

Chapter 17

The Cosmic Clock

The Time Cycles

Time is the dimension in the Creation of God where stories happen. It is a dimension, the fourth dimension, as Einstein famously proved.

There are apparently at least 10 dimensions, but really, who knows? What we can know about time is etched in nature, much to the benefit of story and the human race. We have a very naturally split up day, month and year, with impressive intersections and interactions.

Besides the obvious markers of days and months and years are many interweaving cycles with distinct realities. The pull of a familiar gravitation marks re-alignment of the sun and moon in precise places every 19 years (with a two-hour bump). Can you feel it? Well, it's been 19 years and all. But maybe there is. 19 years ago, the moon was in the same phase as it is today (if it's new moon tonight, it was new moon then too) and the sun came up on the same day of the year in the same spot and three calendars- the solar, the lunar and the draconic- all re-aligned.

Maybe there was something about nineteen years ago that reminds us of today or visa-versa. I don't know. But there is resonance in the Universe, as even Carl Sagan admitted. How or why or even if those resonances are personally felt I do not claim to know. But we are all aware of the effect of the proximity of the moon. It makes the oceans bulge, after all.

The Draco-Metonic Calendar, and her cosmic mate, The Saros, are the most extraordinary calendars of all. Within them and around them, myriads of calendars are dancing!

Periods of Time in Eclipse Witness /Astronomical

Day. A day is both real and perspective. We know a day only from where we live. That same day looks very different than it does 5000 miles away. And a whole other day completely is going on now on the other side of the world. Dutch Astronomer George Van Den Beergh spends three pages in *Universe in Space and Time* proving that "a day is 48 hours". This due, of course, to rotation, perspective and the International Date Line.

Still, from where we sit, a day lasts exactly 24 hours. Solar eclipses happen from sunrise to sunset. They move fast. They occur as the earth is spinning, traveling east to west.

Hours and Minutes and seconds The day is divided along the concept of the 360 degree perspective, the 360 day Religious and Civil Calendar of the Babylonians and Hebrew. There are 360 minutes every six hours. There are 3600 seconds every hour. The half-day of twelve hours is a measure of time equaling twice 360 minutes. The sky is 360 degrees.

The Seven Day Week. This is the closest quarterly approximation of the phases of the moon. Seven is the profound number of perfection and completion. Musical notes. Visible planetary spheres. Seven seas, continents, "Seven Spirits of God+ (Rev.) We find the seven reflected most profoundly in the Hepton Cycle, Octon Cycle and in the Bible.

The Eleven Day Metonic Week The Metonic week is the difference between the length of the solar and lunar years. There are two simultaneous progressions of Metonic weeks for lunar and solar. They happen on opposite fortnights, 33 times per year. 33×11 is 363 days, a close approximation of the solar year.

Fortnight- A fortnight is half a moon cycle, such as new to full, or waning crescent to waxing crescent. Solar eclipses are always accompanied by a lunar eclipse one fortnight sooner or later.

The Three Astronomical Months.

Moons are what months are all about. There are three astronomical months.

Lunar month is 29.53 days. From new moon to new moon, typically.

The Eclipse (Draconic) Month During its monthly journey around the earth, the moon passes through the eclipse node in the sky, creating potential for eclipses. The Draconic Month is 27.21 days.

The Anomalistic Month During that same monthly journey, the moon travels either closer or farther away from earth on an elliptical orbit. Its closest approach is called perigee (perigee at a full moon creates what are called “supermoons”). Its farthest distance is called apogee. Full Circle is 27.55 days.

The Calendar months

Ancient Calendar Month-30 days. Round the lunar month up and you have 30 days. Twelve of those fill a 360 day year, adapted to the solar year by leap days, weeks or months.

Julian Calendar Month-30, 31 or 28 days. The Months as decreed by Julius Caesar in 46 BC ignoring the lunar month, timing out the solar year in the manner of the Egyptians and creating 12 months, each named for gods and Caesar’s and such. This is our calendar. Julius even has a month named after him! He instituted the leap year. This calendar was perfected astronomically in 1582 as the Gregorian Calendar.

The Bahai Calendar-19 days The Bahai Faith observes a nineteen day month, with nineteen months in a year. $19 \times 19 = 361$, very close to a solar year.

