SPA Variable Star Section Annual Report - 2025.

Introduction.

Here in the south-east, the weather was slightly better then average during 2025. Unfortunately, during the last quarter of the year, the weather as very poor, with few opportunities for observing.

However, despite the challenges of the weather, the section received a good number of observations. Bob Steele. Don Matthews, Ed Sawyer, Jonathan Shanklin, Mark Hardaker and Matthew Barrett all submitted observations to the section.

The most popular stars on the SPA programme, were:

- T Cephei.
- R Coronae Borealis.
- AF Cygni.
- Chi Cygni.
- W Cygni.
- Beta Lyrae.
- R Scuti.
- Z Ursa Majoris.

We were able to observe the maximum of almost all of the long-period variables; only the maximum of R Ursa Majoris was under-observed, possibly due to bad weather.

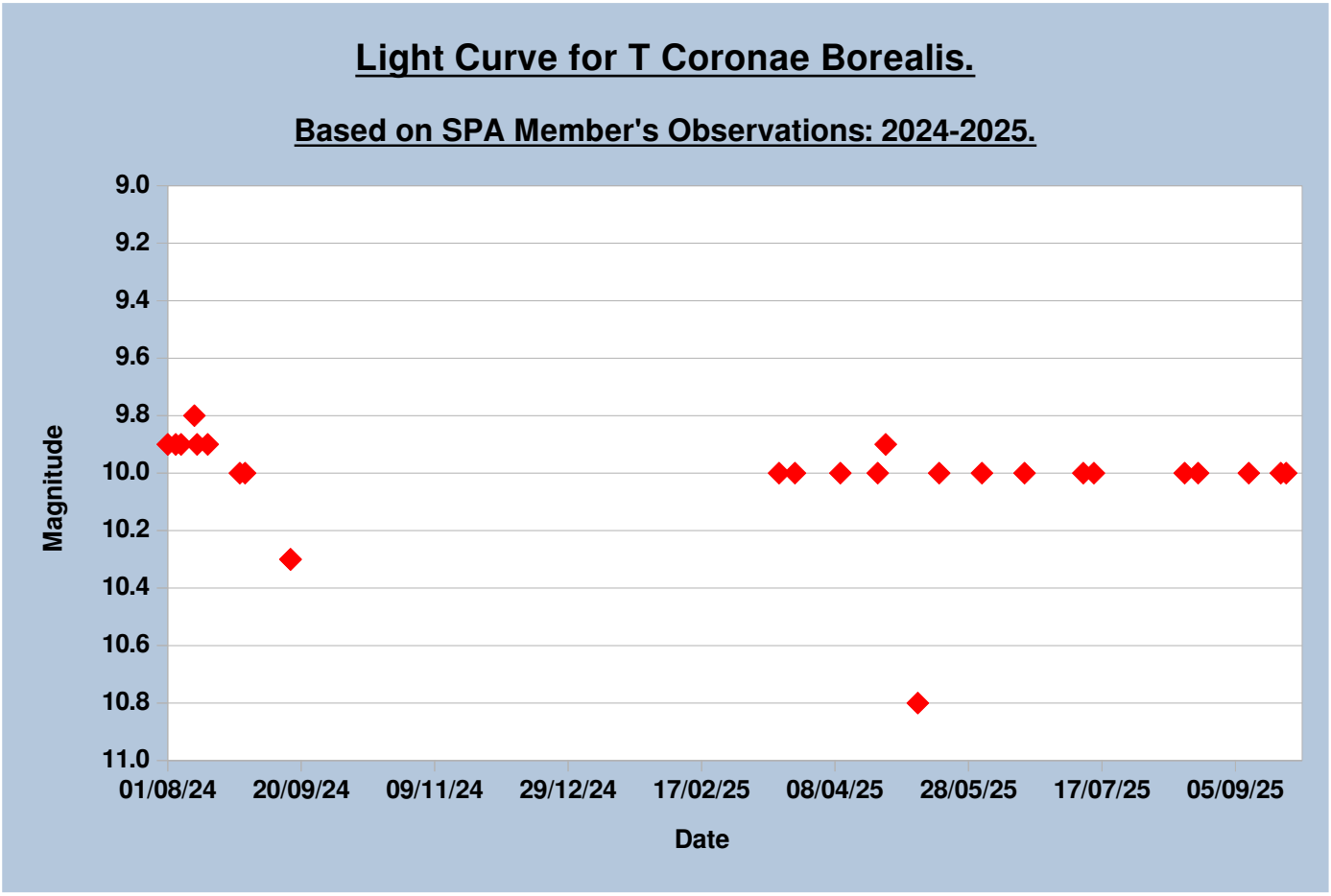
T Coronae Borealis.

Although it's not on the SPA programme, many observers have been keeping an eye upon T Coronae Borealis. T Coronae Borealis, also known as the 'Blaze Star', is a recurring nova. It has a possible period of 80 years, and if this is true, it may undergo another outburst in 2026. It's first outburst was recorded in 1866, when it reached the second magnitude, and a second outburst was observed in 1946, when it reached third magnitude. Usually, T CrB hovers around the tenth magnitude, so would require a modest telescope to observe, but it is possible to check the field, with a pair of binoculars, even if the star is invisible.

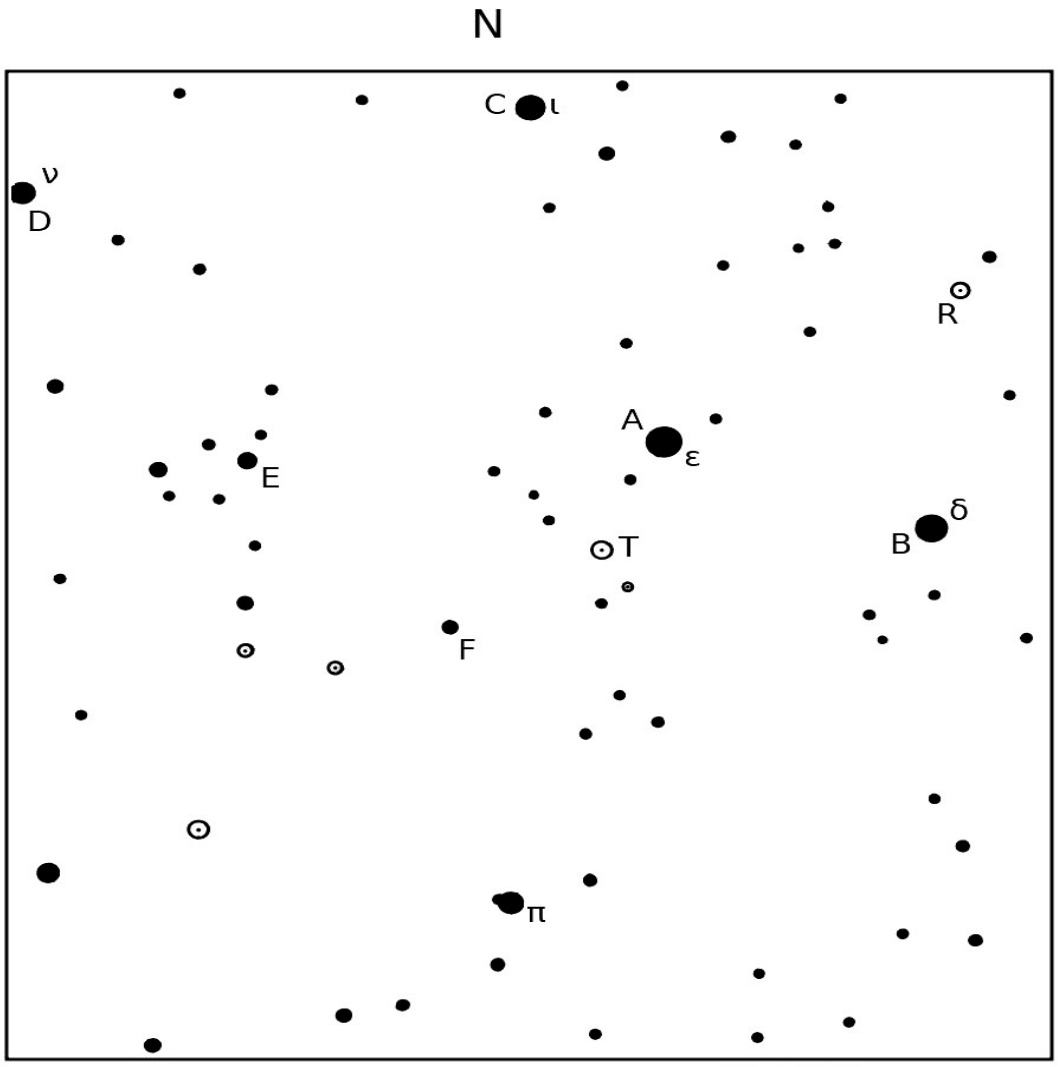
Unfortunately, we have yet to see any unusual behaviour, let alone any outburst, from T CrB. However, it's important to keep checking this star, as we don't know whether this star will experience another outburst, and if so, when.

It's a good idea to check T CrB every clear night, and it can be checked as you make an observation of R CrB.

Light Curve for T Coronae Borealis.



Variable Star Chart for T Coronae Borealis.



T Coronae Borealis. (adapted from a BAA chart)

A 4.1	D 5.8
B 4.6	E 6.6
C 5.0	F 7.1

Under-Observed Stars.

While most of the stars on the section programme were well observed, there were some which were under-observed. The stars which were under-observed were:

- Eta Aquilae.
- Mu Cephei.
- EU Delphini.
- RY Draconis.
- Eta Geminorum.
- Zeta Geminorum.
- Alpha Herculis.
- RX Leporis.
- R Lyrae.
- Alpha Orionis.
- W Orionis.
- R Trianguli.

It hard to say why some stars are so under-observed, some of these stars are winter variables, so may be the weather (or cold!) is discouraging members from observing them. It might also be that these stars don't exhibit interesting enough behaviour to elect the interest of observers. Whatever the reason, it would be nice if we could make some more observations of these stars over the coming year.

