

Re: Earth rotation

Source: <http://sci.tech-archive.net/Archive/sci.astro/2004-07/0250.html>

From: Oriel36 (geraldkelleher_at_hotmail.com)

Date: 07/03/04

Date: 3 Jul 2004 09:27:06 -0700

"OG" <owen@gwynnefamily.org.uk> wrote in message news:<2km321F43psfU1@uni-berlin.de>...

> "Oriel36" <geraldkelleher@hotmail.com> wrote in message

> news:273f8e06.0407020906.7545f132@posting.google.com...

>> "OG" <owen@gwynnefamily.org.uk> wrote in message

> news:<2keanyF1dqt2U1@uni-berlin.de>...

>>> "Oriel36" <geraldkelleher@hotmail.com> wrote in message

>>> news:273f8e06.0406260449.6c36d1cd@posting.google.com...

>>>>

>>>>

>>>> You are assuming that the Earth's equatorial orientation to the Sun

>>>> changes but as already stated, equatorial orientation is a property of

>>>> the Earth axial orientation as an independent motion which remains

>>>> constant throughout its annual orbit.

>>>

>>> Hang on a minute – the Earth's equatorial orientation *_to the Sun_ DOES*

>>> change

>>> throughout the year. The axial orientation remains the same, but since

> the

>>> equator is inclined to the ecliptic, the equatorial orientation to the

> Sun

>>> is bound to change. How strange that you don't see this.

>>>

>>

>> I understand that you did not think the whole thing through carefully

>> enough, not so much that I fault you for it is standard thinking for

>> the last 300 years but I assure you that Equatorial orientation as a

>> property of axial rotation is always tangential to axial orientation.

>

> I said "Equatorial orientation *_to the Sun_ does change*"

> you say "axial orientation is fixed"

>

> What makes you think that the statements are incompatible. I even emphasised

> the "*_to the Sun_*" sub clause. How did you miss it?

>

> Do you honestly think that the Sun always has the same orientation relative

> to the Earth's equatorial plane?

> I emphasise the sub-clause "*relative to the Earth's equatorial plane*"

>

> *Do you really think that the sun has the same orientation to the equator
> both Summer and Winter? Really?*

The Sun is just a reference for the two separate motions of the Earth – axial and orbital. Having two distinct motions will generate two separate effects.

Equatorial /axial orientation as a property of axial rotation is constant insofar as equatorial orientation is always 90 degrees off the Earth's axis.

<http://www.punaridge.org/doc/factoids/Navigation/navfig2.jpg>

What causes the change in the seasons is constant axial/equatorial orientation moving through the change is orbital orientation.

http://www.museum.vic.gov.au/scidiscovery/images/mn000779_w150.gif

The Earth really does have separate motions – constant axial rotation and variable orbital motion, the interplay between these two motions acting in tandem generate the unequal length of the day for each axial rotation wrt to the Sun and the variations in seasons.

If you wish to believe that equatorial orientation to the Sun changes and causes seasonal change then be my guest but I assure you it is a property of constant axial/equatorial orientation moving through variable orbital orientation.

The Sun remains a fixed reference for both axial and orbital motions and the effects they generate –

1 – For constant axial rotation moving through the longitudinal change in orbital orientation, this generates the necessity for the Equation of Time.

<http://www.mhhe.com/physsci/astronomy/fix/student/images/04f15.jpg>

2 – For constant axial/equatorial orientation moving through the latitudinal change in orbital orientation, this generates the seasonal change.

I understand the difficulties of getting your head around treating the Earth's motions separately, treating independent axial motion/orientation as one thing and independent orbital motion/orientation as another, indeed most websites give into the temptation of indicating axial tilt to the Sun rather than the accurate description of axial tilt to the change in orbital orientation.

<http://www.mhhe.com/physsci/astronomy/fix/student/images/04f15.jpg>

sci.astro: Re: Earth rotation

The astronomers in the 17th century, in their eagerness to reduce celestial motion to axial longitude coordinates basically wiped out all reference to orbital motion. The so-called analemma is just another feature of the celestial sphere or the astronomical step backwards to an odd mixture of geocentrism and heliocentrism where it is perceived that the Earth is rotating constantly to what they would have known as the 'fixed stars'.

<http://chemphys.phys.boun.edu.tr/~semiz/universe/near/02ext/star-trails-ex.jpg>