Total Solar Eclipse: April 8, 2024

On April 8, 2024 the Moon's shadow will cover Central and North America. Given clear skies, a partial solar eclipse will be seen from all 48 contiguous U.S. States, Hawaii, Central America, and most of Canada. A total solar eclipse will be visible only from a zone, less than 125 miles wide, that extends through parts of Mexico, Texas, Oklahoma, Arkansas, Missouri, a bit of Tennessee, Kentucky, Illinois, Indiana, Ohio, Pennsylvania, New York, Vermont, New Hampshire, Maine, and southeastern Canada.

Colorado will experience a deep partial eclipse, lasting more than 2 hours. **To observe partial phases of this eclipse and avoid eye injury or blindness, it will be essential to use safe methods, such as image projection, or to view through safe solar filters. For the partial phases, safe solar filters need to be used on all telescopes, binoculars, and cameras.** These are available from various vendors of astronomical products. See these recommendations from an optometrist:

http://mreclipse.com/Special/filters.html

Total solar eclipses can be truly awe-inspiring experiences. If you want to see the total phase of the solar eclipse on April 8, 2024, you need to be within the narrow path of totality. You can find more info and detailed maps at these sites:

https://www.greatamericaneclipse.com/april-8-2024

https://eclipsophile.com/2024tse/

https://solarsystem.nasa.gov/eclipses/future-eclipses/eclipse-2024/

http://xjubier.free.fr/en/site_pages/solar_eclipses/TSE_2024_GoogleMapFull.html

The xjubier site works with Google Maps and allows the user to obtain accurate predictions for times, eclipse phase durations, and positions of the Sun for any location. The eclipsophile site includes helpful summaries of April cloudiness and weather prospects along the eclipse path. The entire eclipse will last more than 2 hours for Mexico and much of the contiguous 48 U.S. States, but the total eclipse phase will be brief, less than 4 minutes and 29 seconds. In local time, the total phase of the April 8, 2024 eclipse will occur during late morning to early afternoon in Mexico, Texas, and Oklahoma and during mid to late afternoon for the midwestern and northeastern States and southeastern Canada. From Montrose, Colorado there will be a partial eclipse with a maximum of 62% of the Sun's disk (by area) covered by the Moon at 12:34 p.m. MDT. Where the eclipse is total in Mexico and the U. S., the Sun will be 70 to 35 degrees above the horizon, with solar altitudes decreasing along the northeastern part of the path. Maximum duration for the total phase of the eclipse, 4 minutes and 28 seconds, occurs in Mexico. Along the central line of the eclipse in the U. S. totality exceeds 3 minutes. Prognoses for cloud-free skies in April favor Mexico. In the U.S., there is likely to be less cloudiness over the southwestern-most parts of the totality path.

Hotels within the path of totality are booking up fast. Sites at some campgrounds within the path of the total eclipse may remain available somewhat later. It may be possible to travel into the path of totality early on eclipse morning. But highways leading into the totality path likely will be congested. If this is your plan, it would be wise to start early toward the path of totality. A detailed road atlas for the April 8, 2024 total solar eclipse is available here:

https://www.mreclipse.com/pubs/Atlas2024.html

Total Solar Eclipse of 2024 Apr 08

Geocentric Conjunction = 18:36:02.5 UT J.D. = 2460409.275029
Greatest Eclipse = 18:17:13.1 UT J.D. = 2460409.261957

