



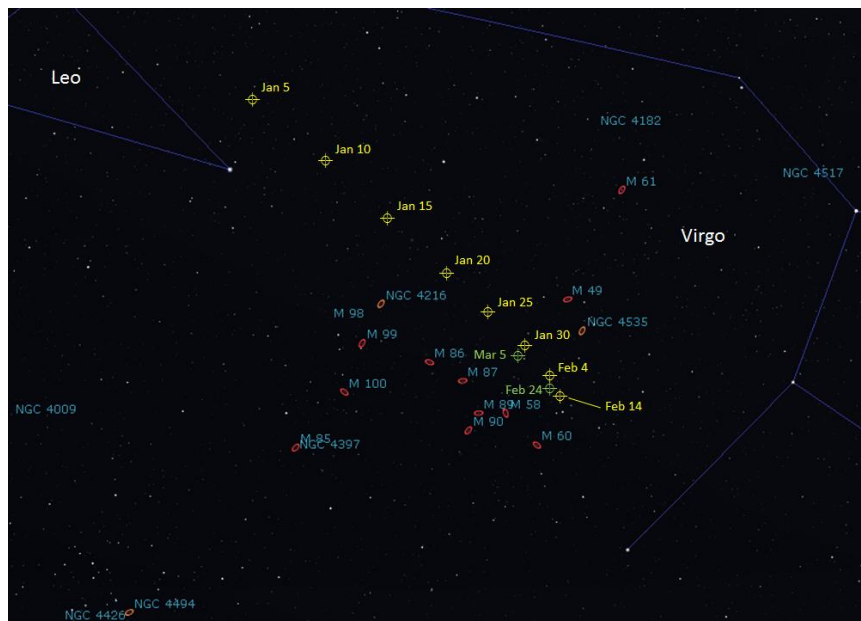
Comet, Asteroid and Meteor Section

CAMnotes 2024 No.1 January-March

The first quarter of the year has a few interesting prospects for minor meteor shower observation. There are also some comets which should be in reach of small telescopes, and binoculars under darker skies. Prospective observers are welcome to contact me should they require further information.

COMETS – the following comets may be suitable for observation:

Comet 62P/Tsuchinshan 1 was at perihelion on 25 December, at which time it reached magnitude 8 or slightly brighter. During January it is expected to fade by about 1 magnitude as it moves past closest approach to Earth on the 29th, albeit it at the rather large distance of 1.34 AU. From the third week of January and throughout February the comet moves through the Virgo Cluster of galaxies, providing numerous opportunities for observation and imaging.



Path of Comet 62P. During January and early February the comet approaches the star rho Virginis before reversing its path across the Virgo Cluster.

From 10 to 24 February the comet will be within half a degree of the star rho Virginis (magnitude 4.8, closest on 18 February), which will aid its location. Close by are the two 11th magnitude galaxies NGC 4596 and 4608. The moon will not interfere after midnight.



Location of Comet 62P near rho Virginis, shown for the morning of 18 February.

Observe as soon as possible into the New Year, before the comet becomes too faint. Best observed in the early morning sky, when the comet will be highest just before dawn.

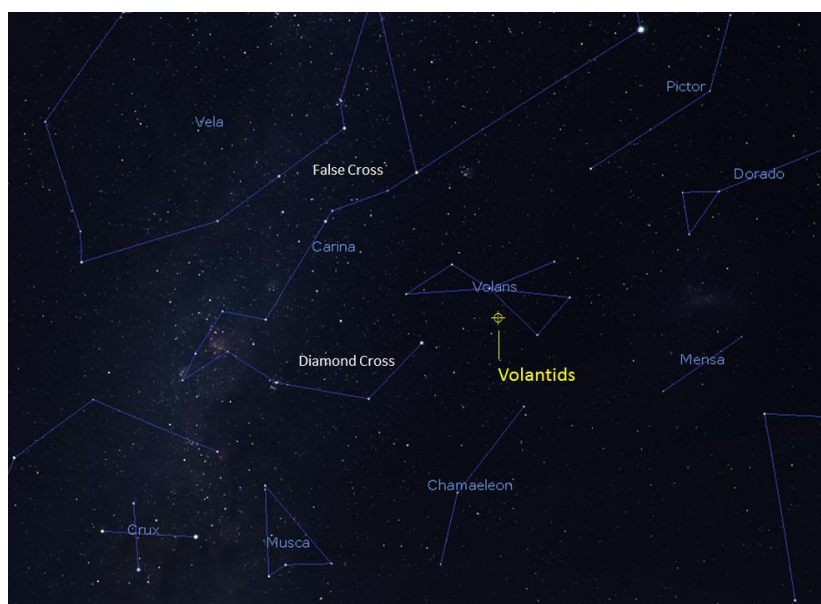
Comet 144P/Kushida will reach perihelion on 25 January, when it might reach 8th magnitude located in Taurus, and well placed for observation. However, this date coincides with the Full Moon, and best opportunity to observe the comet will be from about 1 February onwards, before the comet fades. On the evening of 10 February it will be within 8 arc-minutes of Aldebaran, but likely lost in the glare from the bright star. On the evenings before and after it will be within 0.7° of the star.

