The Caldwell Catalogue on Microsoft Access - Applications

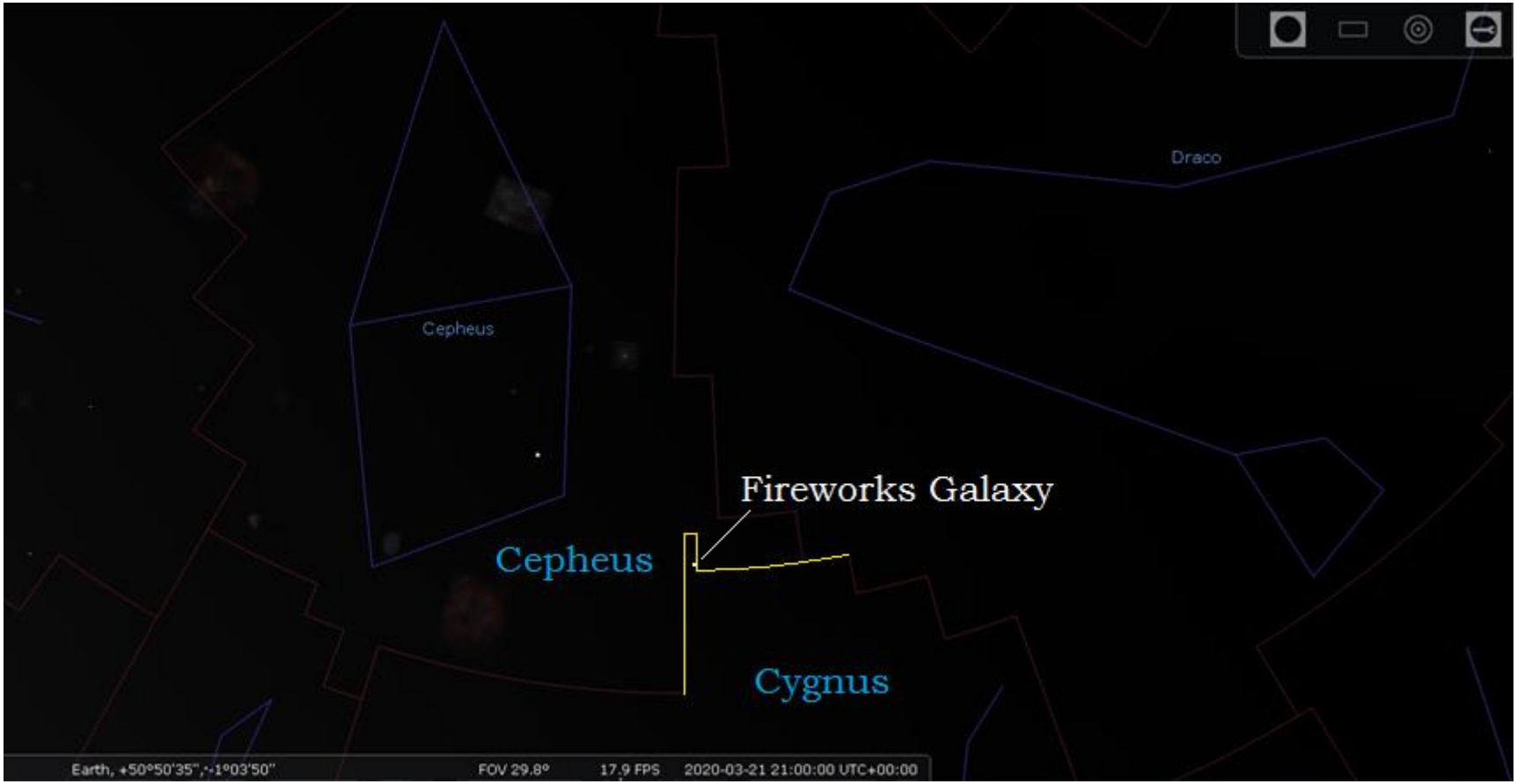
1. Proper Motion and an Examination of I.A.U. Boundaries on Stellarium

The positions of astronomical objects on the celestial sphere drift over time. This drift is known as proper motion.

