Lunar Data Comparison 3

Sidereal Month vs Synodic Month

In a Sidereal Year

Data from 2002 Astronomical Almanac

Moon Revolutions (Sidereal)	1	2	3	4	5	6	7	8	9	10	11	12	13	13.368746
Synodic New Moons	0.925	1.850	2.776	3.701	4.626	5.551	6.476	7.402	8.327	9.252	10.177	11.102	12.028	12.368746
Difference: Moon Revolutions	0.075	0.150	0.224	0.299	0.374	0.449	0.524	0.598	0.673	0.748	0.823	0.898	0.972	1.000000
Degrees of Earth Around Sun	26.928	53.857	80.785	107.714	134.642	161.571	188.499	215.428	242.356	269.285	296.213	323.142	350.070	360.000

Lunar Sidereal Month = 27.321662 days
Lunar Synodic Month = 29.530589 days
Earth Sidereal Year = 365.256363 days

Synodic New Moons = (Moon Revolutions) * (27.321662 / 29.530589)
Difference: Moon Revolutions = (Moon Revolutions) - (Synodic New Moons)
Degrees of Earth Around Sun = (Moon Revolutions) * (27.321662/ 365.256363) * 360

Notes:
This model shows what the Moon reveals about the Earth's motion if one only looks at sidereal data in the model.

Interestingly, by just including sidereal data one can come up with a 360-degree motion of the Earth around the Sun (the point of delta 1.00000) in a sidereal year but this orbit of the Earth around the Sun is longer, in time and distance (about 22,000 miles), than the 360 degree tropical model of the Earth's orbit around the Sun. Obviously, there cannot be two different circumferences of the Earths absolute 360 degree orbit around the Sun.

The time period of this model is equivalent to the prior models sidereal period, which has already been shown to equate to 360 degrees plus 50 arc seconds.

The reason this model can show the Earth moving in a larger orbit and still come out to 360 degrees is because this model only contains sidereal data and does not include any tropical data that shows the Earth's position relative to the Sun.

Because the Earth and Sun are contained within a reference frame, which itself moves in relation to the fixed stars, the time it takes the Earth within this reference frame to return to a fixed point measured outside the frame, will be different than the time it takes the Earth to move relative to a fixed point within the Frame. In this case it is equal to the Earth's 360-degree orbit period within the frame (a.k.a. relative to the Sun), plus the amount of movement of the solar system relative to the fixed star: about 50 arc seconds annually.

This is why model #3 shows a larger Earth orbit circumference. It is also a good lesson that sidereal data alone cannot reveal the true motion of the Earth. And it is proof that the Earth's annual change in orientation to inertial space, now attributed strictly to lunisolar precession, is actually caused by precession of the entire solar system relative to inertial space.