greater than 40°. The limiting magnitude should be carefully recorded for each session, along with the UT and the centre of the field of view of the observer. The most basic observations should include an estimate of the brightness of the meteor, the time of observation, and a shower association (based on the radiant and apparent speed of the meteor). Information on collecting and reporting scientifically useful observations can be found at the International Meteor Organization's website, www.imo.net.

TABLE OF METEOR SHOWERS FOR 2019

The table lists the major visual showers as well as those detectable by radio methods during the day. Of the strongest annual showers, the Moon is favourable for the **Quadrantids**, **η-Aquariids** and the **South δ-Aquariids**. Though a daylight event, there are predictions for a close encounter (the best in several decades) with the centre of the Taurid resonant swarm in the last week of June 2019. This would be associated with heightened activity from either the Daytime β Taurids or the Daytime ζ Perseids (or both) and is likely to be rich in large meteoroids.

Shower	Max Date UT	λ 2000	*D*	ZHR	θ ×10^{-6}	*R*	Moon %	*r*	RA h m	Dec °	*v* km/s
Quadrantids	**Jan. 4 2h**	**283.16**	**0.6**	**120**	**8.4**	✓	**5-**	**2.1**	**15 20**	**+49**	**43**
April Lyrids	Apr. 23 0h	32.3	1.3	20	4.6	✓	88-	2.9	18 10	+34	48
η-Aquariids	**May 6 14h**	**45.5**	**5**	**60**	**6.4**	**>03**	**2+**	**2.4**	**22 30**	**−2**	**66**
S δ-Aquariids	**Jul. 29 16h**	**126**	**8**	**20**	**6.2**	**>23**	**11-**	**3.2**	**22 44**	**−16**	**43**
Perseids	Aug. 13 7h	140.0	2	90	6.0	✓	94+	2.1	3 08	+58	60
Orionids	Oct. 22 0h	208	2	20	2.2	>23	49-	2.4	6 20	+16	67
S Taurids	Nov. 6 0h	223	15	10	1.0	✓	62+	2.3	3 34	+14	31
N Taurids	Nov. 12 23h	230	15	15	1.4	✓	100+	2.3	4 00	+22	30
Leonids	Nov. 18 6h	235.3	1	20	1.9	>00	71-	2.5	10 12	+22	71
Geminids	Dec. 14 19h	262.2	1	120	11.0	✓	94-	2.3	7 28	+33	36
Ursids	Dec. 23 3h	270.7	0.5	10	2.2	✓	13-	3.0	14 36	+75	35
S D ω-Cetids	May 7 2h	46	20	≈20	—	day	—	—	1 24	−6	36
N D ω-Cetids	May 10 5h	49	30	≈20	—	day	—	—	0 47	+19	36
D ζ-Perseids	**Jun. 5 5h**	**74**	**19**	**≈25**	**—**	**day**	**—**	**—**	**3 47**	**+23**	**29**
D Arietids	Jun. 9 21h	78.5	16	≈45	—	day	—	2.1	2 52	+26	41
D β-Taurids	**Jun. 26 3h**	**94**	**9**	**≈20**	**—**	**day**	**—**	**—**	**5 31**	**+20**	**29**
D Sextantids	Sep. 29 17h	186	12	≈20	—	day	—	—	10 17	−1	33

The column **Max Date** lists the date and hour (in Universal Time) when Earth intersects the densest part of the stream, based on the solar longitude **λ** (J2000.0) given in the third column.

The fourth column, ***D***, gives the duration of the shower in days, which is the total number of days for which the activity level is over half the maximum activity.

The **ZHR**, or Zenithal Hourly Rate, is given for the peak of the shower. The **θ** column gives the meteoroid flux at the time of maximum (see text for explanation).

The ***R*** column gives the local times for which the radiant is above the horizon for an observer at 45°N latitude (and therefore meteors from the shower are visible); a ✓ symbol indicates that the radiant is up throughout the night hours, while "day" indicates that the shower is not visible at night.

The **Moon** column gives the percent illumination of the Moon at the time of the shower peak (+ for waxing, – for waning). The population index, ***r***, at the time of the maximum is a measure of the size distribution of particles in the stream. A larger *r* value indicates an excess of small particles, while smaller *r* values indicate larger numbers of brighter meteors. A shower with a higher *r* value will therefore suffer more from background light such as moonlight or light pollution. Sporadic meteors at observable visual magnitudes have an *r* value near 3.0.

The **RA** and **Dec** columns show the position in the sky of the radiant at the time of the shower peak. The position of the radiant will vary from these values away from the time of the peak; tables published by IMO in their annual shower calendar provide details of radiant drift. The last column, ***v***, gives the apparent atmospheric speed of the meteors in the shower.