The Season The procession of the sun during the year creates seasons in the northern and southern hemispheres, marked by equinoxes, daylight and darkness are essentially equal, and solstices, the longest and shortest days of the year.

The Eclipse Season An eclipse season is the only time when the Sun (from the perspective of the Earth) is close enough to one of the Moon's nodes to allow an eclipse to occur. During the season, whenever there is a full moon a lunar eclipse will occur and whenever there is a new moon a solar eclipse will occur. Seasons are 173.3 days apart with matching paired complete eclipses typically happening about 177 days apart within a single eclipse year.

All Those Years (from shortest to longest)

The Draconic (Eclipse Year) The period for the Sun to return to a particular node is called the eclipse or draconic year: about 346.62 days. This is close to 19 days shorter than a solar year and 8 days shorter than a lunar year.

The Lunar Year. A Lunar Year is twelve complete moon phases. This adds up to 354.3 days, about 11 days shorter than a solar year. Civilizations which use the Lunar year can create extra weeks or months to re-align the lunar calendar with solar reality.

The 360 Calendar Year. This is the Babylonian Civil and Hebrew prophetic calendar. 12 30 day months, typically with a 5 day extra period added at the end of the year.

The Solar Year. There are three very close astronomical solar years (differing only in a few hours), depending on perspective, but the typical one used is the “tropical” year of 365.24217 days. The ancient Egyptians used the solar year for calendars. New Year’s Day was September 11. Julius Caesar made it January 1st. This was the Julian Calendar, in use for 1800 years in some places. **Gregorian Calendar:** To keep it accurate in continued use required an adjustment of leap years in 1582.

Currently, every year that is exactly divisible by four is a leap year, except for years that are exactly divisible by 100. EXCEPT... these centurial years ARE leap years if they are exactly divisible by 400. For example, 1900 is not a leap year, but the year 2000 is.

The Cosmic Clock

There are larger cycles of time involving interactions and repetitions in the solar, lunar and draconic (eclipse) calendars. Are these alignments meaningless? I argue they are not, and many throughout time have agreed with that assessment. Realignment of solar and lunar calendars is a real thing, not an astrological conjecture. The sun and the moon have intense gravitational pull and the perspective of their light and positioning has real consequences. They are extraordinary cosmic entities which return into positions like the hands of a clock.

What is true re-alignment? True re-alignment of earth, sun and moon occurs when sun and moon achieve essentially the exact same cosmic position in relation to earth's perspective. That is only achieved in the Draco-Metonic Cycles of 19 years (with a few hours variance) and 391 years (with almost complete perfection, the variance in minutes).

Why is the Eclipse Year so Unknown?

Luni-solar re-alignment The solar and lunar calendars also re-align at other positions in the cosmic clock. These create the opportunity for looking at various calendars in broad scale.

What is an Epact?

Very simply, epact is the difference of days between calendars. The difference between a solar calendar of 365.24 days and a lunar calendar of 354.3 days is about 11 days and 1 ½ hours. That is their epact. After 33 solar years the epact between them and 33 lunar years is about one complete solar year. These epacts allow for the Metonic Cycle, which is simultaneously 20 eclipse years and 19 solar years.

A Look at the most obvious eclipse cycles

As you peruse this work, I make note of many eclipse cycles. Here's a list of most, from shortest to longest.

Semester Series-Time: 177 days apart A semester series involves two eclipses on opposite ends of an eclipse season. These eclipses can remain paired for centuries, usually with one being total and the other a ring of fire. Saros 136 and Saros 141 are one such pair.

In 1919, they provided "Einstein's Eclipse" (total) of May 29 and the JFK Premonition Eclipse (Ring of Fire) Nov 22 on JFK's birth and death days respectively. They also created the Vietnam War Eclipses of 1955, the longest duration total and annular eclipses of the millennium.

Lunar Year Duos and Triads: 355 days and 710 days apart Solar eclipses can return in sets precisely one lunar year apart in duos or trios. A recent example is the Lunar Year Triad of 2019 to 2021. There were solar eclipses on Dec 26 2019, Dec 14 2020 and Dec 4 2021.

Hepton Septiform Cycle: 1211 days and 2422 days apart Discussed in much greater detail later, Hepton Cycles contains seven eclipses occurring seven eclipse seasons/seven eclipse years apart generally landing on the same day of the week. Probably the maximum expression of cosmic peculiarity. A Hepton lasts 21 Eclipse Years or 20 solar years minus 19 days.