Comet C/2021 S3 (PanSTARRS) reaches perihelion on 14 February. When the comet was discovered on 24 September 2021, it was a 20th magnitude object and still at a distance of 8.9 AU from the Sun, and some predictions were made that it might be visible with the naked eye in early 2024. But the comet has not brightened as quickly as expected, in particular over the past three months, and brightness predictions have been reduced considerably. If the current brightness performance holds, then the comet will likely peak around magnitude 9-10 about the end of February.

Comet 12P/Pons-Brooks was not expected to become bright, but underwent a couple of outbursts in 2023, and by year end was about 4 magnitudes brighter than expected at about magnitude 8.5. It should continue to brighten on its way to perihelion on 21 April 2024, when it might reach magnitude 4-5 and be visible with binoculars from dark sites, low above the horizon in the west just after dark. I will say more about this comet in the next issue of CAMNotes, as alas during the first three months of 2024 the comet will remain out of view from Southern Africa.

METEOR SHOWERS - The first quarter of the year is generally quiet for southern hemisphere meteor observers. Some minor activity may be observable from the following showers:

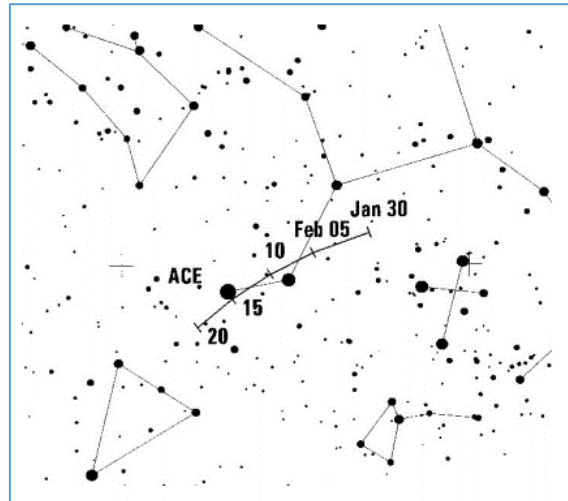
Volantids – this meteor shower was not known before 2015, when it was detected on December 31 by CAMS New Zealand. As a result the shower has been referred to as the New Year's Eve Shower. There was a further outburst in 2020, which was also observed visually by the author, determining a low Zenithal Hourly Rate (ZHR) of 10. The shower would benefit generally from further observation during the period 28 December to 4 January to determine if any further outbursts occur. The radiant is at RA/Decl. 08h14m, -71°, and the meteors are medium speed, entering the atmosphere at 30.4 km/sec. The radiant is up all night, so observations can begin immediately after dark, and culminates at about 2am local time.



Radiant position of the Volantids near the False and Diamond Crosses.

alpha-Centaurids – in most years the alpha-Centaurids produce very low activity with ZHR <5. However, outbursts have been observed in the past, notably with ZHR about 25/hour in 1974 and 1980. The 1980 outburst occurred during the night of 8/9 February and was characterised by bright meteors, on average between magnitude 0 and 1. Jeff Wood in Western Australia said there were many fireballs and many

meteors left persistent trains. The IMO Meteor Shower Calendar gives the maximum for 2024 around February 8. However, an outburst of meteors occurred from nearby during 13 to 15 February 2021, which were recorded as gamma-Crucids, but may have been a further return of the alpha-Centaurids. Therefore observations should be carried out from around 7/8 February and until at least 15 February to check if any further outbursts occur this year.



