Moon Sighting

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Bismillahi Ar-Rahmani Ir-Rahim

Al-Hamdulillah, Was-Salat was-Salam ‘ala Khairi Khalqihi Kullihi, Sayyidina Muhammad wa ‘ala alihi wa Sahbihi.

Moonsighting Fundamentals

- Sighting the Moon each Month is a Fard-Kifayya (Someone from the community needs to do it or else there is a sin upon the whole community.)
- Sighting the Moon for Ramadan, Shawwal, and Dhul-Hijjah is a Fard-'Ain (An Individual Obligation)

Moonsighting Fundamentals

- Moon has a cycle of approximately 29.5 days.
- Each month the moon can be seen either on the 29th day or the 30th day after sunset.
- The critical day to search is the 29th day.
  - If not seen on the 29th, searching on the 30th is not necessary but recommended.
  - If seen on the the 29th, the month ends and the new month starts
- The new day in Shari'a starts at sunset.

Moonsighting Fundamentals

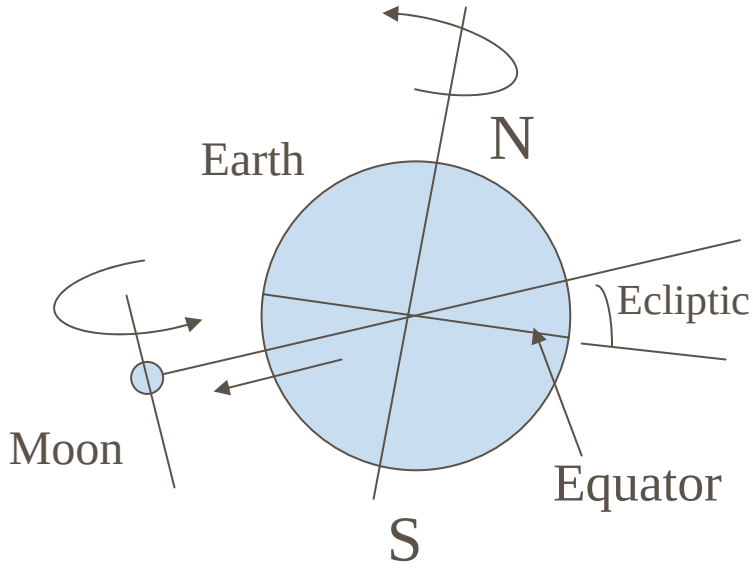
- New hilal will be anywhere from 0 minutes and up to 90 minutes behind the sun on the first day.
- It will only be visible in general if it is more than 30 to 45 minutes behind the sun.
- Each day the moon will lag behind the sun by 45 minutes.
- So if first day moon is say 30 minutes behind the sun and was not visible, then the next day it will be 75 minutes behind the sun and is still considered a first day moon.
- Hadith: One of the signs of the end of time is that people will look at the new hilal and say that is a two day old moon.
- The moon that is 60 to 90 minutes behind the sun will look large and is often mistaken for a two day moon.

Sighting the Moon

- In the Northern Hemisphere, the new hilal will in most cases to the left (or south) of where the sun sets.
- In some rare cases it can be directly above the sun.
- The altitude (or height above the horizon) depends on many factors related to the orbit the moon has around the earth.

