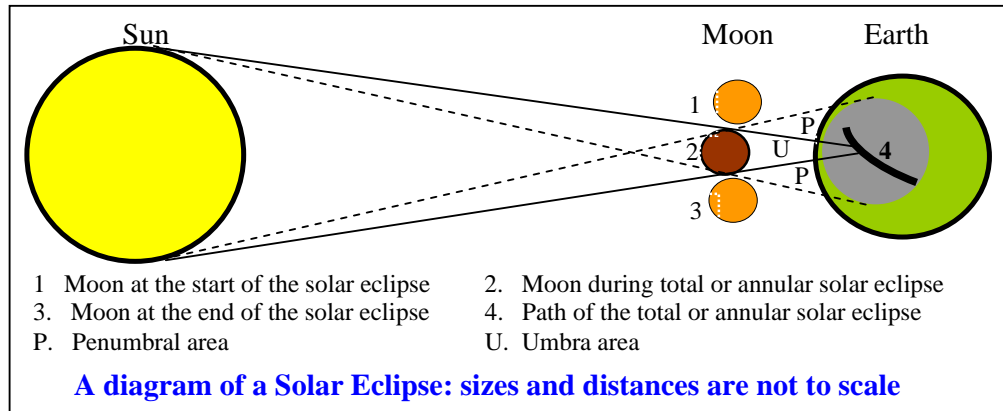




ANNULAR SOLAR ECLIPSE of 15 JANUARY 2010

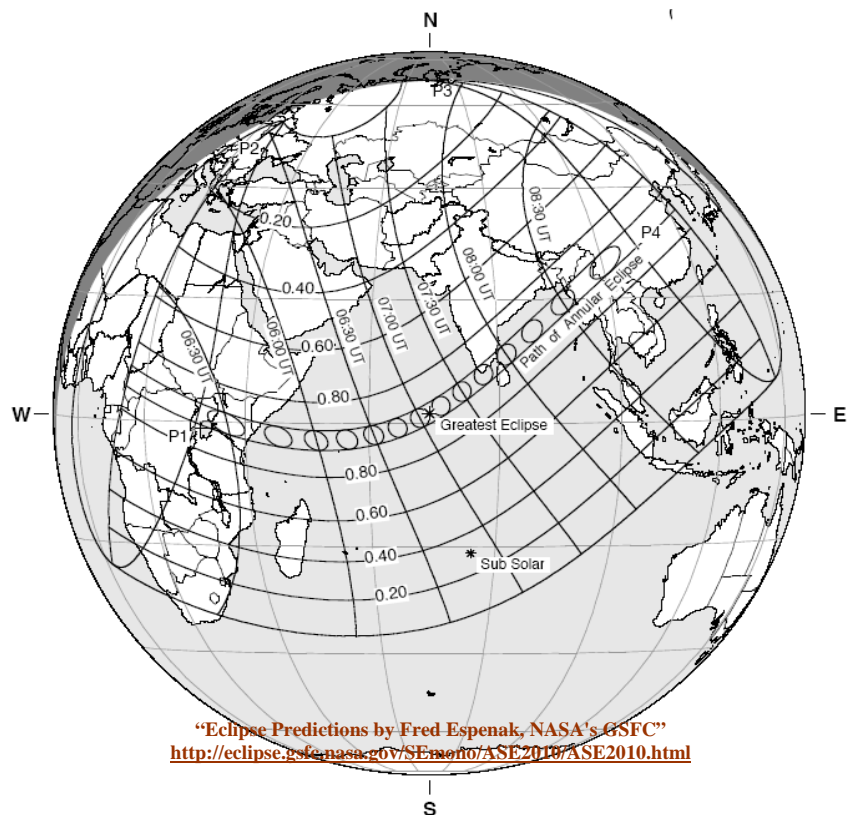
Eclipses can take place whenever Sun, Earth, and Moon are aligned in or nearly in a straight line. A lunar eclipse occurs when the full moon enters the Earth's Shadow as it orbits the earth. Lunar eclipses can be observed from all the areas that will fall into the night-time during the lunar eclipse. On the other hand, a solar eclipse occurs when new moon casts its shadow on the earth as it passes between the sun and the earth while it is orbiting the earth see the figures.

