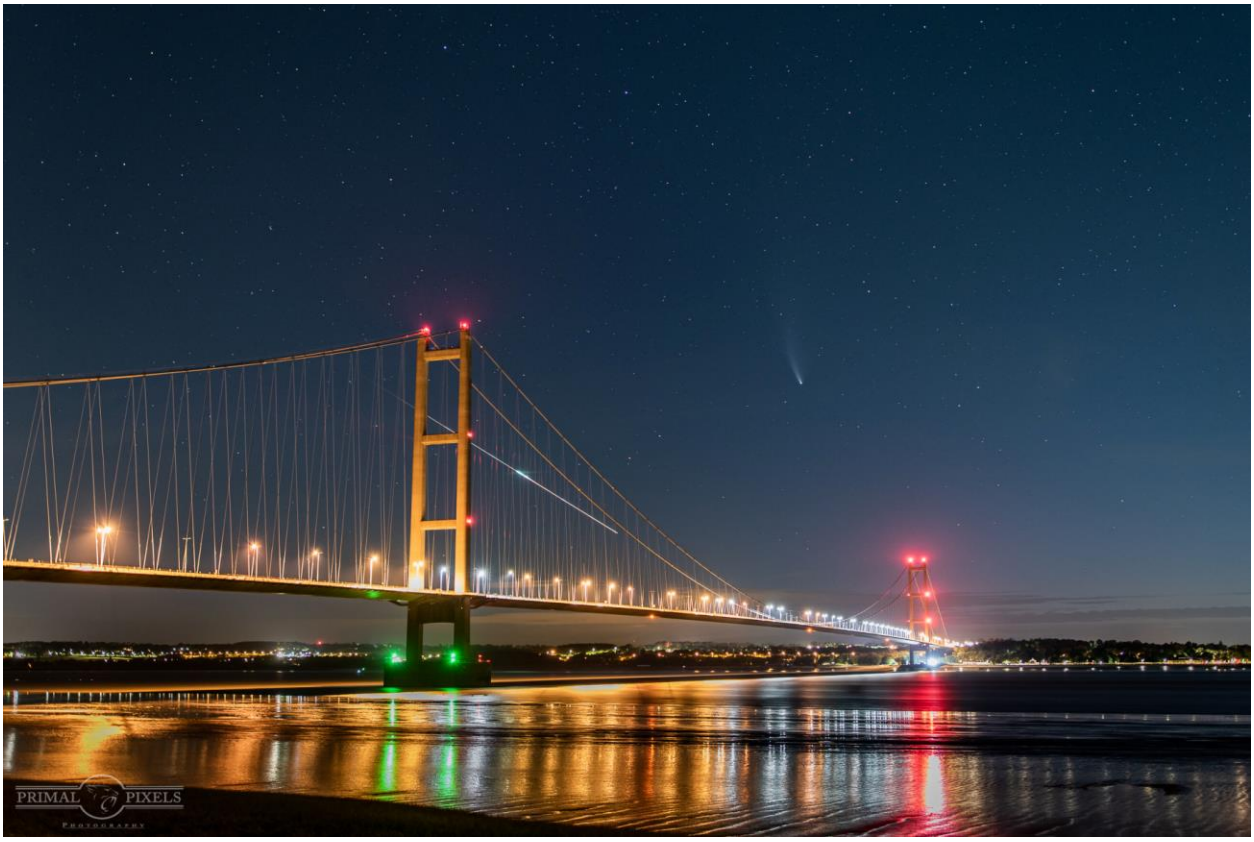
Meteor Activity Outlook for August 8-14, 2020