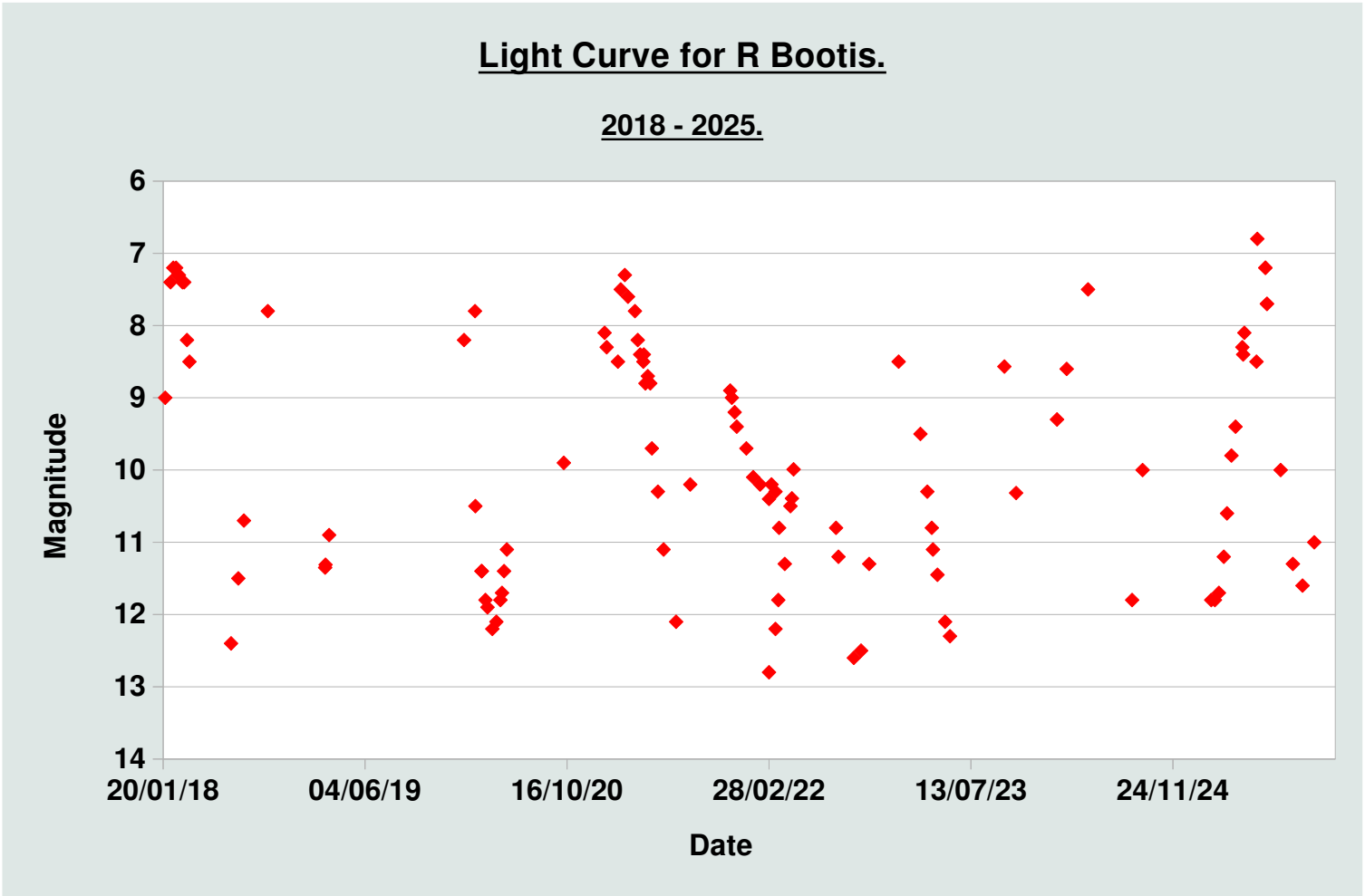
None of our stars showed unusual behaviour over the course of 2025. However, as always, its important to maintain a program of regular observations, as any changes in behaviour, as well as unusual behaviour, may only manifest itself over the course of many months, or years.

Let's hope T Coronae Borealis puts on a show for us in 2026!

Light Curves for the More Well Observed Stars.

R Bootis.

Extreme brightness range	6.2 – 13.1
More typical range	7.2 – 12.3
Period of variation	223 days (approx 7.5 months).
Frequency of observation	Worth checking a few times per month.
Observe using	50mm binoculars will suffice when in the upper part of its brightness range. Larger binoculars will be required when it gets fainter. A telescope is required to follow it down to minimum.

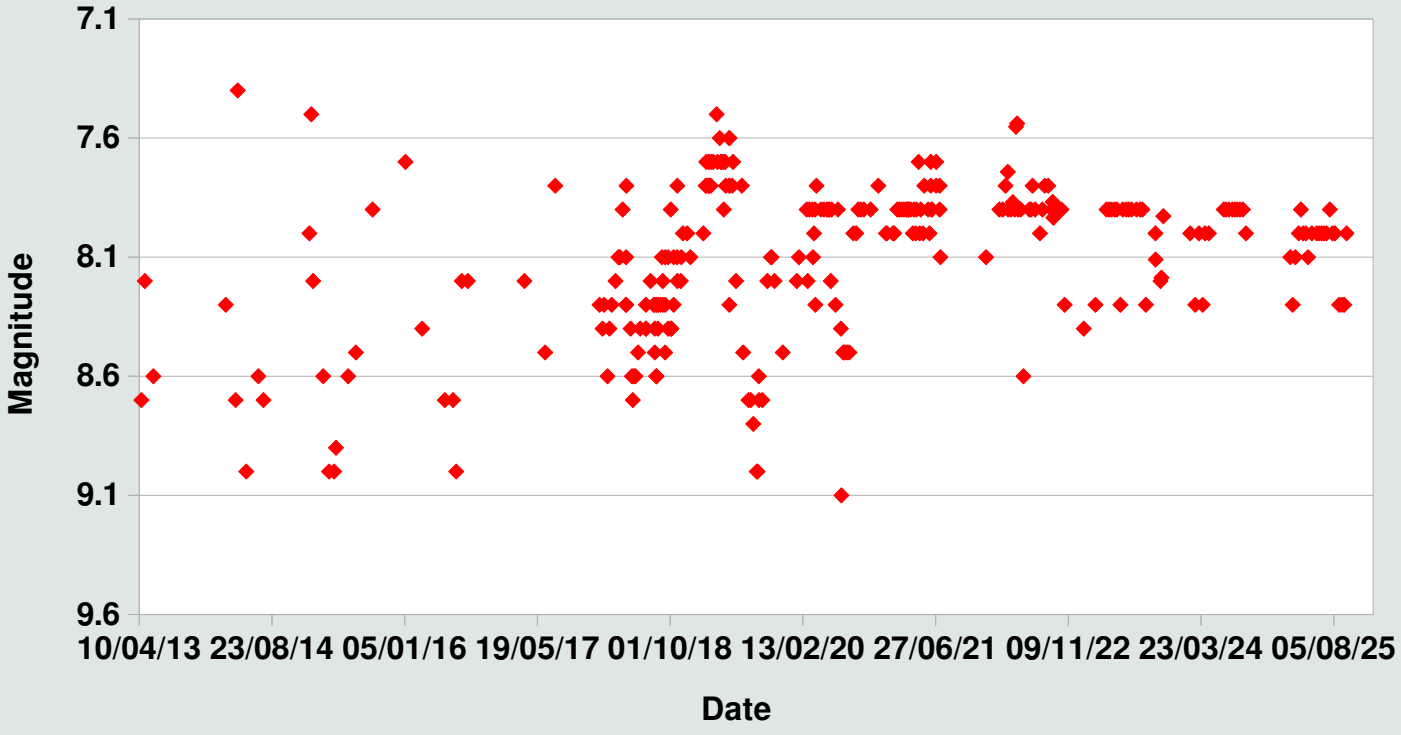


RW Bootis.

Extreme brightness range	6.4 – 9.2
More typical range	7.9 – 8.7
Period of variation	Listed as about 7 months, but recent observations suggest it is more like 10-11 months.
Frequency of observation	Worth checking a few times per month.
Observe using	50 – 80mm binoculars will suffice for most of the time. However, 70 – 80mm binoculars may be required if your observing site is not particularly dark, and may also be needed when RW Boo is low in the sky.
Visibility	Can be observed all year round, but is rather low in the evening sky during November and December. Not visible in the evening sky for most of January. Can be observed in the morning sky from late October onwards.

Light Curve for RW Bootis.

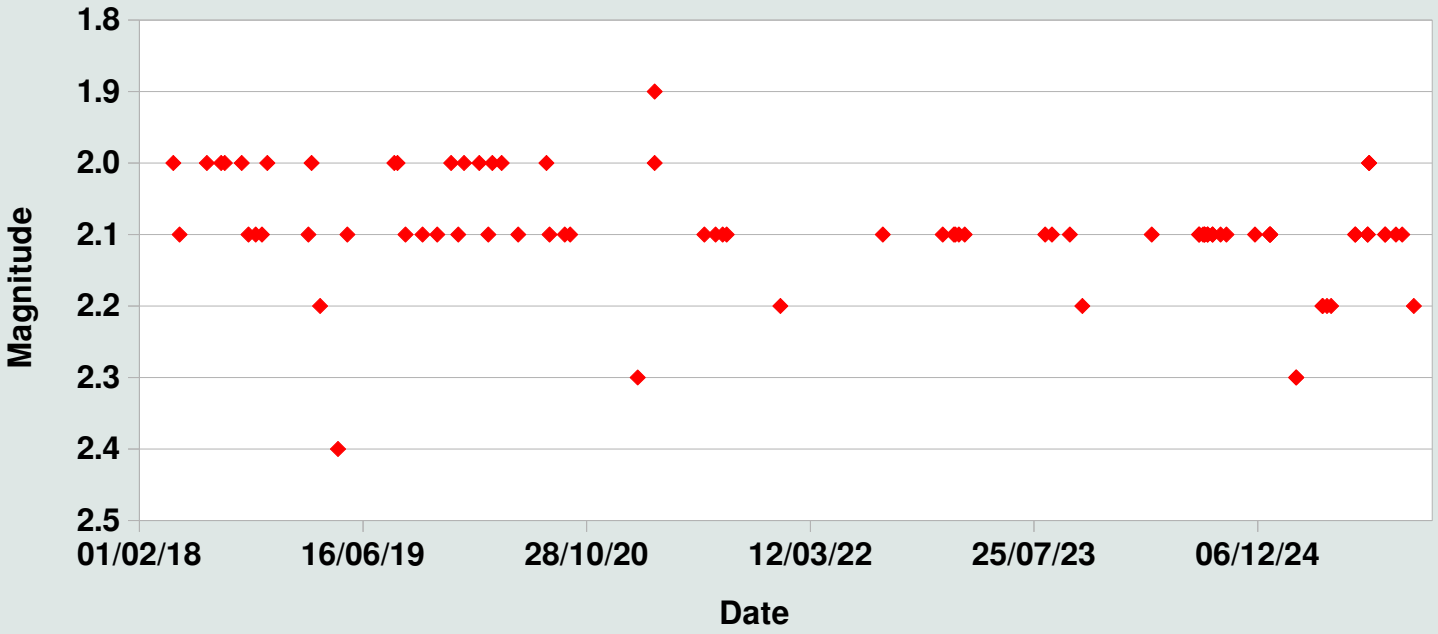
2013 - 2025.