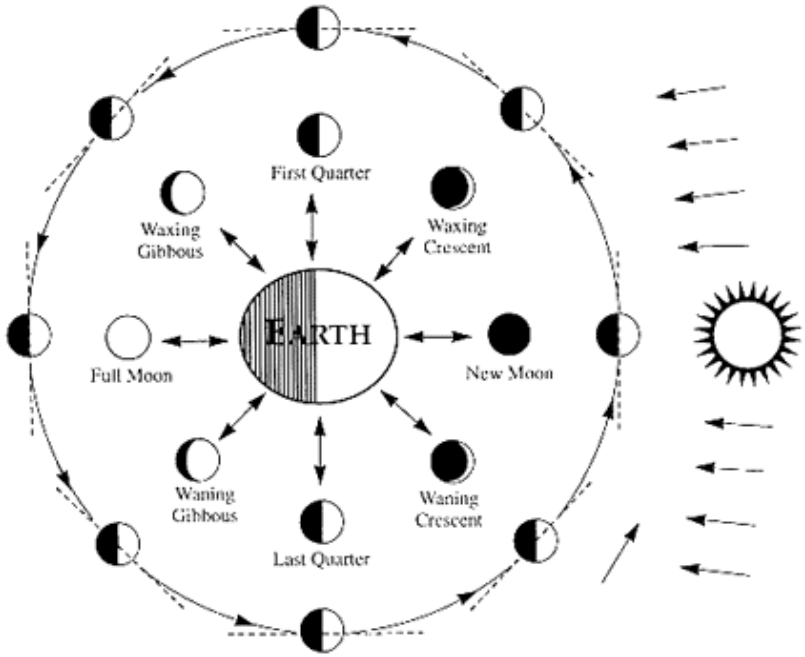
The Moon's Orbit

- The moons orbit has an ecliptic. That is the Moon's orbit takes the moon into the northern hemisphere and the southern hemisphere.
- The moon revolves around the Earth and together with its own spin on its own axis results in that we always see the same hemisphere of the moon when it is lit by the sun.
- Due to the Moon's orbit having an ecliptic to the Earth's equator, there are months when the new hilal will occur in the southern hemisphere and not visible to very difficult to sight from northern locations.



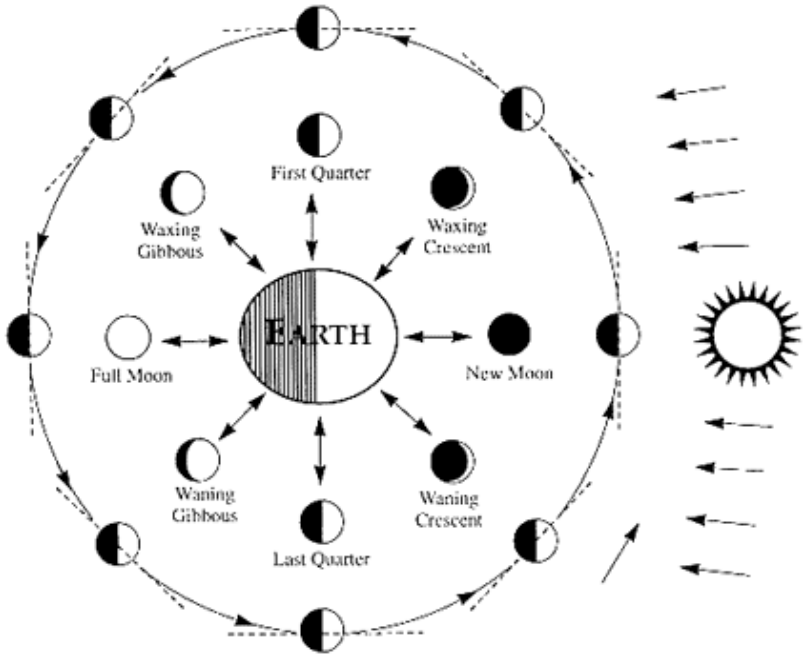
The Phases of the Moon

- The Moon goes through its phase over the 29.5 day cycle.
- As it grows it is called a Waxing Moon and as it declines it is a Waning Moon.

