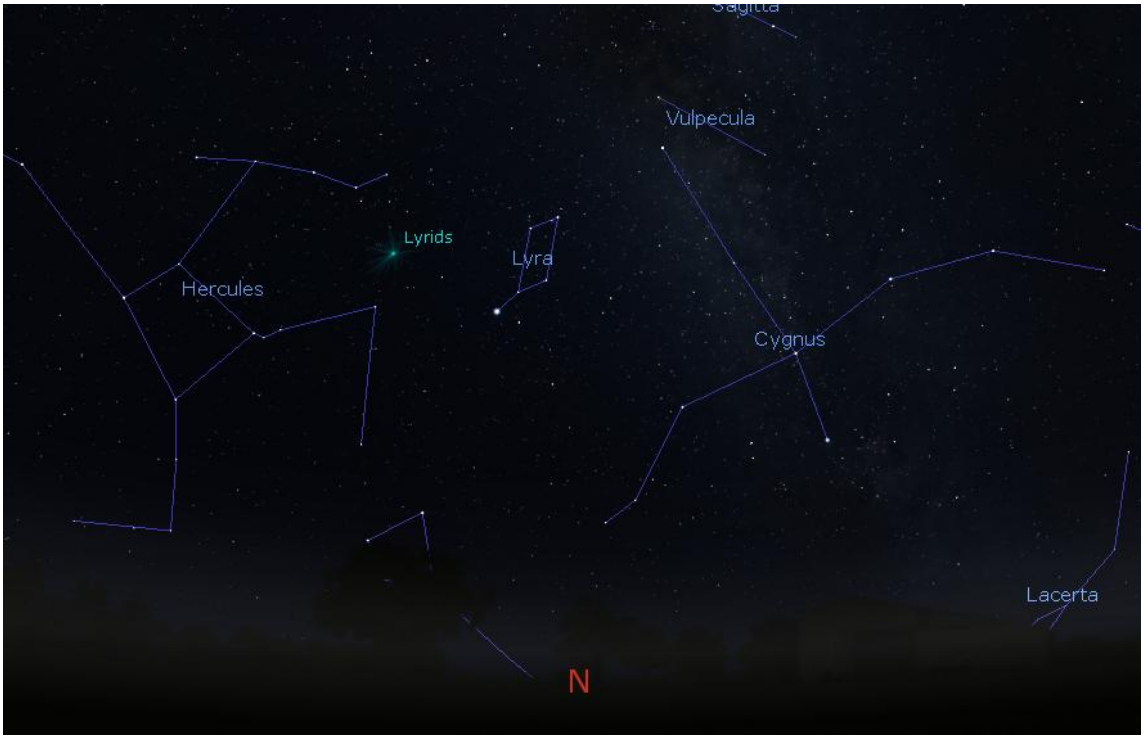
Comet, Asteroid and Meteor Section

CAMNotes 2025 No.2 April-June

METEOR SHOWERS

The **April Lyrids** are the debris left behind by comet C/1861 G1 (Thatcher). In most years they show modest activity with ZHR = 15-20 per hour at maximum, but the shower has shown outbursts traced back to ancient times. The most recent was on 1982 April 22.3 UT, when the outburst was well observed with a duration of only 0.64 hours and a peak ZHR 200-300. No outburst is predicted for this year, but the shower should be observed nonetheless just in case something untoward happens.