Gamma Cassiopeiae.

Extreme brightness range	1.75 – 3.0
More typical range	2.0 – 2.2
Period of variation	None.
Frequency of observation	Worth checking a few times per month.
Observe using	Naked Eye.

Light Curve for Gamma Cassiopeiae.
2018 - 2025.

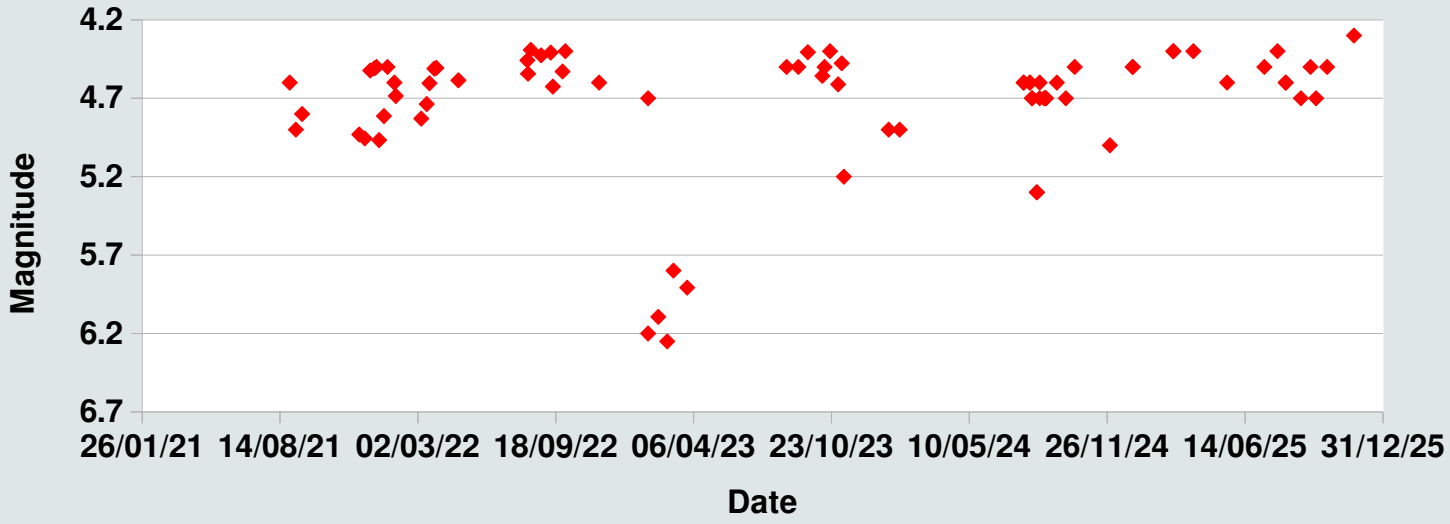


Rho Cassiopeiae.

Extreme brightness range	4.1 – 6.2
More typical range	4.2 – 5.0
Period of variation	None.
Frequency of observation	Once a week.
Observe using	Naked eye – if you have a reasonably dark observing site. Otherwise use 40mm or 50mm binoculars.
Visibility	Can be observed all year round – but is low in the sky during the summer months.

Light Curve for Rho Cassiopeiae.

2018 - 2025.

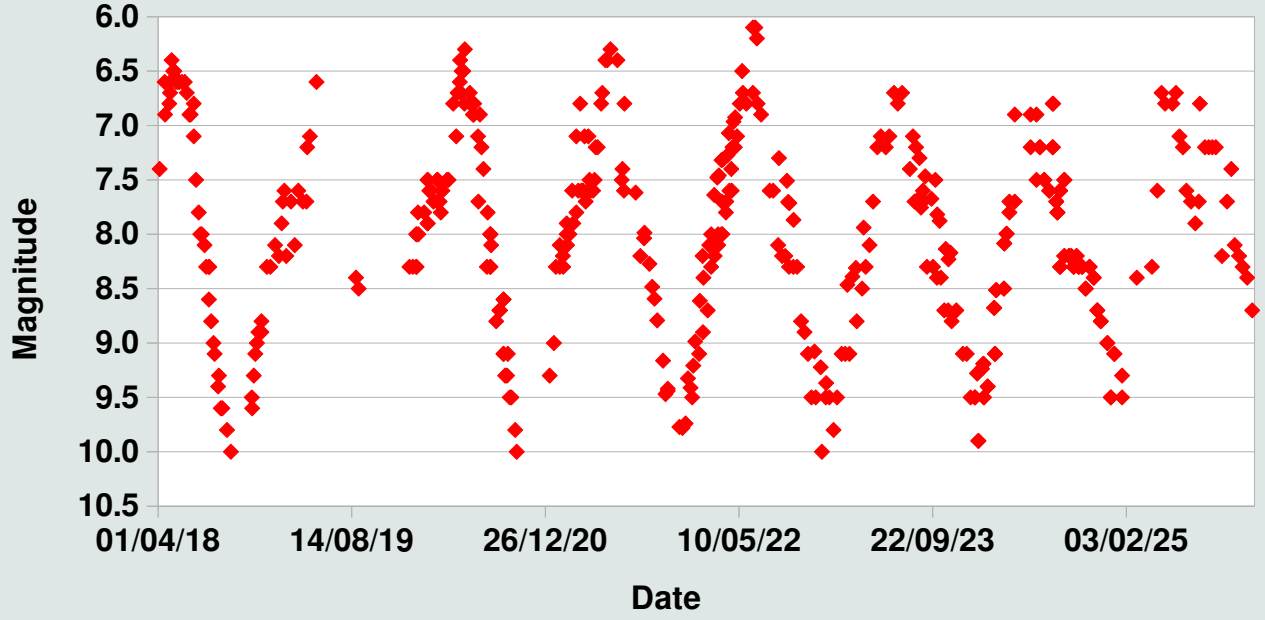


T Cephei.

Extreme brightness range	5.4 – 11.0
More typical range	6.0 – 10.5
Period of variation	389 days (nearly 13 months).
Frequency of observation	Worth checking a few times per month.
Observe using	40mm or 50mm binoculars will suffice when the star is near maximum, but 50-80mm binoculars will be required when it gets fainter and a telescope will be needed at minimum.
Visibility	Can be observed all year round.

Light Curve for T Cephei.

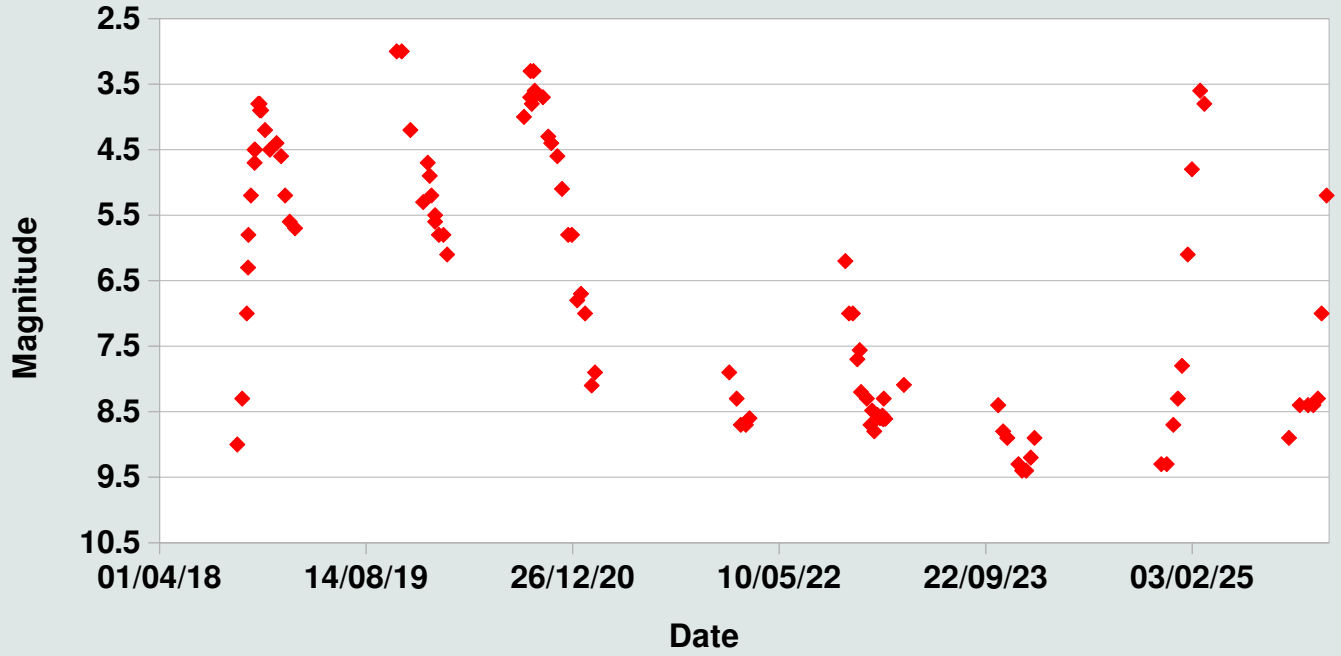
2018 - 2025.



