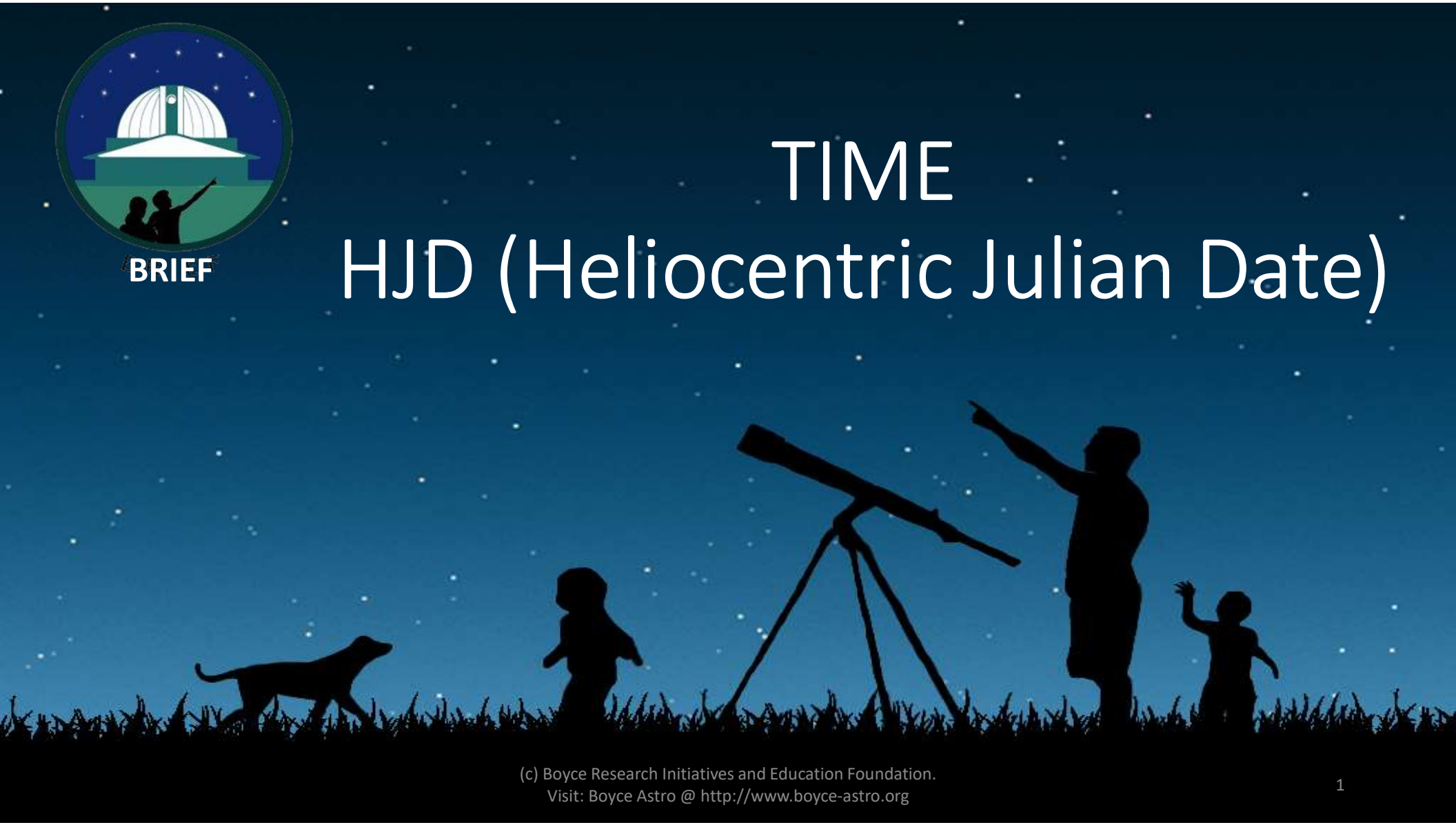
BRIEF

TIME
HJD (Heliocentric Julian Date)



Overview

In our continuing discussion on “What time is it?” we introduce HJD.

