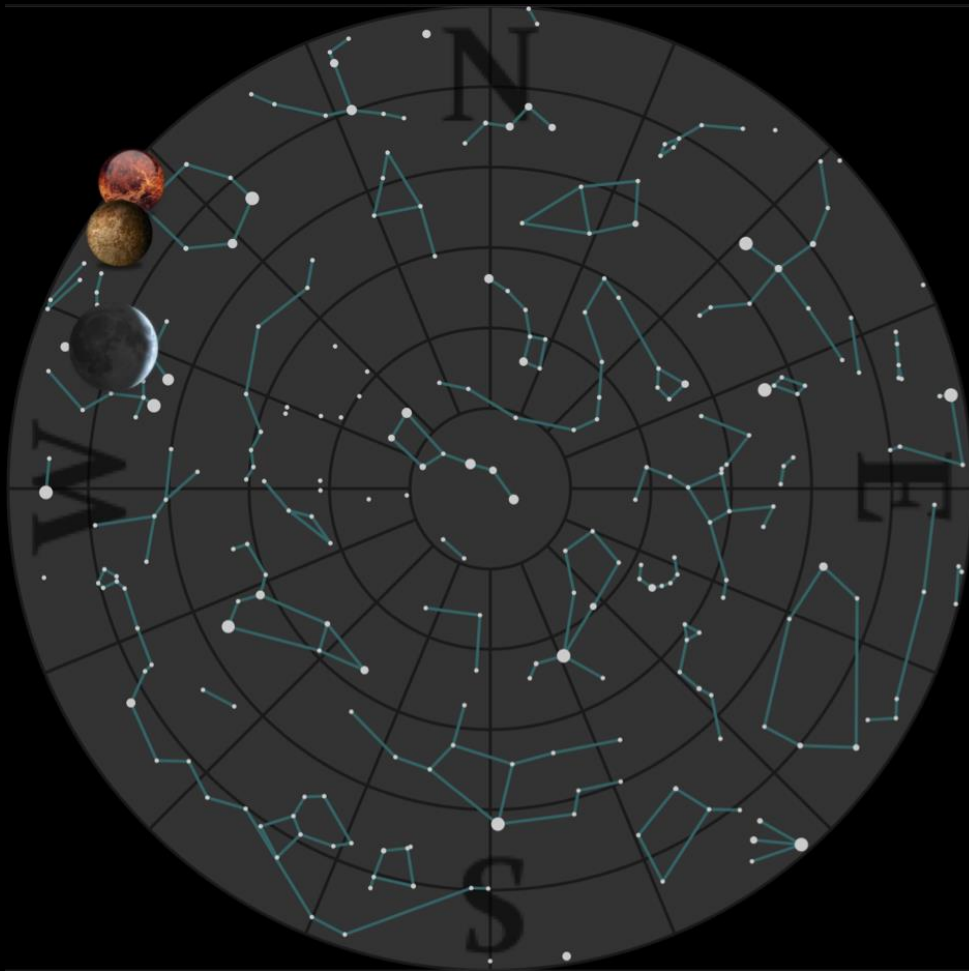


What's Up?