Octon Cycle: 1388 days and 2766 days apart Octon Cycles last exactly eight eclipse seasons and eight eclipse years apart. Interestingly, eight eclipse years is 7 solar years, 7 months and 7 days.

Saros Cycle: 6585 days /19 eclipse years/ or 19 solar years minus one lunar year One of the most astonishing coincidences of science, The Saros Cycle creates the 40 or so Saros Personalities that are born, grow, live and die creating eclipses and allows for the ability to predict eclipses. The Saros Cycle is the precise alignment of several calendars-the Solar, Lunar-Synodic, Lunar- Anomalistic (which creates apogee and perigee of the moon), and the Lunar sidereal. giving each eclipse a predictable

character. This personality returns every 18 years with a similar (though slowly changing in characteristics) eclipse about 1/3 around the globe from where it was last.

Again it is 6,585.3 solar days or 18 years 11 days and 8 hours which is 223 lunar (synodic months), 241.99 draconic months which equals 19 eclipse years and 239 anomalistic months (perigee to perigee) and 241 sidereal months –the moon aligned to fixed star positions.

In other words, every 19 eclipse years there is a precise alignment of 5 cosmic calendars.

It is quite fortuitous that this arrangement should occur in such a conveniently low integer, allowing for repetitive eclipses and easy prediction. The next time after 19 eclipse years such a precise alignment of three of these calendars (lunar, draconic and anomalistic) re-occurs is after 127 Saros Cycles, or about 2290 years.

Draco-Metonic Calendar 6940 days/ 19 solar years/ 20 eclipse years Every 19 years the same phase of the moon returns. Is there a waxing crescent moon out tonight? There was 19 years ago too. And there will be 19 years from now. 235 lunar months is just 1 hour, 27 minutes and 33 seconds longer than 19 tropical years. Meton of Athens in the 5th Century B.C. determined the cycle, which was also known to Babylonians and Mayans.

The eclipse Calendar also aligns at the same 19 years spot at 255 Draconic Months.

Solar Year= 365.24 days. $365.24 \times 19 = 6,939.60$ days (19 years)

Synodic (Lunar)= 29.53 days. $29.53058868 \times 235 = 6,939.68$ days (235 months)

The difference between 19 solar years and 235 lunar months is less than two hours, resulting in a full day of delay every 219 years, roughly twelve cycles.

Now the Draconic (Eclipse) calendar results from the alignment of the moon in a lunar node about every 346.62 days, a reality that is completely independent of the solar and lunar cycles.

255 draconic months (lunar nodes) = 6,939.11 days. 20.02 eclipse years. The less than half a day difference every 19 years with the lunar and solar calendars results in eclipses often occurring on the same day of the year every 19 years for up to century.

300/44 Cycle Similar eclipses 300 years minus 44 days apart. My favorite example is the twin 300 year pairs on America and the Mideast.

391 Year Grattan Guinness Cycle: 391 years is the nearly perfect alignment of solar, lunar, and draconic yearly calendars. It is the only place after the number 19 where the three calendars match dramatically.

391 solar years equals 4836.005 lunar months and 5248.002 Draconic months.

That is, 391 solar years equals precisely 403 lunar years and precisely 412 eclipse years.

At the 391-year juncture, the epact of lunar years is 12 and the epact of draconic years is 21.

(Thanks to Chris Grant of Brigham Young University for precise modern calculations).

There is reason to suspect the 391-year pattern may bear evidence in history, but this work can only breeze by this prospect. Here's one way to look at it. Call it the "Babylon to Babylon" approach.

