



PISGAH  
ASTRONOMICAL  
RESEARCH INSTITUTE

## Astro Advisory

*Notice of an upcoming  
astronomical event.*

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### EARTH AT FARTHEST POINT FROM THE SUN

**Rosman, NC (June 20, 2017)** – Astronomers at the Pisgah Astronomical Research Institute announce that at 4 p.m. EDT on Tuesday, July 3, the Earth, in its annual orbit around the sun will be at its farthest point from the Sun. Astronomers call this point *aphelion*.

The average distance of the earth from the sun is about 92,918,000 miles. However, the earth's orbital path around our central star is not a perfect circle but rather slightly *elliptical* in shape. Because of this the earth is slightly closer to the sun in January, at *perihelion*, and a bit farther away in July, at *aphelion*. At 4 p.m. on the 4th the earth will be 94,505,901 miles from the sun or about 1½ million miles farther than average.

Some people find this a bit confusing: The earth is farther from the sun in the summer and closer in the winter? Shouldn't it be the other way around? No! Realize that the seasons have nothing to do with the distance of the earth from the sun. The seasons are caused by the 23.5 degree tilt of the earth's axis of rotation. In the spring and summer we in the Northern Hemisphere are tilted towards the sun while in the fall and winter we lean away from it. The small difference in our distance from the sun has a very insignificant effect on our seasons and weather.

One effect that does result from our distance from the sun is the speed of the earth in its orbit. Near aphelion, when the earth is farthest from the sun, it slows down a bit. Vice versa, the earth speeds up near perihelion. The effect of this is to produce a difference between the actual position of the sun in the sky and where it would be if the earth's orbit were a perfect circle and it had a constant speed around the sun. We call this difference the *equation of time* and it manifests itself in the corrections we have to apply to readings of the shadow on a sundial. It also shows up in the *analemma*, that funny looking distorted figure-8 we see on some earth globes.

#### About PARI

PARI is a public not-for-profit public foundation established in 1998. Located in the Pisgah National Forest southwest of Asheville, NC, PARI offers STEM educational programs at all levels, from K-12 through post-graduate research. For more information about PARI and its programs, visit [www.pari.edu](http://www.pari.edu).

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