

Daytime observations only, no telescope needed!

Analemma Observing Program

An educational, hands on program



Just about everyone knows that the sun's altitude at culmination, the highest point above the observer's horizon, varies throughout the year – higher in early summer, and lower in early winter. However, outside of navigators, cartographers, and astronomers, it is not commonly realized that the sun's apparent angular velocity also varies – sometimes "fast" (west of the meridian at local noon), and sometimes "slow" (east of the meridian at local noon).

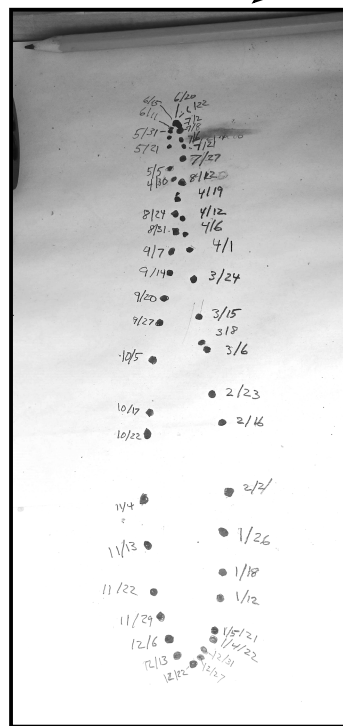
Participants in the Analemma Observing Program will monitor the sun's motion throughout the year, and note its changes in position, both in altitude and azimuth. With reference only to their analemma and observing apparatus, they will then:

- Calculate their observing latitude and the tilt of Earth's axis,
- Sketch or plot the path of the sun on the celestial sphere,
- Calculate the Equation of Time,
- Calculate the eccentricity of Earth's orbit.

DO NOT ATTEMPT DIRECT OBSERVATIONS OF THE SUN! Due to hazards associated with direct observation of the Sun, only indirect observations will be accepted. Looking at the sun can cause permanent eye damage! The safe way – build an observation box. (Construction details are on the website.)

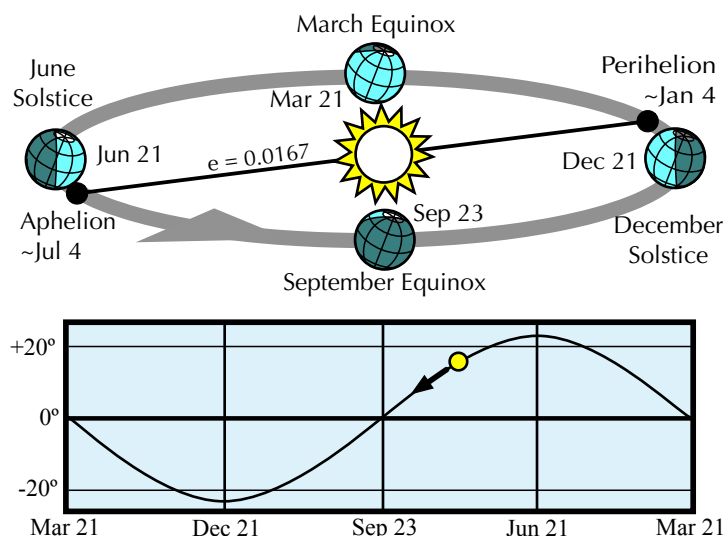


Specify your observing apparatus: If using a transmitted light ray or shadow for your observations, a box containing a sheet of paper can be constructed. The points of the analemma are to be marked during the year, with the points of Solstices, Equinoxes, and aphelion and perihelion identified on the analemma.



Data reduction and calculations

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For complete details, <https://www.astroleague.org/analemma-observing-program/>