Eclipse Magnitude = 1.0565 Gamma = 0.3432

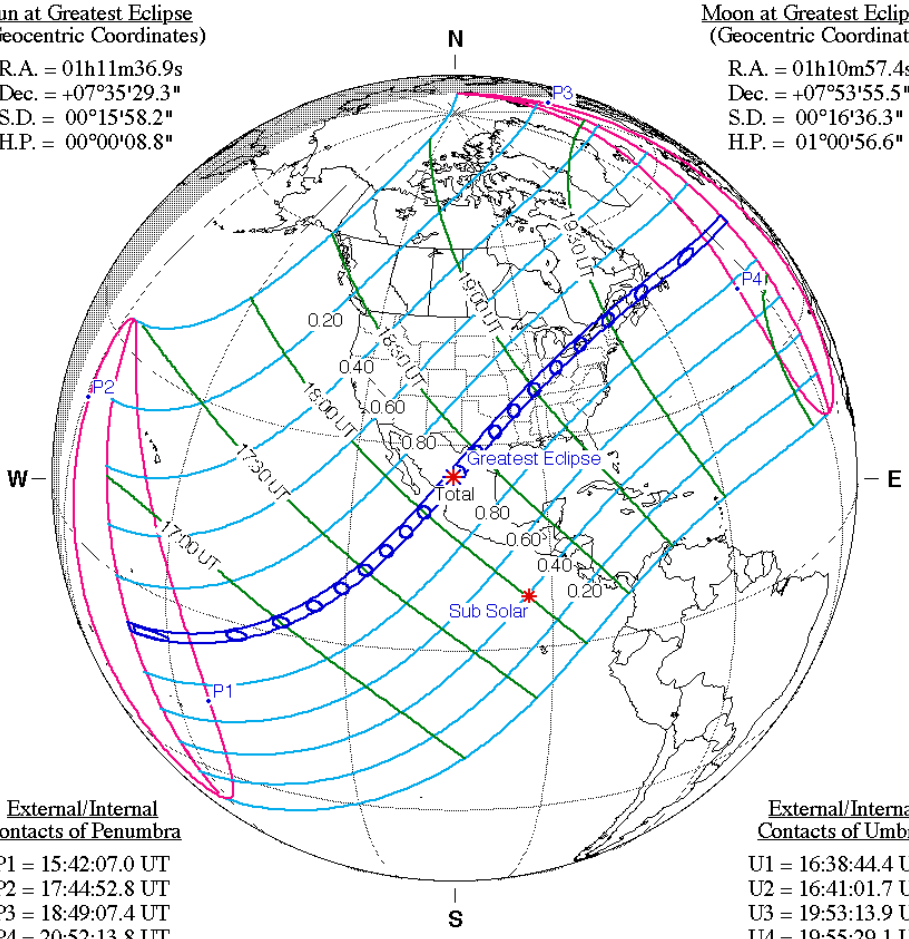
Saros Series = 139 Member = 30 of 71

Sun at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 01h11m36.9s
Dec. = +07°35'29.3"
S.D. = 00°15'58.2"
H.P. = 00°00'08.8"

Moon at Greatest Eclipse
(Geocentric Coordinates)

R.A. = 01h10m57.4s
Dec. = +07°53'55.5"
S.D. = 00°16'36.3"
H.P. = 01°00'56.6"



External/Internal Contacts of Penumbra

P1 = 15:42:07.0 UT
P2 = 17:44:52.8 UT
P3 = 18:49:07.4 UT
P4 = 20:52:13.8 UT

External/Internal Contacts of Umbra

U1 = 16:38:44.4 UT
U2 = 16:41:01.7 UT
U3 = 19:53:13.9 UT
U4 = 19:55:29.1 UT

Local Circumstances at Greatest Eclipse

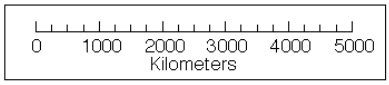
Lat. = 25°17.5'N Sun Alt. = 69.8°
Long. = 104°07.2'W Sun Azm. = 149.4°
Path Width = 197.5 km Duration = 04m28.1s

Ephemeris & Constants

Eph. = Newcomb/ILE
ΔT = 81.2 s
k1 = 0.2724880
k2 = 0.2722810
Δb = 0.0" Δl = 0.0"

Geocentric Libration
(Optical + Physical)

l = 2.00°
b = -0.46°
c = -20.75°
Brown Lun. No. = 1253



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