



WEATHER WISDOM

Everything you need to know about the rare supermoon eclipse Sunday September 27th

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There is an eclipse Sunday evening and after so many days of clear skies and mild temperatures, it's going to be a tough break if clouds disrupt us from seeing it. As of right now, there should be enough clear spots in the sky to see the eclipse quite well. I'll be updating weather conditions on [Twitter @growingwisdom](#). I put the details of the eclipse later in this entry. Let's discuss the supermoon thing first.

Although words like "super moon" and "rare" are used in eye catching headlines. These terms aren't what astronomical professionals will use to describe this event. While these phenomena don't happen all the time, they have happened before and will certainly again. The length of time between these types of lunar eclipses warrants calling it rare. I enjoy teaching about astronomical events, and while meteorologists aren't astronomers the cool occurrences in the sky often fall to us to explain.

Full Moon

Roughly every 30 days there is a full moon. The moon is full when the Sun, Earth and moon line up and the Earth in the middle. When we look up, the moon is fully illuminated. During this time, because the moon is exactly opposite the sun in the sky, the moon rises in the east just as the sun sets in the west. Then, roughly 12 hours later, the moon sets in the west just as the sun is rising in the east.

Constant Motion

These three bodies are continuously revolving around each one another, the moon about the Earth and the Earth about the sun. This means although we hear about a full moon occurring on a particular day, it's really an instantaneous event, occurring when the moon is exactly opposite the sun. This week, such an alignment happens 10:50 p.m. EDT (02:50 GMT) on Sunday September 28th.

Like the sun, the moon is not always the same distance from the Earth. In the relationship between the Earth and the Sun, the two are closest around July 4th each year and this is called perihelion, the two bodies are furthest around January 3rd and this is called apogee.

Near and Far

The moon will be closest to the earth on Sunday, just two weeks after being at it's furthest point from the Earth. You can see from the chart below that each month there is a perigee and apogee with the moon, unlike the relationship with the Sun. What's happening this weekend of the 13 close approaches the moon makes to the Earth this year, this one is the closest. Since the Earth-moon distance is shorter, the moon will appear bigger, thus the term "supermoon". While the moon might appear bigger and brighter, the difference isn't really all that much.

Perigees and Apogees

Perigee				Apogee			
Jan 21	20:07	359642 km	N+1d 6h	Jan 9	18:18	405410 km	F+4d13h
Feb 19	7:31	356991 km	- N+ 7h	Feb 6	6:27	406154 km +	F+2d 7h
Mar 19	19:39	357583 km	N- 13h	Mar 5	7:36	406385 km +	F- 10h
Apr 17	3:54	361025 km	N-1d15h	Apr 1	13:00	406011 km +	F-2d23h
May 15	0:24	366023 km	N-3d 3h	Apr 29	3:56	405083 km	F-4d23h
Jun 10	4:40	369712 km	N-6d 9h	May 26	22:14	404245 km	F-6d18h
Jul 5	18:55	367094 km	F+3d16h	Jun 23	17:02	404132 km	N+7d 2h
Aug 2	10:12	362134 km	F+1d23h	Jul 21	11:03	404836 km	N+5d 9h
Aug 30	15:25	358288 km	F+ 20h	Aug 18	2:34	405851 km	N+3d11h
Sep 28	1:47	356876 km	++ F- 1h	Sep 14	11:29	406465 km --	N+1d 4h
Oct 26	13:00	358463 km	F- 23h	Oct 11	13:18	406388 km -	N-1d10h
Nov 23	20:07	362816 km	F-2d 2h	Nov 7	21:50	405722 km	N-3d19h
Dec 21	8:54	368417 km	F-4d 2h	Dec 5	14:57	404799 km	N-5d19h