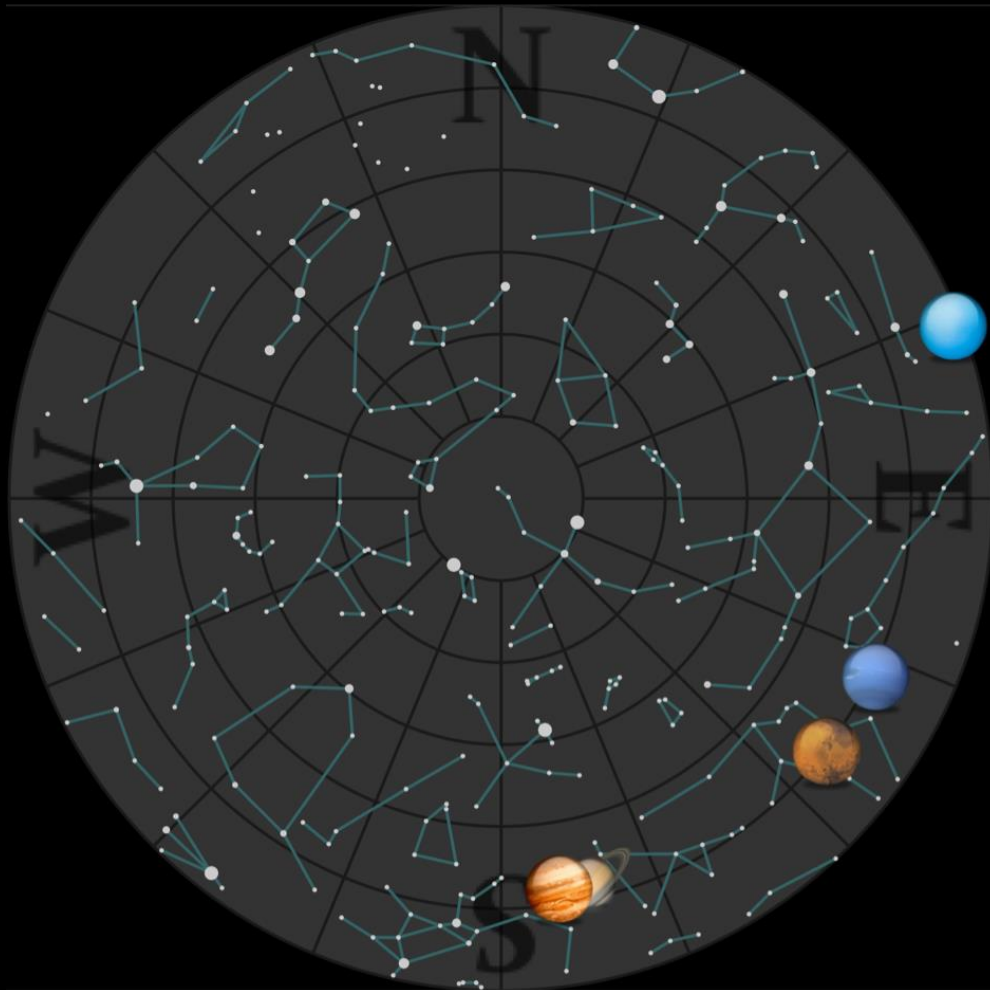
2020 May 25 to June 22

Bill Barton, FRAS

•The Sky 22:00
Tonight







•The Sky 04:00
Tomorrow



Inner Solar System

- Sun
 - Declination increasing, Solstice June 20, Aphelion July 04
- Mercury
 - Currently in evening sky
 - Greatest elongation June 04 (24°)
 - Good observing opportunity mid May to mid June
 - Inferior conjunction July 01
 - Today, rise 05:40, transit 14:15, set 22:55
- Venus
 - In evening sky, greatest eastern elongation March 24 (46°)
 - Inferior conjunction on June 03
 - Today, rise 05:15, transit 13:50, set 22:30

Earth

- Time
 - 00:00UT \approx 16:10ST today
 - Today, sunrise 04:50, transit 12:50, sunset 20:50
 - End of period, sunrise 04:35, transit 12:55, sunset 21:15
- Moon
 -  First Quarter, 30
 -  Full, 05 (Strawberry or Thunder Moon)
 -  Last Quarter, 13
 -  New, 21
- Meteors
 - Only sporadic activity

Eclipses

- Penumbral Lunar
 - June 5
 - P1 = 18:45
 - Greatest eclipse = 20:25
 - P4 = 22:04
 - Moon rise 19:45, transit 01:05, set 05:05
 - Sun set 21:05
- Annular Solar
 - June 21
 - U1 = 05:48
 - U4 = 09:32
 - Not visible from UK

Penumbral Lunar Eclipse of 2020 Jun 05

Ecliptic Conjunction = 19:13:32.7 TD (= 19:12:20.9 UT)

Greatest Eclipse = 19:26:13.8 TD (= 19:25:02.0 UT)

Penumbral Magnitude = 0.5683 P. Radius = 1.2653° Gamma = 1.2406
 Umbral Magnitude = -0.4053 U. Radius = 0.7399° Axis = 1.2285°