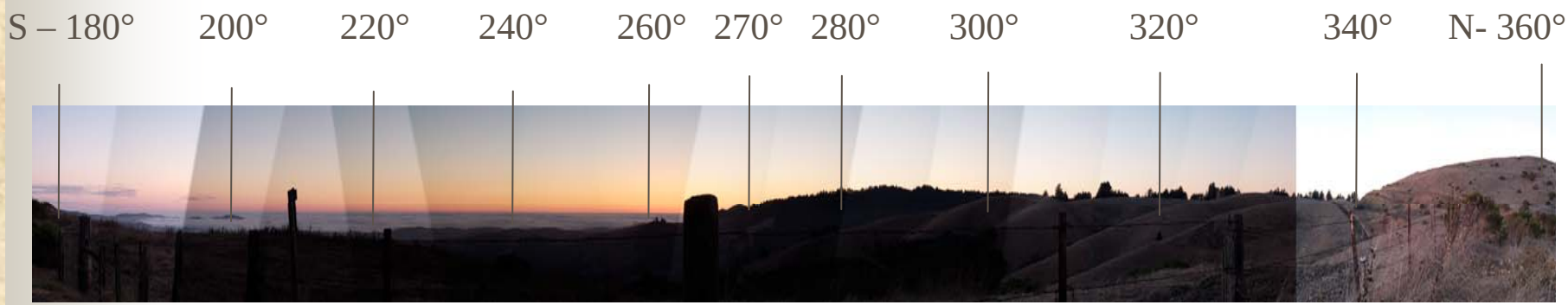


The Phases of the Moon

- As the moon moves past the sun (in the figure to the right) from below to above, more and more of it will start to become visible from the positions on the earth that have already experienced sunset.
- It moves from a crescent (hilal) to a a quarter moon which is half lit to a gibbous and finally full.
- It then wanes to a gibbous and the last quarter and finally a crescent again before it goes invisible to observes on earth as conjunction takes place.