When Sun-Moon-Earth align in a straight line and the size of the apparent disk of the moon is same or greater than that of the Sun, a total solar eclipse occurs. Annular solar eclipse occurs when the sun and the moon are in line, but the apparent size of the moon's disk is smaller than that of the visible disk of the sun., where only a ring of light will be visible from the sun surface rim. Otherwise it will be a partial solar eclipse when the those three celestial bodies do not align exactly in straight line.



An annular solar eclipse is expected to take place on Friday 15 January 2010.

The annularity will be seen, starting from Chad and west of the Republic of East Africa at sunrise and the path will pass through its middle and goes to north Congo then to Uganda then to south Somalia, after that it will leave Africa to cross Indian Ocean to reach north Sri Lanka and far-south of India then to Burma then crossing the middle of China where it finally reaches the east coastal region of China at sunset where the sun moon set while the eclipse is still not over. The longest period of annularity will be about eleven minutes.



A geographical (global) map showing the eclipse path of the annular solar eclipse of 15 Jan 2010 that starts on the middle of East Africa regions and ends in the eastern coasts of China.

The partial phase of the solar eclipse will be visible around the world except west north west of Africa, northern and western regions of Europe, far North Asia, North and South Americas, Australia, and Antarctica. Also It will not be visible from Atlantic, pacific, and Arctic oceans.

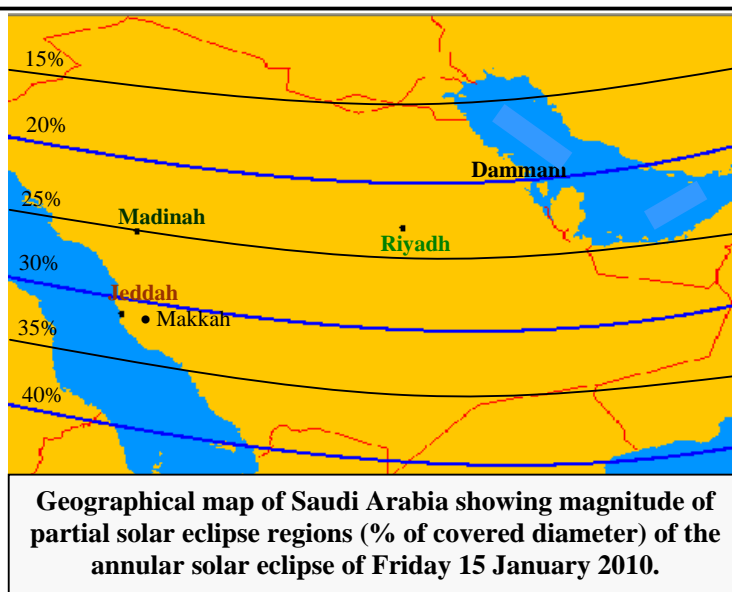
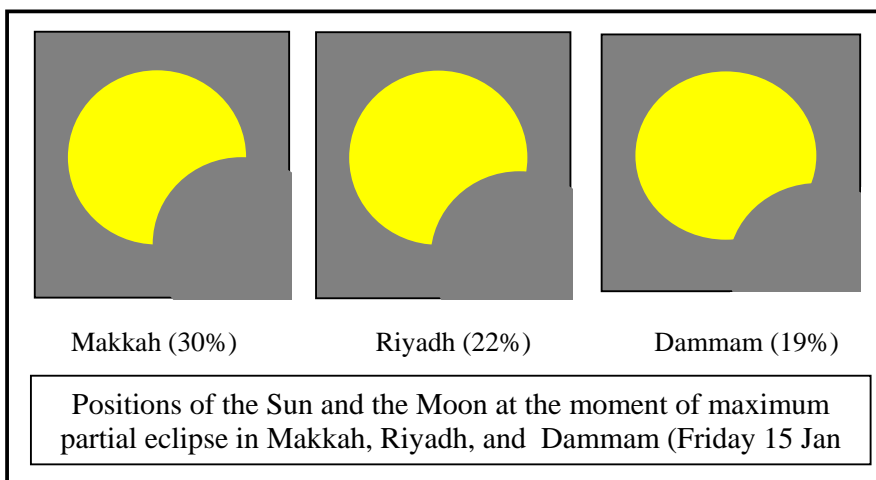
It is visible as a partial solar eclipse in all GCC countries. In areas where the magnitude of the partial eclipse is less than 10% may not be that noticeable, but **please DO NOT look directly at the Sun at any time, its light may damage your eyes no matter how small it is.**

