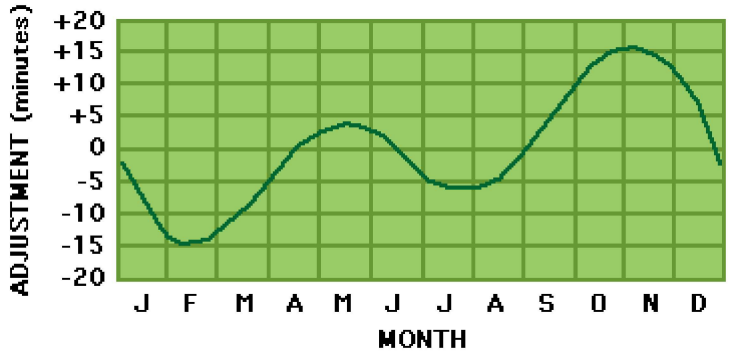
The equation of time (EOT) is a formula used in the process of converting between solar time and clock time to compensate for the earth's elliptical orbit around the sun and its axial tilt. Essentially, the earth does not move perfectly smoothly in a perfectly circular orbit, so the EOT adjusts for that. Graphically, it appears as:



For example, the EOT adjustment in mid-February is about -14 minutes. So when converting clock time to local solar time, you'd subtract 14 minutes. When converting from local solar time to clock time, you'd add 14 minutes.

The EOT can be approximated by the following formula:

$$E = 9.87 * \sin(2B) - 7.53 * \cos(B) - 1.5 * \sin(B)$$

Where:

$$B = 360 * (N - 81) / 365$$

Where:

N = day number, January 1 = day 1

Note: The SunAngle program currently uses a more sophisticated algorithm for EOT calculations, but the above formula is a decent approximation and much simpler. Note also that the EOT output is in hours, so please multiply by 60 if you'd like to obtain results in minutes.