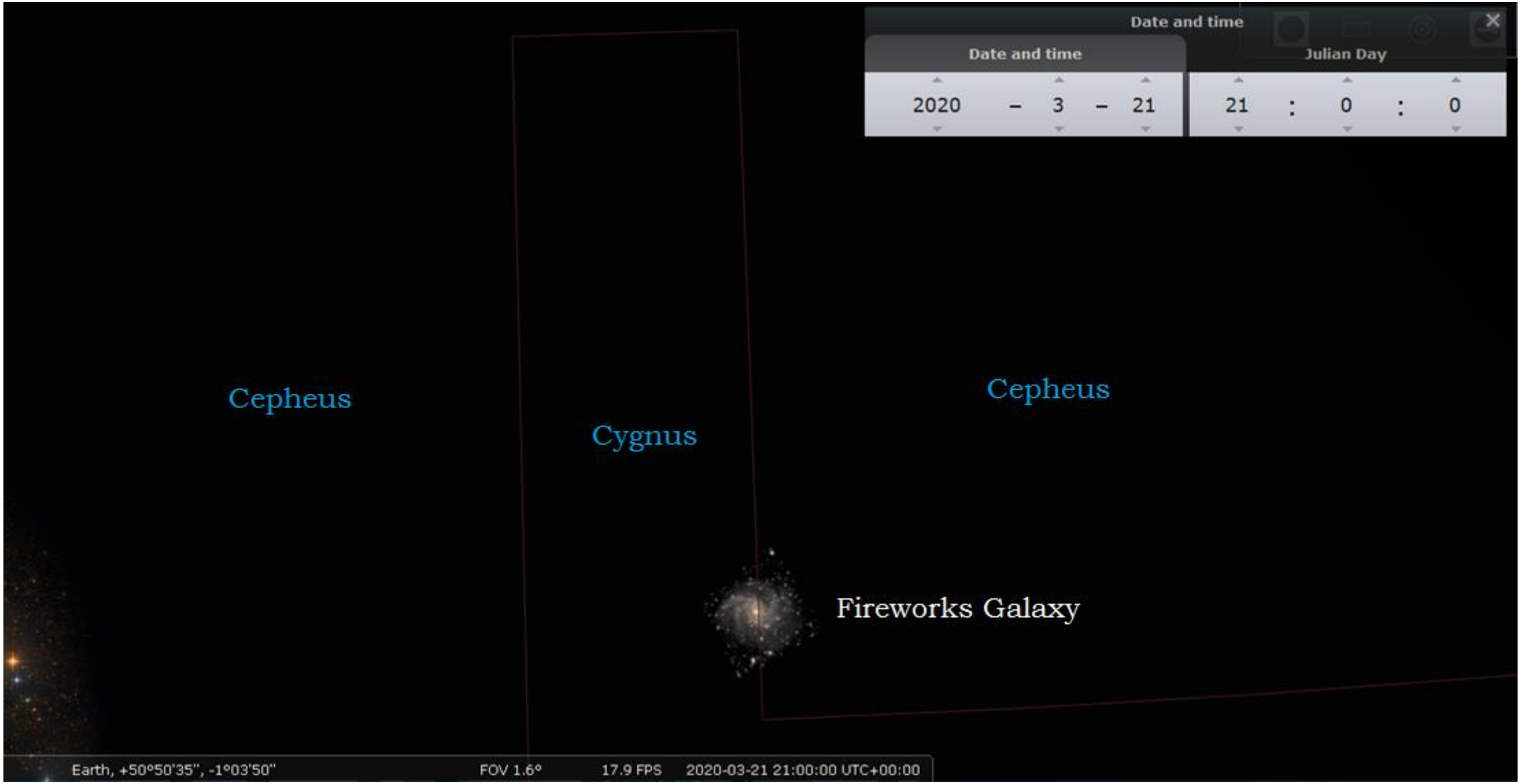
As an example Barnard's Star has the largest measured proper motion in the entire sky. It moves roughly the apparent radius of the Moon against the fixed background sky every 90 years.

The Caldwell Object C 12 (known as the Fireworks Galaxy) was originally listed as being in the constellation Cepheus.
But now it is in the constellation Cygnus!