*Radiant position of the alpha-Centaurids.
Courtesy IMO Meteor Shower Calendar 2024.*

With the New Moon on 10 February, observations are favoured in 2024. Observations will be welcomed even if there is no outburst, as they will help understand the frequency of such events.

gamma-Normids – The gamma-Normid meteor shower was discovered in 1929 by the New Zealand amateur astronomer Ronald McIntosh. The shower was long forgotten and poorly observed, but was added back to the IMO lists a few years ago. Activity appears to vary from year to year but is generally low, with ZHR seldom exceeding 5 to 6 meteors per hour around maximum on 14 March. Information from the IMO says the peak activity could occur anywhere between 7-17 March, but a stable profile has not yet been determined. Despite the apparent low activity, this shower would benefit from increased attention by ASSA members to help elucidate the nature of its activity. The radiant is at RA 16h36, Decl. -51° . The Moon poses no hindrance this year and observations can be carried out from midnight until dawn.

ASTERIODS – Details of close approaches and occultations which might be observable follow. Prospective observers are welcome to contact me for further information.

Asteroid 2008 OS7 – passes by Earth at a distance of 7.4 LD (lunar distance) on 2 February. Closest approach occurs at 14:41 UT, during daytime for Southern Africa. By the time the asteroid is high enough to observe, it will be a magnitude 16 object

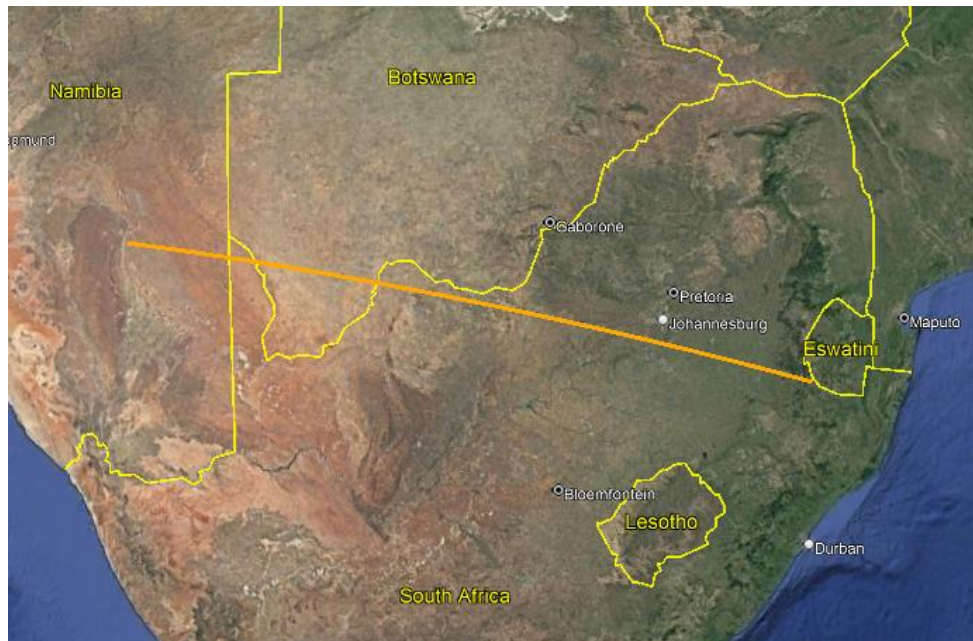
travelling at about 1.3 arc-minutes per minute of time. Best opportunity to observe the asteroid will probably be the evening before, when it will be brighter than magnitude 15, and still crossing the field of view at over 1 arc-minute per minute of time. Below tables give the ephemerides for observers in Johannesburg for both evenings.