Omicron Ceti – Mira.

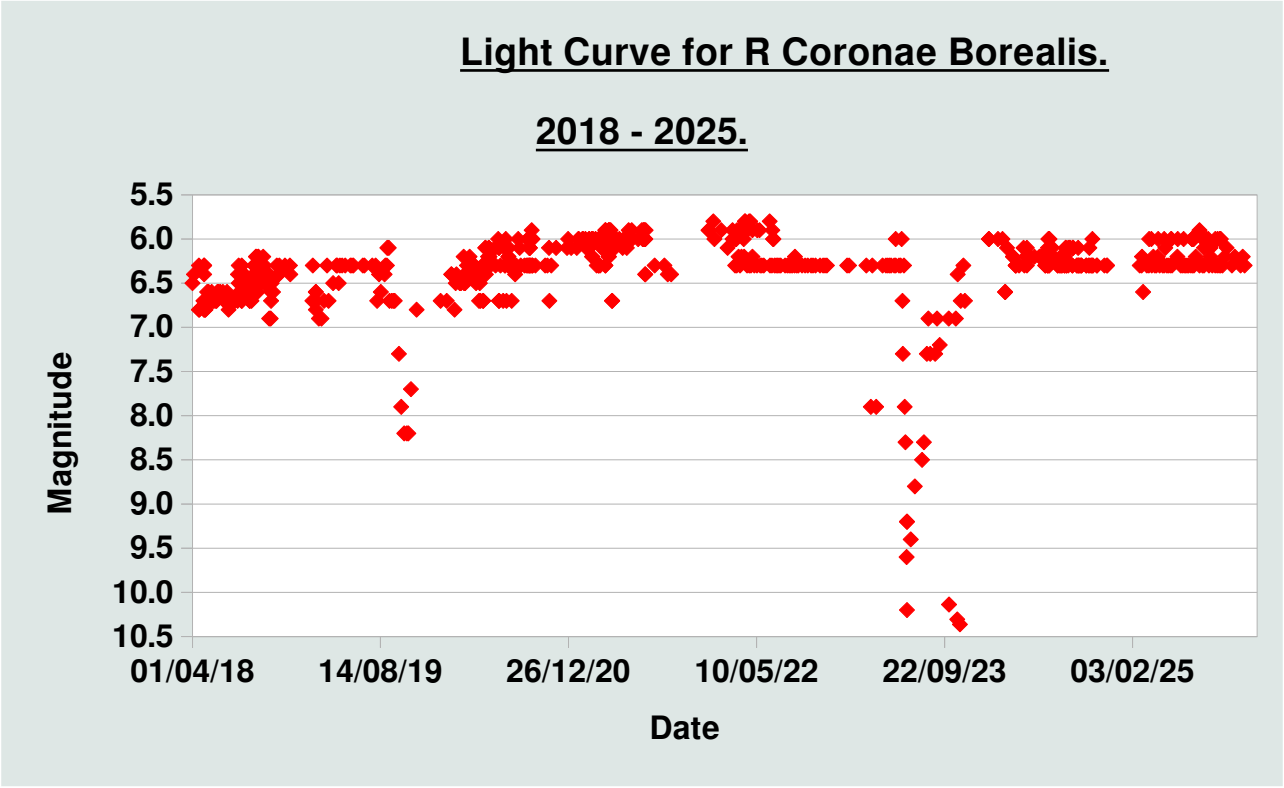
Extreme brightness range	1.7 – 10.1
More typical range	3.6 – 9.3
Period of variation	About 11 months.
Frequency of observation	Worth checking a few times per month.
Observe using	Naked eye when near maximum. 40mm or 50mm binoculars when it is less bright. Larger binoculars or a telescope when it is near minimum.
Visibility	Can be observed from the UK from late July to early March.

Light Curve for Omicron Ceti.
2018- 2025.



R Coronae Borealis.

Extreme brightness range	5.8 – 15.0
More typical range	6.1 – 6.4 (until a fade starts ...).
Period of variation	None – totally unpredictable.
Frequency of observation	Worth checking on every clear night.
Observe using	40mm or 50mm binoculars will suffice for most of the time, but 50-80mm binoculars will be required during smaller fades and a telescope is required during the deepest fades.
Visibility	Can be observed all year round, but is rather low in the evening sky in November and December. From late October it is visible in the pre-dawn sky and is only visible in the morning sky from Christmas to the end of January.

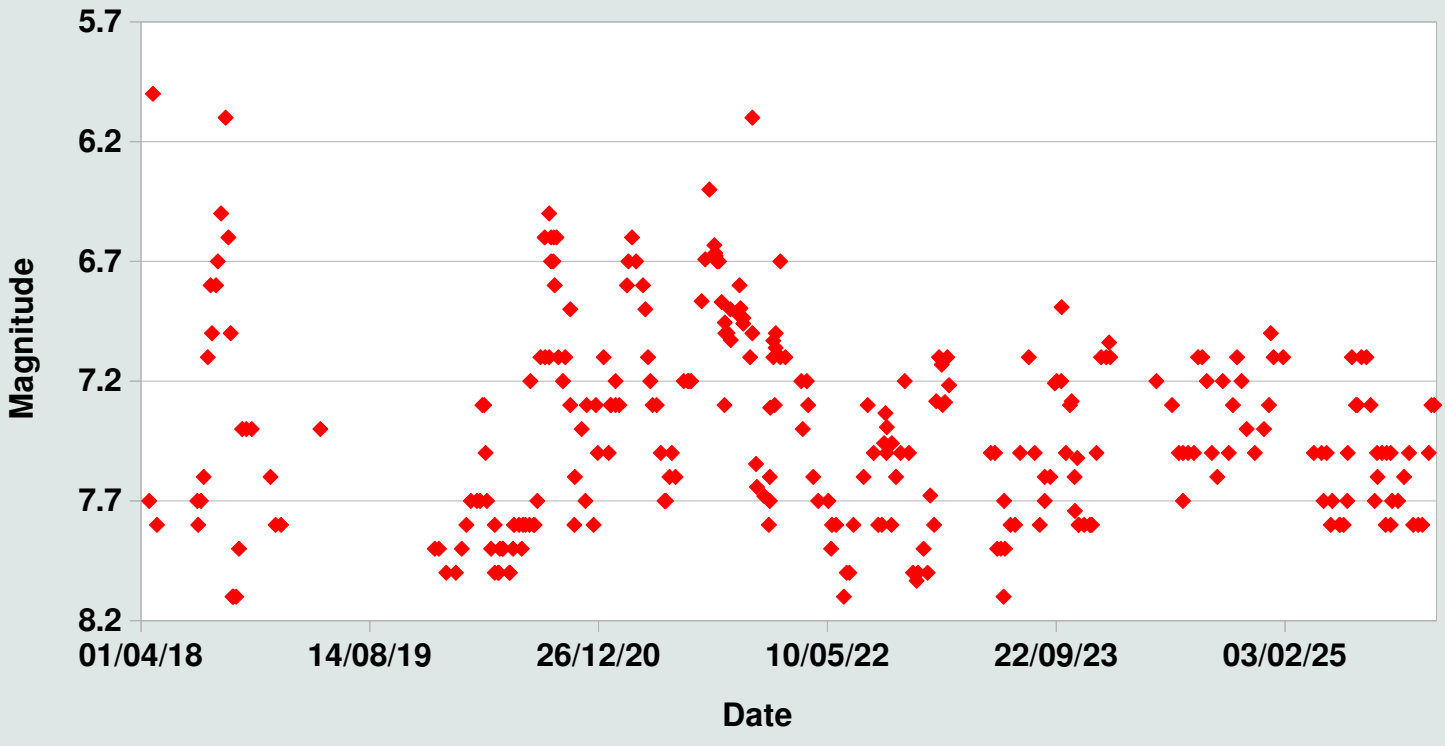


AF Cygni.

Extreme brightness range	6.4 – 8.4
More typical range	6.7 – 7.7
Period of variation	About 3 months.
Frequency of observation	Worth checking a few times per month.
Observe with	40mm or 50mm binoculars will suffice for most of the time, but 50-80mm binoculars may be required during the deeper minima.
Visibility	Can be observed all year round, but is rather low in the evening sky from January to April.