New and Full Moons

New		Full	
2014 Dec 22	1:36	2015 Jan 5	4:54
2015 Jan 20	13:15	2015 Feb 3	23:10
2015 Feb 18	23:49	2015 Mar 5	18:07
2015 Mar 20	9:39	2015 Apr 4	12:07
2015 Apr 18	18:59	2015 May 4	3:45
2015 May 18	4:16	2015 Jun 2	16:22
2015 Jun 16	14:08	2015 Jul 2	2:22
2015 Jul 16	1:26	2015 Jul 31	10:46
2015 Aug 14	14:55	2015 Aug 29	18:38
2015 Sep 13	6:43	2015 Sep 28	2:52
2015 Oct 13	0:07	2015 Oct 27	12:06
2015 Nov 11	17:48	2015 Nov 25	22:45
2015 Dec 11	10:30	2015 Dec 25	11:12
2016 Jan 10	1:31		

Sunday's moon is the closest encounter with Earth until November 14, 2016. The full moon on November 14, 2016, will be the closest full moon (356,509 kilometers) until November 25, 2034 (356,448 kilometers). So yes, these things are interesting, but not all that uncommon.

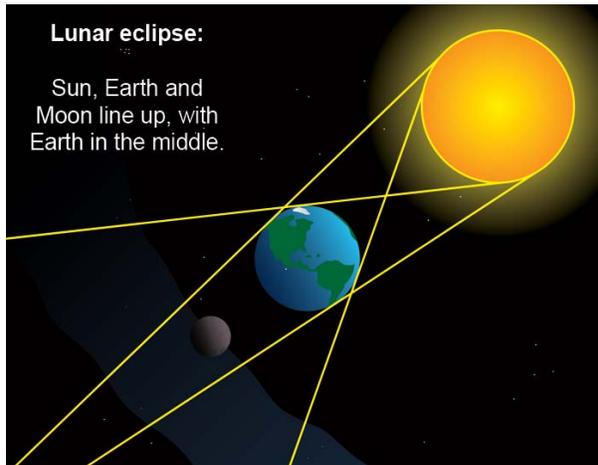
Not So Super

In a recent article in the Evening Sun, Ian Clarke, director of the Hatter Planetarium at Gettysburg College told the newspaper the following, "Take a quarter and hold it 103 inches away from you. That's the apparent size of the moon relative to us, as we see it. Take that same quarter, and bring it 5 inches closer, 98 inches away from you. That's the effect of the Supermoon, he said." As you can see, this isn't the celestial event of the century.

Eclipse

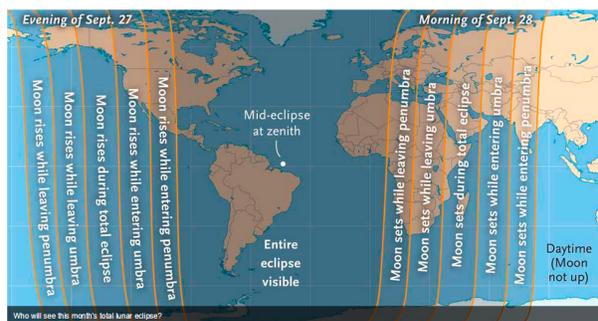
What's happening Sunday evening is an eclipse of the moon, in its full state, while making its closest approach of the year. The eclipse begin at 8:11 p.m. ET. The moon will be fully covered at at 10:11 p.m. ET, peaking at

10:47 p.m. ET. The moon stays covered until 11:23 p.m.ET, and the eclipse will end at 12:27 a.m ET



You only need to look towards the east to watch this event. There aren't any special glasses or special precautions to take. However, if you are driving, pay attention to the road, not the moon. During the time the Earth gets in the way of the Sun's light from illuminating the moon, the moon will take on a reddish hue. This is why you are hearing the term "blood moon" associated with this eclipse.

The image below, courtesy of Sky and Telescope does a great job of explaining the upcoming eclipse.



There have only been five supermoon eclipses since 1900 (in 1910, 1928, 1946, 1964 and 1982). After Sunday, the next supermoon eclipse will occur in 2033. There will however be other lunar eclipses. Even better,

August 21st 2017, a full solar eclipse visible across most of the United States.