The Tychos – Our Geoaxial Binary System

26 November 2019, 12:11 am[1]

Sidereal day *vs.* solar day in the Tychos model

One of the most basic issues debated by astronomers since the dawn of recorded history is the observed difference between a sidereal day and a solar day. A sidereal day is completed when Earth, having spun around its axis approximately once, lines up again with a given star:

> *"A sidereal day is approximately 23 hours, 56 minutes, 4.0905 SI seconds (24 hours - 4 minutes + 4 seconds = 86164.0905 s = 23.9344696 h."*[2]

A solar day, as Earth lines up again with the Sun, takes about 3.93 minutes longer on average. This period we all agree to call "24 hours".

> *"Conceptually, Mean solar time is based on a fictional Sun that is considered to move at a constant rate of 360° in 24 hours along the celestial meridian. One mean day is 24 hours in length, each hour consisting of 60 minutes, and each minute consisting of 60 seconds. Though the amount of daylight varies significantly throughout the year, the length of a mean solar day is kept constant, unlike that of an apparent solar day."*[3]

Note for now that a solar day is therefore just about 0.27379% longer than a sidereal day (24 hours *vs.* 23.9344696 hours).

Well, the other day it just dawned upon me (pun very much intended) that the difference between the two is very neatly accounted for by Earth's 1.6 km/h motion around its PVP orbit. Those who have read my book on the Tychos model will be familiar with the following two figures concerning Earth's motion:

Daily distance covered by Earth: 38.428 km
Yearly distance covered by Earth: 14,036 km (or more precisely: 14035.847 km)

And, in fact, 38.428 km is 0.27379% of 14,035.847 km. In other words, the difference between the sidereal and solar day is explained in the simplest imaginable manner: it is demonstrably caused by the daily motion of Earth (38.428 km) around its PVP orbit. Note also that the Sun (travelling at 107.226 km/h) covers 2,573,424 km in 24 hours, which amounts to 0.27379% of its orbital circumference of 939,943,910 km. Similarly, the number "1" (as in "one day") amounts to 0.27379% of 365.2425 (the average number of days in a solar year).

In Chapter 23[4] of my book on the Tychos model you may find the below graphic illustrating the difference between a sidereal day and a solar day:
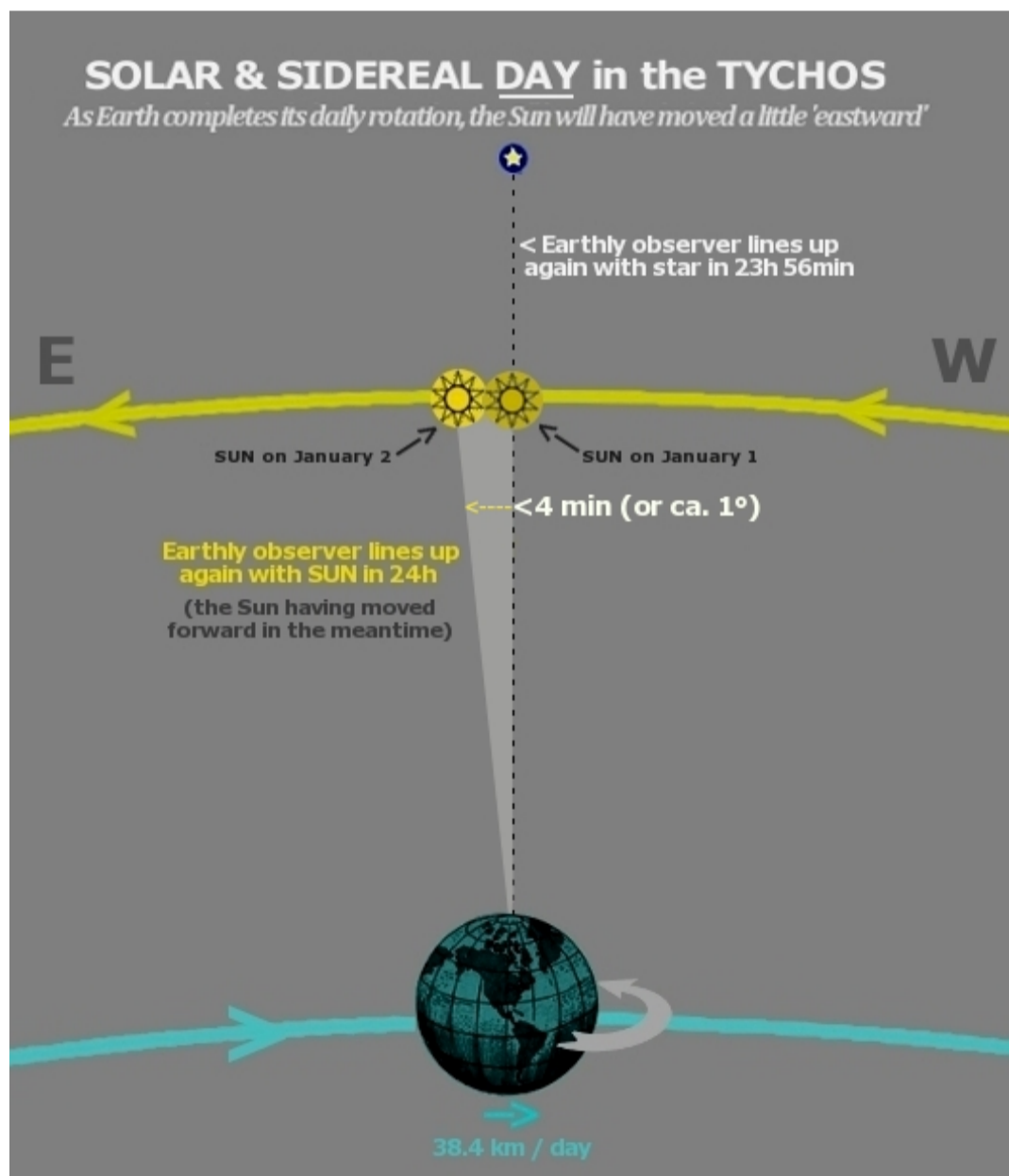
As I made the above graphic a couple of years ago, I had not yet realized all of this remarkably exact mathematical consistency of Earth's 1.6 km/h motion, as proposed by the Tychos model, with the observed difference between the sidereal day and the solar day. The Tychos model is truly "a gift that never stops giving!"

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[1] https://cluesforum.info/viewtopic.php?p=2413007#p2413007
[2] https://en.wikipedia.org/wiki/Sidereal_time
[3] https://www.universetoday.com/78107/solar-day/
[4] https://www.tychos.info/chapter-23/