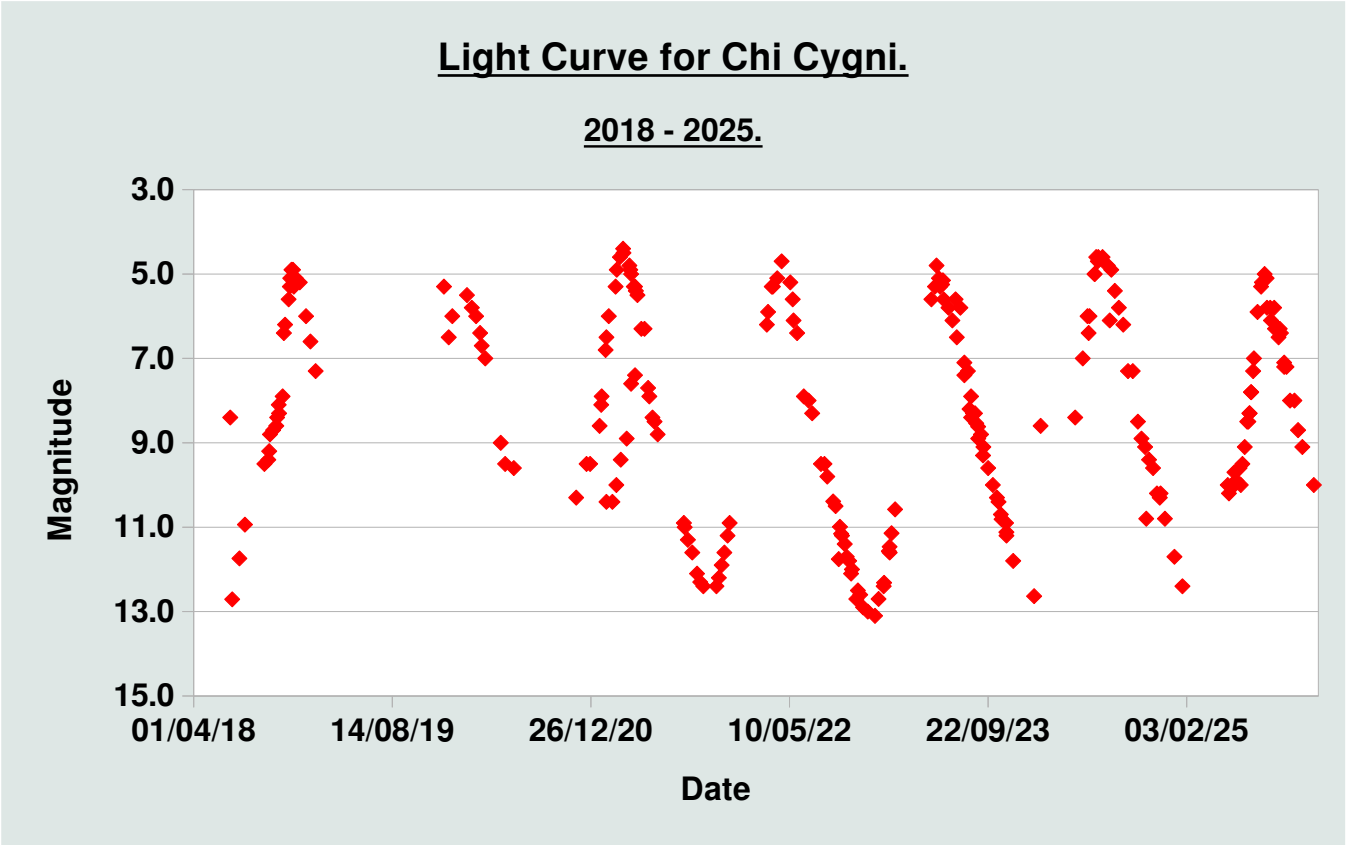
Light Curve for AF Cygni.

2018 - 2025.



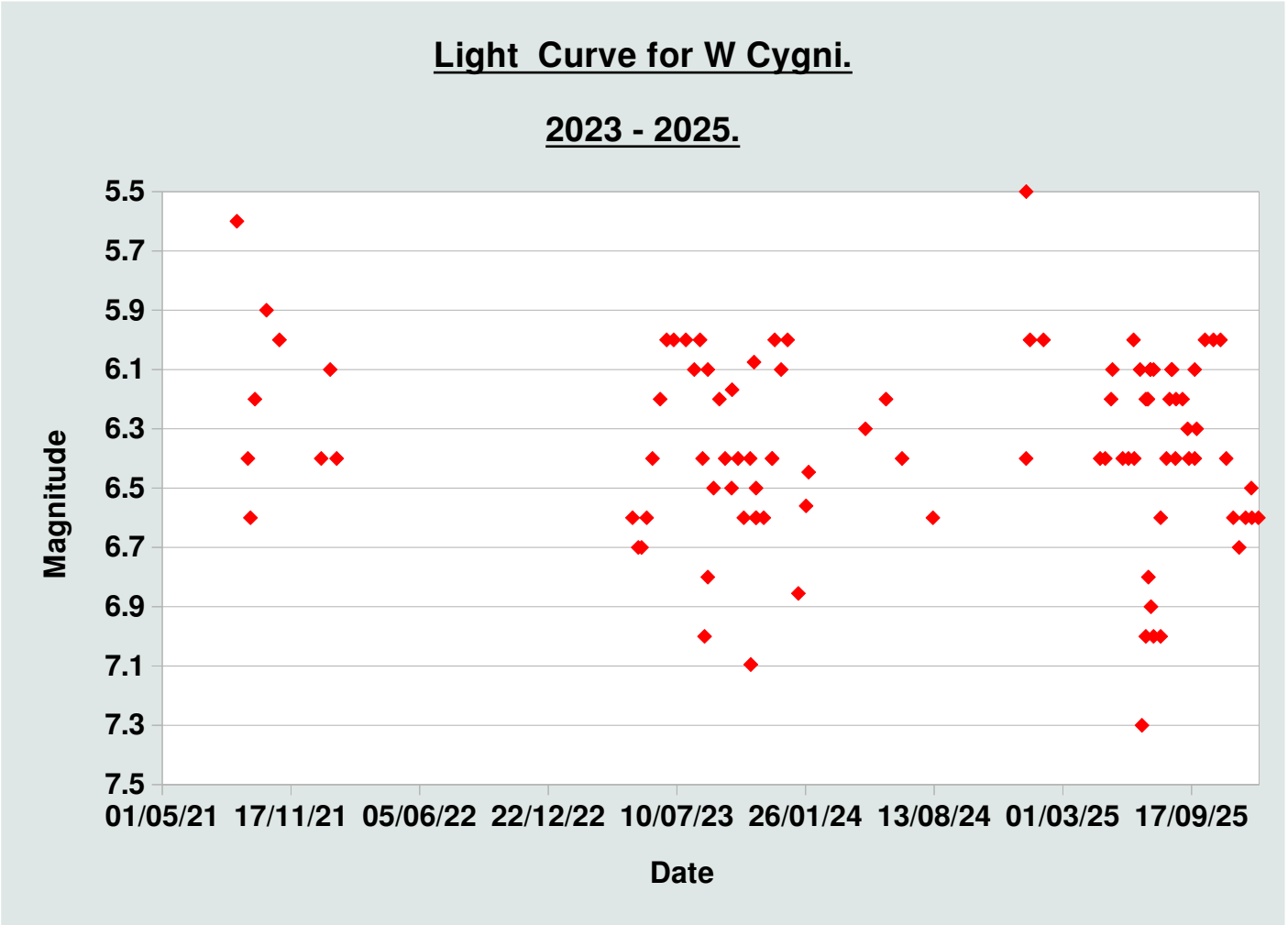
Chi Cygni.

Extreme brightness range	**3.4 – 14.2**
More typical range	**5.1 – 13.4**
Period of variation	**407 days (approx 13.5 months).**
Frequency of observation	**Worth checking a few times per month.**
Observe using	**Naked eye for the brighter maxima, binoculars when fainter and a telescope to follow it all the way down to minimum.**
Visibility	**Can be observed all year round, but is only visible in the morning sky from mid January to April.**



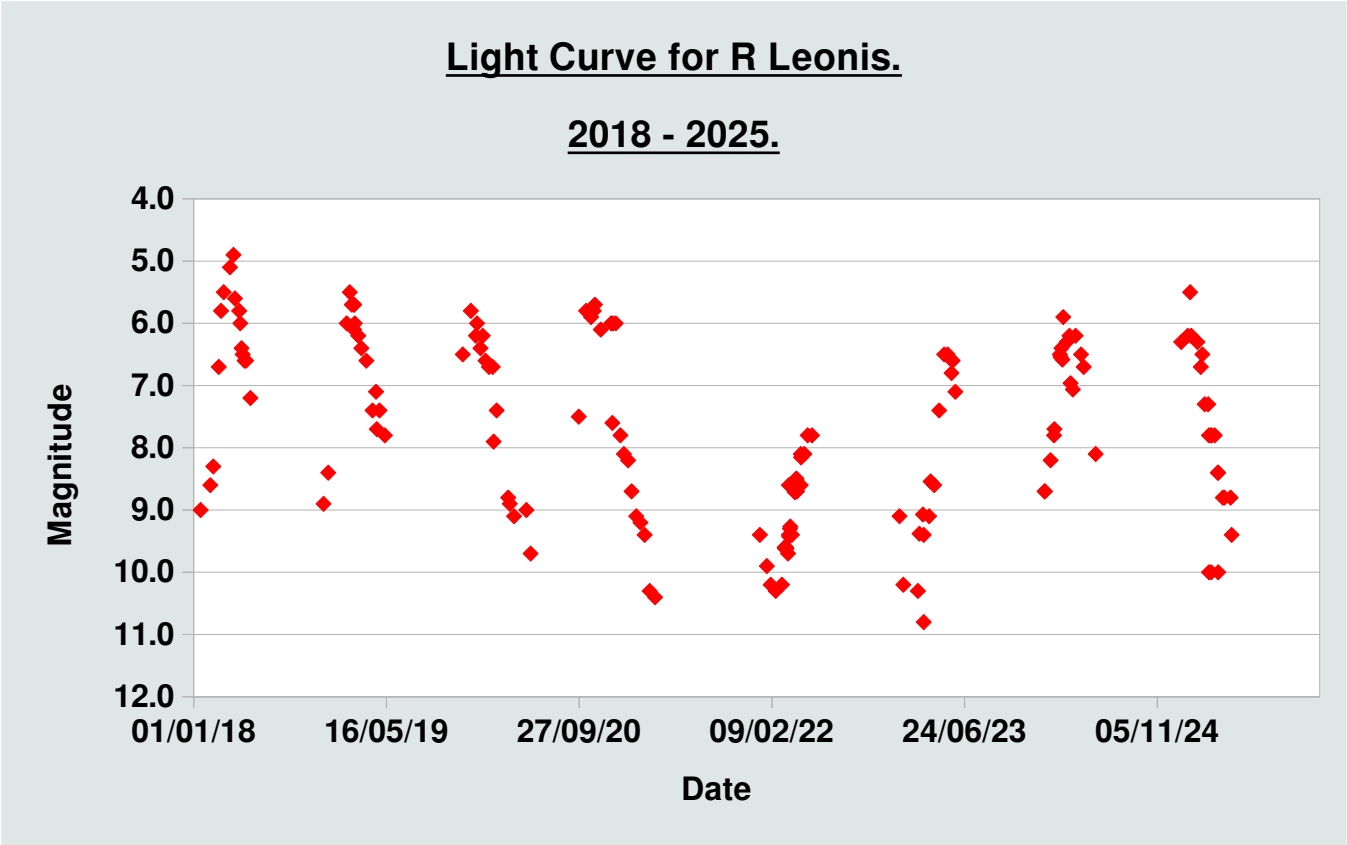
W Cygni.

