

# Meteor Activity Outlook for July 25-31, 2020



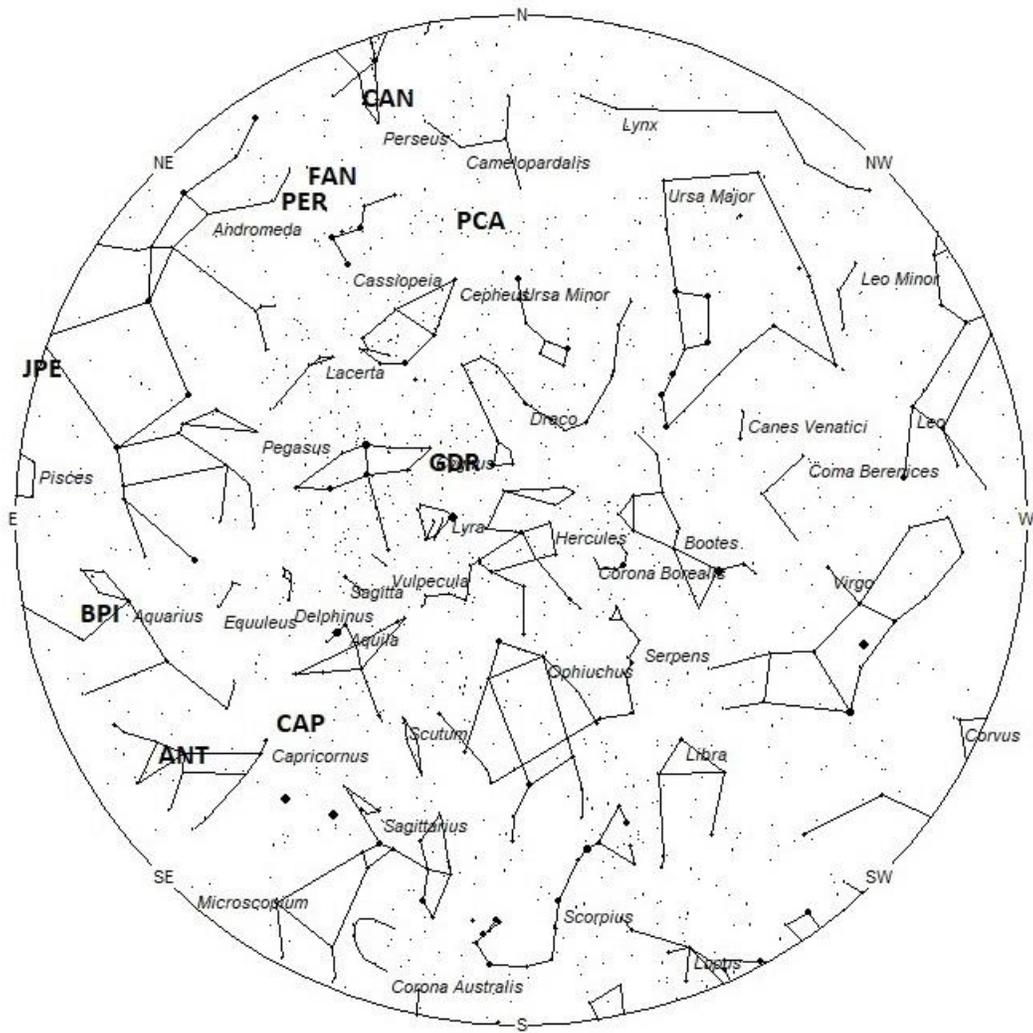
Meteor and [Comet 2020/F3](#) aka “NEOWISE” North of Priest River, Idaho

July 18<sup>th</sup>, 2020 – Nikon D850, iso 1000, 1/6 second shutter speed with intervals every 3 seconds – Credits: BrianPlonka / [brianp.onfabrik.com](http://brianp.onfabrik.com)