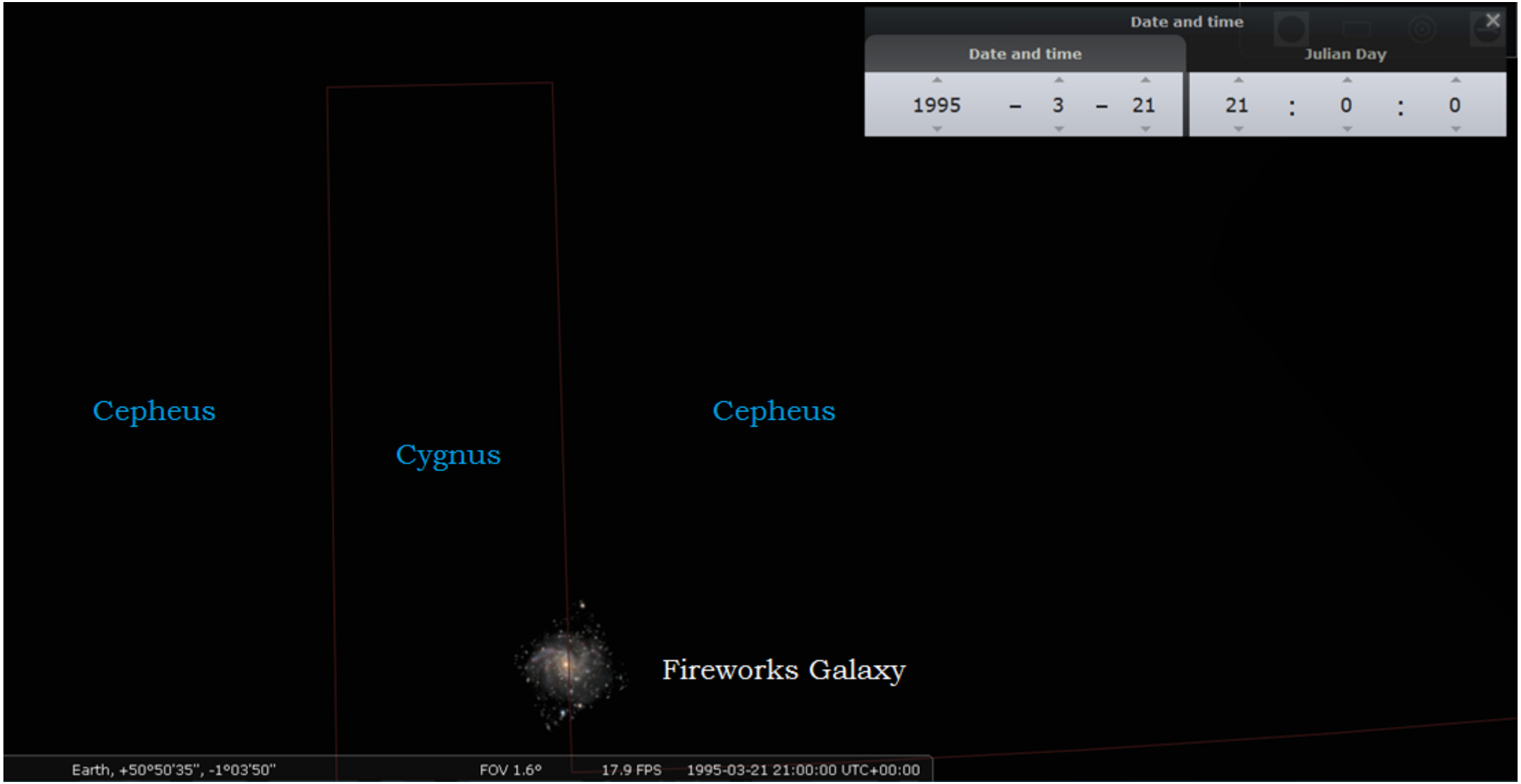
Use Stellarium to examine how the Fireworks Galaxy has crossed the IAU boundary between Cepheus and Cygnus.



Stellarium shows that the centre of the Fireworks Galaxy is just inside the constellation Cygnus on 21st March 2020.