In The Field



Location: Windy Hill Open Space Preserve

Latitude: 37° 21’ North Longitude: 122° 15’ West

Altitude: 1775 Feet above Mean Sea Level

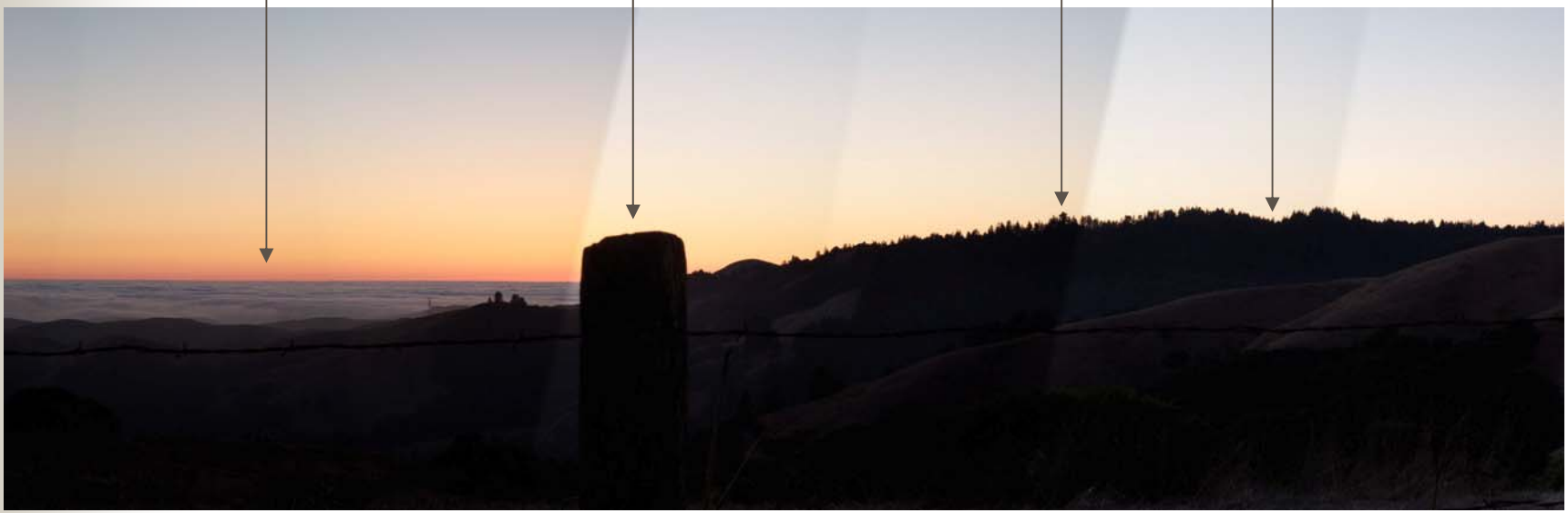
Recent Sunset History / Future

Sunset on Nov. 2nd - Shawwal
251.4° @ 5:08pm PST

Sunset on Oct. 4th - Ramadan
264.5° @ 6:45pm PDT

Sunset on Sep. 4th – Sha'ban
280° @ 7:31pm PDT

Sunset on Aug. 5th - Rajab
291.5° @ 8:10pm PDT

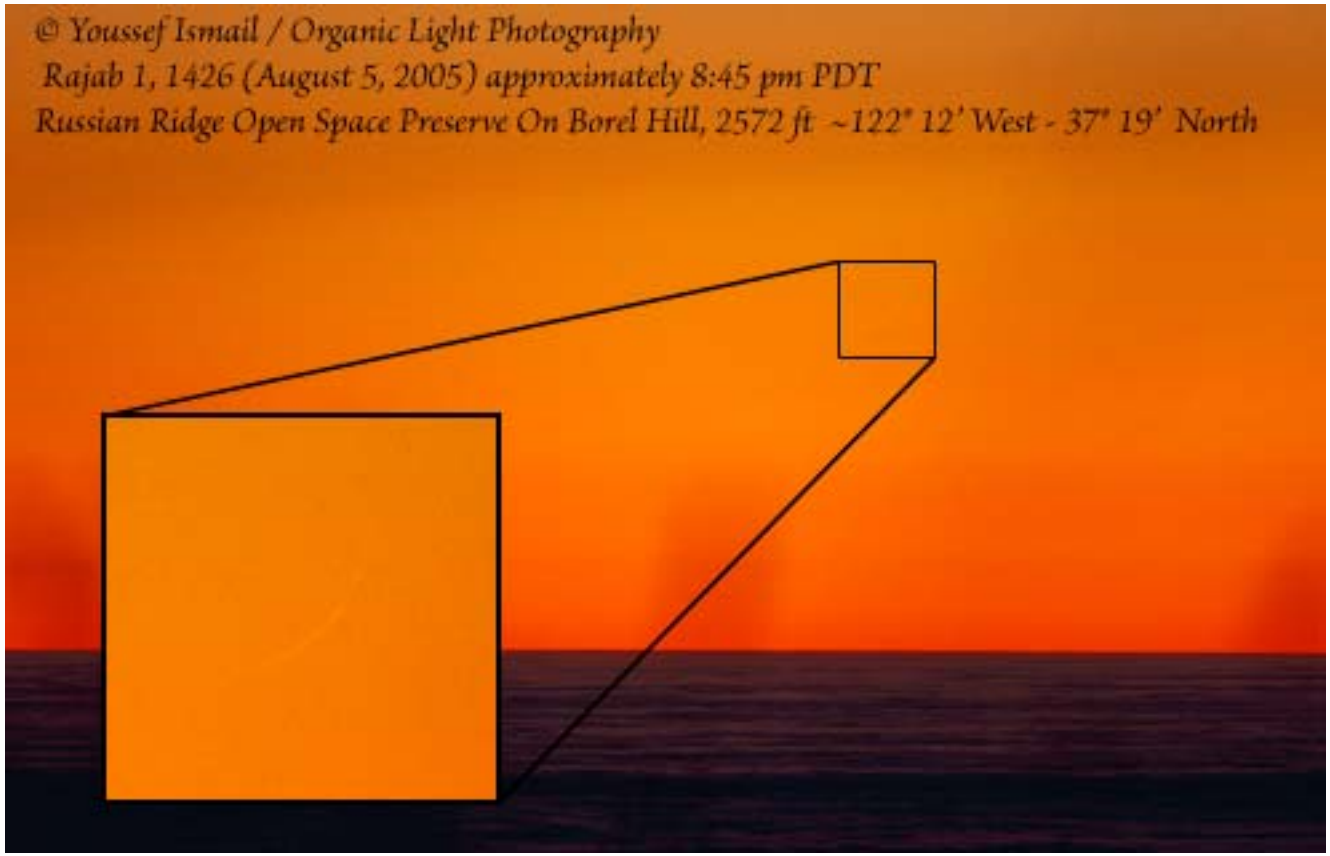


Moon of Rajab

Moon at Sunset: Altitude – **8.1°** Azimuth – **284.5°** Visibility – **1%**

Moonset at 8:56pm PDT – **46** mins after Sunset at Azimuth **291°**

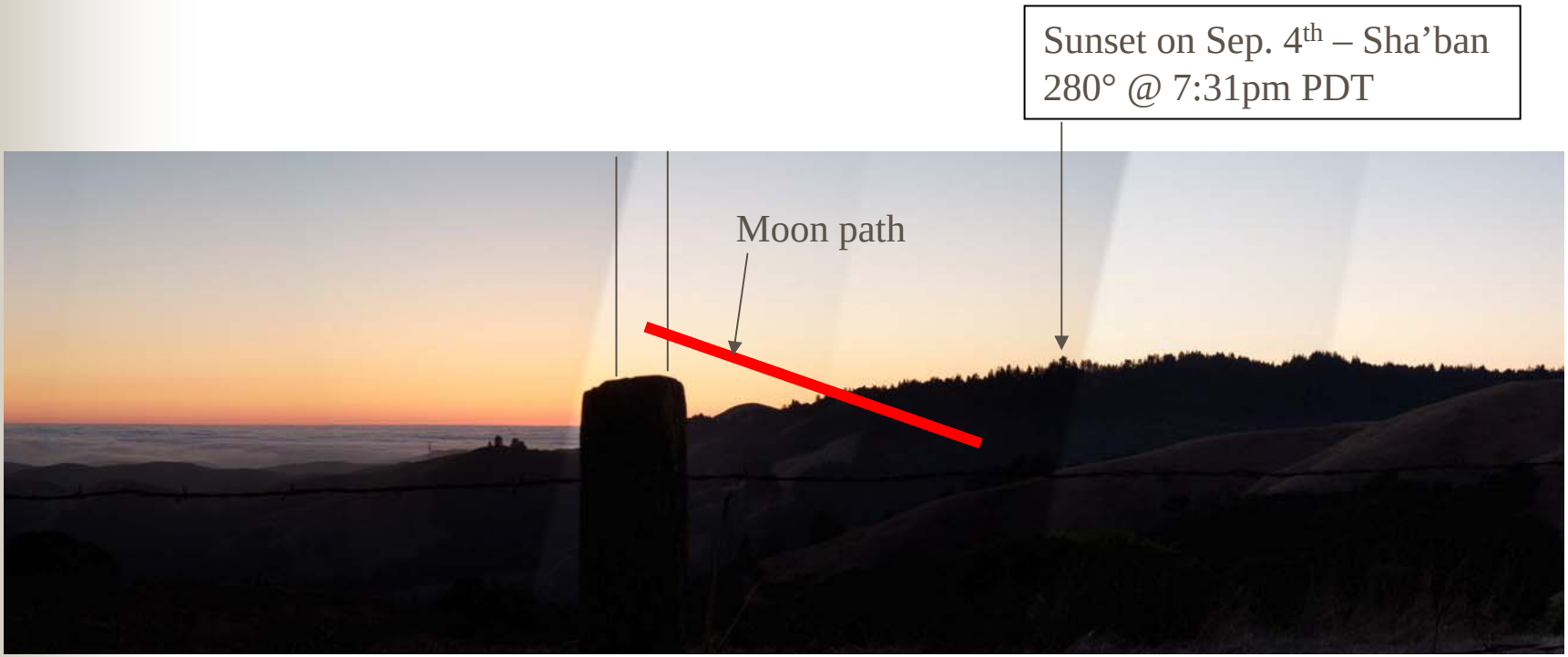
