

2021 Eclipse Schedule

2021 May 26: Total Lunar Eclipse; Greatest Duration 14 minutes, 30 seconds;

Greatest Eclipse: 11:18:40 UT

Visible from South-East Asia, Australia, Pacific, Western North and South America, Antarctica

2021 Jun 10: Annular Solar Eclipse; Greatest Duration 3 minute, 51 seconds;

Greatest Eclipse: 10:41:51 UT

Visible from Canada, Russia; Partial in North America, Europe, North Asia

2021 Nov 19: Partial Lunar Eclipse; Umbral Magnitude 0.9742

Greatest Eclipse: 09:02:53 UT

Visible from Asia, Australia, Pacific, North America, South America

2021 Dec 4: Total Solar Eclipse; Greatest Duration 1 minute, 54 seconds;

Greatest Eclipse: 07:33:22 UT

Visible from Antarctica

Eclipse Predictions by Fred Espenak, NASA/GSFC Emeritus

Total Lunar Eclipse of 2021 May 26

Ecliptic Conjunction = 11:15:02.4 TD (= 11:13:50.1 UT)
 Greatest Eclipse = 11:19:52.7 TD (= 11:18:40.3 UT)

Penumbral Magnitude = 1.9540 P. Radius = 1.2981° Gamma = 0.4774
 Umbral Magnitude = 1.0095 U. Radius = 0.7719° Axis = 0.4880°

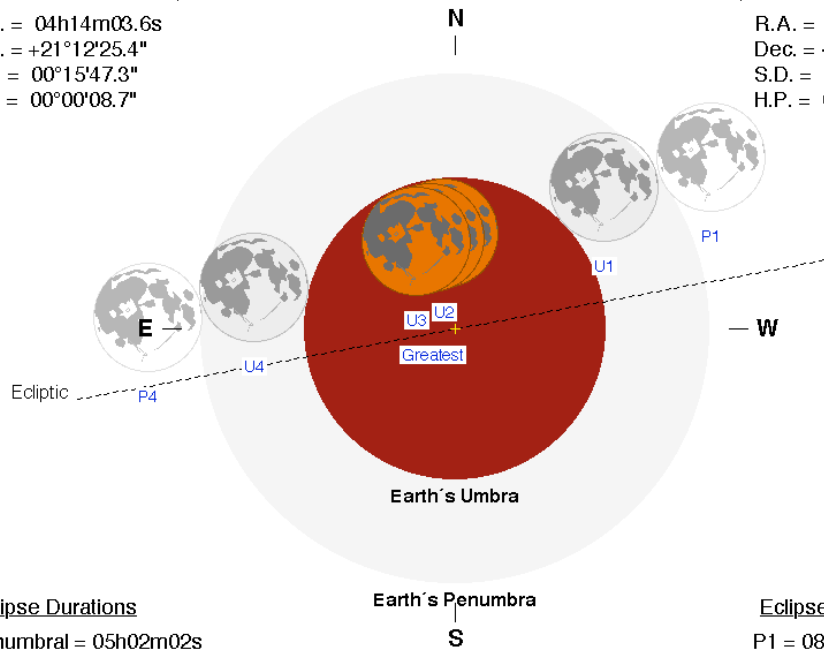
Saros Series = 121 Member = 56 of 84

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 04h14m03.6s
 Dec. = +21°12'25.4"
 S.D. = 00°15'47.3"
 H.P. = 00°00'08.7"

Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 16h14m37.8s
 Dec. = -20°44'14.9"
 S.D. = 00°16'42.9"
 H.P. = 01°01'20.5"