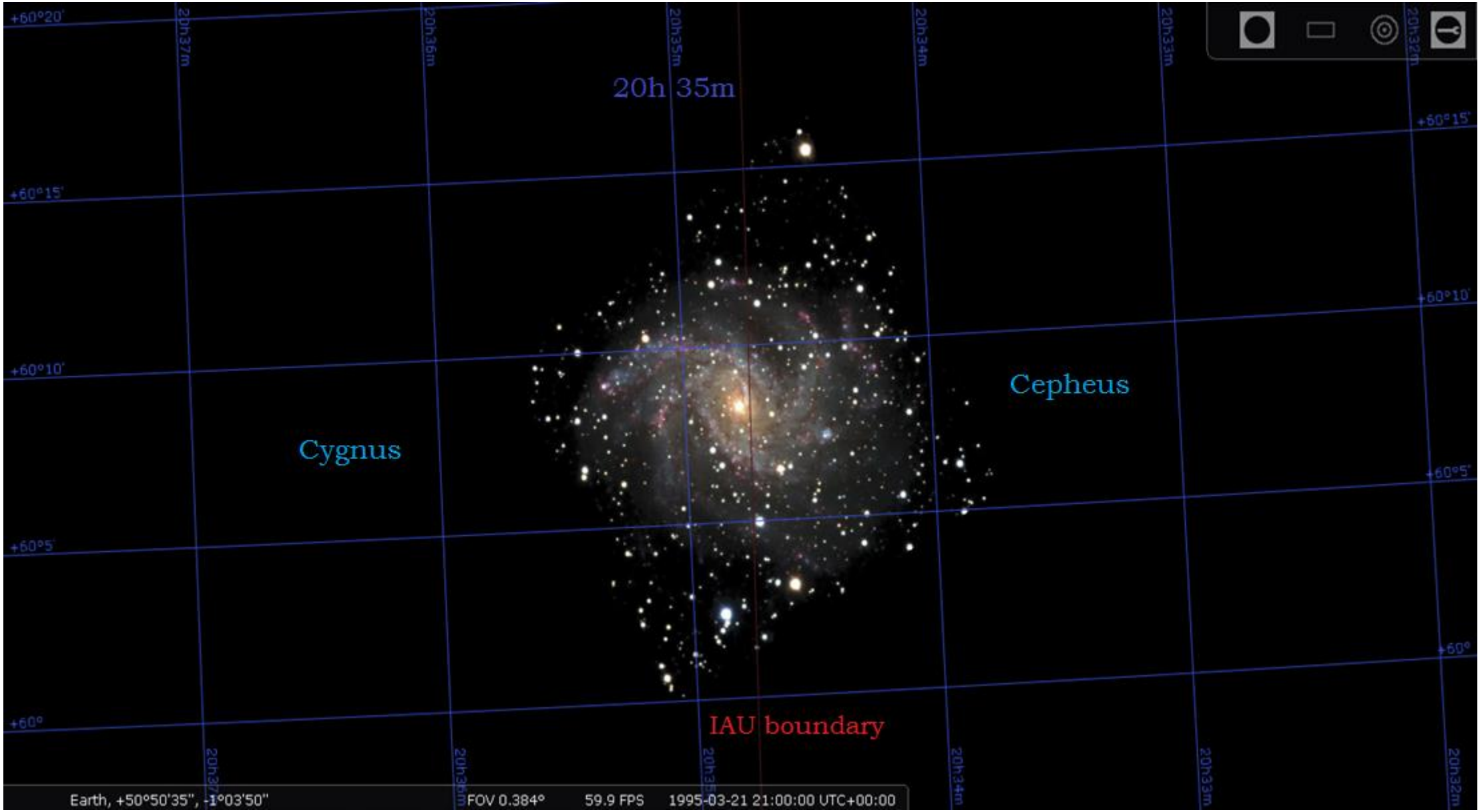
Now go back to 1995 to see if the Fireworks Galaxy is in the constellation Cepheus.



Stellarium shows that the centre of the Fireworks Galaxy is just inside the constellation **Cygnus** on 21st March 1995.
That is, Stellarium has not shown that the Fireworks Galaxy has crossed the Cepheus – Cygnus boundary!