Extreme brightness range	5.1 – 8.9
More typical range	5.1 – 6.8
Period of variation	132 days
Frequency of observation	Once a week.
Observe using	Best observed with 50mm binoculars.
Visibility	Can be observed all year round, but is rather low in the evening sky from January to April.



R Leonis.

Extreme brightness range	4.8 – 11.0
More typical range	5.4 – 10.5
Period of variation	310 days (approx 10 months).
Frequency of observation	Worth checking a few times per month.
Observe using	40mm or 50mm binoculars will suffice when near maximum, but 50-80mm binoculars will be required when fainter. A telescope is required to follow R Leo all the way down to minimum.
Visibility	Mid September to early June.

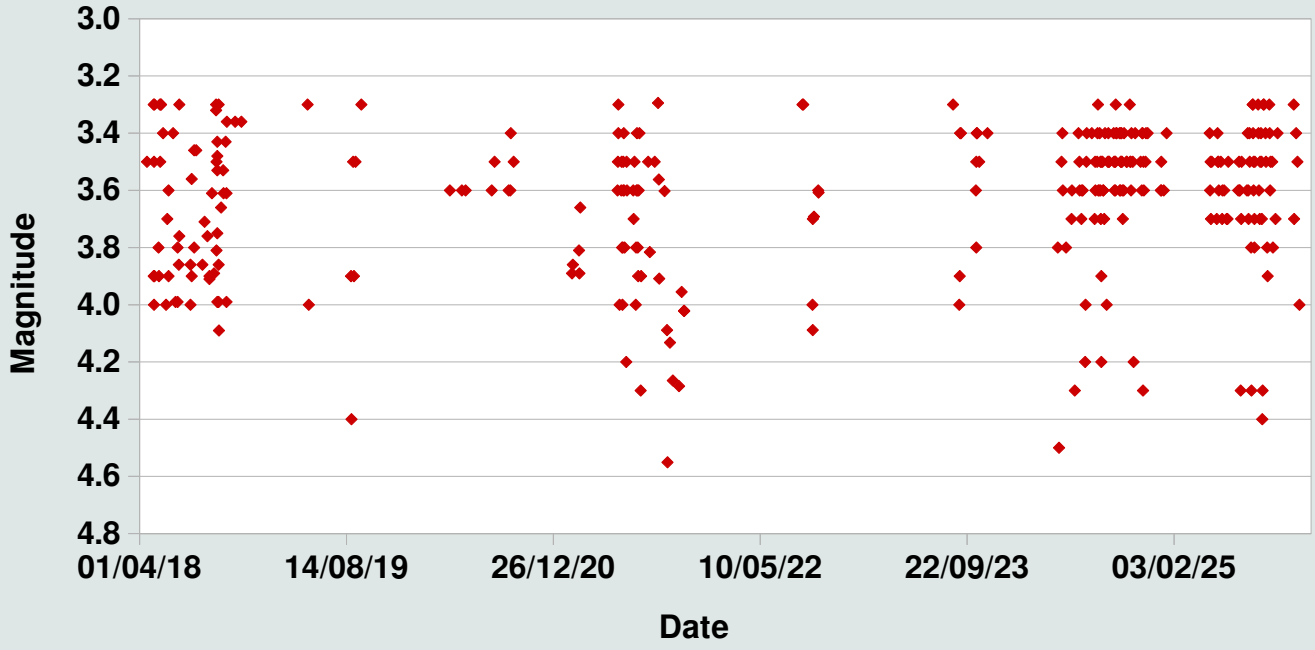


Beta Lyrae.

Extreme brightness range	3.4 – 4.3
More typical range	Always the same range.
Period of variation	12.941 days (and slowly increasing).
Frequency of observation	Check on every clear night.
Observe using	Can be observed with the naked eye, but 40mm or 50mm binoculars may also help, especially during eclipses.
Visibility	Can be observed all year round, but is rather low in the evening sky from January to April.

Light Curve for Beta Lyrae.

2018 - 2025.

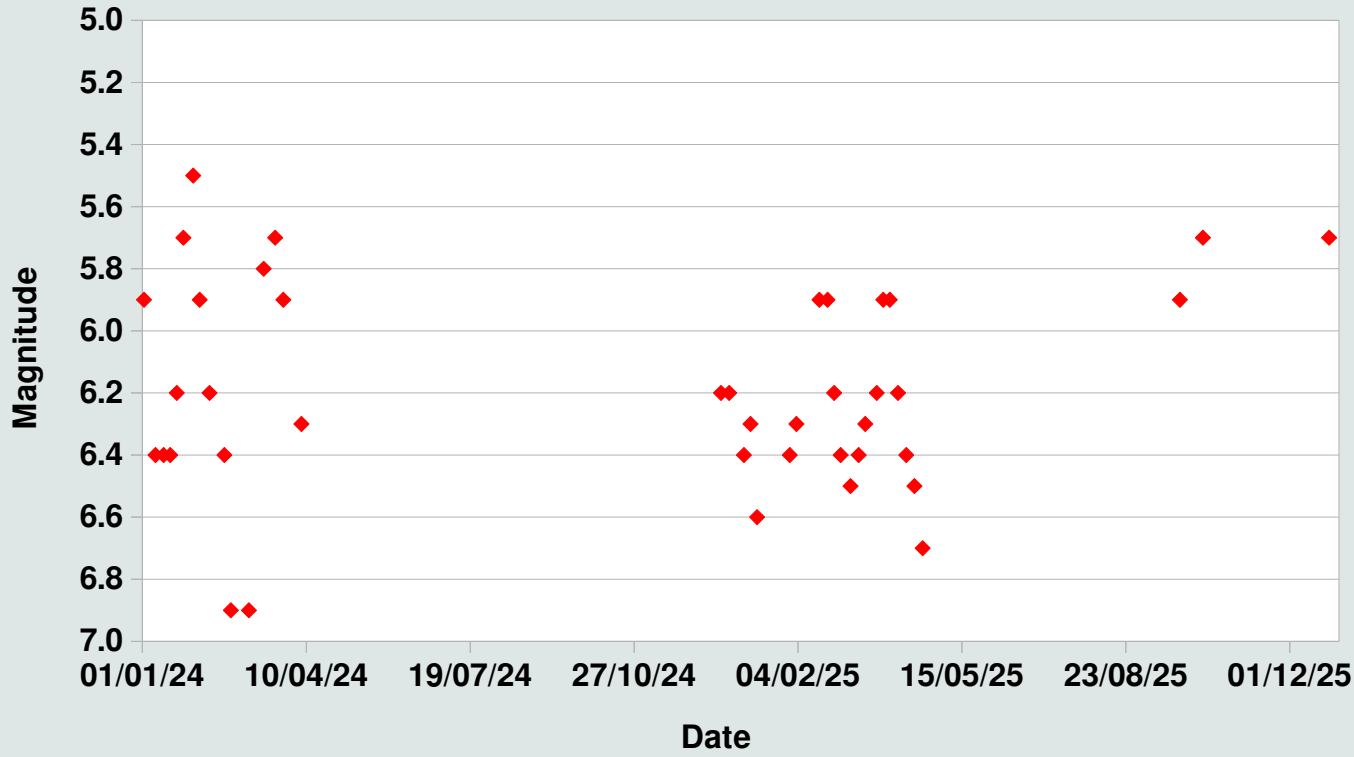


U Monocerotis.

Extreme brightness range	5.1 – 7.5
More typical range	5.1 – 7.1.
Period of variation	Short Period: 92 days. Long Period: 2475 days.
Frequency of observation	Check once a week, or every ten days.
Observe using	40mm or 50mm binoculars.
Visibility	Can be observed from September to April, but best observed during November to February.

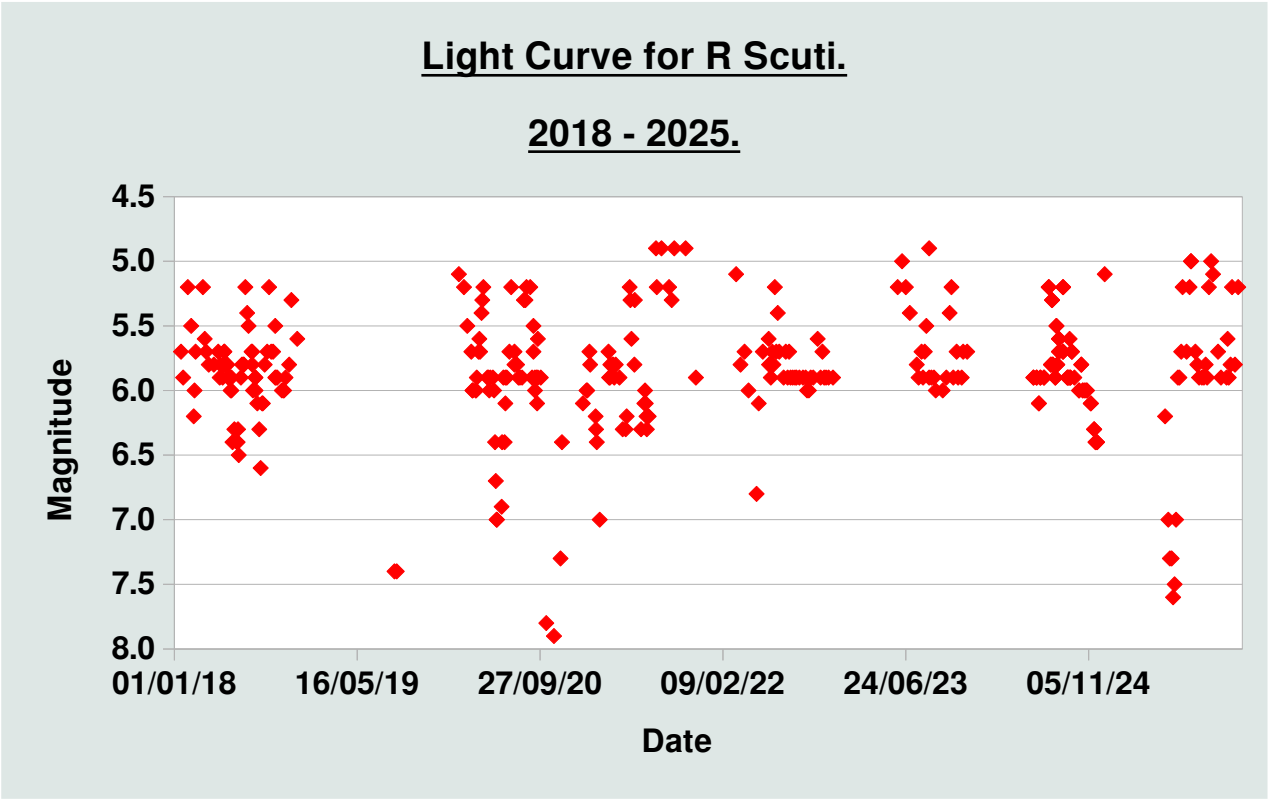
Light Curve for U Mon.