K080075		[H=20.47]		Delta	r	El.	Ph.	V	Sky Motion		Object		Sun	Moon	
Date	UT	R.A. (J2000)	Decl.						"/min	P.A.	Azi.	Alt.		Alt.	Phase
	h m s														Dist.
2024 02 01	170000	04 21 30.7	-14 17 06	0.021	0.991	104.9	73.9	14.7	64.92	256.1	222	+75	-01	0.62	133
2024 02 01	180000	04 17 07.8	-14 32 38	0.021	0.991	103.8	75.0	14.7	66.10	256.5	155	+77	-14	0.62	134
2024 02 01	190000	04 12 39.8	-14 48 02	0.021	0.990	102.7	76.1	14.7	67.12	256.8	115	+67	-25	0.62	135
2024 02 01	200000	04 08 07.3	-15 03 15	0.021	0.990	101.5	77.3	14.7	68.00	257.1	100	+53	-35	0.61	136
2024 02 01	210000	04 03 30.8	-15 18 17	0.021	0.989	100.4	78.4	14.8	68.74	257.5	091	+39	-43	0.61	137
2024 02 01	220000	03 58 50.9	-15 33 06	0.020	0.989	99.2	79.6	14.8	69.36	257.7	084	+24	-47	0.60	138
2024 02 01	230000	03 54 08.1	-15 47 43	0.020	0.988	98.0	80.8	14.8	69.89	258.0	077	+10	-46	0.60	139

K080075		[H=20.47]		Delta	r	El.	Ph.	V	Sky Motion		Object		Sun	Moon	
Date	UT	R.A. (J2000)	Decl.						"/min	P.A.	Azi.	Alt.		Alt.	Phase
	h m s														Dist.
2024 02 02	190000	02 08 30.4	-19 34 22	0.019	0.980	72.1	106.8	15.8	79.14	266.2	086	+40	-25	0.52	143
2024 02 02	200000	02 02 56.8	-19 39 15	0.019	0.979	70.8	108.1	15.9	78.25	266.7	080	+26	-35	0.51	142
2024 02 02	210000	01 57 27.0	-19 43 26	0.019	0.979	69.5	109.5	16.0	77.24	267.2	074	+12	-43	0.51	142
2024 02 02	220000	01 52 01.3	-19 46 57	0.019	0.979	68.2	110.8	16.1	76.16	267.6	067	-02	-47	0.51	141

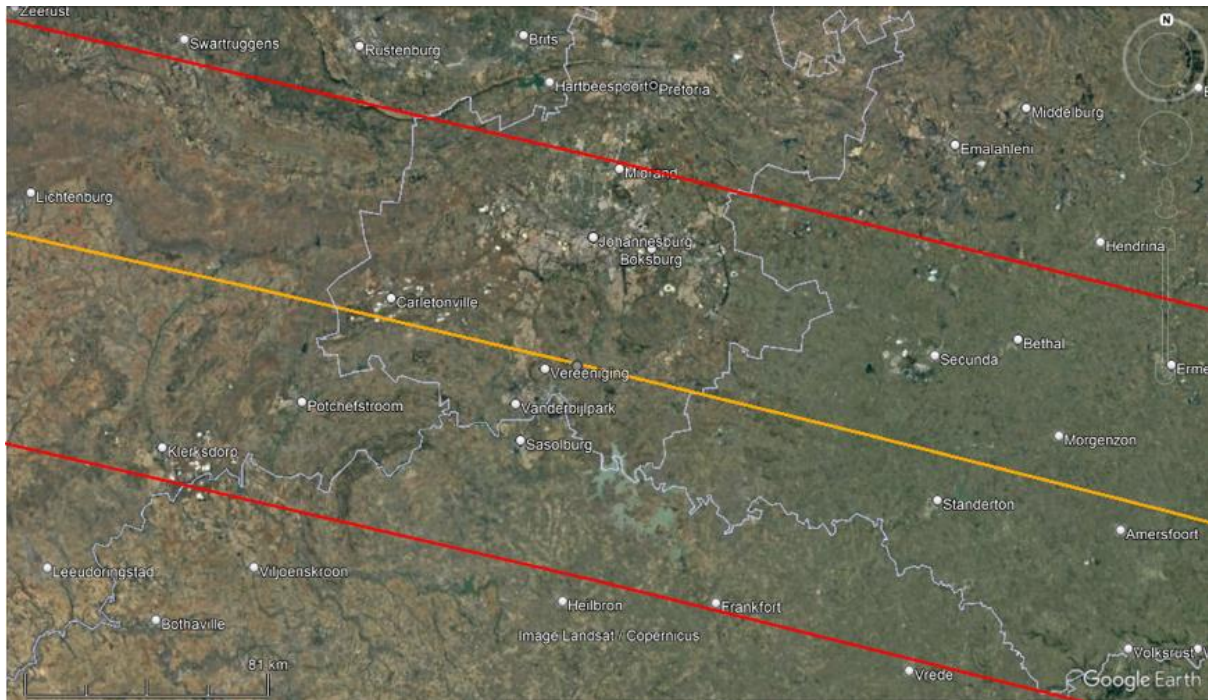
*Table 1 ephemerides for asteroid 2008 OS7 for 1 and 2 February 2024.
Courtesy Minor Planet Centre, Ephemeris Service.*