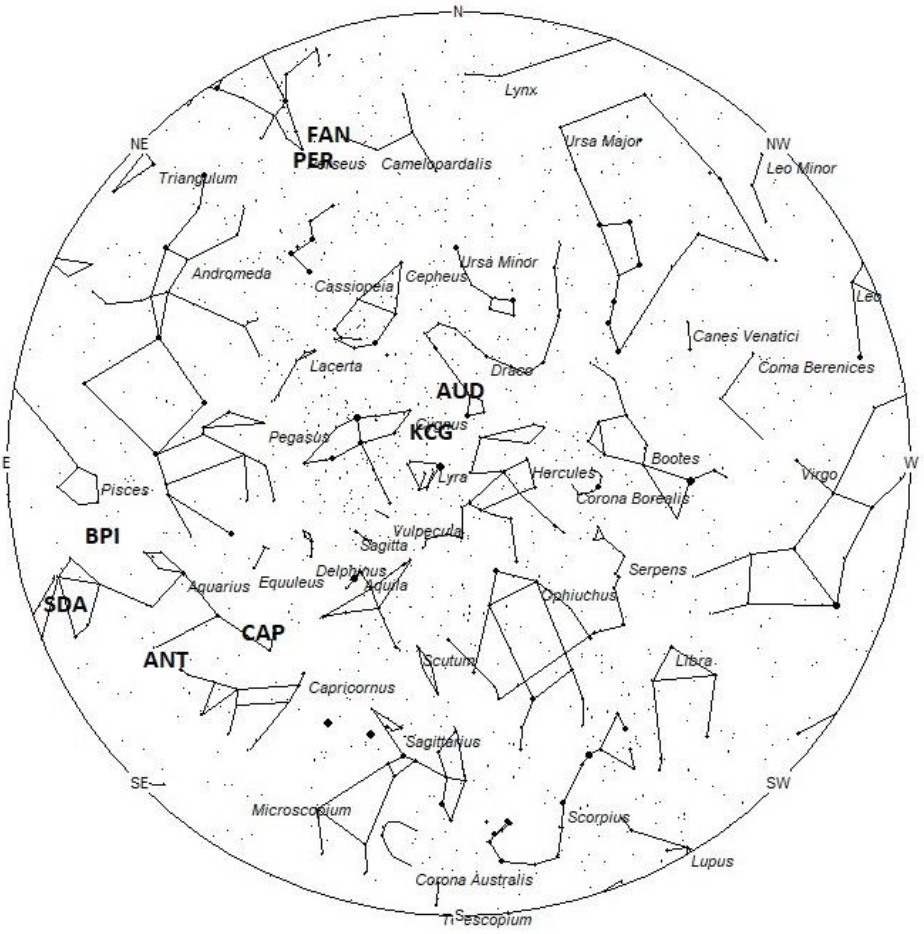


While this appears to be an impressive picture of comet Neowise and a bridge near Barton-upon-Humber, UK, a bright fireball is lurking behind the support stand, just left of center. The fortunate photographer is Richard Wilks who commented that "2 large flashes followed by several smaller flashes". Photographed on 21 July 2020 at 00:15 UT – Credit: Richard Wilks

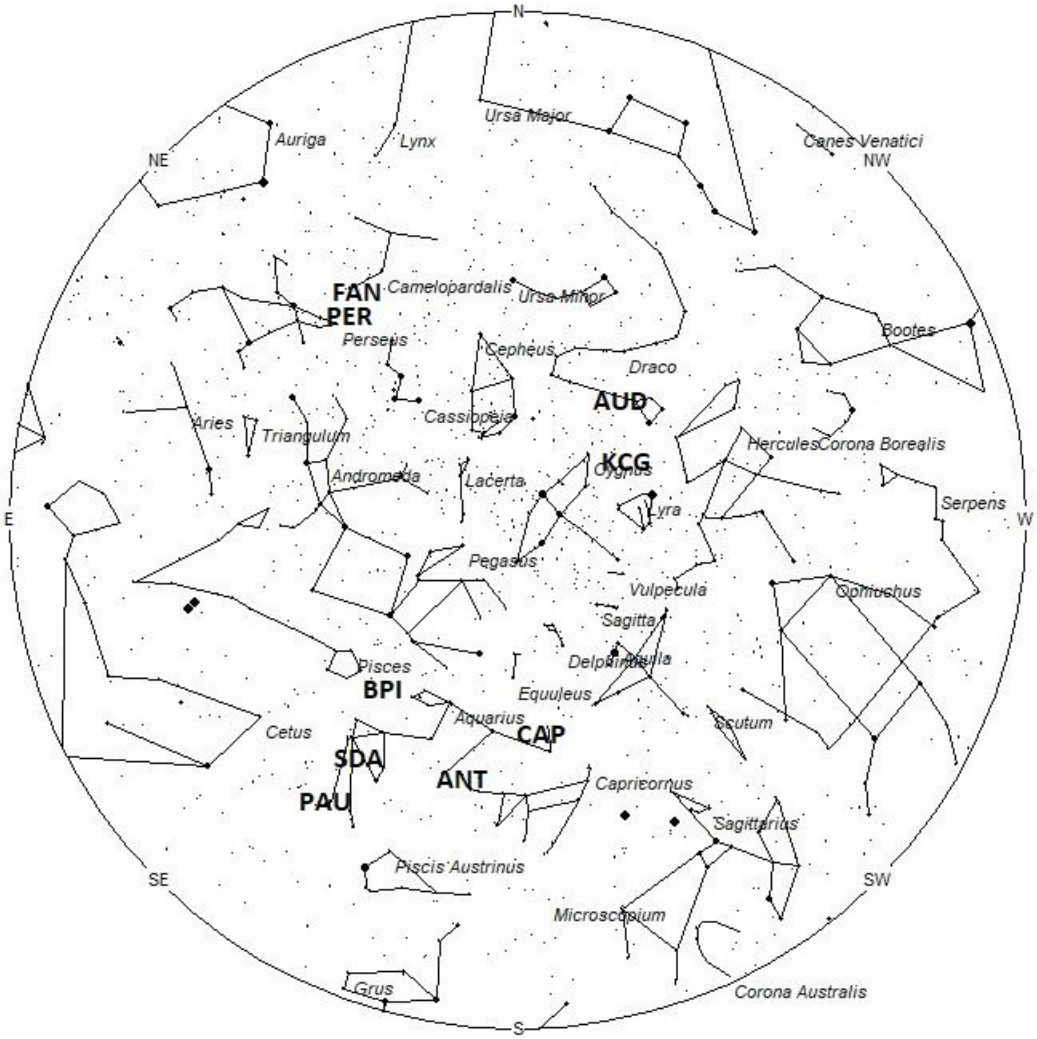
During this period, the moon reaches its last quarter phase on Tuesday August 11th. At this time, the moon is located 90 degrees west of the sun and rises between 23:00 and midnight local daylight saving time (LDST on August 10/11). This weekend the waning gibbous moon will rise during the late evening hours, allowing a short but dark glimpse of the early August activity between dusk and moonrise. The estimated total hourly meteor rates for evening observers this week is near 5 as seen from mid-northern latitudes and 4 as seen from tropical southern locations (25S). For morning observers, the estimated total hourly rates should be near 21 as seen from mid-northern latitudes (45N) and 15 as seen from tropical southern locations (25S). The actual rates will also depend on factors such as personal light and motion perception, local weather conditions, alertness, and experience in watching meteor activity. Morning rates are reduced during this period 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 August 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 at

