

# Eclipses and Shadows

Eclipses are powerful because they are predictable. A model that explains eclipses only after they happen is weaker than a model that predicts their timing, path and geometry in advance.

## Lunar Eclipses

During a lunar eclipse, Earth passes between the Sun and Moon. Earth's shadow crosses the Moon, and that shadow is consistently round. A sphere casts a round shadow from every direction.

## Solar Eclipses

During a solar eclipse, the Moon's shadow falls on Earth. The path of totality is narrow because the Moon's umbral shadow touches only a small part of Earth's surface.

## Prediction Is the Point

Eclipses can be predicted years in advance using orbital geometry. This includes exact timing, where totality will be visible, how long it will last and what partial phases nearby locations will see.

## Common Flat-Earth Problem

Flat-earth explanations often invoke hidden bodies, projection effects or vague shadow objects. The problem is not merely explaining one eclipse; it is predicting all eclipses with the same geometry.

## Prediction Challenge: Next Eclipse

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Before an eclipse happens, write down what a model predicts: start time, maximum time, end time, path of visibility, direction of motion, and whether your location sees total, partial, or no eclipse. Then compare with reality.

## Why Round Shadows Matter

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A disk can cast a round shadow only from certain angles. A sphere casts a round shadow from every angle. Lunar eclipses consistently show Earth's round shadow on the Moon, which matches a spherical Earth.

## Solar vs Lunar Eclipses

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Solar eclipses are caused by the Moon's shadow falling on Earth. Lunar eclipses are caused by Earth's shadow falling on the Moon. A good model has to explain both with the same orbital geometry, not separate ad hoc stories.

## Common Claim: "There Must Be a Shadow Object"

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A hidden shadow object does not become a strong explanation unless it makes precise, repeated predictions. Where is it? Why does it line up with known orbital cycles? Why does it not appear in other observations?

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Revision #3

Created 2026-04-26 23:15:26 UTC by Daniel

Updated 2026-04-27 04:40:18 UTC by Daniel