

## July 2022 Sky Events

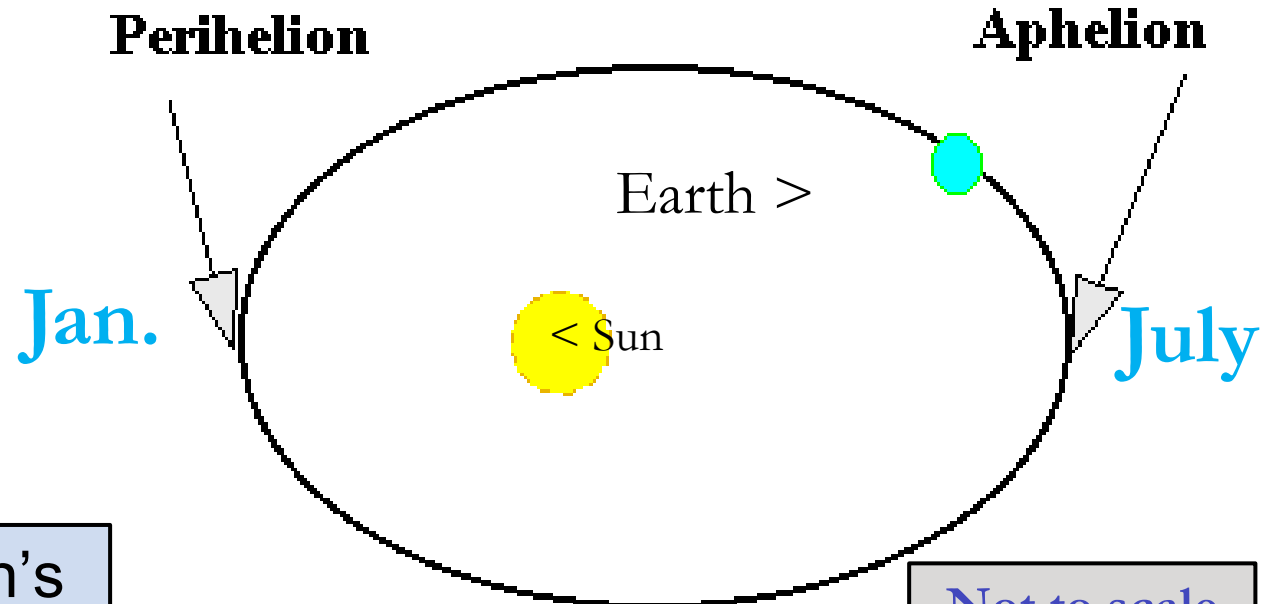
### Monday, July 4<sup>th</sup> - Earth Reaches Aphelion

Earth reaches “aphelion” – the farthest position from the Sun in its annual elliptical orbit. Six months later in January, Earth reaches its closest approach to the Sun – “perihelion”.

Distances in miles:

