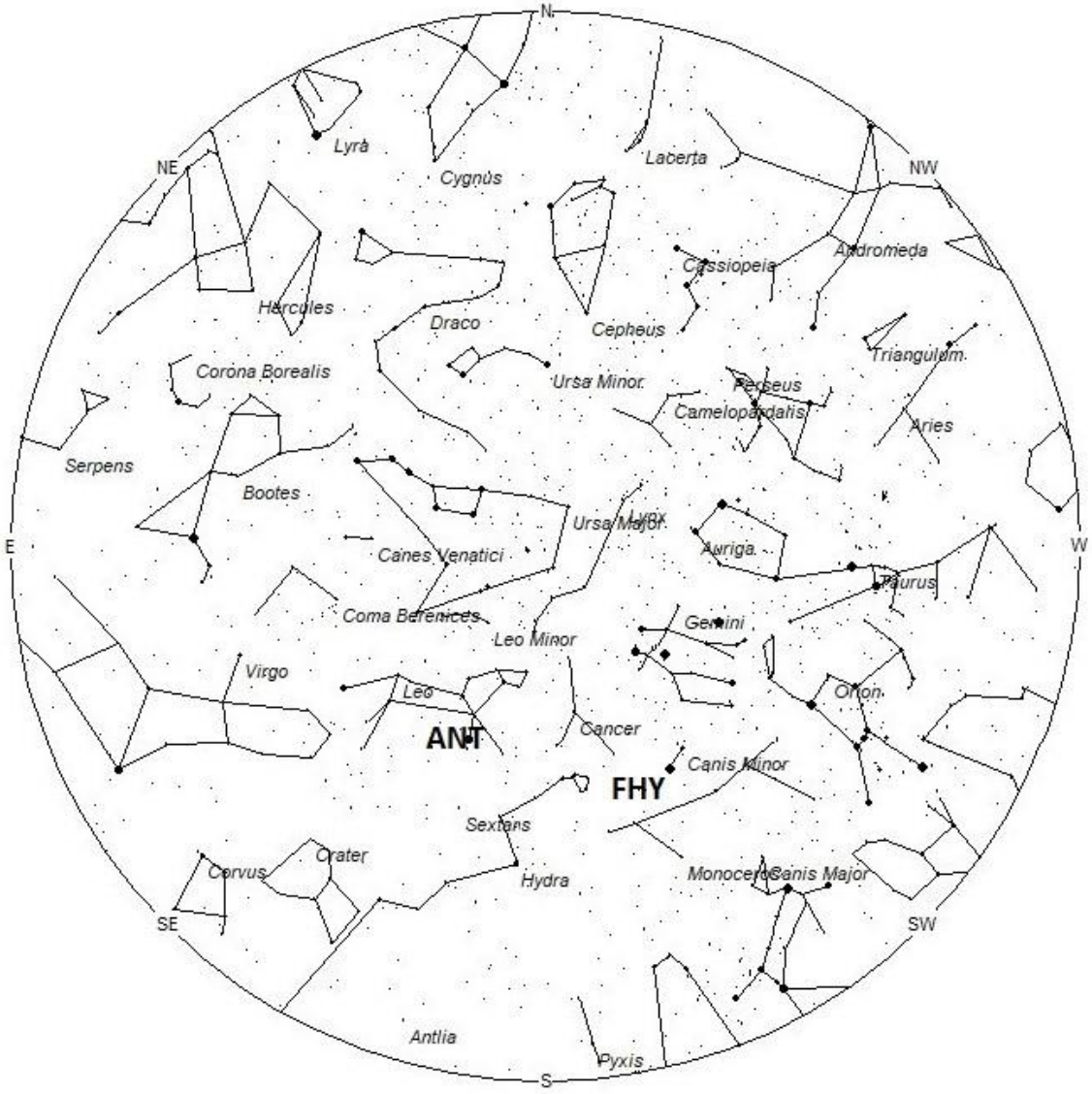
During this period, the moon reaches its full phase on Wednesday February 12th. On that night the moon will be located opposite the sun and will lie above the horizon all night long. This weekend the waxing gibbous moon will set during the early morning hours, leaving a small window of opportunity to observe under dark conditions between moonset and the break of dawn. The estimated total hourly rates for evening observers this weekend 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 8 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. Evening rates are reduced due to 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 February 8/9. These positions do not change greatly day to day so the listed coordinates may be used during this entire period. Most star atlases (available online and at bookstores and planetariums) will provide maps with grid lines of the