The following Table lists Circumstances for the annular solar eclipse occurrence on Friday 29 Muharram 1431 H (15 January 2010) which will be seen as partial solar eclipse in some major cities in Saudi Arabia and GCC countries.

S/N	Location	Start Time	Time of Max	Alt (deg)	Eclipse Mag	Area Covered	End Time
1	Makkah	7:39 am	8:56 am	23	41 %	30 %	10:29 am
2	Madina	7:47 am	9:00 am	21	35 %	24 %	10:27 am
3	Riyadh	8:00 am	9:19 am	29	33 %	22 %	10:52 am
4	Jeddah	7:38 am	8:54 am	22	41 %	30 %	10:27 am
5	Taif	7:39 am	8:56 am	23	41 %	30 %	10:30 am
6	Dammam	8:12 am	9:33 am	32	30 %	19 %	11:05 am
7	Hufuf	8:08 am	9:30 am	32	32 %	21 %	11:04 am
8	Buraidah	8:00 am	9:14 am	26	30 %	19 %	10:40 am
9	Tabouk	7:47 am	9:00 am	17	29 %	18 %	10:27 am
10	Khamis Mushait	7:35 am	8:58 am	27	47 %	35 %	10:40 am
11	Kuwait	8:18 am	9:31 am	28	25 %	14 %	10:53 am
12	Muscat	9:22 am	11:02 am	42	39 %	28 %	12:45 pm
13	Doha	8:11 am	9:36 am	33	32 %	21 %	11:12 am
14	Manama	8:13 am	9:35 am	33	30 %	19 %	11:07 am
15	Abu Dhabi	9:15 am	10:46 am	38	35 %	23 %	12:26 pm
16	Dubai	9:20 am	10:51 am	38	34 %	22 %	12:29 pm

Please note that the eclipsed area of the Sun is the area of the disk that is covered by the lunar disk, while eclipse magnitude is the portion of the blocked diameter

WARNING: People who do not take adequate safety measures could severely damage their eyes without realizing it and may lead to a permanent damage to their sight or a total blindness. Avoid using non-approved solar filter such as sunglasses (regular, tinted, or darken glasses), smoked glasses, or photographic negatives for viewing annular or partial solar eclipses since they may not be able to block all the sun's harmful infrared rays. DO NOT USE ANY TYPE OF FILTERS UNLESS YOU ARE CERTAIN THAT THEY ARE SAFE AND APPROVED for viewing the sun. Some commercial solar filters, which come with cheap non-branded telescopes may not be save either. Welders' goggles with a rating of 14 or higher may be safe to watch solar eclipses provided that they not damaged in any way. Remember,



Annular Solar Eclipse of 2010 Jan 15

your eyes are too precious to put in risk of losing them no matter how small or slight is the chance. Any attempt by the children to watch the eclipse should be under supervision of their parents or a qualified adult. Please take care and watch your children.

Please remember that Eclipses or any other celestial phenomena are not related to life, death, destiny, or fate of a person. A solar eclipse coincided with the day of pass away of our Prophet, s – (ﷺ) PBUH- son Ibrahim where people believed that it happed due to his death, but our Prophet - (ﷺ) PBUH- said: (What the meaning is) "Sun and Moon are Signs of Allah and they will not be eclipsed for the death or the life of any person, if you see them make dua'a to Allah and pray till it is over". It may be an indirect sign of how dangerous is to watch solar eclipses which of course happen at day time when every one is awake, and Allah has the knowledge. Therefore, please do not forget to observe the Eclipse prayer during the time of the eclipses as directed to us by our Prophet (ﷺ) –PBUH.