Asteroid 1437 Diomedes – will occult the magnitude 9.7 star TYC 824-00995-1 in the early hours of 20 February. The path across the country is shown below, and observers within approximately 72 km either side of the centre line can expect to see the star disappear for up to 8 seconds if you are on the centre line, but for a shorter duration the further away you are located from the centre line.



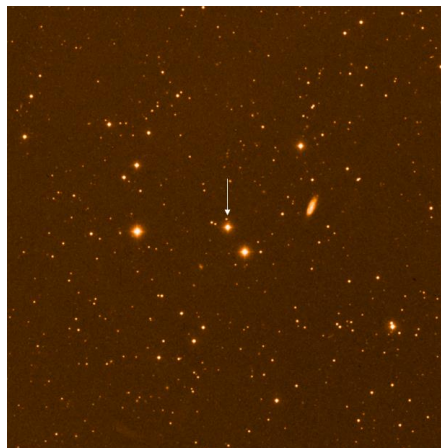
Path of occultation of TYC 824-00995-1 by Asteroid 1437 Diomedes, on 20 February 2024 at 00h25-00h26 UT. Path is from right to left.

The following towns are near the centre line, from east to west: Mpumalanga – Piet Retief, Greylingstad, Balfour; Gauteng – Meyerton, Vereeniging, Fochville, Carletonville; North West –Venterdorp, Lichtenburg, Tosca.



Path of occultation of TYC 824-00995-1 by Asteroid 1437 Diomedes, on 20 February 2024 for southern Gauteng. Orange line is centre line, red lines are the northern and southern limits of predicted occultation.

The star is at coordinates: RA/Decl. 09 35 10, +10 15 42 in the constellation of Leo.



30' x 30' field of view with TYC 824-00995-1 arrowed. The galaxy to the right is NGC 2919. ESO image.

Since the asteroid will be 15th magnitude, the star will disappear for the duration of the occultation. Predicted time of occultation is 00h25-00h26 UT (02h25-02h26 SAST). I suggest observing for 5 minutes either side of this, in case any secondary occultations

due to any previously unknown satellites of Diomedes occur. Visual observations can be made by looking at the star and recording commentary onto a voice recorder. Shout 'gone' if and when the star disappears, and 'back' when it reappears. The recording needs to be calibrated using a suitable time signal or a device synchronised to internet time, and an accuracy of ± 0.1 seconds in all timings is desirable. A better way to time the disappearance and reappearance is using a video camera attached to a telescope and guiding on the star. A GPS based time-inserter can be used to insert the time in UT on each video field, and the video can be replayed later to derive the exact time of any events recorded.

I hope the foregoing gives visual observers and astro-imagers plenty of opportunities to start the year. If you do observe any of these events I will be pleased to receive any reports or images for analysis.

Clear skies

Tim Cooper

Director, Comet, Asteroid and Meteor Section

Acknowledgements

Dr Peter Jenniskens for meteor shower information in Atlas of Earth's Meteor Showers, Elsevier, 2023. Occultation data is from Steve Preston's site at asteroidoccultation.com. Star maps were drawn using Stellarium 0.20.1, Copyright © 2000-2020 Stellarium Developers. Occultation paths courtesy Google Earth Pro, © Google LLC. ESO image is courtesy ESO Online Digitized Sky Survey.