

Meteor Activity Outlook for July 31-August 6, 2021

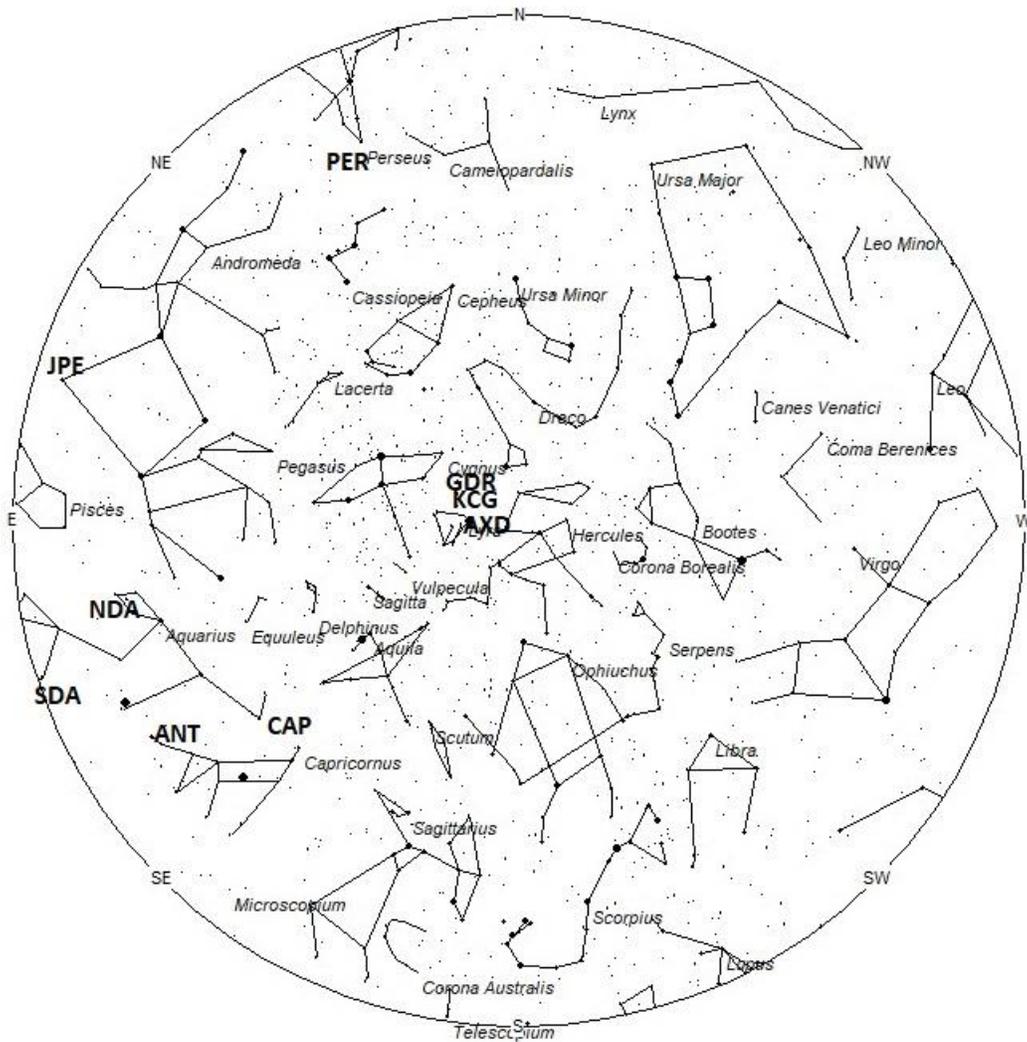


Meteor over Mt Fuji from Narusawa, Yamanashi, Japan. August, 12 2020
©Takaaki Ito – Nikon D750 20mm F1.8 ISO1600 7sec, Sigma 20mm F1.4 DG HSM