Closer inspection is required …

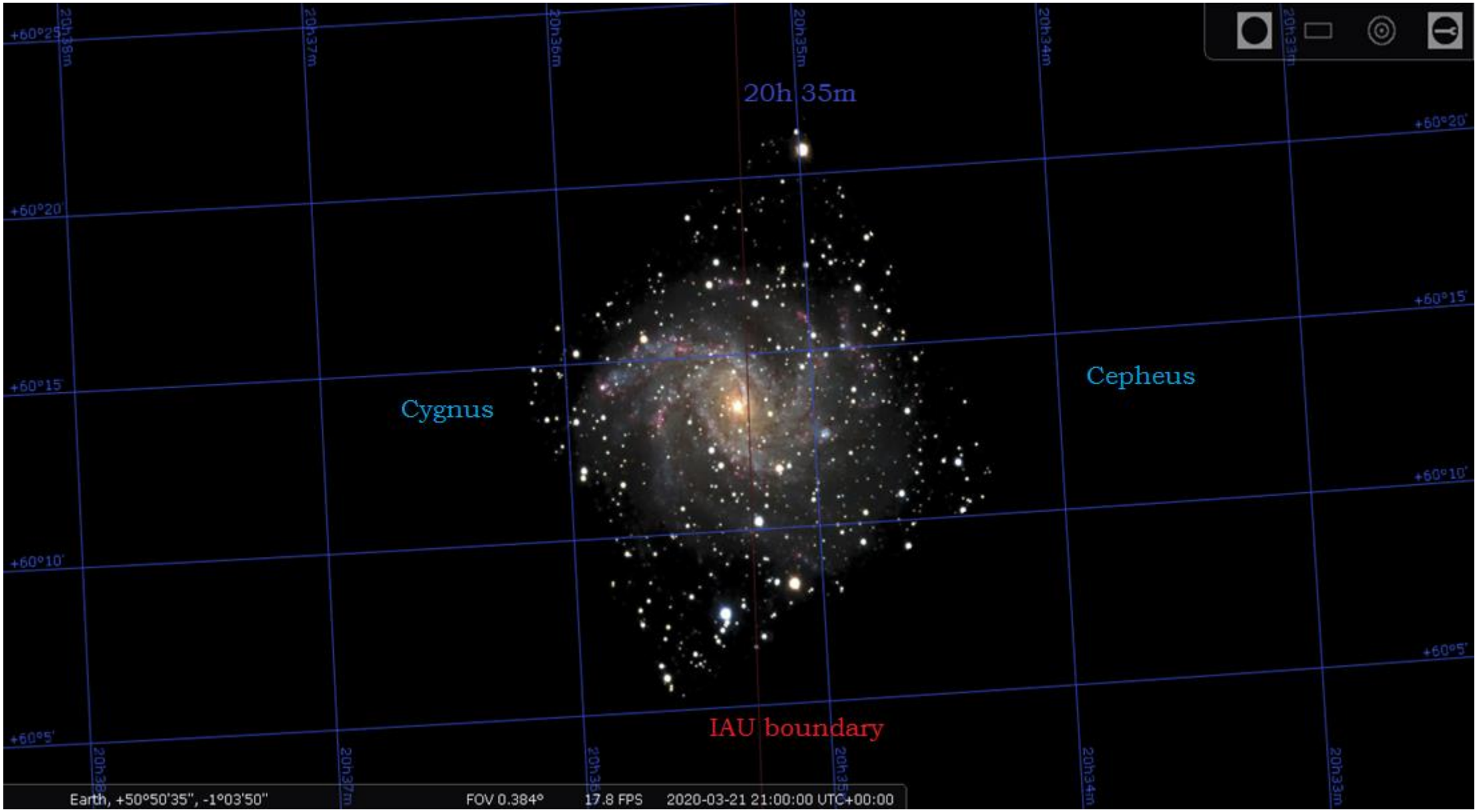
Apply the equatorial grid and consider the situation in 1995.



Stellarium gives the coordinates as: Right ascension: 20 hours 34 mins 46.55 secs Declination: 60^{o} 8’ 16’’

Note that the IAU boundary is to the right of the gridline for20h 35m and that the Fireworks Galaxy is in the constellation Cygnus (not Cepheus!).