Seven Impulses of the 391 Year Cosmic Clock in Western History

1. 747 BC (Feb 26) the first truly agreed upon date in the history of western civilization. The Crowning of King Nabonassar of Babylon.
2. 356 BC Birth of Alexander the Great, Greek Conqueror and founder of Greco-Roman Empire.
3. 35 AD Jesus executed sometime between 27 and 34 AD. Near height of Roman Empire. Beginning of the Christian Church.
4. 426 AD Sack of Rome by Visigoths 410 AD. Decline of Roman Empire and dissolution in 476AD. Beginning of Papacy. Augustine publishes City of God. Beginning of "Dark Ages"
5. 817 AD Holy Roman Empire begins in Europe 800 AD as Charlemagne is crowned by Pope Leo III. Expansion of Papal power. Muslim Golden Age. Middle of "Dark Ages."
6. 1208 AD Roman Church persecution of "heretics" and "infidels" begins in 1209 with the Albigensian Crusades. The Inquisition authorizes torture in 1252 in what becomes a centuries long campaign against Jews and heretics. Spain and Portugal's colonial efforts, papal power extends across the Atlantic. Between disease and war perhaps 150 million native Americans and Europeans died. The Maximum Expression of the Dark Ages.
7. 1599 AD Reformation. British begin colonizing North America May 14 1607. The last Empire is born. The period of the maximum expression of war, slavery, conquest, freedom and creativity.
8. 1990 AD (Aug 2) Iraq invades Kuwait. Empire circuitously returns to Babylon. The American Empire sends troops, preparing for war against Baghdad, which sits atop the ruins of Babylon. After defeating ruler Saddam Hussein (Saddam means "one who confronts" in Arabic). This is exactly the completion of seven 391-year cycles. On Jan 14 1991, war breaks out and ground troops actually enter Iraq on Feb 26, the 2738th anniversary of the first King of Babylon. US Coalition forces first occupied the ruins of Babylon in April 2003.

This is a rough sketch of a reality that perhaps resonates in these long cycles. Taken from the 70 AD temple destruction, five periods of 391 years lead us to 2025.

There are other Cycles and Time Periods involving Religious Calendars, particularly Hebrew.

Septiform Reality: 7 as basis for cycle. A week. Sabbath day.

The ancient laws of 3 and 7.

7 year Sabbath year: sabbath of land, indentured servitude was typically 7 years.

11 Year: 136 lunar months matches up within a day or so to eleven years.

30 Year: 371 lunar months matches closely.

33 year Messianic Cycle: 33 years epact equals full lunar year. 33 solar years equals 34 lunar years.

Jesus and Alexander the Great die at 33.

40 years: Time of purification. 40 years for Moses in exile. 40 years wandering in wilderness. King David had 40 year reign. Jesus had 40 days fasting and temptation. "Yet 40 Days and Nineveh will be overthrown", Jonah cried. 40 days were spent by the resurrected Christ on earth before his ascension.

49 years: Jubilee 7 X 7 49 years is full cycle.

50 years is Jubilee year.

70 years: Exile of 70 years for Jews in Babylon. Biblical typical lifespan of man. David died at 70. Temple destroyed in 70 AD.

99 years: 3 messianic cycles.

100 years: classic century mark

120 years: Bible. Moses age at death. Time given as warning for Noah.

400 years: period of captivity in Egypt, rough approximation of slavery in the Americas. First slaves taken from natives in 1492, first Africans brought in 1526.

490 years Prophetic period of Book of Daniel....Temple to Christ

1000 years. Millenium.

1260 days (years)—mentioned in Daniel..."Time, Times, and half a time" 3 and ½ x 360 days or years, depending whose interpreting. reign of antichrist archetype/literal. The numbers 1335 and 2300 are mentioned in the same Book.

2106 years. Zodiac Age. The click of one constellation to the next on the zodiacal wheel of 25,800 years takes 2106 years for the sun of the vernal equinox to rise on the next constellation . It is said we have been in the age of Pisces since 68 BC. If there was strict science, this puts the arrival of the Age of Aquarius at 2038, but there is no clear boundary between agreed upon spots in the constellations and much debate. We are in the midst of Vernal Equinox eclipses on 2015 and 2034.

2520 Years. A full season: This is 7 x 360 years.

The 500-year historic impulse.

There are many different repeating spans of time which could be tickings of the Cosmic Clock.

For instance, eclipses can be separated by :

177-day intervals. 355-day lunar year intervals.

1211-day (7 eclipse seasons), 2422 day (7 eclipse year) Hepton intervals.

7 year, 7 month, 7 day Octon Personality eclipses.

19 eclipse year Saros personality repetitions.

19-year Metonic repetition of same moon phase.