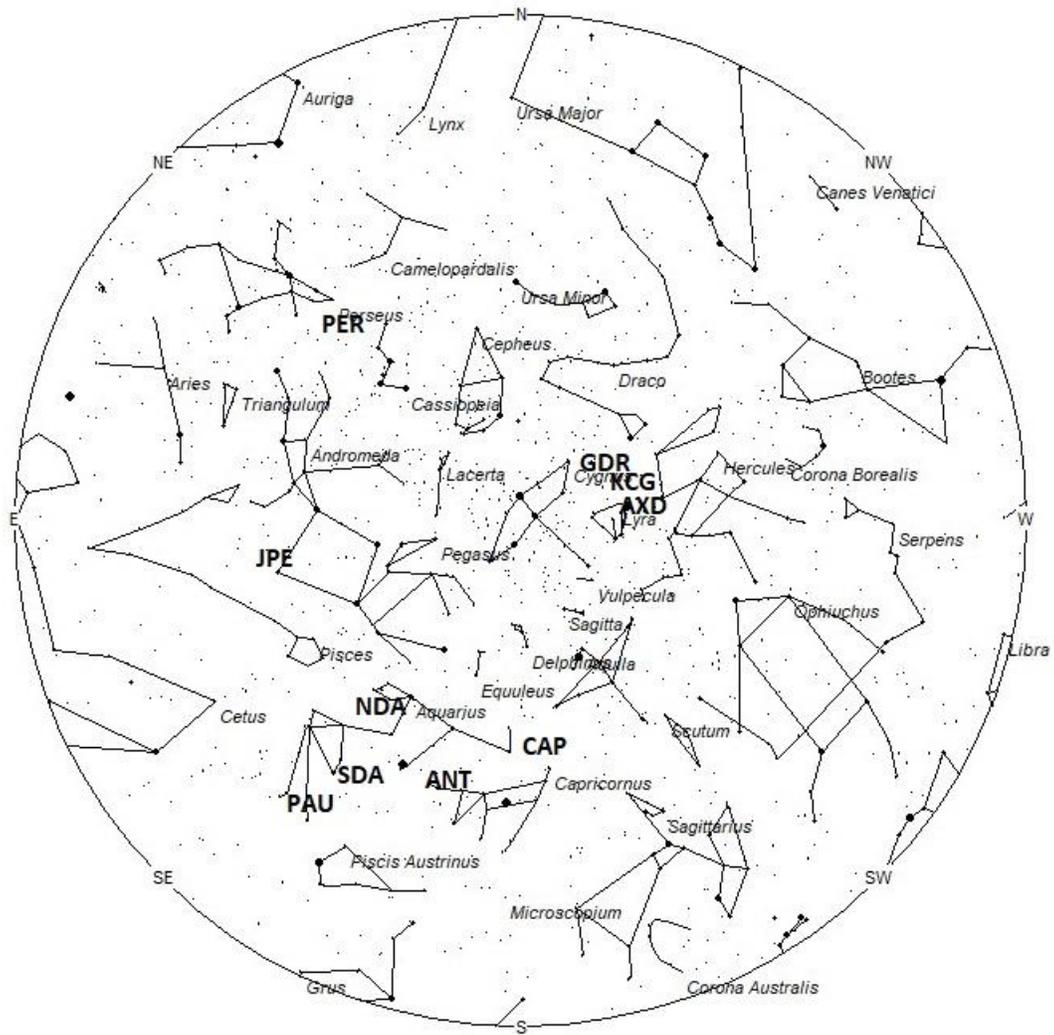
During this period, the moon reaches its last quarter phase on Saturday July 31st. At that time the moon lies 90 degrees west of the sun and rises near midnight local daylight saving time (on August 1st). As the week progresses the waning crescent moon rises later each morning, allowing a better view of the active morning sky as glare from the moon subsides. The estimated total hourly meteor rates for evening observers this week is near 4 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 18 as seen from tropical southern locations (25S). Morning rates are reduced by moonlight during this period. 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. 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 July 31/August 1. 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