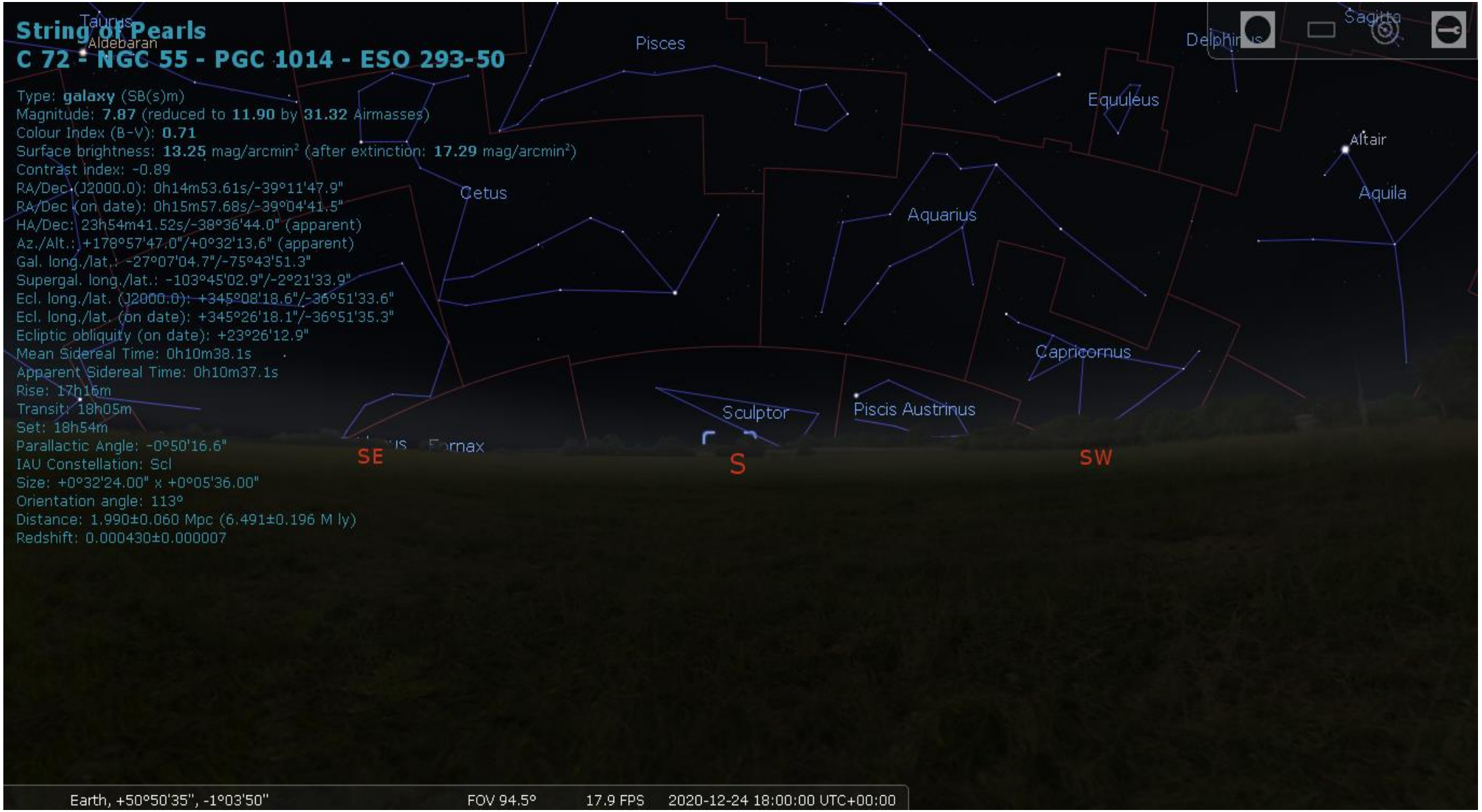
Apply the equatorial grid and now consider the situation in 2020.



Stellarium gives the coordinates as: Right ascension: 20 hours 35 mins 18.18 secs Declination: 60^{o} 13’ 31.2’’

Note that the IAU boundary is now to the left of the gridline for20h 35m and that the Fireworks Galaxy is in the constellation Cygnus.
So Stellarium has not shown the Fireworks Galaxy crossing the Cepheus-Cygnus boundary since the boundary has moved.

2. [Is the String of Pearls Galaxy Visible from the South Coast of England?]



According to Stellarium, on 24th December 2020 the String of Pearls galaxy just manages to reach the horizon.

The declination for J2000 is given as -39° 11’ 47.9’’ and for the given date as -39° 4’ 41.5’’ meaning that its position on the celestial sphere has risen by 7 minutes 6.4 seconds. This enhances the viewing possibility!