November 24, 2017

Dear Doug,

I have completed all the calculations from my Analemma I plotted over a year, starting 11/12/2016 and finishing 11/12/2017. By clicking all the links on my Analemma WebPage, you can see all my data, calculations and plots I generated from my own Analemma data.

I came remarkably close to the actual values for the tilt of the Earths' Axis (I calculated 23.65^{o} - actual 23.44^{o}), my observing latitude from my backyard (I calculated 39.995^{o} – actual 39.931^{o}) and the eccentricity of the Earths' Orbit (I calculated 0.0170 – actual 0.0167). My Equation of Time plot looks good also.

Something happened to my viewer setup about Day 244, September 1, 2017. This is seen by the fact that on November 12, 2017, my Analemma plot does not line up with last year's first point on the plot. By looking at the EoT – No Tilt – Elliptical Orbit plot of Activity 4, you can see that my points starting November 12, 2016 are closely aligned with the theoretical values, but starting about Day 244, the points are drifting too high.

I leveled my viewer about every 2 months but did not recheck the North South orientation on Day 244 again. I had to relevel my viewer often, due to ground movement and suspect that it twisted sometime in August, 2017. So when I put the feet of my viewer on the marks on the cement blocks, it was not orientated correctly anymore.

Otherwise, I think my I did a very good job this time with my Analemma plotting, adding a Sun location 21 seconds after local noon for every observation I made. I made all the observations from my backyard, as seen by the pictures of my setup on the WebPage.

If you find all my data and plots in order, please have my name read Michael A. Hotka on my certificate. I am a member of the Longmont Astronomical Society.

Please send my certificate and award pin to:
Mike Hotka
1425 Snowberry Lane
Broomfield, CO 80020

It has been a rewarding experience plotting the Sun over 2 years. I see now why one observing location is preferred over my first attempt where I used 4 or 5 different locations. Also, the alignment of my current observing viewer with celestial North really helped in reducing the data. I am pleased with my calculated answers from my Analemma data.

Mike Hotka