2018 - 2025.



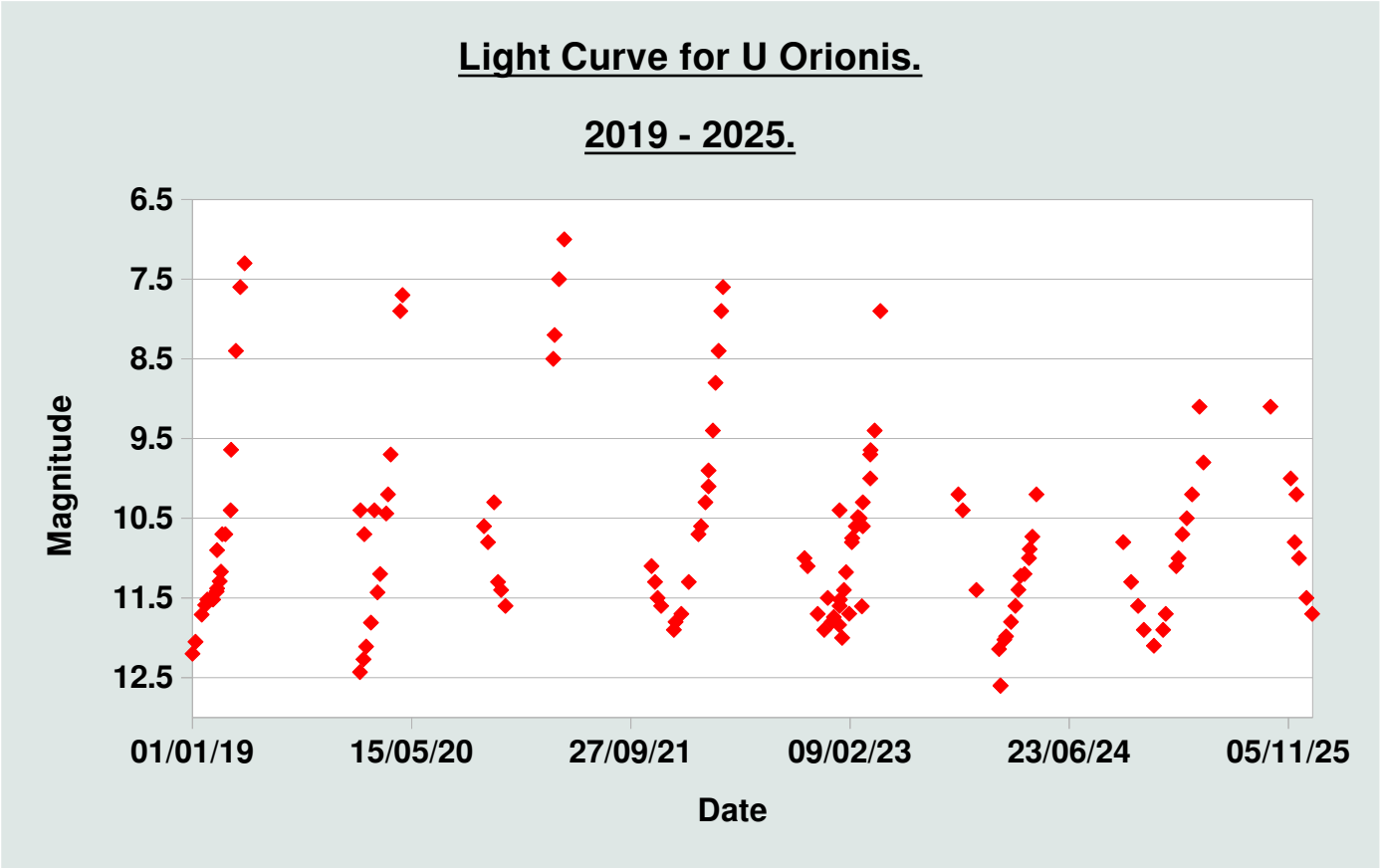
R Scuti.

Extreme brightness range	4.5- 8.6
More typical range	5.0 – 7.5
Period of variation	142 days (often including one deep and one shallow minimum).
Frequency of observation	Worth checking a couple of times per week – possibly every other day during deep minima.
Observe using	40mm or 50mm binoculars will suffice for most of the time, but 50-80mm binoculars may be required during the deeper minima.
Visibility	Can be observed from mid January to mid December, but is rather low in the morning sky until April.



U Orionis.

Extreme brightness range	5.3 – 12.6
More typical range	6.3 – 12.0
Period of variation	372 days (a week longer than a year).
Frequency of observation	Worth checking a few times per month.
Observe using	50mm binoculars will suffice for most of the time, but 50-80mm binoculars will be needed to cover the middle of its range. A telescope will be required to follow it all the way down to minimum.
Visibility	Can be observed from mid August to early May.

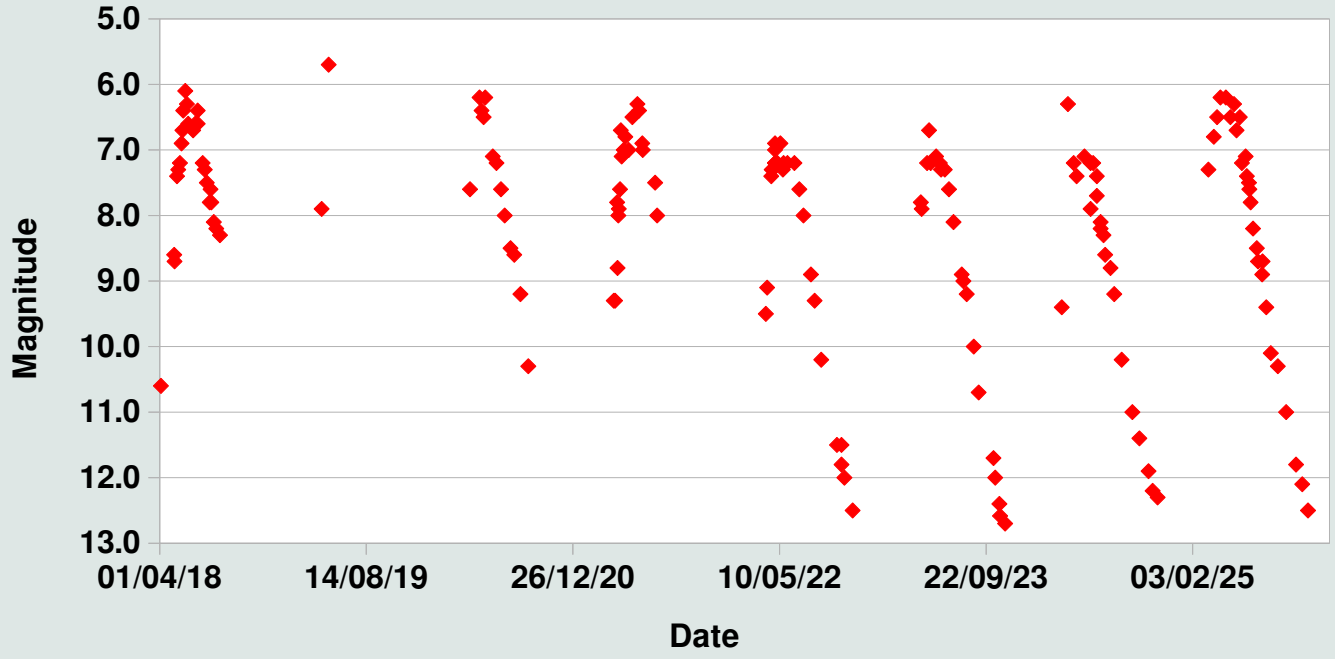


R Serpentis.

Extreme brightness range	5.7 – 14.4
More typical range	6.9 – 13.4
Period of variation	357 days (8 days shorter than a year).
Frequency of observation	Worth checking a few times per month.
Observe using	50mm binoculars will suffice when near maxima. Larger binoculars will be required as it fades. A telescope will be required to follow it all the way down to minimum.
Visibility	Can be observed all year round, but is only visible in the morning sky from December to February.