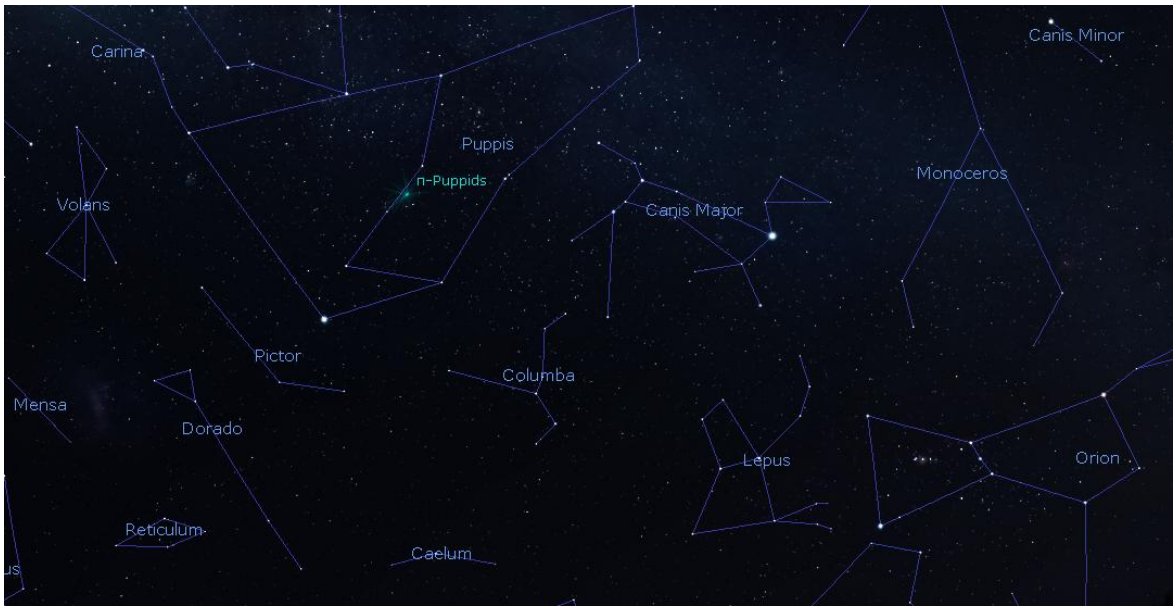


Location of the Lyrid radiant, view is for Johannesburg at 05h00 SAST.

The maximum, which is predicted this year for 13h30 UT (15h30 SAST) on April 22, is quite sharp and normally lasts at most two days above half peak activity. Meteors enter the atmosphere at 49 km/s and appear medium speed. The radiant is at RA =

271°, Decl. = +34°, and is located just west of the bright star Vega. For southern Africa the radiant rises about 23h20 local time. Useful observations can be made between about 01h00 and about 05h00, at which time the radiant is at its highest elevation of about 30°. On the morning of April 22, the waning crescent Moon rises shortly after midnight and will pose slight hindrance.