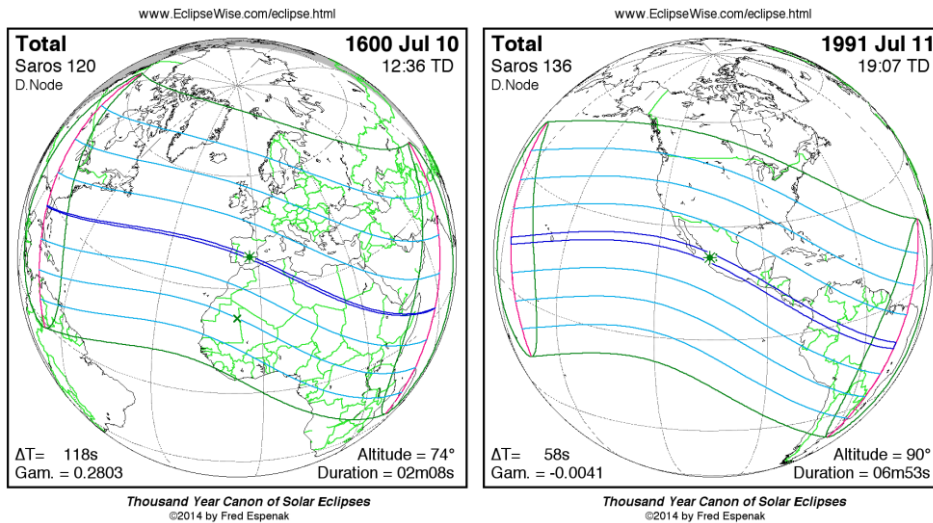
19, 38, 57, 65, 84, 103 and 122 Draco-Metonic year repeating eclipses on the same date.

300 years minus 44-day cycle of similar shape and geographical eclipses.

And the 391 Year Perfect cycle. There is also a 391 solar year alignment of solar years, draconic and anomalistic months. This is probably the most precise return of the cosmic clock as it relates to our conception of calendar time.

391 Years= 4836.005 lunar months and 5248 draconic (eclipse months)

The actual movement of the sun in relation to human solar calendar time was slightly off until Pope Gregory in 1582 corrected the issues. 391 years is the most perfect reappearance of the cosmic positioning of the moon and sun in relation to earth. Below are two eclipses 391 and 6 ½ hours apart. They are very close to the same shape and latitude.



Courtesy of NASA

There is another 500-year apparent impulse where solar or lunar eclipses return again to occur on essentially the same calendar dates from 2000 BC to 1000 AD. This repetitive clicking means all three cosmic calendars have reset on an anniversary. Major religious figures and movements seem to pop up on that cyclical, approximately 500-year impulse. The average appears to be about a 491-year period before the Gregorian Calendar:

Anyway, here are nine points in time creating eight distinct periods because eclipses happen on the same days in the same order. If seen as an octave, it would be seven notes finishing on the eighth, the repeating “do” note-as in do, re, mi, fa, so, la ti, do. The time frames are rough:

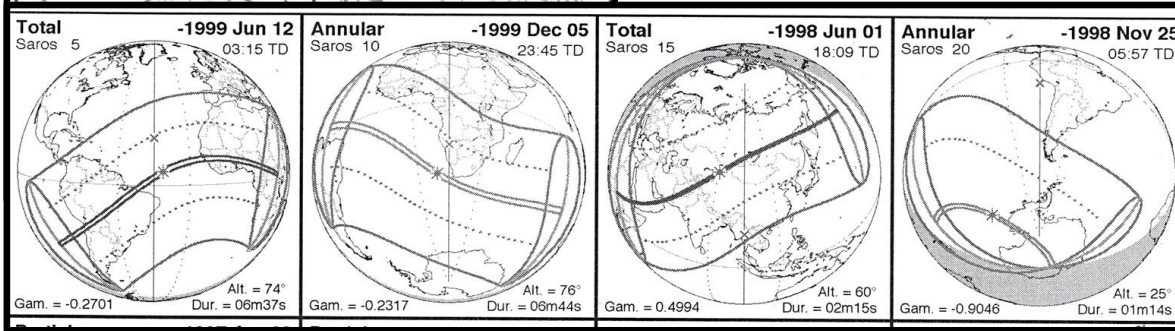
1. (do)2,000 BC Abraham/ Egypt/ Babylonian beginnings
2. (re) 1500 BC Moses/ Peak of Egypt/ Indian Vedas/ Zoroaster
3. (me)1000 BC King David/Solomon/ Decline of Egypt
4. (Fa) 500 BC Buddha/ Confucius/ Pythagoras/ Persian-Greek Empires/ Jewish Exile and Return
5. (so)1 AD Jesus and Apostles/ Jewish Temple destroyed 70 AD/ Roman Empire Ascendant
6. (la) 500 AD Fall of Rome/ Islam /Beginning of European nations
7. (ti) 1000 AD Eastern Orthodox Christianity/ Holy Roman Empire/ Early Russia
8. (do) 1500 AD Martin Luther/ Protestantism/ Colonization of New World/ Slave Trade

We arrive then at 2000, which as we know, just happened a few years ago.