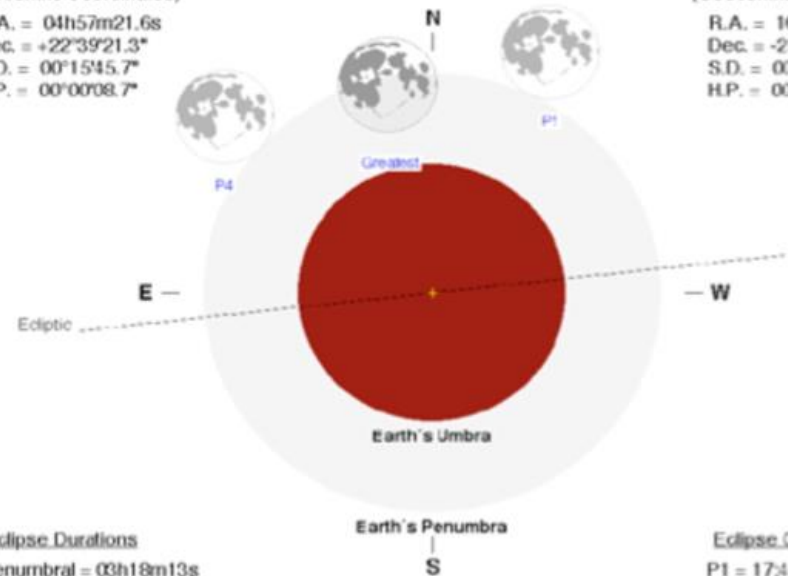
Saros Series = 111 Member = 67 of 71

Sun at Greatest Eclipse
 (Geocentric Coordinates)

R.A. = 04h57m21.6s
 Dec. = +22°39'21.3"
 S.D. = 00°15'45.7"
 H.P. = 00°00'08.7"

Moon at Greatest Eclipse
 (Geocentric Coordinates)

R.A. = 16h58m25.5s
 Dec. = -21°27'08.8"
 S.D. = 00°16'11.4"
 H.P. = 00°59'25.1"