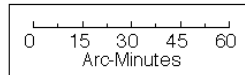


Eclipse Durations

Penumbral = 05h02m02s
 Umbral = 03h07m25s
 Total = 00h14m30s

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

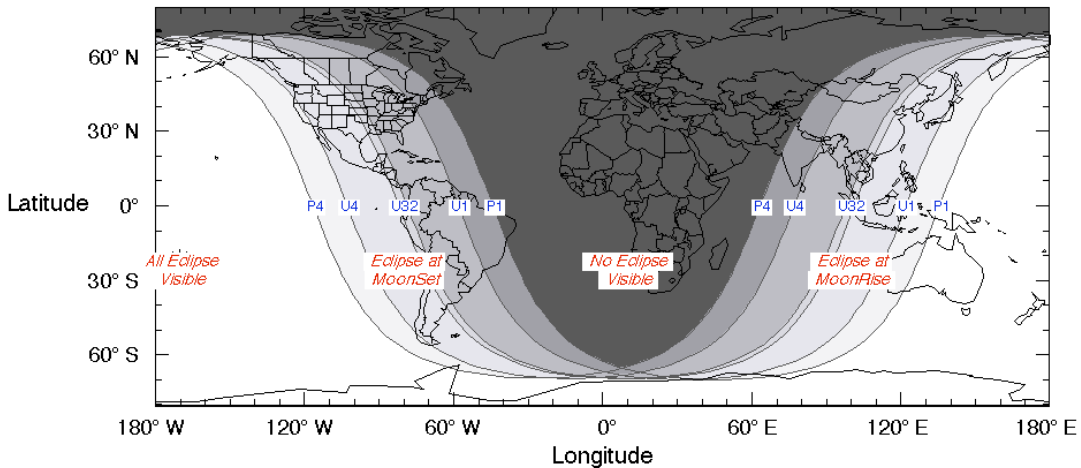
Earth's Penumbra



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

Eclipse Contacts

P1 = 08:47:39 UT
 U1 = 09:44:57 UT
 U2 = 11:11:25 UT
 U3 = 11:25:55 UT
 U4 = 12:52:22 UT
 P4 = 13:49:41 UT



Annular Solar Eclipse of 2021 Jun 10

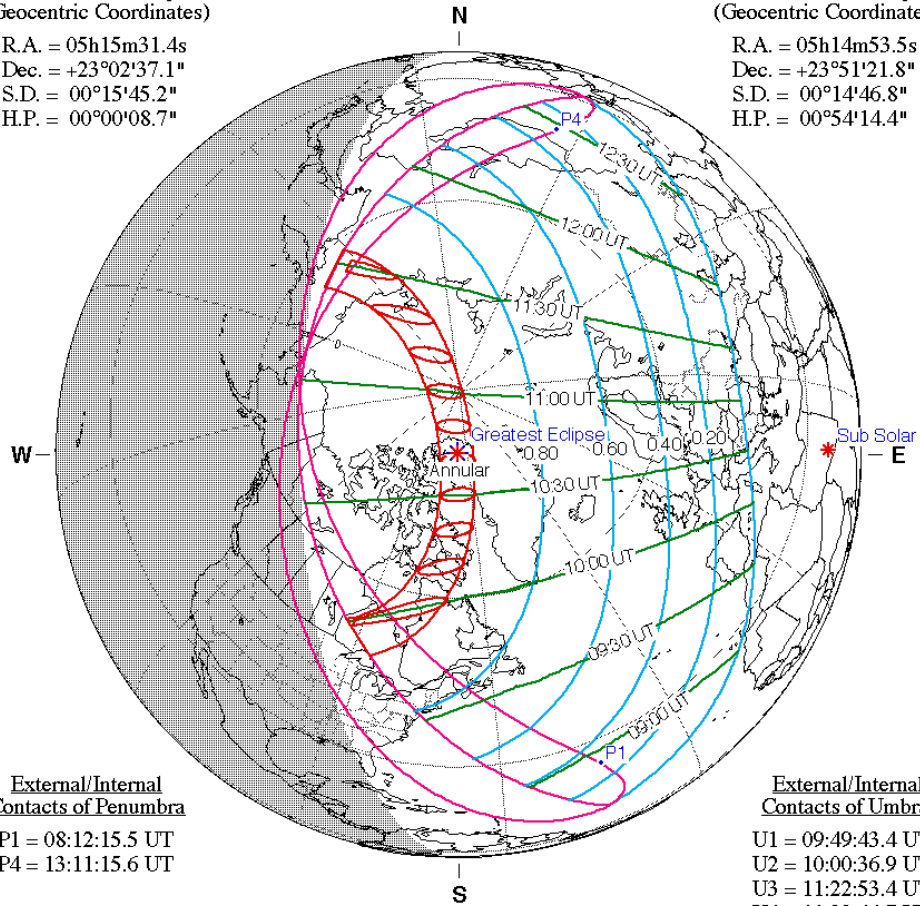
Geocentric Conjunction = 11:00:58.7 UT J.D. = 2459375.959013
 Greatest Eclipse = 10:41:51.0 UT J.D. = 2459375.945730
 Eclipse Magnitude = 0.9435 Gamma = 0.9152
 Saros Series = 147 Member = 23 of 80