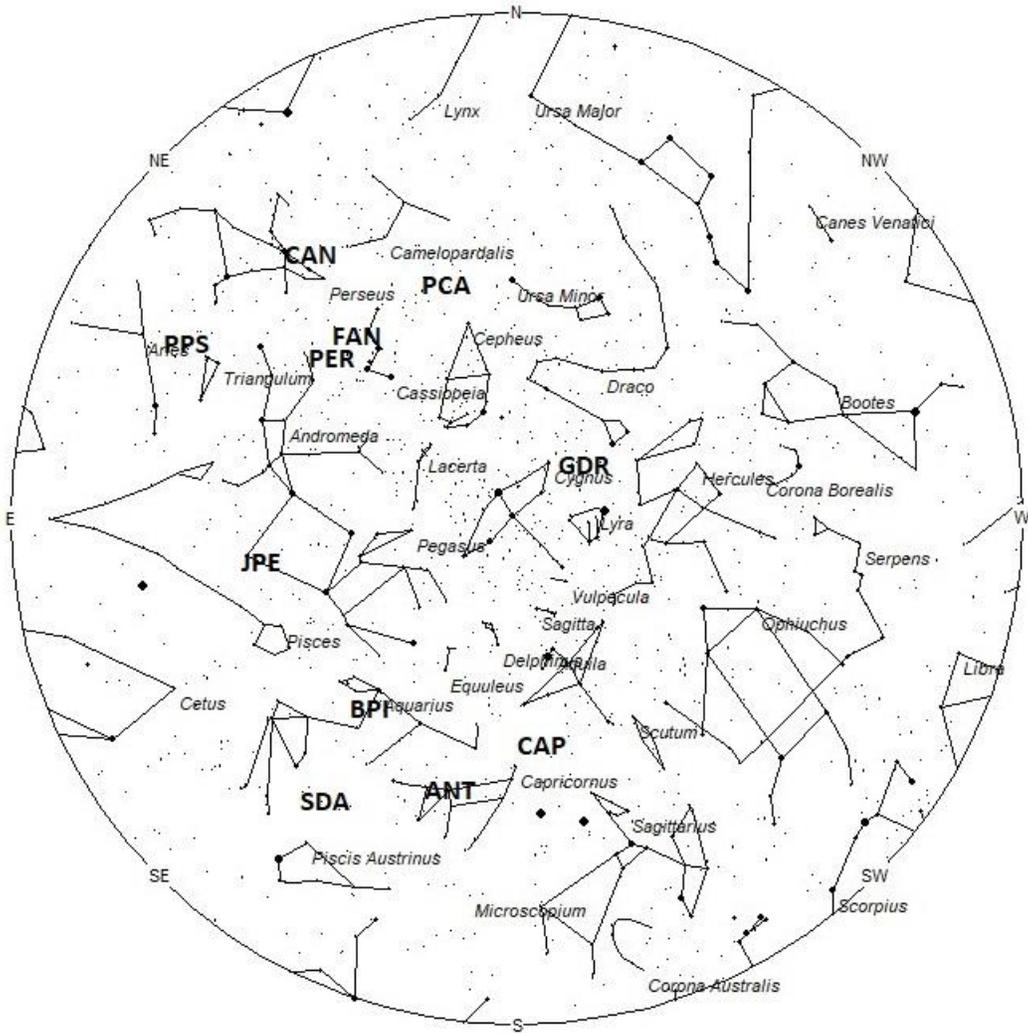
During this period, the moon reaches its first quarter phase on Monday July 27<sup>th</sup>. At this time, the moon is located 90 degrees east of the sun and sets near midnight. This weekend the more active morning sky will be totally free of interfering moonlight. As the week progresses though, only the few hours just prior to dawn will provide dark skies. The estimated total hourly meteor rates for evening observers this week is near 4 as seen from mid-northern latitudes and 3 as seen from

tropical southern locations (25S). For morning observers, the estimated total hourly rates should be near 22 as seen from mid-northern latitudes (45N) and 19 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. Evening 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.