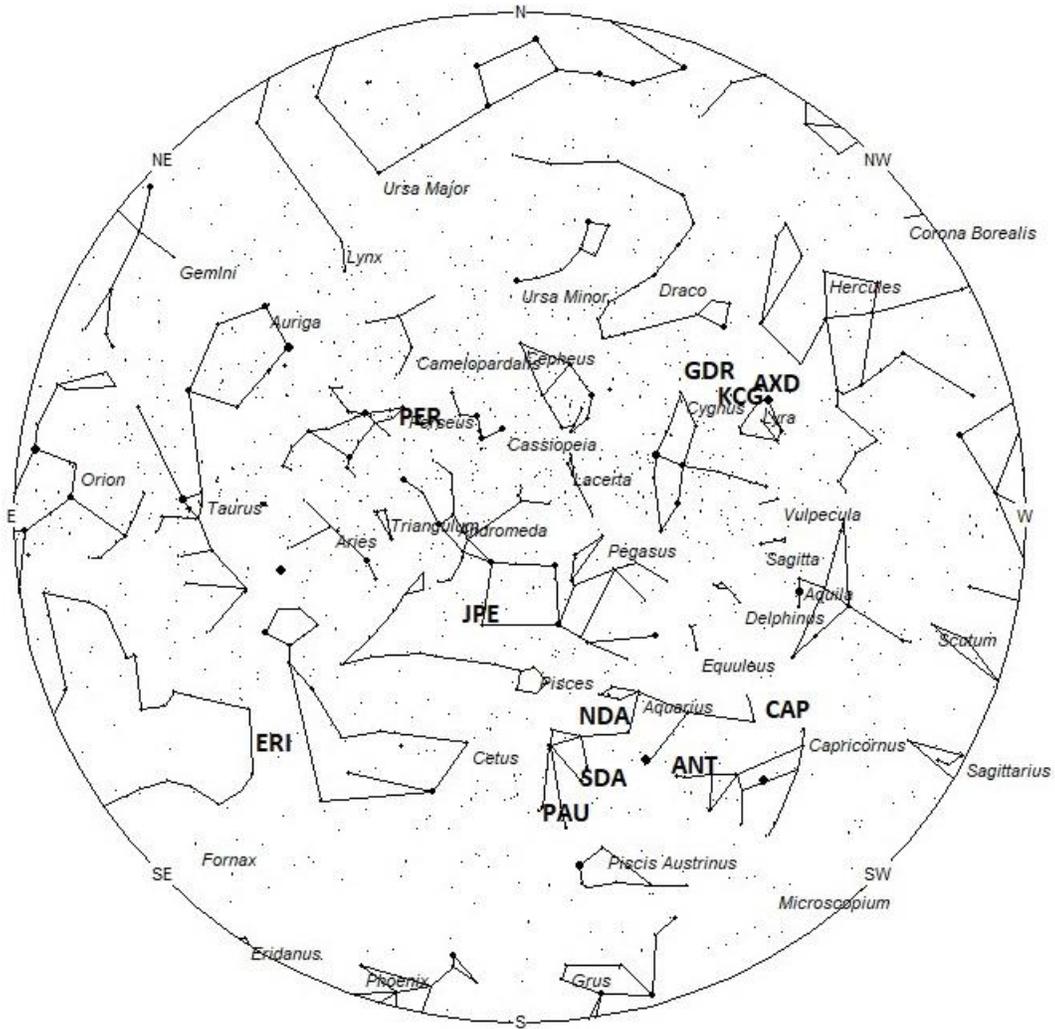
from the radiant, so it is best to center your field of view so that the radiant lies at the edge and not the center. Viewing there will allow you to easily trace the path of each meteor back to the radiant (if it is a shower member) or in another direction if it is sporadic. Meteor activity is not seen 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 xi Draconids (AXD)** was discovered by Masahiro Koseki in his study of SonotaCo Net video observations 2007–2018. These meteors were long considered part of the kappa Cygnids but Koseki states that they are clearly distinct*. This stream is active from August 4-28 with maximum activity occurring on the 14th. The radiant is currently located at 18:28 (277) +40, which places it in western Lyra, 2 degrees northwest of the zero magnitude star known as Vega (alpha Lyrae). This radiant is best placed near 2300 local daylight saving time (LDST), 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 less than 1 no matter your location. Due to the high northern declination these meteors are difficult to observe from the southern hemisphere.

*The activity of meteor showers recorded by SonotaCo Net video observations 2007–2018, Masahiro Koseki, 2021, <https://www.meteornews.net/2021/02/09/february-2021-special-issue-of-emeeteornews-online/> Page 147

The **kappa Cygnids (KCG)** are active from August 1-27, with maximum occurring on the 13th. The radiant shifts rapidly towards the northeast with each passing night. It starts out just north of the bright star Vega (alpha Lyrae) and by the end of the week ends up 7 degrees northeast of Vega. This radiant is best placed near 2300 LDST 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 less than 1 no matter your location. With an entry velocity of 20 km/sec., the average meteor from this source would be of slow velocity.

The **July gamma Draconids (GDR)** were first noticed by Japanese observers of SonotaCo and the IMO's network team of Sirko Molau and Juergen Rendtel in 2009. This stream is active from July 23-August 3 with maximum activity occurring on July 28. The radiant is currently located at 18:38 (280) +51, which places it in southeastern Draco, 5 degrees southeast of the 2nd magnitude star known as Eltanin (gamma Draconis). The radiant also lies 13 degrees due north of the brilliant zero magnitude star Vega (alpha Lyrae). This radiant is best placed near 23:00 LDST, when it lies on the meridian and is located highest in the sky. With an entry velocity of 26 km/sec., the average gamma Draconid meteor would be of slow velocity. In 2016, this stream produced a strong outburst that lasted approximately 1 hour. Nothing unusual has occurred since 2016. Some researchers feel these meteors are related to the kappa Cygnids, which are active in August.

The **alpha Capricornids (CAP)** are active from July 7 through August 15, peaking on July 31st. The radiant is currently located at 20:28 (307) -09. This position lies in northwestern Capricornus, 3 degrees northeast of the naked eye double star known as (alpha Capricornii). Current rates are expected to be near 2 per hour as seen from the Northern Hemisphere and 3 per hour as seen from south of the equator. These meteors are best seen near 01:00 LDST, when the radiant lies highest in the sky. With an entry velocity of 22 km/sec., the average meteor from this source would be of slow velocity.