Party like it's **1999 BC**? Below are Four Eclipses from around Abraham's Time:

Photo courtesy of NASA and Fred Espenak/Jean Meuss



Note dates carefully: **June 12, Dec 05, Jun 1 and Nov 25 (then look below)**

Now Look Below at Four Eclipses from Moses' Time: ca. **1476 BC ; 521 years later**

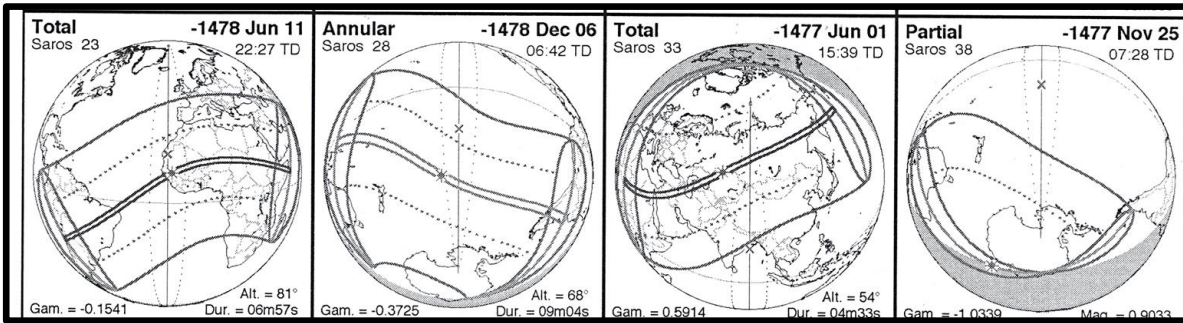
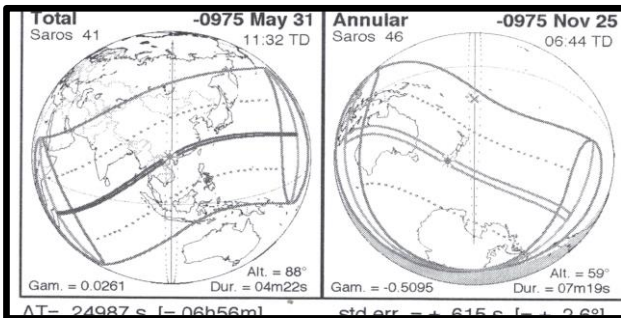


Photo courtesy of NASA and Fred Espenak/Jean Meuss

The first eclipse is one day earlier, the second is one day later, the last two are the same. Even the eclipse geography is amazingly similar between the four 1999 BC and the four 1476 BC eclipses. This is the perceived passage of time along the solar calendar, with the Julian leap year.

courtesy of NASA



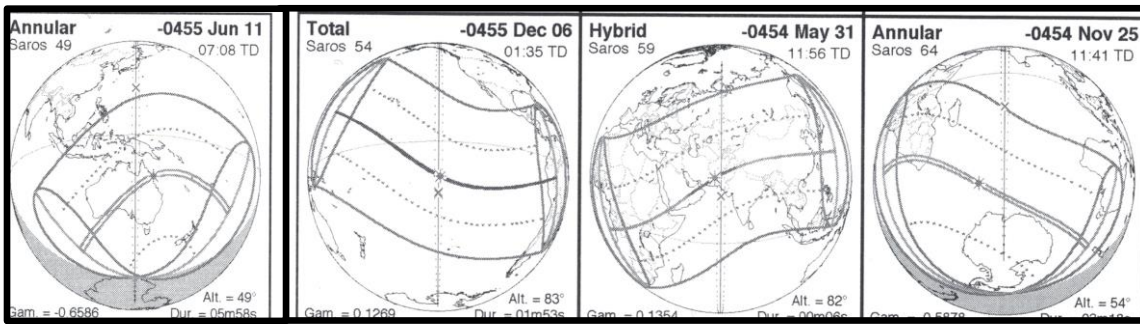
Here are essentially **Same dates: Eclipses of time of King David and Solomon (975 BC)**

497 years after the Moses Metonic, eclipses from the Reign of King David around 1010 BC to 970 BC. Solomon built the Temple in Jerusalem around 970 BC. Dates of **Nov 25** are the same as the 1476 BC.