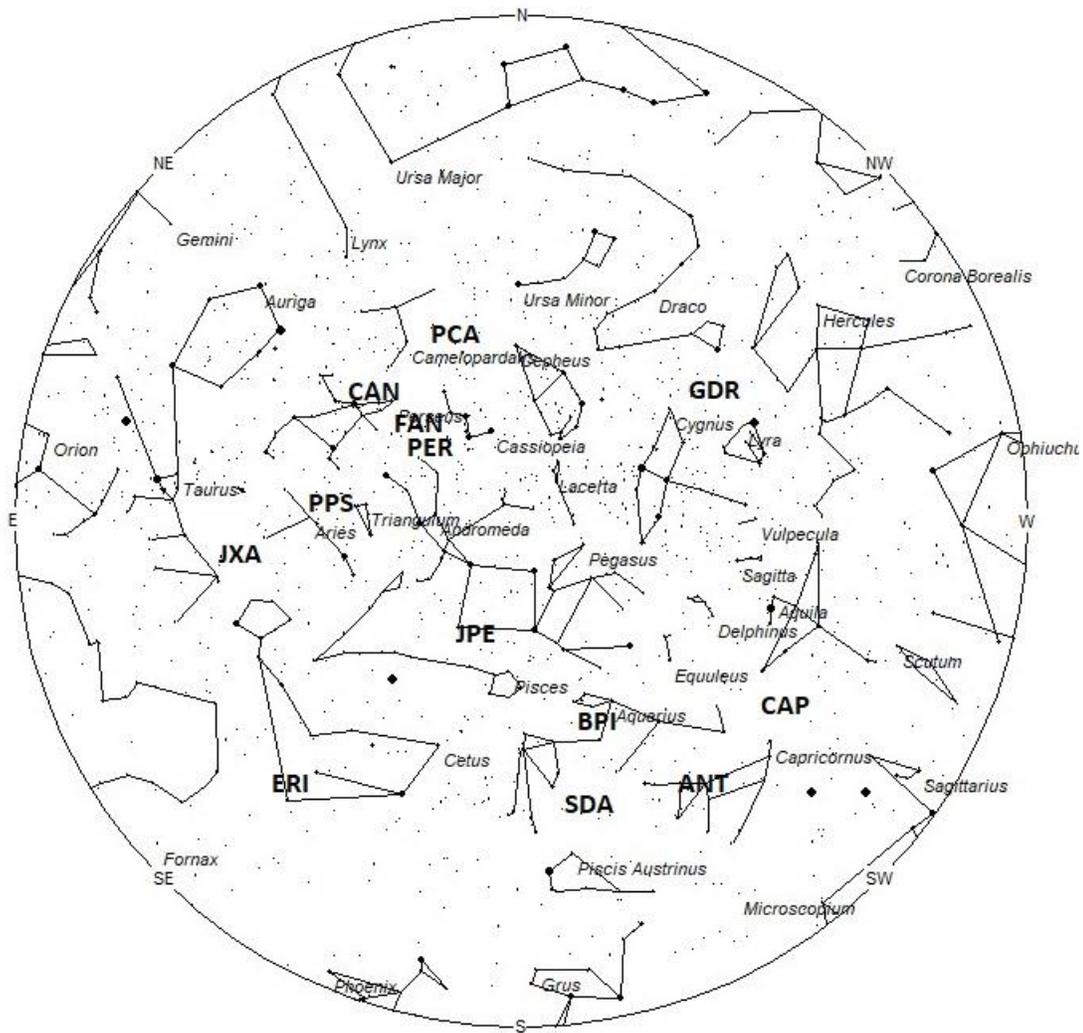
The radiant (the area of the sky where meteors appear to shoot from) positions and rates listed below are exact for Saturday night/Sunday morning July 25/26. These positions do not change greatly day to day so the listed coordinates may be used during this entire period. Most star atlases (available 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 Locations at 10pm Local Daylight Saving Time**



**Radiant Locations at 1am Local Daylight Saving Time**



**Radiant Locations at 4am Local Daylight Saving Time**

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

The **July gamma Draconids (GDR)** were first noticed by Japanese observers using SonotoCo and the IMO's network team of Sirko Molau and Juergen Rendtel in 2009. This stream is active from July 21-29 with maximum activity occurring on July 28. The radiant is currently located at 18:37 (279) +50, which places it in southeastern Draco, 5 degrees southeast of the 2nd magnitude star known as Eltanin (gamma Draconis). The radiant also lies 12 degrees due north of the brilliant zero magnitude star Vega (alpha Lyrae). This radiant is best placed near midnight local daylight saving time (LDST), when it lies on the meridian and is located highest in the sky. With an entry velocity of 28 km/sec., the average gamma Draconid meteor would be of medium-slow velocity. In 2016, this stream produced a strong outburst that lasted approximately 1 hour. If a repeat performance occurs this year it will most likely occur near 00:52 Universal Time on July 28. Nothing unusual has occurred since 2016. Some researchers feel these meteors are related to the kappa Cygnids, which are active next month.