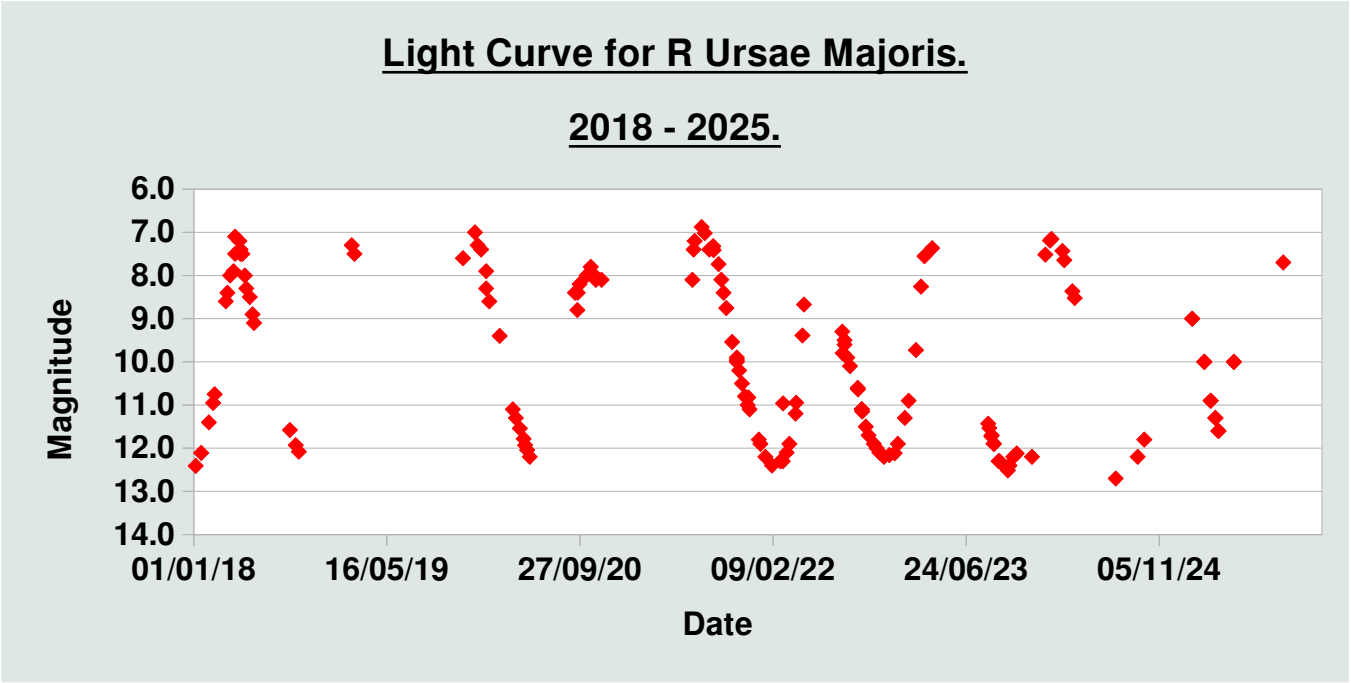
Light Curve for R Serpentis.

2018 - 2025.



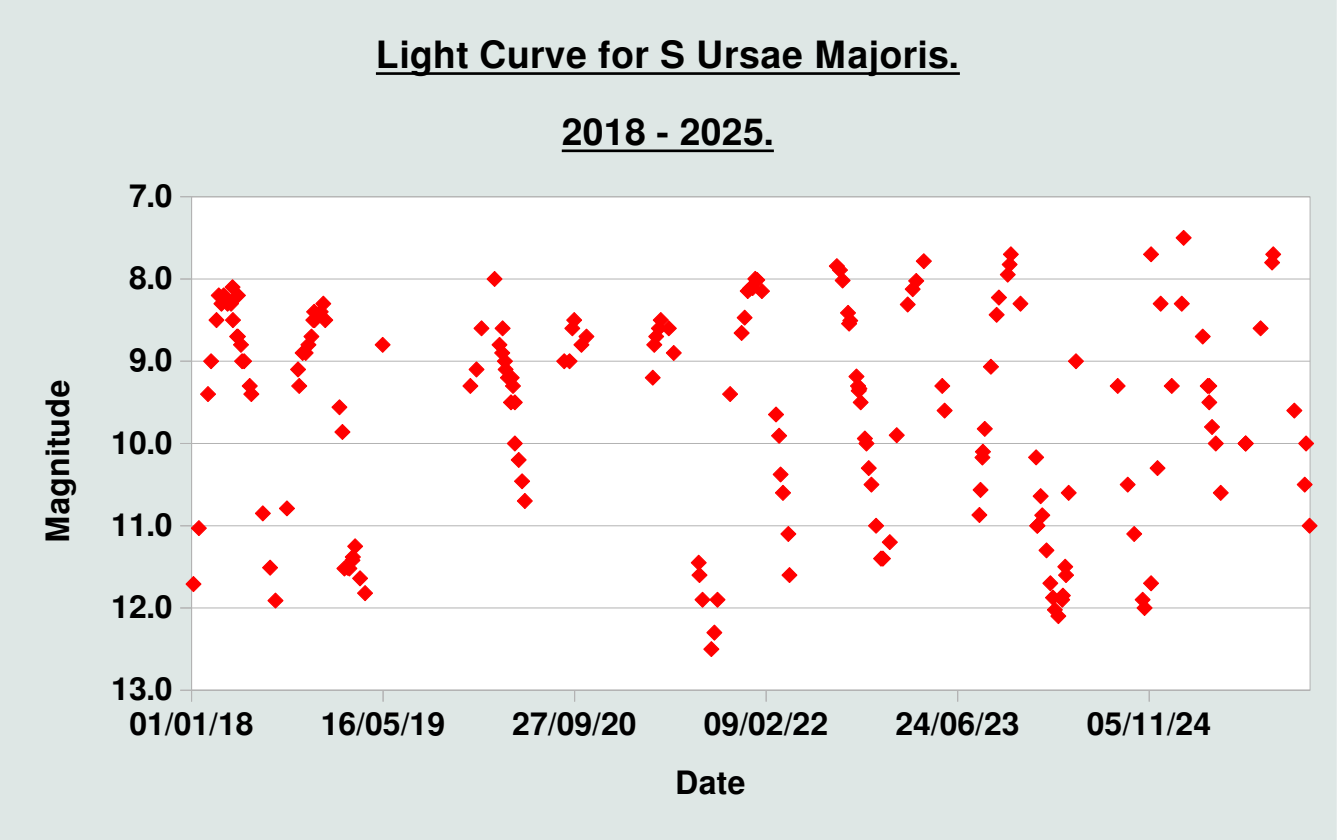
R Ursae Majoris.

Extreme brightness range	6.7 – 13.4
More typical range	7.2 – 13.0
Period of variation	302 days – approx 10 months.
Frequency of observation	Worth checking a few times per month.
Observe using	50mm binoculars will suffice when it is near maximum. Larger binoculars will be needed when fainter. A telescope is required if you want to follow it down to minimum.
Visibility	Circumpolar – can be observed all year round.



S Ursae Majoris.

Extreme brightness range	7.2 – 12.7
More typical range	7.9 – 11.7
Period of variation	226 days (approx 7.5 months).
Frequency of observation	Worth checking a few times per month.
Observe using	50-80mm binoculars when near maximum. A telescope will be required to follow it down to minimum.
Visibility	Star is circumpolar.

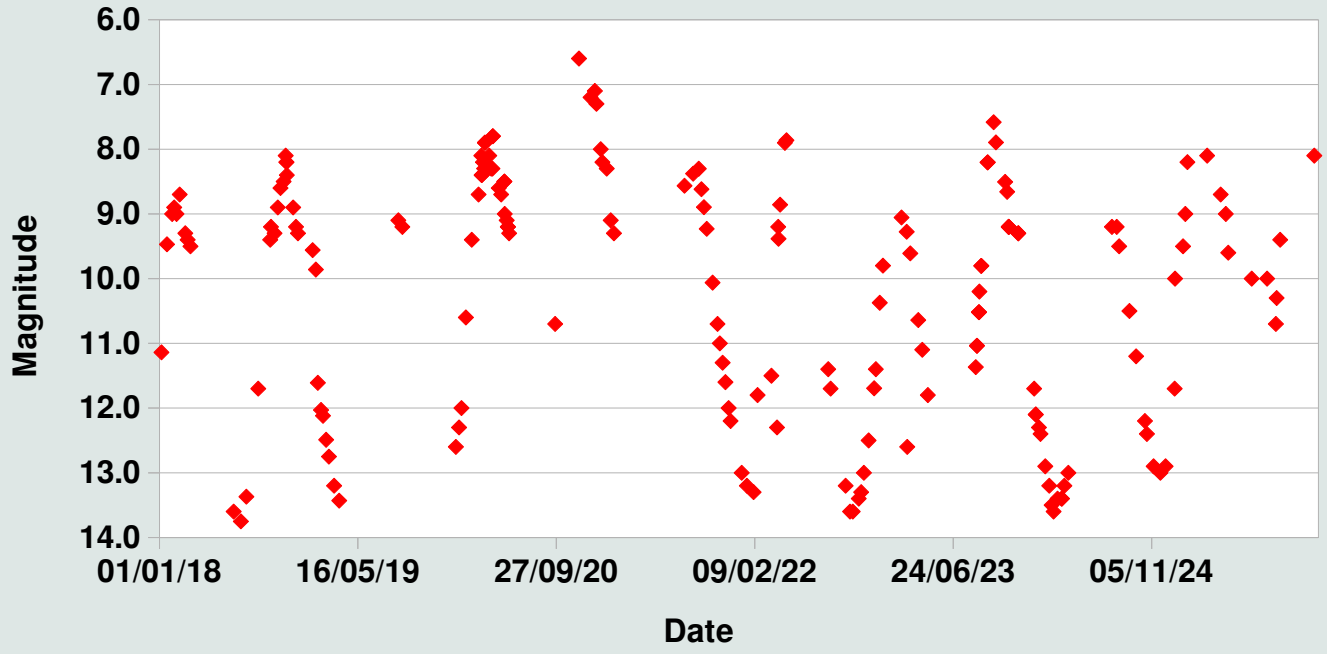


T Ursae Majoris.

Extreme brightness range	6.6 – 13.5
More typical range	7.7 – 12.9
Period of variation	257 days (approx 8.5 months).
Frequency of observation	Worth checking a few times per month.
Observe using	50-80mm binoculars. A telescope will be required to follow it all the way down to minimum.
Visibility	Circumpolar – can be observed all year round.

Light Curve for T Ursae Majoris.

2021 - 2025.



Z Ursae Majoris.

Extreme brightness range	6.3 – 9.8
More typical range	6.9 – 8.7
Period of variation	About 6 months (longer secondary period is also present).
Frequency of observation	Worth checking a few times per month.
Observe using	50mm binoculars will suffice for most of the time, but 60-80mm binoculars may be required during the deeper minima.
Visibility	Can be observed all year round. Circumpolar.

Light Curve for Z Ursae Uajoris.

2018 - 2025.