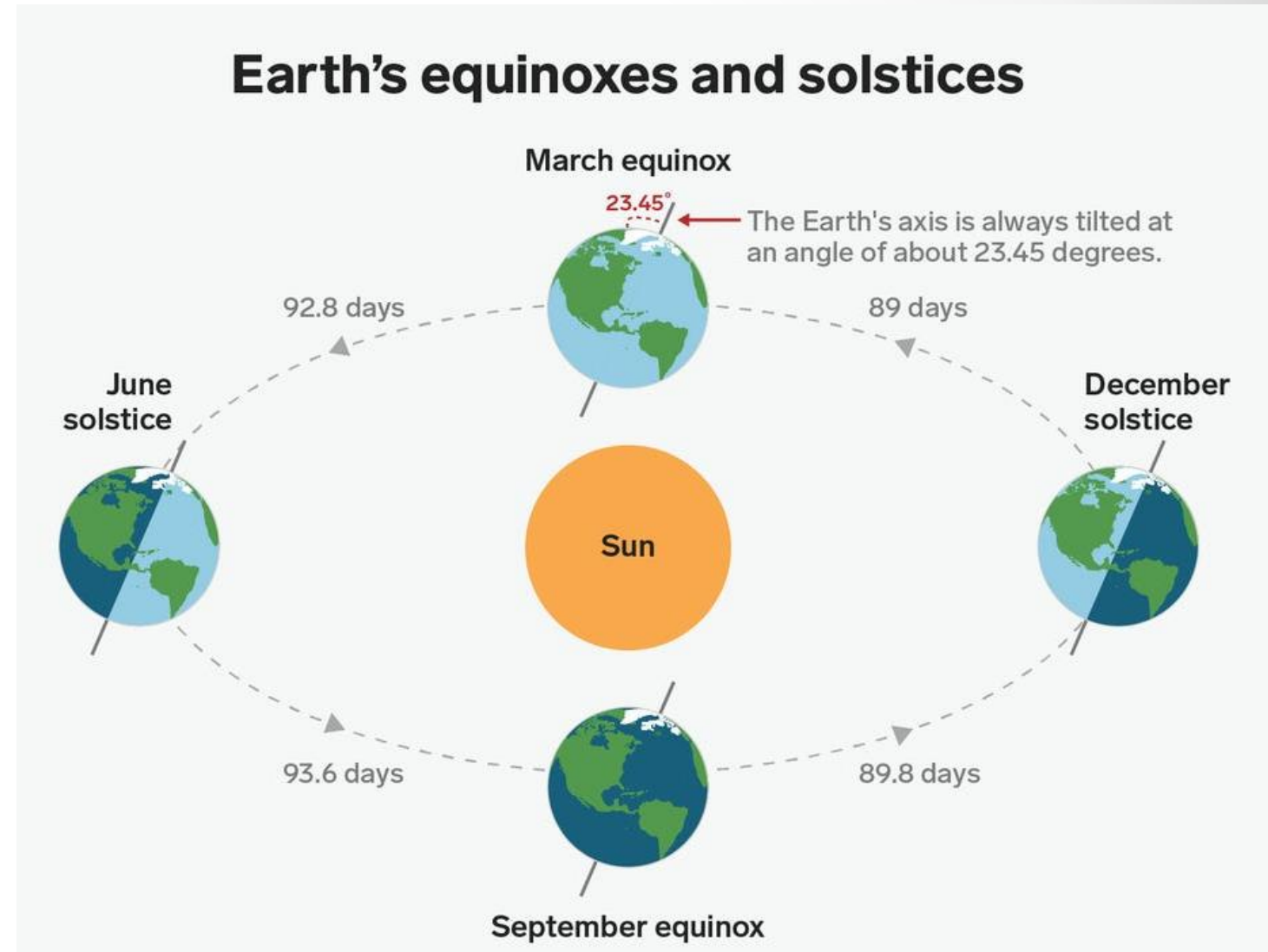
Aphelion  $\approx$  94.5 million  
Perihelion  $\approx$  91.5 million  
Average  $\approx$  93 million or  
1 astronomical unit (AU)  
~ the Earth-Sun distance

There is a 3.3% change in the Sun’s distance from aphelion to perihelion.



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Annual changes in our weather, for example between the summer and winter, are caused entirely by the tilt of the Earth's axis of rotation, rather than by any change in its distance from the Sun.

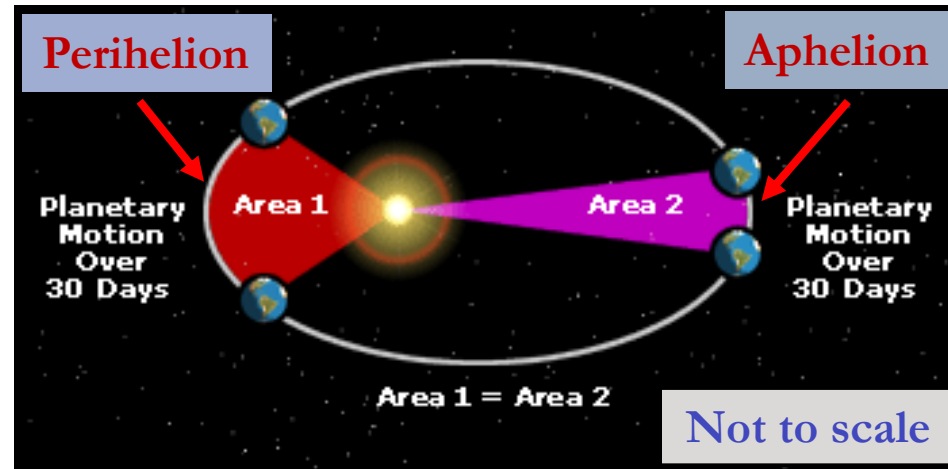


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### Monday, July 4<sup>th</sup> - Earth Reaches Aphelion

On July 4<sup>th</sup> (at aphelion) this year, you may notice that you are orbiting around the Sun on planet Earth slower than usual! Here's why:

Johannes Kepler's (year 1609) 2<sup>nd</sup> Law of Planetary Motion states that an imaginary line joining a planet and the Sun sweeps out an equal area of space in equal intervals of time.



As determined by Kepler's 2<sup>nd</sup> Law of Planetary Motion, the speed of a planet along its elliptical orbit is fastest when it is closest to the Sun (for Earth at perihelion in January) and slowest when it is farthest from the Sun (for Earth at aphelion in July).