The **alpha Capricornids (CAP)** are active from July 2 through August 10 with maximum activity occurring during the last week of July. The broad maximum occurs anywhere from July 25 to the 30th with visual rates usually around 3 per hour. The radiant is currently located at 20:07 (302) -10, which places on the Capricornus/Aquila border, 4 degrees northwest of the 4<sup>th</sup> magnitude star known as Alpha<sup>2</sup> Capricorni (Algedi). This radiant is best placed near 01:00 LDST when it lies on the meridian and is located highest in the sky. Hourly rates at this time should be near 3 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 21:04 (316) -17. This position lies in northern Capricornus, near the spot occupied by the 4<sup>th</sup> magnitude star known as Dorsum (theta Capricornii). Due to the large size of this radiant, anthelion activity may also appear from southwestern Aquarius as well as Capricornus. This radiant is best placed near 0200 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 mid-northern latitudes (45 N) and 3 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 13<sup>th</sup>, also occurs with the radiant within the borders of the constellation of Pisces. The radiant currently is located near 22:00 (330) -05. This area of the sky is located in western Aquarius, 5 degrees south of the 3<sup>rd</sup> magnitude star known as Sadalmelik (alpha Aquarii). This radiant is best placed near 0200 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 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 22:26 (337) -18. This position is located in southwestern Aquarius, 5 degrees southwest of the 3<sup>rd</sup> magnitude star known

as Skat (delta Aquarii). Maximum activity is expected on July 29th. Current hourly rates will depend on your latitude. Those viewing from the southern tropics will see the best rates of near 3 per hour, increasing to near 20 at maximum. Rates seen from mid-northern latitudes will be near 1 per hour, increasing to 10 at maximum. The radiant rises near 22:00 LDST for observers located in the southern tropics, but is best placed near 0300 LDST, when it lies highest in the sky. With an entry velocity of 41 km/sec., most activity from this radiant would be of average velocities.

The **July Pegasids (JPE)** are active during the entire month of July with maximum activity occurring on July 10th. The radiant is currently located at 00:04 (001) +15. This area of the sky is located in southeastern Pegasus, 2 degrees southwest of the 3rd magnitude star known as Algenib (gamma Pegasi). This radiant is best placed near 0500 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 68 km/sec., the average meteor from this source would be of swift velocity.

The **Perseids (PER)** are active from a radiant located at 01:29 (022) +53. This position lies on the Perseus/Cassiopeia border, 4 degrees southeast of the 4th magnitude star known as Marfak (theta Cassiopeiae). 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 12 so current rates are expected to 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 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 02:01 (030) -17. This position lies in southern Cetus, 4 degrees southeast of the 3<sup>rd</sup> magnitude star known as tau Ceti. This source is active until September 16<sup>th</sup>, with maximum activity occurring on August 10<sup>th</sup>. Current rates would be less than 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 02:07 (032) +50. This position lies in northeastern Andromeda, 4 degrees northeast of the 4<sup>th</sup> magnitude star known as Nembus (51 Andromedae). Rates are currently expected to be near 1 per hour for those in the northern hemisphere and less than 1 for those viewing from south of the equator. 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.

The **psi Cassiopeiids (PCA)** were discovered by Zdenek Sekanina in his study of radio streams. These meteors are active from July 4 through August 7 with maximum activity occurring on July 21. The current position of the radiant is 02:54 (043) +75. This position lies in a remote area of northern Cassiopeia, 4 degrees northeast of the 4<sup>th</sup> magnitude star known as 50 Cassiopeiae. Rates are currently expected to be near 1 per hour for those in the northern hemisphere and less than 1 for those viewing from south of the equator. 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 42 km/sec., the average psi Cassiopeiid meteor would be of medium speed. Being discovered by radio, a majority of these meteors may be dim and difficult to see.

The **phi Piscids (PPS)** were another discovery by Dr. Peter Brown and associates using data from the Canadian Meteor Orbit Radar (CMOR) installation. These meteors are active from June 8-August 02 with maximum activity occurring on July 4th. The radiant position currently lies at 02:33 (038) +33. This area of the sky lies in eastern Triangulum, 4 degrees southeast of the 4th magnitude star known as gamma Trianguli. These meteors are best seen near during the last dark hour of the night when the radiant lies highest in a dark sky. Current rates should be less than 1 per hour no matter your location. With an entry velocity of 67 kilometers per second, most of these meteors will appear to move with swift velocities. Being discovered by radio, a majority of these meteors may be dim and difficult to see.