What was **Jun 1** has become one day earlier here at **May 31**. The last three eclipses here appear in very approximate geographical regions of the globe as the last three eclipses in 1476 BC and 1999 BC.

approximate geographical regions of the globe as the last three eclipses in 1476 BC and 1999 BC.

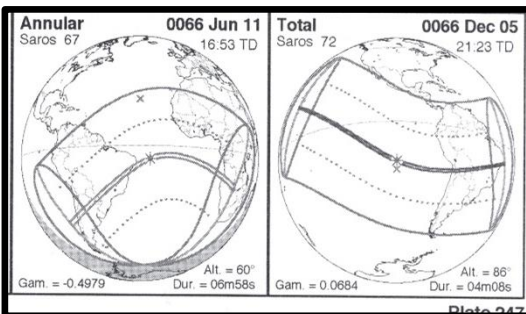
455 BC-- Buddha/ Confucius/ Pythagoras/Rebuilding of Jerusalem



courtesy of NASA

455 BC

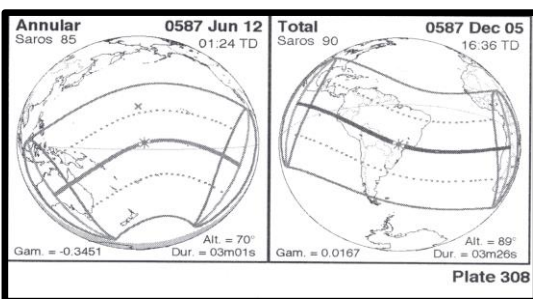
Above: Now 520 years after the 975 BC eclipses and we have a snapshot around the time of Buddha/ Confucius/ Pythagoras and Babylonian and Persian Empires. 455 BC is often also the date given as the order from King Artaxerxes for Nehemiah to rebuild Jerusalem. We find the same dates -**June 11, Dec 06, May 31/June 1, Nov 25**. and similar shape of eclipses in very similar geographies!



66 AD Death of the Apostles/ Destruction of Jewish Temple (left)

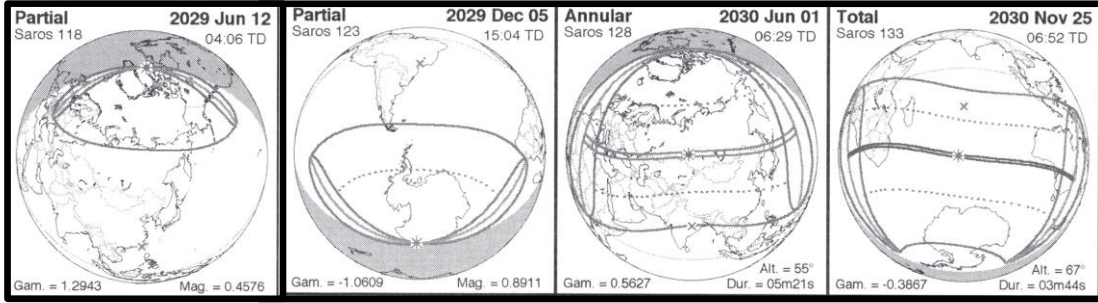
Jump 520 years from the Buddha Metonic. We are 33 years after death of Jesus, four years before the Jewish temple is destroyed in 70 AD. Paul and nearly every other Apostle martyred before 67 AD. There's the same dates we've been seeing, **June 11 and Dec 05**, and almost same geography...see below.

587 AD—Muhammad (below) 587 AD 521 years after 66 AD- From Around Muhammad's 18th Birthday . **Jun 11/12 and Dec 05** and maintaining similarities in eclipse shapes as well.