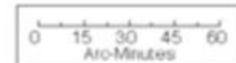


Eclipse Durations

Penumbral = 03h18m13s

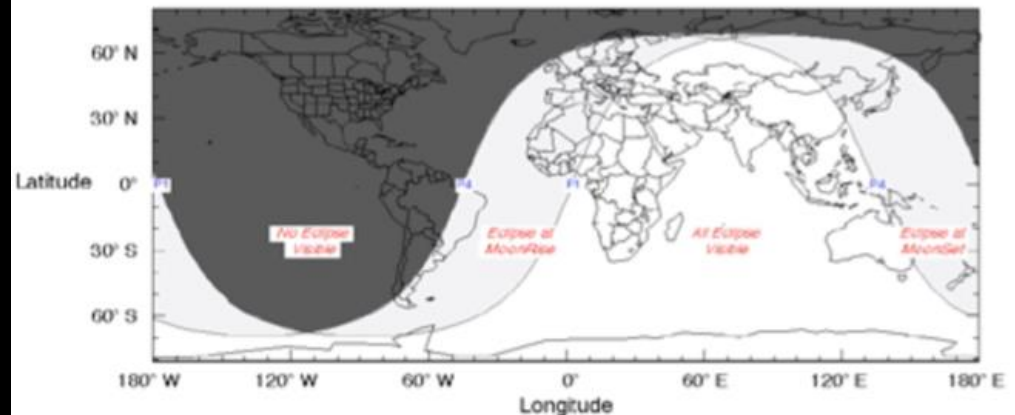
Eclipse Contacts

P1 = 17:45:50 UT
 P4 = 21:04:03 UT



ΔT = 72 s
 Rule = CdT (Danjon)
 Eph. = VSOP87/ELP2000-85

F. Espenak, NASA to GSFC
eclipse.gsfc.nasa.gov/eclipse.html



Annular Solar Eclipse of 2020 Jun 21

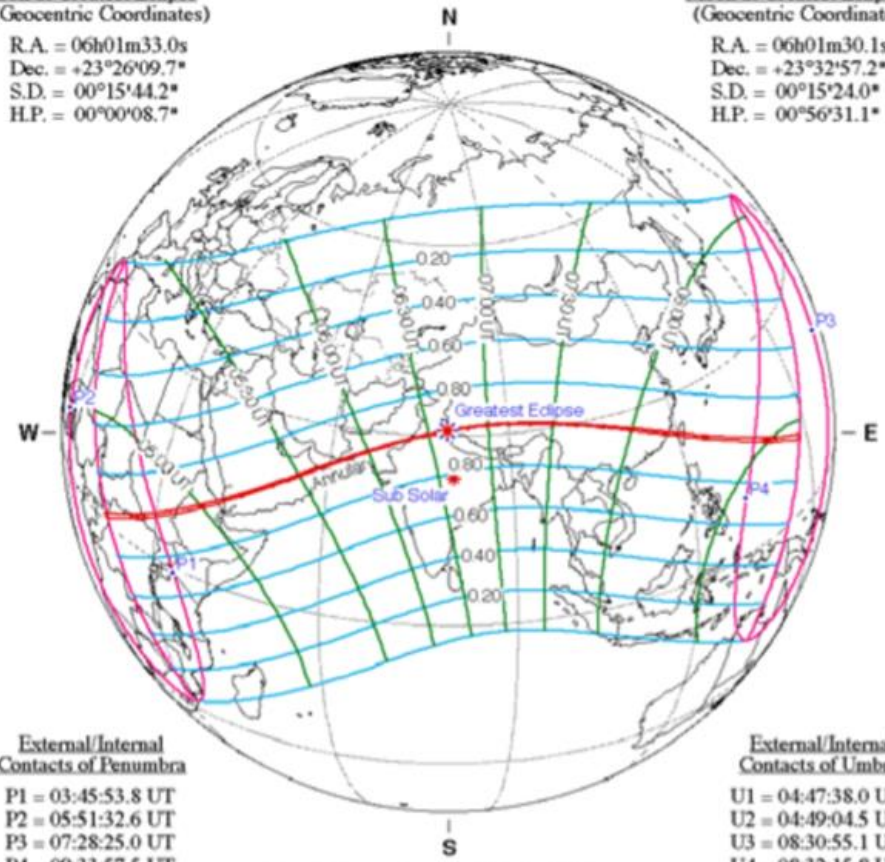
Geocentric Conjunction = 06:41:18.4 UT J.D. = 2459021.778685
 Greatest Eclipse = 06:39:59.3 UT J.D. = 2459021.777769
 Eclipse Magnitude = 0.9940 Gamma = 0.1210
 Saros Series = 137 Member = 36 of 70

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 06h01m33.0s
 Dec. = +23°26'09.7"
 S.D. = 00°15'44.2"
 H.P. = 00°00'08.7"

Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 06h01m30.1s
 Dec. = +23°32'57.2"
 S.D. = 00°15'24.0"
 H.P. = 00°56'31.1"



External/Internal Contacts of Penumbra

P1 = 03:45:53.8 UT
 P2 = 05:51:32.6 UT
 P3 = 07:28:25.0 UT
 P4 = 09:33:57.5 UT

External/Internal Contacts of Umbra

U1 = 04:47:38.0 UT
 U2 = 04:49:04.5 UT
 U3 = 08:30:55.1 UT
 U4 = 08:32:15.8 UT

Ephemeris & Constants

Eph. = Newcomb/ILE
 $\Delta T = 77.2$ s
 $k1 = 0.2724880$
 $k2 = 0.2722810$
 $\Delta b = 0.0^* \quad \Delta l = 0.0^*$

Local Circumstances at Greatest Eclipse

Lat. = 30°31.6'N Sun Alt. = 82.9°
 Long. = 079°41.3'E Sun Azm. = 174.3°
 Path Width = 21.2 km Duration = 00m38.2s

Geocentric Libration (Optical + Physical)

$l = -4.97^{\circ}$
 $b = -0.11^{\circ}$
 $c = 1.69^{\circ}$

Brown Lun. No. = 1206



Occultations

- Lunar-Venus
 - June 19 daylight event
 - Disappearance at the bright limb 08:36BST
 - Reappearance at the dark limb 09:40BST
 - Moonrise 03:30, Sunrise 04:45
 - 22° away from the Sun

Outer Solar System

- Mars
 - Opposition October 13. Today, rise 02:15, transit 07:25, set 12:30
- Jupiter
 - Opposition July 14. Today, rise 00:30, transit 04:40, set 08:45
- Saturn
 - Opposition July 20. Today, rise 00:45, transit 05:00, set 09:10
- Uranus
 - Opposition October 31. Today, rise 03:50, transit 11:05, set 18:20
- Neptune
 - Opposition September 11. Today, rise 02:30, transit 08:10, set 13:50

Societies Events

- Physical Events Cancelled or Postponed due to Coronavirus
- Virtual Meetings or Webinars

And Finally I

- SpaceX Dragon Demo 2 Launch
 - Doug Hurley and Bob Behnken travelling to the ISS
 - May 27, 21:33BST
 - Sunset 21:00BST
 - ISS pass 23:00BST
- Docking May 28, 16:30BST?

And Finally II

- C/2020 F8 (SWAN)
 - Discovered March 25
 - Perigee May 13 (0.57AU)
 - Perihelion May 26 (0.43AU)
- Mag 5
- Currently in Perseus