The **psi Cassiopeids (PCA)** were discovered by Zdenek Sekanina in his study of radio streams. These meteors are active from July 4 through August 7 with maximum activity occurring on July 21. The current position of the radiant is 02:54 (043) +75. This position lies in a remote area of northern Cassiopeia, 4 degrees northeast of the 4<sup>th</sup> magnitude star known as 50 Cassiopeiae. Rates are currently expected to be near 1 per hour for those in the northern hemisphere and less than 1 for those viewing from south of the equator. 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 42 km/sec., the average psi Cassiopeiid meteor would be of medium speed. Being discovered by radio, a majority of these meteors may be dim and difficult to see.

The last of the **c-Andromedids (CAN)** are expected this weekend from a radiant located at 03:11 (048) +54, which places it in northwestern Perseus, 1 degree east of the 3rd magnitude star known as gamma Persei. This area of the sky is best seen during the last dark hour before dawn when the radiant lies highest in a dark sky. Observers in the northern hemisphere are better situated to view this activity as the radiant rises much higher in the sky before dawn compared to southern latitudes. Current rates should be less than 1 per hour no matter your location. With an entry velocity of 58 km/sec., the average meteor from this source would be of swift velocity.

The **July chi Arietids (JXA)** were discovered by two investigating teams in Europe using video data from European video Meteor Network Database (EDMOND), SonotaCo, 2013; and CMN, 2013. Activity from this stream is seen from July 2 through August 1 with maximum activity occurring on July 13. The radiant currently lies at 03:12 (048) +13, which places it in southeastern Aries, 4 degrees west of the 4th magnitude star known as 5 Tauri. This area of the sky is best seen during the last dark hour before dawn when the radiant lies highest in a dark sky. Current rates are expected to be less than 1 per hour no matter your location. With an entry velocity of 69 km/sec., the average meteor from this source would be of swift velocity.

Morning sporadic rates are expected to be near 11 per hour as seen from mid-northern latitudes and 9 as seen from tropical southern latitudes. Evening rates should be near 3 as seen from the northern hemisphere and 2 as seen from tropical southern latitudes. Evening 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.

<b>SHOWER</b>	<b>DATE OF MAXIMUM ACTIVITY</b>	<b>CELESTIAL POSITION</b>	<b>ENTRY VELOCITY</b>	<b>CULMINATION</b>	<b>HOURLY RATE</b>	<b>CLASS</b>
		<b>RA (RA in Deg.) DEC</b>	<b>Km/Sec</b>	<b>Local Daylight Saving Time</b>	<b>North- South</b>	
July gamma Draconids (GDR)	Jul 28	18:37 (279) +50	28	00:00	1 - <1	IV
alpha Capricornids (CAP)	Jul 26	20:07 (302) -10	22	01:00	3 - 3	II
Anthelion (ANT)	-	21:04 (316) -17	30	02:00	2 - 3	II
August beta Piscids (BPI)	Aug 13	22:00 (330) -05	41	02:00	<1 - <1	IV
South delta Aquariids (SDA)	Jul 29	22:26 (337) -18	41	03:00	1 - 3	I
July Pegasids (JPE)	Jul 10	00:04 (001) +15	68	05:00	<1 - <1	IV
Perseids (PER)	Aug 12	01:29 (022) +53	59	06:00	2 - 1	I
eta Eridanids (ERI)	Aug 10	02:01 (030) -17	65	07:00	<1 - <1	IV
49 Andromedids (FAN)	Jul 20	02:07 (032) +50	60	07:00	<1 - <1	IV
phi Piscids (PPS)	Jul 04	02:33 (038) +33	67	07:00	<1 - <1	IV
psi Cassiopeiids (PCA)	Jul 21	02:54 (043) +75	42	07:00	1 - <1	IV
c- Andromedids (CAN)	Jul 09	03:11 (048) +54	58	08:00	<1 - <1	IV
July chi Arietids (JXA)	Jul 13	03:12 (048) +13	69	08:00	<1 - <1	IV