The center of the large **Anthelion (ANT)** radiant is currently located at 21:24 (321) -16. This position lies in northeastern Capricornus, 3 degrees west of the 3rd magnitude star known as Deneb

Algedi (delta Capricornii Aa). Due to the large size of this radiant, Anthelion activity may also appear from northwestern Aquarius as well as Capricornus. This radiant is best placed near 2100 LDST, when it lies on the meridian and is located highest in the sky. Rates at this time should be near 2 per hour as seen from the Northern Hemisphere and 3 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 **Northern delta Aquariids (NDA)** are a conglomeration of at least two weak radiants that peak 10 days apart. These meteors were first mentioned by Luigi G. Jacchia in his book *The Moon, Meteorites and Comets*. The NDA's are active from August 2-17, with peak rates occurring on the 11th. The radiant currently is located near 22:30 (337) -03. This area of the sky is located in northern Aquarius, 3 degrees south of the 4th magnitude star known as zeta Aquarii. This radiant is best placed near 0300 LDST, 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 40 km/sec., the average meteor from this source would be of medium velocity.

The **Southern delta Aquariids (SDA)** are active from a radiant located at 22:45 (341) -16. This area of the sky is located in southwestern Aquarius, 2 degrees west of the 3rd magnitude star known as Skat (delta Aquarii). This radiant is best placed near 0300 LDST, when it lies on the meridian and is located highest in the sky. Hourly rates at this time should be near 3 as seen from the Northern Hemisphere and near 5 as seen from south of the equator, where the radiant lies higher in the sky. With an entry velocity of 40 km/sec., the average meteor from this source would be of medium velocity.

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 August 1st through the 10th, with maximum activity occurring on the 7th. Using these parameters, the current position of the radiant would be 23:14 (349) -22. This area of the sky is located in southeastern Aquarius, near the spot occupied by the faint star known as 88 Aquarii. This position is also 8 degrees northeast of the bright star known as Fomalhaut (alpha Piscis Austrini). The radiant is best placed near 03:00 LDST, when it lies highest in the sky. Current hourly rates should be less than 1 no matter your location. With an entry velocity of 43km/sec., most activity from this radiant would be of medium velocities.

The **July Pegasids (JPE)** are active from July 4th through August 8th with maximum activity having occurred on July 10th. The radiant is currently located at 00:21 (005) +17. This area of the sky is located on Pegasus/Pisces border, 3 degrees north of the 2nd magnitude star known as Algenib (gamma Pegasi). This radiant is best placed near 0400 LDST, when it lies on the meridian and is located highest in the sky. Rates are expected to be less than 1 per hour this week no matter your location. With an entry velocity of 63 km/sec., the average meteor from this source would be of swift velocity.

The **Perseids (PER)** are active from a radiant located at 02:12 (033) +55. This position lies in northwestern Perseus, just 3 degrees south of the Double Cluster in Perseus. This area of the sky

is best placed for viewing during the last dark hour before dawn when it lies highest in the sky. Maximum is not until August 12th so current rates are expected to be near 3 as seen from the Northern Hemisphere and less than 1 as seen 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 near 02:27 (037) -15. This position lies in southeastern Cetus, 3 degrees west of the 4th magnitude star known as pi Ceti. This source is active until September 10th, with maximum activity occurring on August 6th. Current rates would 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 64 km/sec., the average meteor from this source would be of swift speed.

As seen from the mid-northern hemisphere (45N) one would expect to see approximately 10 **sporadic** meteors per hour during the last hour before dawn as seen from rural observing sites. Evening rates would be near 3 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. Locations between these two extremes would see activity between the listed figures. Morning rates are reduced due to moonlight.

SHOWER	DATE OF MAXIMUM ACTIVITY	CELESTIAL POSITION	ENTRY VELOCITY	CULMINATION	HOURLY RATE	CLASS
August xi Draconids (AXD)	Aug 14	18:28 (277) +40	21	23:00	<1 – <1	IV
kappa Cygnids (KCG)	Aug 13	18:38 (280) +43	20	23:00	<1 – <1	II
alpha Capricornids (CAP)	Jul 31	20:28 (307) -09	23	01:00	2 – 3	II
Anthelion (ANT)	–	21:24 (321) -16	30	02:00	1 – 2	II
Northern delta Aquariids (NDA)	Aug 11	22:30 (337) -03	40	03:00	<1 – <1	IV
Southern delta Aquariids (SDA)	Jul 30	22:45 (341) -16	40	03:00	3 – 5	I
Piscids Austrinids (PAU)	Aug 07	23:14 (349) -22	43	03:00	<1 – <1	IV
July Pegasids (JPE)	Jul 10	00:21 (005) +17	63	04:00	1 – 1	II
Perseids (PER)	Aug 12	02:12 (033) +55	59	07:00	3 – <1	I
eta Eridanids (ERI)	Aug 06	02:27 (037) -15	64	07:00	1 – 1	IV