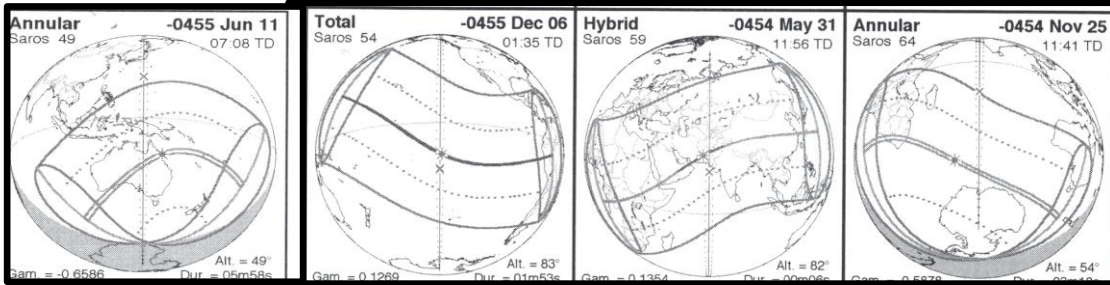


The Julian Calendar seriously departs from Solar Reality around the time of Muhammad. The Metonics of around **1054 AD and 1500 Ad** appear skewed because of the incredibly drifting solar calendar which was finally adjusted by the Gregorian Calendar Change in 1582.

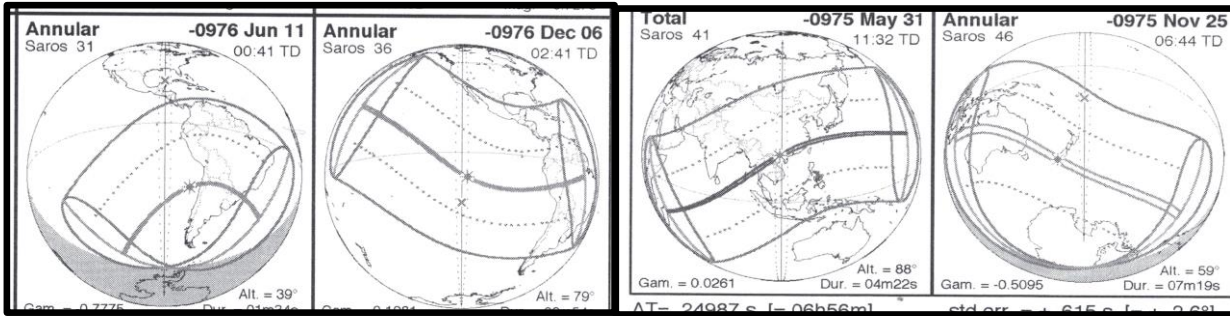
Below is our Current Time: **2029**...notice similar months and days



455 BC



976 BC (extremely similar geography to eclipses above)



Moses' Time: ca. 1476 BC

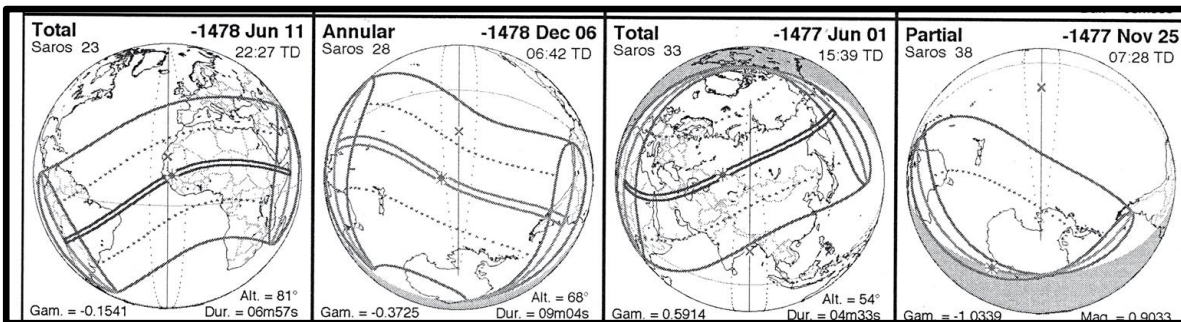


Photo courtesy of NASA and Fred Espenak/Jean Meuss

It's a Cosmic Clock, my friends. It's around 500 years.

There is obviously a truer cosmic beat at 19 years and at 391 years but this 500-year reality is difficult to deny.