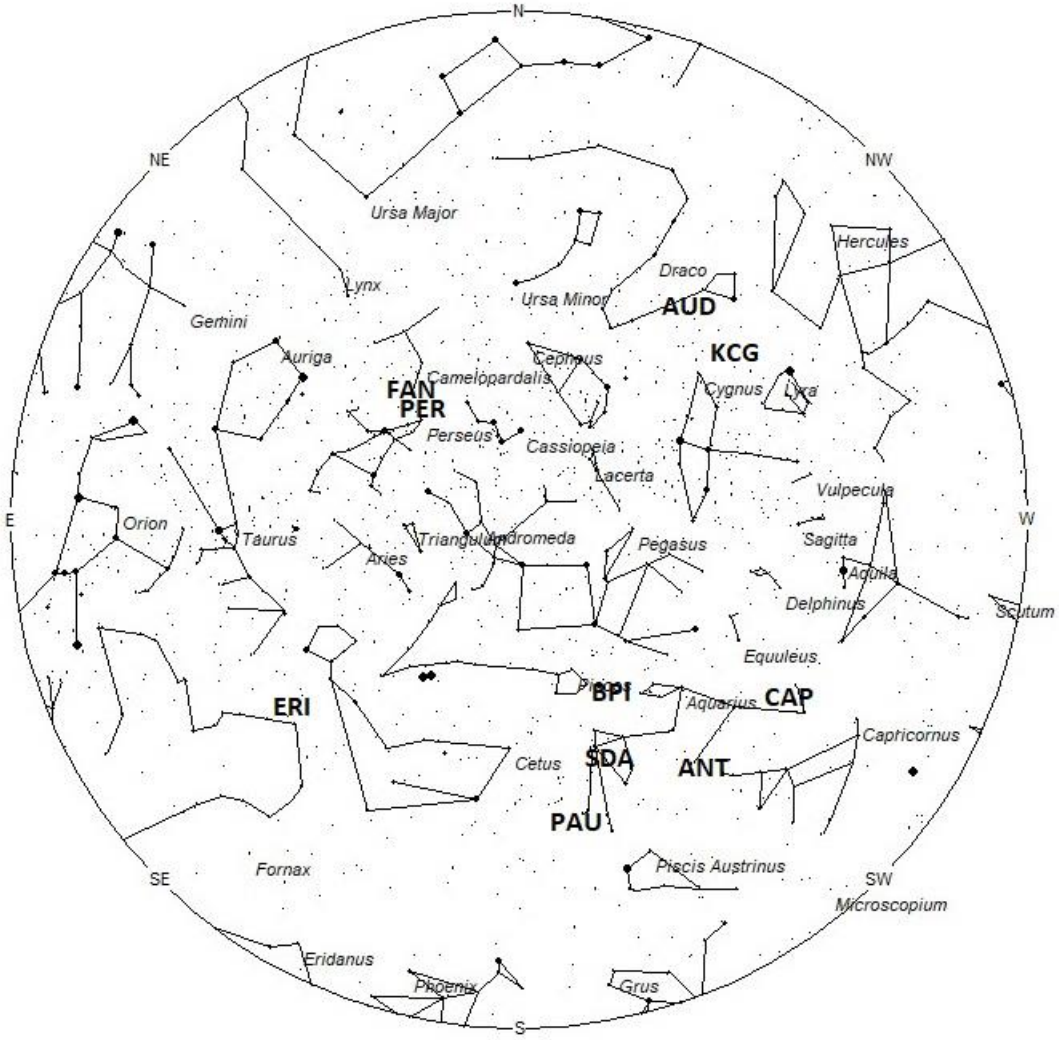
science stores and planetariums) will provide maps with grid lines of the celestial coordinates so that you may find out exactly where these positions are located in the sky. A planisphere or computer planetarium program is also useful in showing the sky at any time of night on any date of the year. 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 the 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 a 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 **August Draconids (AUD)** were discovered by Zdenek Sekanina in his study of meteor streams using radio methods. This stream is active from August 13-19 with maximum activity occurring on the 15th. The radiant is currently located at 18:00 (270) +59, which places it in southern Draco, 8 degrees north of the 2nd magnitude star known as Eltanin (gamma Draconis). This radiant is best placed near 2100 LST, when it lies on the meridian and is located highest in the sky. With an entry velocity of 21 km/sec., the average August Draconid meteor would be of slow velocity. Rates this week are expected to be near 1 per hour as seen from the northern hemipshere and less than 1 as seen from south of the equator. Due to the high northern declination these meteors are difficult to observe from the southern hemisphere.