Rajab Moon



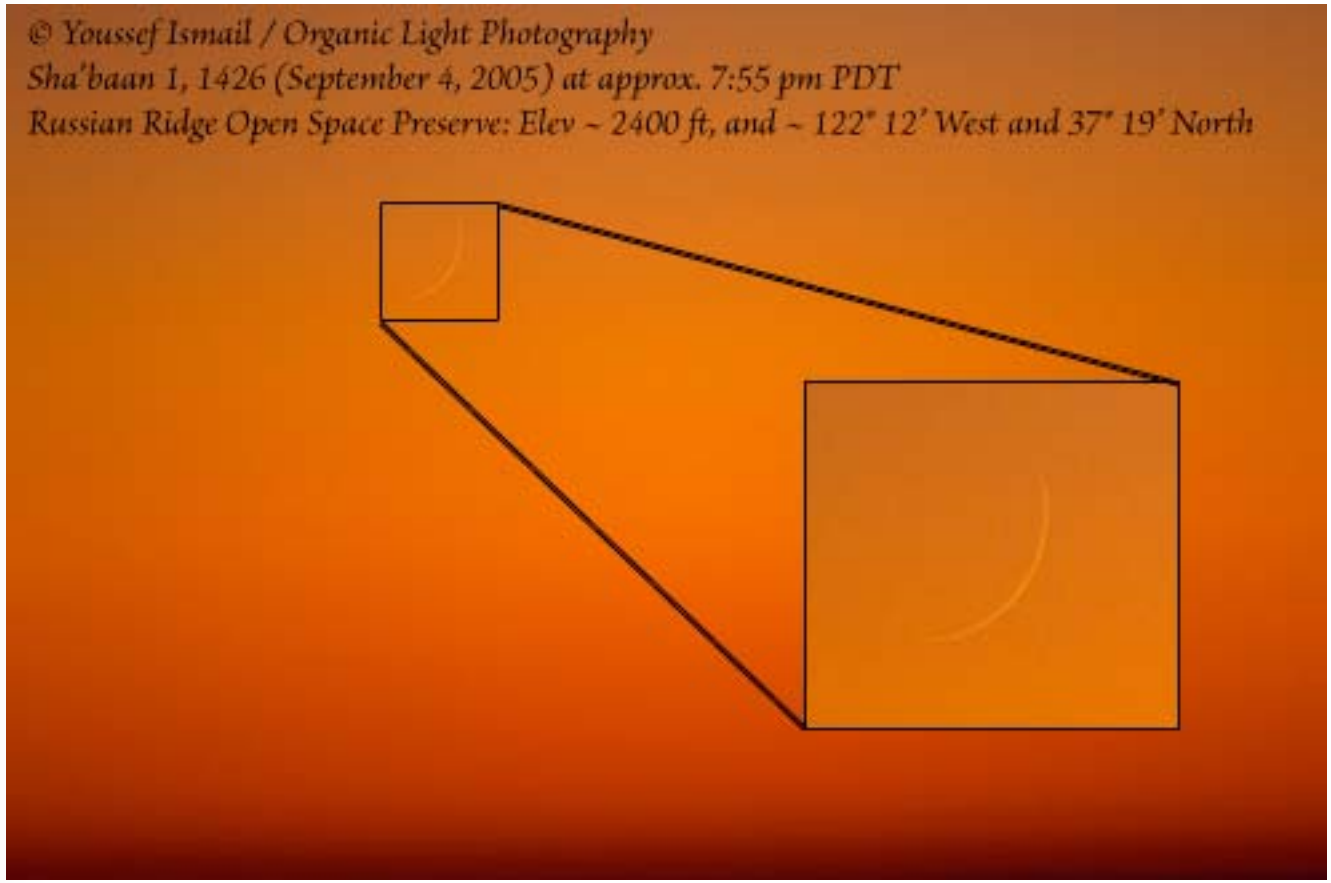
Moon of Sha’ban

Moon at Sunset: Altitude – **7.3°** Azimuth – **266.9°** Visibility – **2%**

Moonset at 8:12pm PDT – **41** mins after Sunset at Azimuth **272.5°**



Sha’ban Moon



Moon of Ramadan (Oct. 3rd)

Moon at Sunset: Altitude – **2.7°** Azimuth – **258.3°** Visibility – **0%**

Moonset at 6:59pm PDT – **12** mins after Sunset at Azimuth **260.9°**

Moon Set at 260.9° @ 6:59pm PDT

Sunset on Oct. 3rd - Ramadan 264.9° @ 6:47pm PDT

Moon of Ramadan (Oct. 4th)

Moon at Sunset: Altitude – **6.7°** Azimuth – **247°** Visibility – **3%**

Moonset at 7:23pm PDT – **38** mins after Sunset at Azimuth **252.6°**

Moon Set at 252.6° @ 7:23pm PDT

Sunset on Oct. 4th - Ramadan 264.5° @ 6:45pm PDT

Ramadan Sighting Notes

- October 3rd is the 29th day of Sha'ban.
- On October 3rd, the moon is only 12 minutes behind the sun.
- The percentage of the moon that will be lighted by the sun is 0%, that is it has not moved far enough from the sun that positions on the shadowed side of the Earth can see it.
- The sky will be very bright and the moon will not be visible, insha Allah on this day.
- Its path in the sky from sunset time until it sets is extremely short and starts at an altitude of only 2.7° nearly directly vertical from where it sets, making it even harder to see.