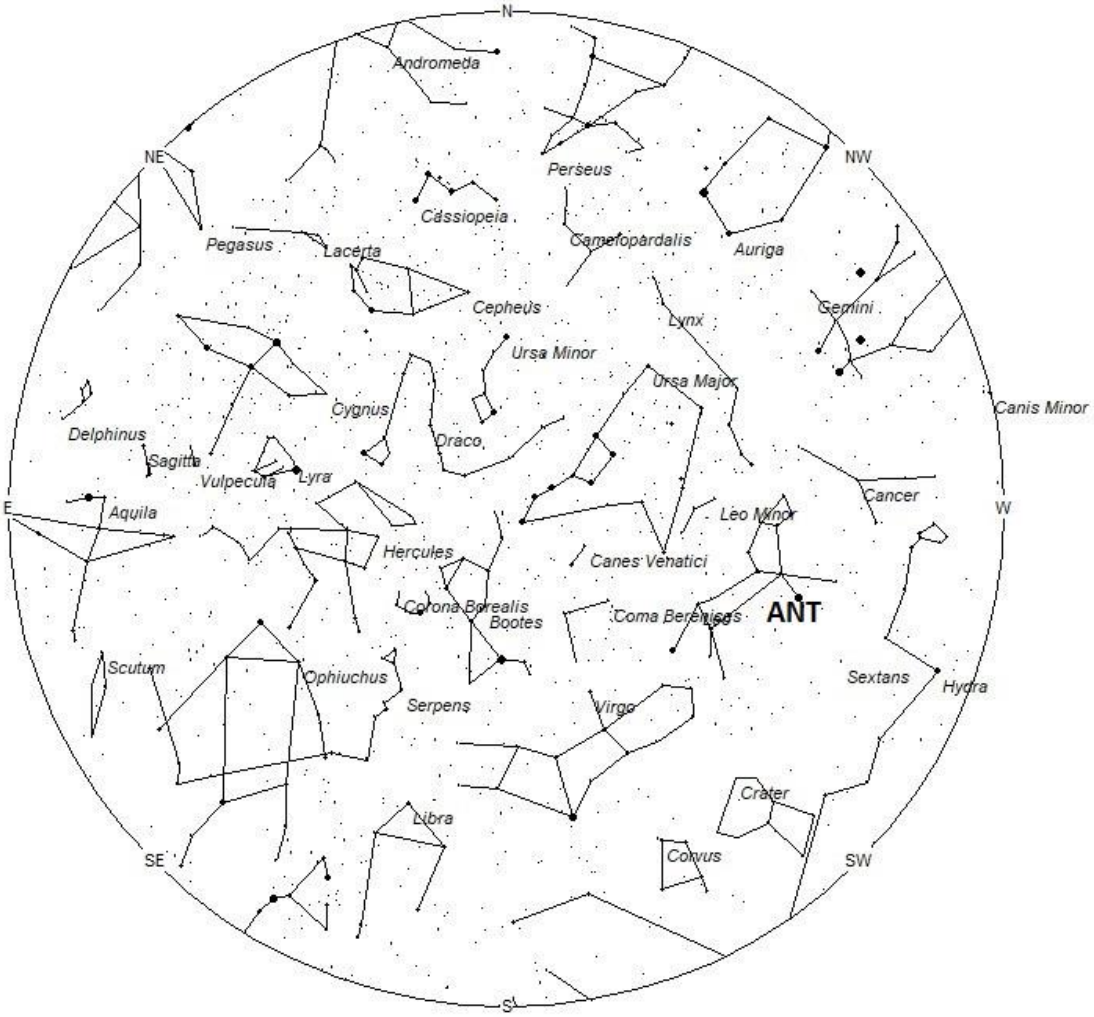
celestial coordinates so that you may find out exactly where these positions are located in the sky. I have also included charts of the sky that display the radiant positions for evening, midnight, and morning. The center of each chart is the sky directly overhead at the appropriate hour. These charts 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 19:00 Local Standard Time