The **kappa Cygnids (KCG)** are active from a radiant located near 18:52 (283) +48. This area of the sky lies in southeastern Draco, 10 degrees northeast of the brilliant zero magnitude star known as Vega (alpha Lyrae). This radiant is best laced near 2200 LST when it lies on the meridian and is located highest in the sky. With a high northern declination, these meteors are difficult to view from the southern hemisphere. Expected hourly rates this week are near 1 as seen from the northern hemisphere and less than 1 as seen from south of the equator. With an entry velocity of 21 km/sec., the average meteor from this source would be of slow velocity.

The last of the **alpha Capricornids (CAP)** are expected this weekend. The radiant is currently located at 21:01 (315) -07, which places on the western Aquarius, 3 degrees northeast of the 4th magnitude star known as Albali (epsilon Aquarii). This radiant is best placed near midnight LST when it lies on the meridian and is located highest in the sky. Hourly rates at this time should be less than 1 no matter your location. With an entry velocity of 22 km/sec., the average alpha Cap meteor would be of slow velocity.

The center of the large **Anthelion (ANT)** radiant is currently located at 21:56 (329) -13. This position lies in eastern Capricornus, 2 degrees northwest of the 4th magnitude star known as iota Aquarii. Due to the large size of this radiant, anthelion activity may also appear from central Aquarius as well as eastern Capricornus. This radiant is best placed near 0200 LST, when it lies on the meridian and is located highest in the sky. Rates at this time should be near 1 per hour as seen from mid-northern latitudes (45 N) and 2 per hour as seen from the southern tropics (S 25). With an entry velocity of 30 km/sec., the average anthelion meteor would be of slow velocity.

The **August beta Piscids (BPI)** are synonymous with the northern delta Aquariids (NDA). Although the BPI's have been removed from the IAU's shower list, it best represents the classical activity of the NDA's, first mentioned by Luigi G. Jacchia in his book *The Moon, Meteorites and Comets*. The peak, on August 13th, also occurs with the radiant within the borders of the constellation of Pisces. The radiant currently is located near 22:51 (343) +00. This area of the sky is located on the Aquarius/Pisces border, 3 degrees east of the 4th magnitude star known as eta Aquarii. This radiant is best placed near 0300 LST, when it lies on the meridian and is located highest in the sky. Hourly rates at this time should be near 1 no matter your location. With an entry velocity of 38 km/sec., the average meteor from this source would be of medium-slow velocity.