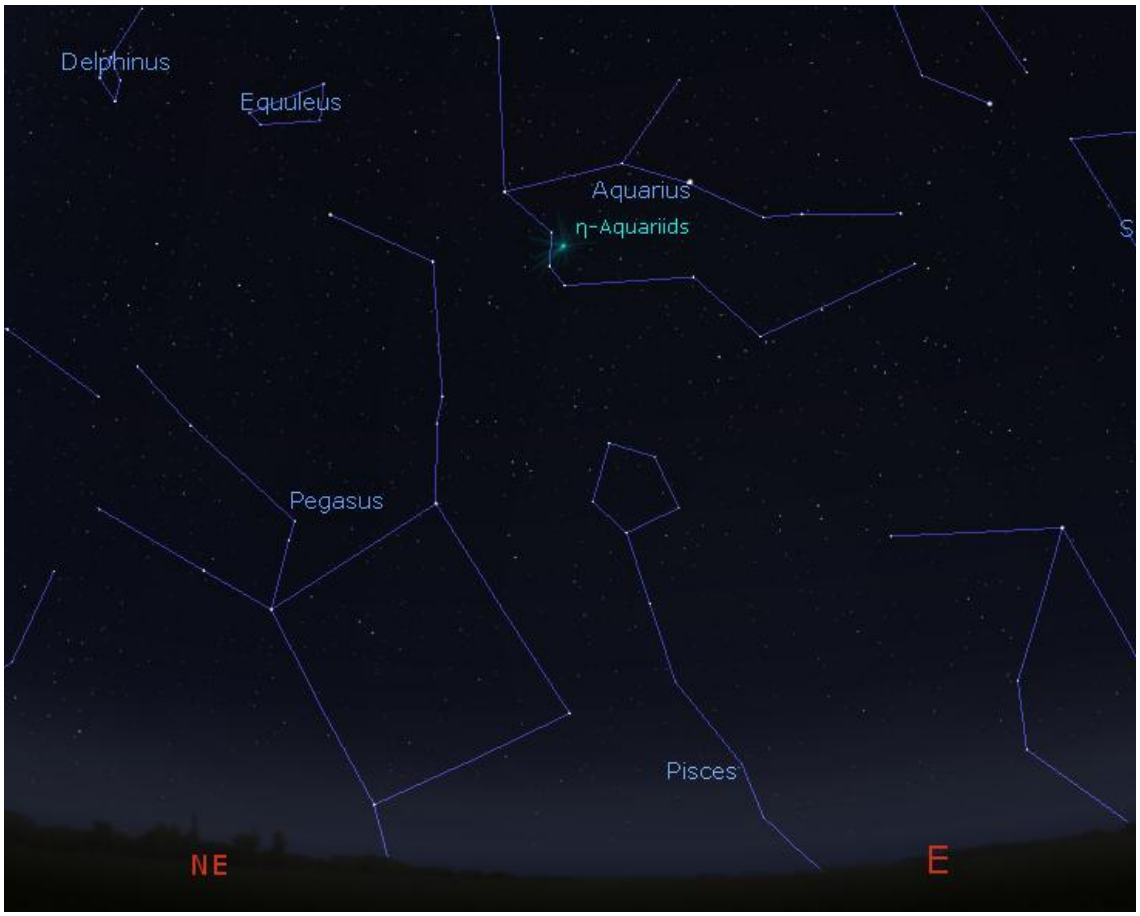
The **pi-Puppids** meteor shower was unknown until 1972, when activity was first detected. The parent comet is 26P/Grigg-Skjellerup, the orbit of which was perturbed due to a close encounter with Jupiter in 1964. The first significant outburst was observed on the night of 1977 April 23/24, with many bright fireballs, leaving trains up to several minutes duration. A second outburst occurred in 1982, again with many fireballs, all of which left persistent trains. The meteors were all slow, and yellow or orange coloured. No enhanced activity has been observed since. By now the comet's orbit has changed to 5.3 years, and it is possible the earth will no longer intersect the debris stream, as was the case before 1964, and the pi Puppids will no longer be observable as a meteor shower. However, further observations are critical to understand if this is indeed the case. The radiant is highest just after dark and can be observed until about midnight. Observe at least on the evenings of 23 and 24 April from dusk to midnight. The Moon will not interfere and so conditions are favourable in 2025.



Radiant of the pi Puppids, is easy to find using the two brightest stars in the sky, upper right of Canopus and to the left of Sirius, looking west.

The eta-Aquariids are the most active of the southern meteor showers, and these remnants of comet 1P/Halley normally peak around 5/6 May at a ZHR of 50-60/hour. In some years however, activity can be higher due to Earth crossing filaments of particles which are in mean motion resonances with the planet Jupiter. Such was the case last in 2013, when the ZHR reached 130/hour during the mornings of 5-7 May as

Earth crossed filaments left behind by the comet at its -910 and -1197 apparitions. In the years since, the shower has returned to a 'normal' activity profile. At a talk given at the 2020 online-International Meteor Conference, Auriane Egal predicted possible enhanced rates again in 2023 or 2024 but observations by Magda Streicher and Tim Cooper showed no enhanced activity in either year. Clearly there is much still to be learned about this important meteor shower, and detailed observations are requested. Normally, activity picks up in the early days of May, and peaks about May 5 or 6. Rates can remain quite high until about May 10. On May 6 the radiant rises at 01h30 local time, and observations can begin from about 03h00 when the altitude is about 15°. Observations will be cut short by encroaching twilight at about 05h30 or shortly thereafter (later for observers in the Western Cape), by which time the radiant has risen to a respectable altitude of nearly 50°. This year there is no interference from the Moon so the shower is very favourable for observation.



Radiant position of the eta Aquariids, close to the Water Jar asterism of Aquarius

Note eta-Aquariids are fast moving meteors, entering the atmosphere at 66 km/sec. Brighter members often leave trains, that can be persistent. There may be activity from several other minor showers nearby, so be careful to report these separately from your ETA counts. Anyone who would like to observe this shower, which is particularly important this year, can contact me for further information on what is required.