Radiant Positions at Midnight Local Standard Time



Radiant Positions at 05:00 Local Standard Time

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

The **February Hydrids (FHY)** are a recent discovery by the CAMS system of meteor cameras under the direction of Dr. Peter Jenniskens. These meteors are active from February 9-17, which maximum activity occurring on February 14th. The current radiant position is 08:02 (121) +03. This position lies in eastern Canis Minor, 5 degrees southeast of the zero-magnitude star known as Procyon (alpha Canis Minoris). This area of the sky is best placed for viewing near 23:00 local standard time (LST) when it lies highest in the southern sky. Expected hourly rates are less than 1 no matter your location. With an entry velocity of 16 km/sec., these meteors would possess a very slow velocity.

The large **Anthelion (ANT)** radiant is currently centered at 10:12 (153) +11. This position lies in western Leo, 1 degree southeast of the 1st magnitude star known as Regulus (alpha Leonis). This radiant is best placed near 01:00 LST 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 1 per hour 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 **alpha Centaurids (ACE)** are an irregular shower that does not seem to be active every year. The International Meteor Organization list this shower as active from February 3-20, with maximum activity occurring on February 9th. Yet recent video data from the southern hemisphere has yet to identify any such radiant. This situation should become more clear as more data is received from south of the equator. I would suggest that potential observers monitor the southern skies though February 20th for any signs of these meteors. The radiant is predicted to be located at 14:04 (211) -58. This position lies in southeastern Centaurus, 4 degrees south of the 1st magnitude star known as Hadar (beta Centauri). Due to the southern declination of this radiant, these meteors are not seen north of latitude 30 north. Current hourly rates are expected to be less than 1 as seen from the northern hemisphere and perhaps up to 5 in the southern hemisphere. These meteors are best seen near 05:00 LST when the radiant lies highest above the southern horizon. At 59 km/sec. the alpha Centaurids would produce mostly swift meteors.

Sporadic meteors are those meteors that cannot be associated with any known meteor shower. All meteor showers are evolving and disperse over time to the point where they are no longer recognizable. Away from the peaks of the major annual showers, these sporadic meteors make up the bulk of the activity seen each night. As seen from the mid-Northern Hemisphere (45N), one would expect to see during this period approximately 6 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 10 per hour as seen from rural observing sites and 2 per hour during the evening hours. Locations between these two extremes would see activity between these listed figures. Evening rates are reduced due to moonlight.

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 one, so these sources are rarely listed as visual targets in most meteor shower lists. If you are like me and wish to associate as many meteors as possible with known sources, then you will appreciate these listings. Before listing

meteors from these obscure sources, you should attempt to prove these meteors belong to them and are not chance alignments of sporadic meteors. You can note parameters such as duration, length, radiant distance and the elevation of each meteor to help compute the probability of shower association. It should be remembered that slow meteors can be seen from fast showers, but fast meteors cannot be produced from slow showers. Slower showers are those with velocities less than 35/km per second. Slow meteors can appear from fast showers when they appear close to the radiant or low in the sky. The table located on page 22 of the IMO's 2025 Meteor Shower Calendar is a big help in aiding in the identification of meteors. If you record the length and duration of each meteor, you can use this chart to check the probability of the meteor belonging to a shower of known velocity. If the angular velocity is similar to the figure in the table, then your meteor probably belongs to that shower. Rates and positions are exact for Saturday night/Sunday morning.

SHOWER	DATE OF MAXIMUM ACTIVITY	CELESTIAL POSITION	ENTRY VELOCITY	CULMINATION	HOURLY RATE	CLASS
		RA (RA in Deg.) DEC	Km/Sec	Local Standard Time	North-South	
February Hydrids (FHY)	Feb 14	08:02 (121) +03	16	23:00	<1 - <1	II
Anthelion (ANT)	-	09:40 (145) +14	30	01:00	2 - 1	II
alpha Centaurids (ACE)	Feb 09	13:28 (202) -56	56	06:00	<1 - 5?	III

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.

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.