Ramadan Sighting Notes

- October 4th will, insha Allah be the 30th day of Sha'ban.
- On October 4th, the moon is 38 minutes behind the sun.
- The percentage of the moon that will be lighted by the sun is 3%.
- It will be an older moon than the moons of previous months, but it is only 6.7° above the horizon at sunset, also lower than previous months, again making it harder to see.
- It will, insha Allah, only be in the sky for 38 minutes after sunset, making searching the sky immediately during this time critical. It is problematic as Maghrib needs to be done during this time as well, thus losing viewing time.

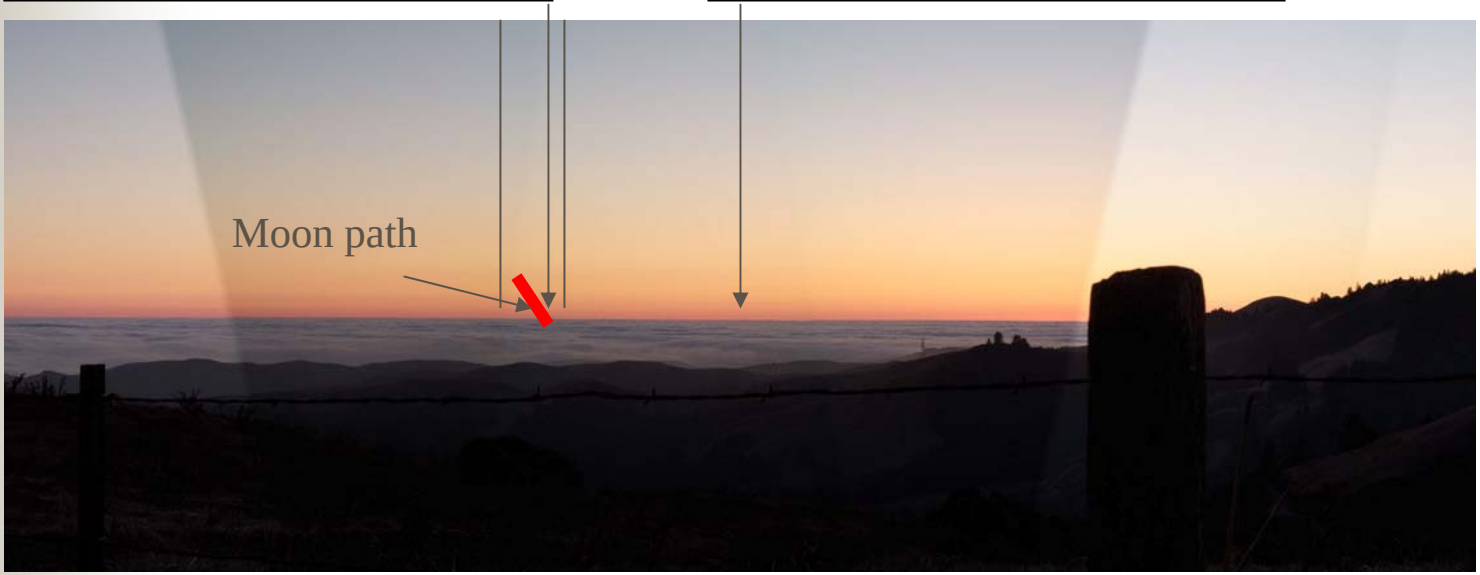
Moon of Shawwal (Nov. 2nd)