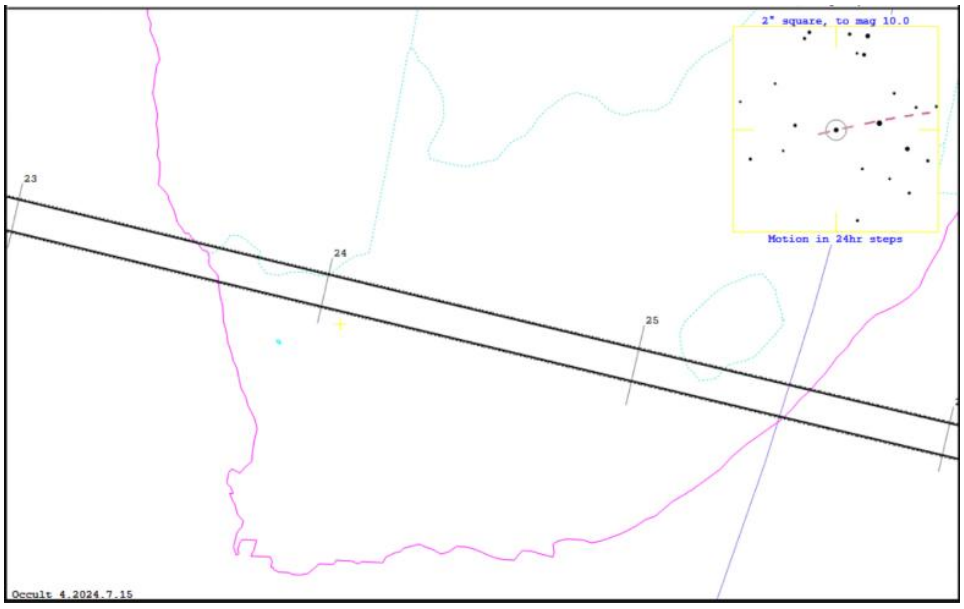
COMETS

Following on from two bright comets in recent months, comet C/2023 A3 (Tsuchinshan-ATLAS) and comet C/2024 G3 (ATLAS), both of which became naked-eye objects, the second quarter of 2025 sees nothing predicted brighter than magnitude 12. If any comets are discovered in the interim which might become visible in amateur instruments, a special Observing Circular will be issued.

ASTEROIDS

There are no asteroid close approaches within 1 lunar distance (LD) and the brightest event will be of asteroid 2025 BC10 on April 5, which will reach magnitude 13.7.

On 11 June, asteroid 1240 Centenaria will occult the magnitude 7.4 star HIP 56392 along a path which stretches from Oranjemund in the west to Southbroom in the east. The towns of Aggenys in the Northern Cape, Philippolis in the southern Free State and Margate in Kwa-Zulu Natal are in the predicted path, which is 63 km wide.



Predicted path of occultation of HIP 56392 by asteroid 1240 Centenaria on 11 June 2025.

The star is located at RA 11h33m37.82s, Decl. -6°32'13.0". Predicted time of occultation is 18h23-18h26 UT depending on your location, and predicted duration is 6 seconds for locations on the centre line. The full Moon will be located 89° from the star. The occultation is the brightest predicted for 2025 and can be observed with modest instruments. The path does not favour major centres, but if you are interested in attempting to observe please do not hesitate to contact me.

I hope the foregoing gives visual observers and astro-imagers plenty of opportunities. If you do observe or image 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
Star maps were drawn using Stellarium 0.20.1, Copyright © 2000-2020 Stellarium Developers. Meteor shower data is from the International Meteor Organization, 2025 Meteor Shower Calendar edited by Juergen Rendtel, with additional information from Atlas of Earth's Meteor Showers by Peter Jenniskens. Close approach data for asteroids is from the ESA NEO Coordination Centre (NEOCC), website at https://neo.ssa.esa.int/close-approaches. The prediction for the 11 June event was kindly provided by Auke Slotegraaf using data from Occult 4.2024.7.15.