The radiant of the **Southern Delta Aquariids (SDA)** is now located at 23:20 (350) -13. This position is located in southcentral Aquarius, 5 degrees northeast of the 3rd magnitude star known as Skat (delta Aquarii). This radiant is best placed near 0300 LST, when it lies on the meridian and is located highest in the sky. Rates are expected to be less than 1 per hour this as seen from the northern hemisphere and 2 per hour as seen from south of the equator. With an entry velocity of 41 km/sec., most activity from this radiant would be of average velocities.

The **Piscids Austrinids (PAU)** are an obscure shower, not well seen from the northern hemisphere. Recent studies by the IMO Video Network shows little activity. Other studies have indicated that this shower is active later than previously thought. We will go along with that idea until more information is available. It is now thought that this radiant is active from July 30 through August 18, with maximum activity occurring on the 8th. Using these parameters, the current position of the radiant would be 23:34 (353) -20. This area of the sky is located in southeastern Aquarius, near the spot occupied by the faint star known as 101 Aquarii. This position is also 12 degrees northeast of the bright star known as Fomalhaut (alpha Piscis Austrini). The radiant is best placed near 03:00 LST, when it lies highest in the sky. Current hourly rates should be less than 1 for those north of the equator and near 1 per hour for observers in the southern hemisphere. With an entry velocity of 44km/sec., most activity from this radiant would be of average velocities.

The **Perseids (PER)** are active from a radiant located at 02:49 (042) +57. This position lies in northeastern Perseus, only 1 degree north of the 4th magnitude star known as Miram (eta Persei A). This area of the sky is best placed for viewing during the last dark hour before dawn when it lies highest in the sky. Rates are expected to be near 7 per hour as seen from the northern hemisphere and 2 per hour as seen from south of the equator. Hourly rates peak on the night of August 11/12 when up to 30 per hour may be seen from the northern hemisphere and 5 from south of the equator. With an entry velocity of 59 km/sec., the average meteor from this source would be of swift velocity.

The **eta Eridanids (ERI)** are active from a radiant located near 02:50 (042) -13. This position lies in western Eridanus, 2 degrees northeast of the 4th magnitude star known as pi Eridani. This source is active until September 16th, with maximum activity occurring on August 10th. Current rates are expected to be near 1 per hour no matter your location. These meteors are best seen during the last dark hour prior to dawn when the radiant lies highest above the horizon in a dark sky. With an entry velocity of 65 km/sec., the average meteor from this source would be of swift speed.

The **49 Andromedids (FAN)** were discovered by Željko Andreić and the Croatian Meteor Network team based on studying SonotaCo and CMN observations (SonotaCo 2007-2011, CMN 2007-2010). These meteors are active from July 5 through August 13 with maximum activity occurring on July 20. The current position of the radiant is 03:07 (047) +56. This position lies in northeastern Perseus, 3 degrees east of the 4th magnitude star known as Miram (eta Persei A). This is very close to the Perseid radiant and would be impossible to separate unless you are looking directly at the two radiants. Rates are currently expected to be less than 1 per hour no matter your position.

These meteors are best seen near during the last dark hour of the night when the radiant lies highest in a dark sky. With an entry velocity of 60 km/sec., the average meteor from this source would be of swift speed.

Morning sporadic rates are expected to be near 8 per hour as seen from mid-northern latitudes and 6 as seen from tropical southern latitudes. Evening rates should be near 4 as seen from the northern hemisphere and 3 as seen from tropical southern latitudes. Morning rates are reduced due to interfering moonlight.

The list below offers the information from above in tabular form. 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	
August Draconids (AUD)	Aug 15	18:00 (270) +59	21	00:00	1 - <1	IV
kappa Cygnids (KCG)	Aug 13	18:52 (283) +48	21	01:00	1 - <1	IV
alpha Capricornids (CAP)	Jul 26	21:01 (315) - 07	22	01:00	<1 - <1	II
Anthelion (ANT)	-	21:56 (329) - 13	30	02:00	1 - 2	II
August beta Piscids (BPI)	Aug 13	22:51 (343) +00	41	03:00	<1 - <1	IV
South delta Aquariids (SDA)	Jul 29	23:20 (350) - 13	41	03:00	1 - 2	I
Piscids Austrinids (PAU)	Aug 08	23:34 (353) - 20	44	03:00	<1 - 1	II
Perseids (PER)	Aug 12	02:49 (042) +57	59	06:00	7 - 2	I
eta Eridanids (ERI)	Aug 10	02:50 (042) - 13	65	06:00	1 - 1	IV

49 Andromedids (FAN)	Jul 20	03:07 (047) +56	60	06:00	<1 - <1	IV