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 05h15m31.4s
 Dec. = +23°02'37.1"
 S.D. = 00°15'45.2"
 H.P. = 00°00'08.7"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 05h14m53.5s
 Dec. = +23°51'21.8"
 S.D. = 00°14'46.8"
 H.P. = 00°54'14.4"



External/Internal
Contacts of Penumbra

P1 = 08:12:15.5 UT
 P4 = 13:11:15.6 UT

External/Internal
Contacts of Umbra

U1 = 09:49:43.4 UT
 U2 = 10:00:36.9 UT
 U3 = 11:22:53.4 UT
 U4 = 11:33:44.7 UT

Local Circumstances at Greatest Eclipse

Lat. = 80°48.9'N Sun Alt. = 23.3°
 Long. = 066°48.3'W Sun Azm. = 89.8°
 Path Width = 527.1 km Duration = 03m51.2s

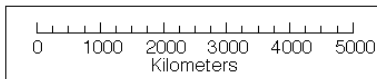
Ephemeris & Constants

Eph. = Newcomb/ILE
 $\Delta T = 78.2$ s
 $k1 = 0.2724880$
 $k2 = 0.2722810$
 $\Delta b = 0.0''$ $\Delta l = 0.0''$

Geocentric Libration
(Optical + Physical)

$l = -2.30^\circ$
 $b = -1.06^\circ$
 $c = -2.93^\circ$

Brown Lun. No. = 1218



F. Espenak, NASA's GSFC - Fri, Jul 2,
sunearth.gsfc.nasa.gov/eclipse/eclipse.html

Partial Lunar Eclipse of 2021 Nov 19

Ecliptic Conjunction = 08:58:37.0 TD (= 08:57:24.4 UT)
 Greatest Eclipse = 09:04:05.7 TD (= 09:02:53.1 UT)

Penumbral Magnitude = 2.0720 P. Radius = 1.1829° Gamma = -0.4552
 Umbral Magnitude = 0.9742 U. Radius = 0.6434° Axis = 0.4104°