Eclipse (spherical) maps are from:
 "Eclipse Predictions by Fred Espenak, NASA's GSFC"
<http://eclipse.gsfc.nasa.gov/SEmono/ASE2010/ASE2010.html>

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Sultan Bin AbdulAziz Science & Technology Center (SciTech) - KFUPM will arrange for an observing session to watch the solar eclipse starting from 8:15 am on Friday 15 Jan 2010.

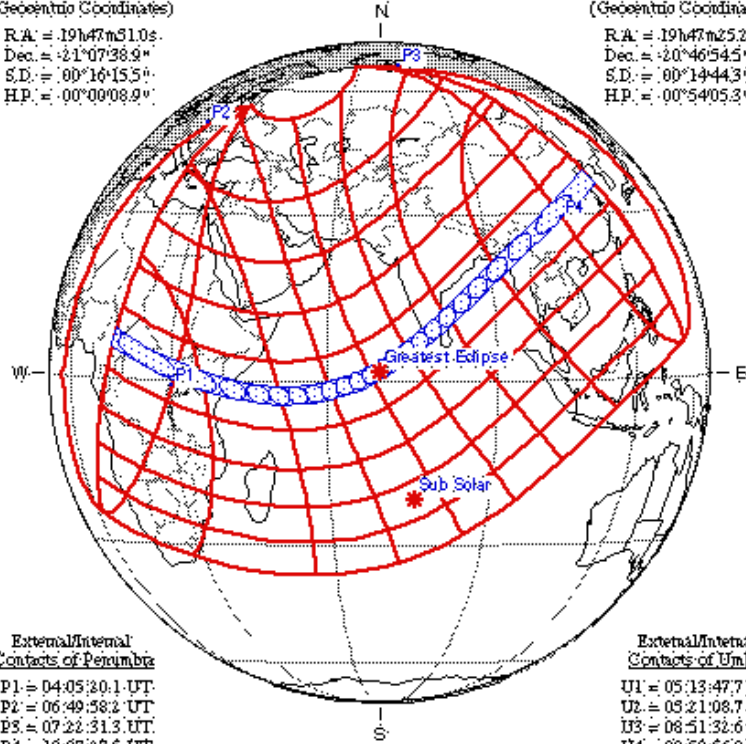
Geocentric Conjunction = 07:20:13.6 UT ... J.D. = 2455211.805713
 Greatest Eclipse = 07:06:25.6 UT ... J.D. = 2455211.796130

Eclipse Magnitude = 0.91903 ... Gamma = 0.40012

Saros Series = 141 ... Member = 23 of 70

Sun at Greatest Eclipse
 (Geocentric Coordinates)
 R.A. = 19h47m31.0s
 Dec. = +21°07'38.9"
 S.D. = 00°16'15.5"
 H.P. = 00°00'08.9"

Moon at Greatest Eclipse
 (Geocentric Coordinates)
 R.A. = 19h47m25.2s
 Dec. = +20°46'54.5"
 S.D. = 00°14'44.3"
 H.P. = 00°54'05.3"



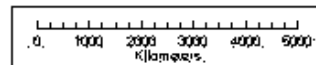
External/Internal
 Contacts of Penumbra
 P1 = 04:05:30.1 UT
 P2 = 06:49:58.2 UT
 P3 = 07:23:31.3 UT
 P4 = 10:07:27.5 UT

External/Internal
 Contacts of Umbra
 U1 = 05:13:47.7 UT
 U2 = 08:21:08.7 UT
 U3 = 08:51:32.6 UT
 U4 = 09:58:56.0 UT

Ephemeris & Constants
 Eph. = Newcomb/LE
 ΔT = 73.6 s
 k1 = 0.2724880
 k2 = 0.2722810
 Δb = -0.6" ... Δl = 0.0"

Local Circumstances at Greatest Eclipse:
 Lat. = 01°37.30N ... Sun Alt. = 66.4°
 Long. = 069°19.6'E ... Sun Azm. = 164.9°
 Path Width = 333.1 km ... Duration = 11m07.7s

Geocentric Libration
 (Optical + Physical)
 l = 1.48°
 b = -0.48°
 c = -8.81°
 Epoch Lun. No. = 1077



F. Espenak, NASA/GSFC, Thu, 1999 May 27