Heliocentric Julian Date (HJD) is the Julian Date corrected for the differences in the Earth’s position relative to the center of the Sun.

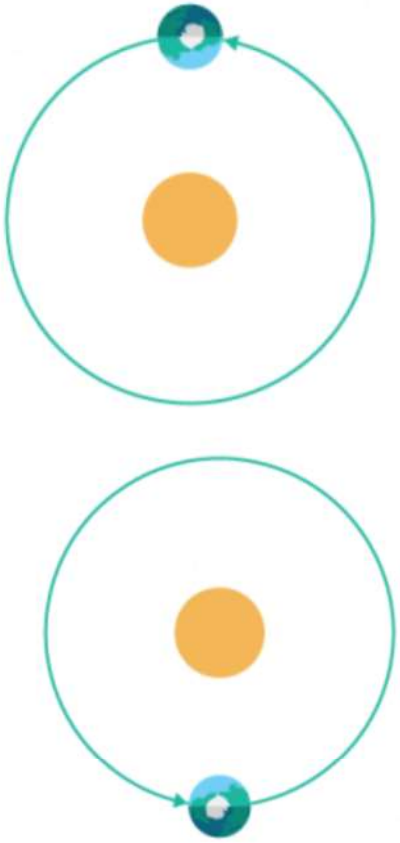
This accounts for the effects of the speed of light given that the Earth’s Position varies through out the year.

Heliocentric Julian Date (HJD)

Heliocentric Julian Date (HJD) is the Julian Date (JD) corrected for differences in the Earth's position with respect to the Sun, and uses the RA and Dec of the target object in its determination.

When timing events (Ex. Photometry, exoplanets, pulsars, etc) that occur beyond the Solar System, due to the finite speed of light, the time the event is observed depends on the changing position of the observer in the Solar System.

Before multiple observations can be combined, they must be reduced to a common, fixed, reference location. This correction also depends on the direction to the object or event being timed.

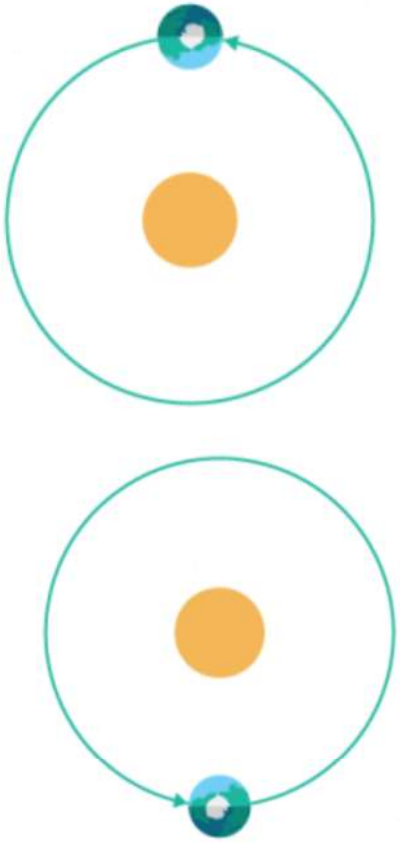


Heliocentric Julian Date (HJD)

The maximum correction corresponds to the time in which light travels the distance from the Sun to the Earth, i.e. ±8.3 min (500 s, 0.0058 days).

However, since the Sun itself orbits around the barycenter of the Solar System, the HJD correction is not actually to a fixed reference.

The difference between correction to the heliocenter and to the barycenter is up to ±4 s.



Heliocentric Julian Date - HJD

Summary

Heliocentric JD is time measured at the center of the Sun.

Remember, while this seems like the center of the Solar System, and thus would be good place to standardize time, the center is not always at the center of the Solar System.

For this standard, we have BJD.

Questions?