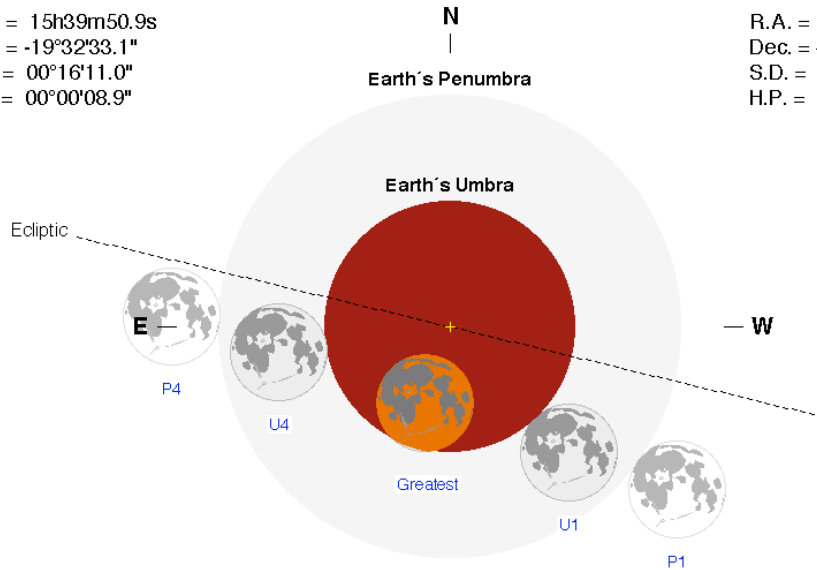
Saros Series = 126 Member = 46 of 72

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 15h39m50.9s
 Dec. = -19°32'33.1"
 S.D. = 00°16'11.0"
 H.P. = 00°00'08.9"

Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 03h40m24.8s
 Dec. = +19°09'15.5"
 S.D. = 00°14'44.5"
 H.P. = 00°54'06.1"



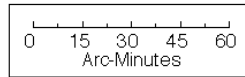
Eclipse Durations

Penumbral = 06h01m29s
 Umbral = 03h28m23s

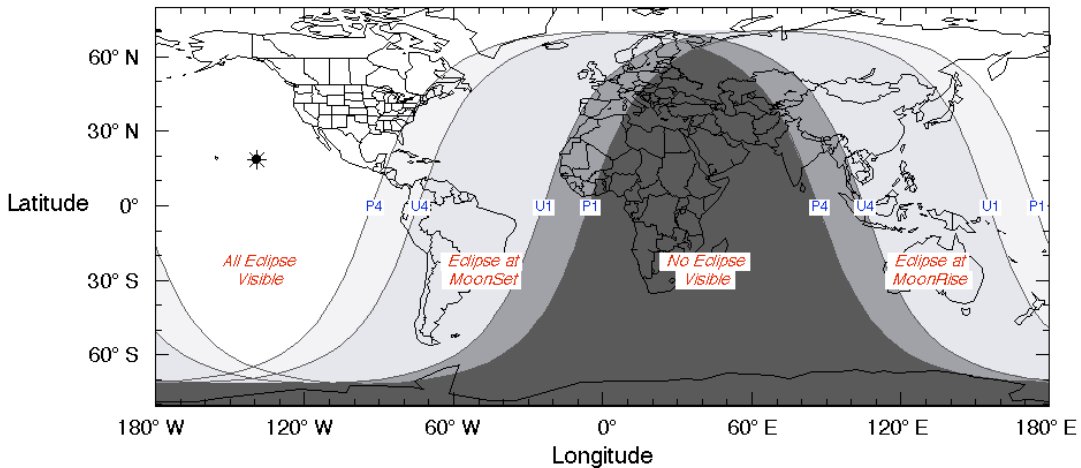
$\Delta T = 73$ s
 Rule = CdT (Danjon)
 Eph. = VSOP87/ELP2000-85