Moon at Sunset: Altitude – **2.6°** Azimuth – **239.4°** Visibility – **1%**

Moonset at 5:25pm PDT – **17** mins after Sunset at Azimuth **241.9°**

Moon Set at 241.9° @ 5:25pm PST

Sunset on Nov. 2nd - Shawwal 251.4° @ 5:08pm PST



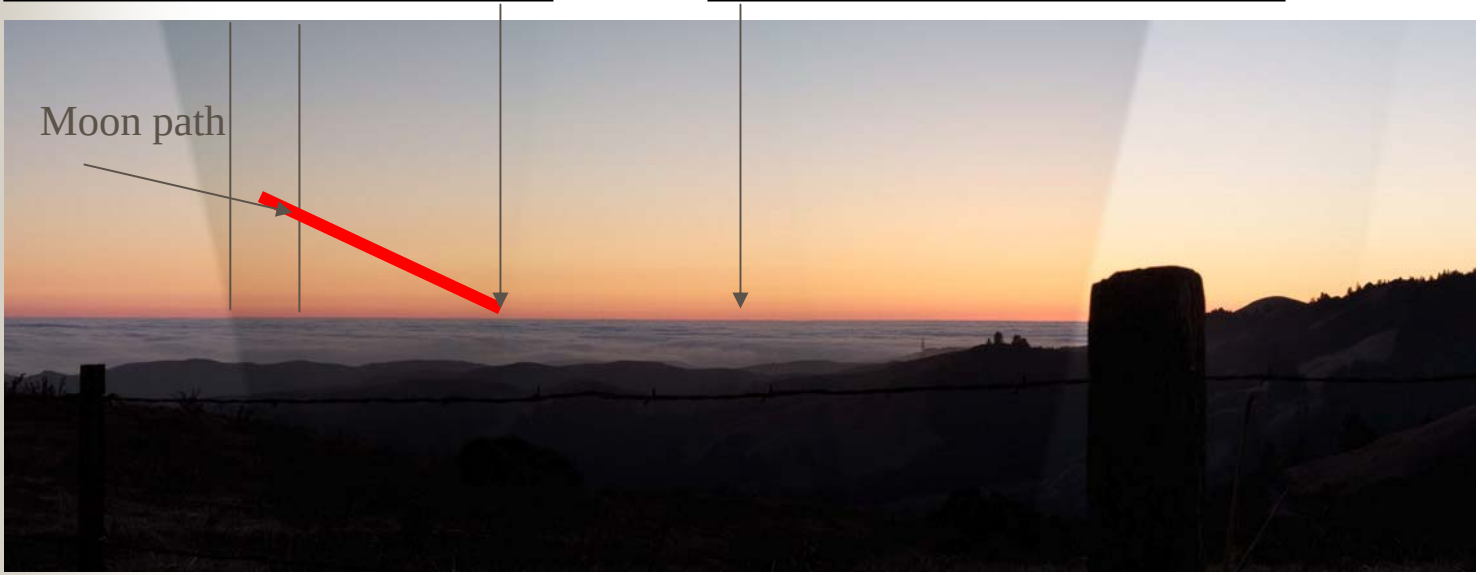
Moon of Shawwal (Nov. 3rd)

Moon at Sunset: Altitude – **8.3°** Azimuth – **227.9°** Visibility – **5%**

Moonset at 6:04pm PST – **57** mins after Sunset at Azimuth **236.4°**

Moon Set at 236.4° @ 6:04pm PST

Sunset on Nov. 3rd - Shawwal 251.0° @ 5:07pm PST



Shawwal Sighting Notes

- November 2nd is the 29th day of Ramadan (if Ramadan starts on October 5th as anticipated).
- On November 2nd, the moon is only 17 minutes behind the sun.
- The percentage of the moon that will be lighted by the sun is 1%, and will, insha Allah be very thin.
- The sky will be very bright and the moon will not be visible, insha Allah on this day.
- Its path in the sky from sunset time until it sets is extremely short and starts at an altitude of only 2.6° making it even harder to see.

Shawwal Sighting Notes

- November 3rd will, insha Allah be the 30th day of Ramadan.
- On November 3rd, the moon is 57 minutes behind the sun.
- The percentage of the moon that will be lighted by the sun is 5% and will appear very large for a first day moon.
- It will be an older moon than the moons of previous months, and starts out at 8.3° above the horizon at sunset.
- This moon is the classic case of the Hadith mentioned earlier where people will think it will be a 2nd day moon.

Final Notes

- Moon sighting is an activity that benefits the seeker both in this world and the next life.
- It takes some practice to learn the area in the sky that the moon will appear in.
- Science and astronomical calculations can be of great help in locating the moon but is not necessary.
- Science alone cannot be a deciding factor in determining the beginning of a new month, but it can be used as a litmus to negate false sightings when it is clearly impossible to sight it.
- Nothing can compare to the certainty that enters the heart when the moon is seen when it comes to starting the fast of Ramadan and ending it for Eid.
- Seeing the moon actually come into existence before your eyes is something that is indescribable and it is a proof of the existence of Allah (swt) and
- It anchors Iman firmly in the heart and everyone needs to establish that, and Allah (swt) gives us 12 opportunities each month, so take the opportunity!
- May Allah (swt) accept this presentation from me and benefit others from it, Amin.