Eclipse Contacts

P1 = 06:02:09 UT
 U1 = 07:18:41 UT
 U4 = 10:47:04 UT
 P4 = 12:03:38 UT



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



Total Solar Eclipse of 2021 Dec 04

Geocentric Conjunction = 07:56:04.9 UT J.D. = 2459552.830612

Greatest Eclipse = 07:33:22.5 UT J.D. = 2459552.814844

Eclipse Magnitude = 1.0367 Gamma = -0.9526

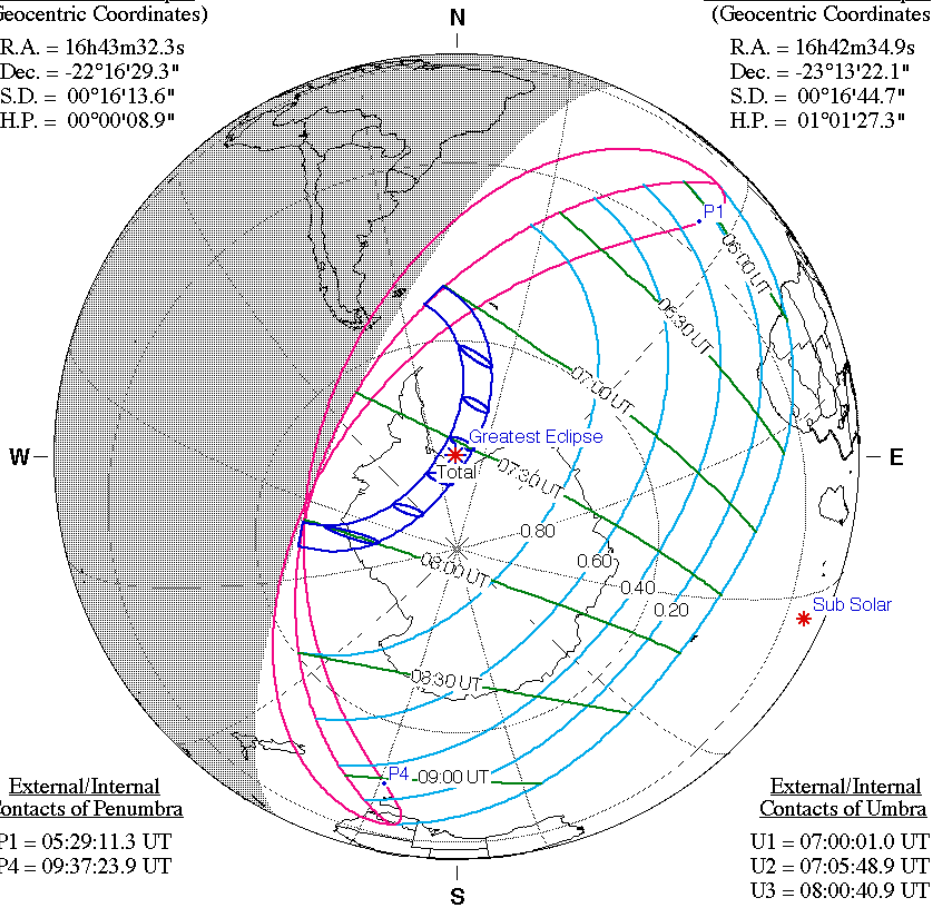
Saros Series = 152 Member = 13 of 70

Sun at Greatest Eclipse (Geocentric Coordinates)

R.A. = 16h43m32.3s
Dec. = -22°16'29.3"
S.D. = 00°16'13.6"
H.P. = 00°00'08.9"

Moon at Greatest Eclipse (Geocentric Coordinates)

R.A. = 16h42m34.9s
Dec. = -23°13'22.1"
S.D. = 00°16'44.7"
H.P. = 01°01'27.3"



External/Internal Contacts of Penumbra

P1 = 05:29:11.3 UT
P4 = 09:37:23.9 UT

External/Internal Contacts of Umbra

U1 = 07:00:01.0 UT
U2 = 07:05:48.9 UT
U3 = 08:00:40.9 UT
U4 = 08:06:29.2 UT

Local Circumstances at Greatest Eclipse

Lat. = 76°46.7'S Sun Alt. = 17.2°
Long. = 046°11.9'W Sun Azm. = 114.8°
Path Width = 418.6 km Duration = 01m54.4s

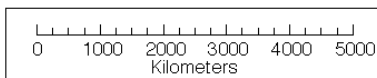
Ephemeris & Constants

Eph. = Newcomb/ILE
 $\Delta T = 78.8$ s
k1 = 0.2724880
k2 = 0.2722810
 $\Delta b = 0.0''$ $\Delta l = 0.0''$

Geocentric Libration (Optical + Physical)

l = -0.23°
b = 1.26°
c = 6.09°

Brown Lun. No. = 1224



F. Espenak, NASA's GSFC - Fri, Jul 2,
sunearth.gsfc.nasa.gov/eclipse/eclipse.html