

MISSION START // YEAR 4 SCIENCE

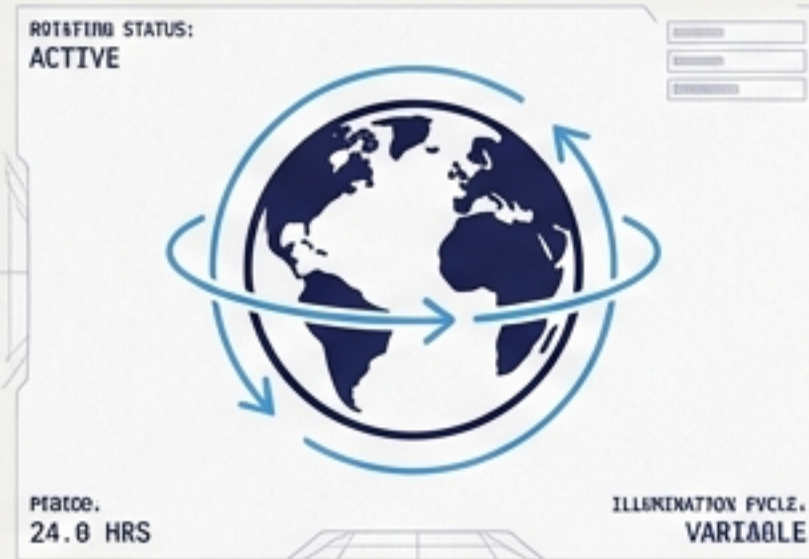
# EARTH AND BEYOND

A comprehensive mission briefing  
on our planet, our star, and the  
deep space neighborhood.



# Mission Flight Plan

## Sector 7.1



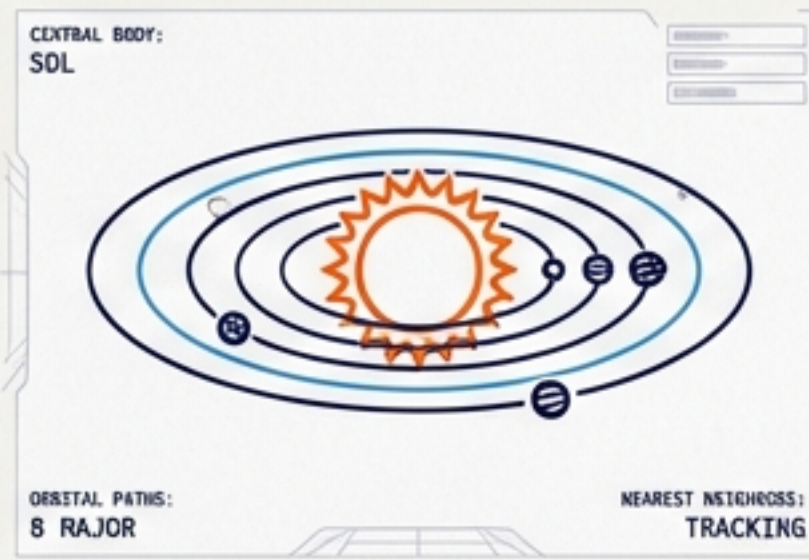
Inter  
Day and Night  
Mechanics

## Sector 7.2



Inter  
The Axis and  
The Spin

## Sector 7.3



Inter  
The Solar System  
Neighborhood

## Sector 7.4



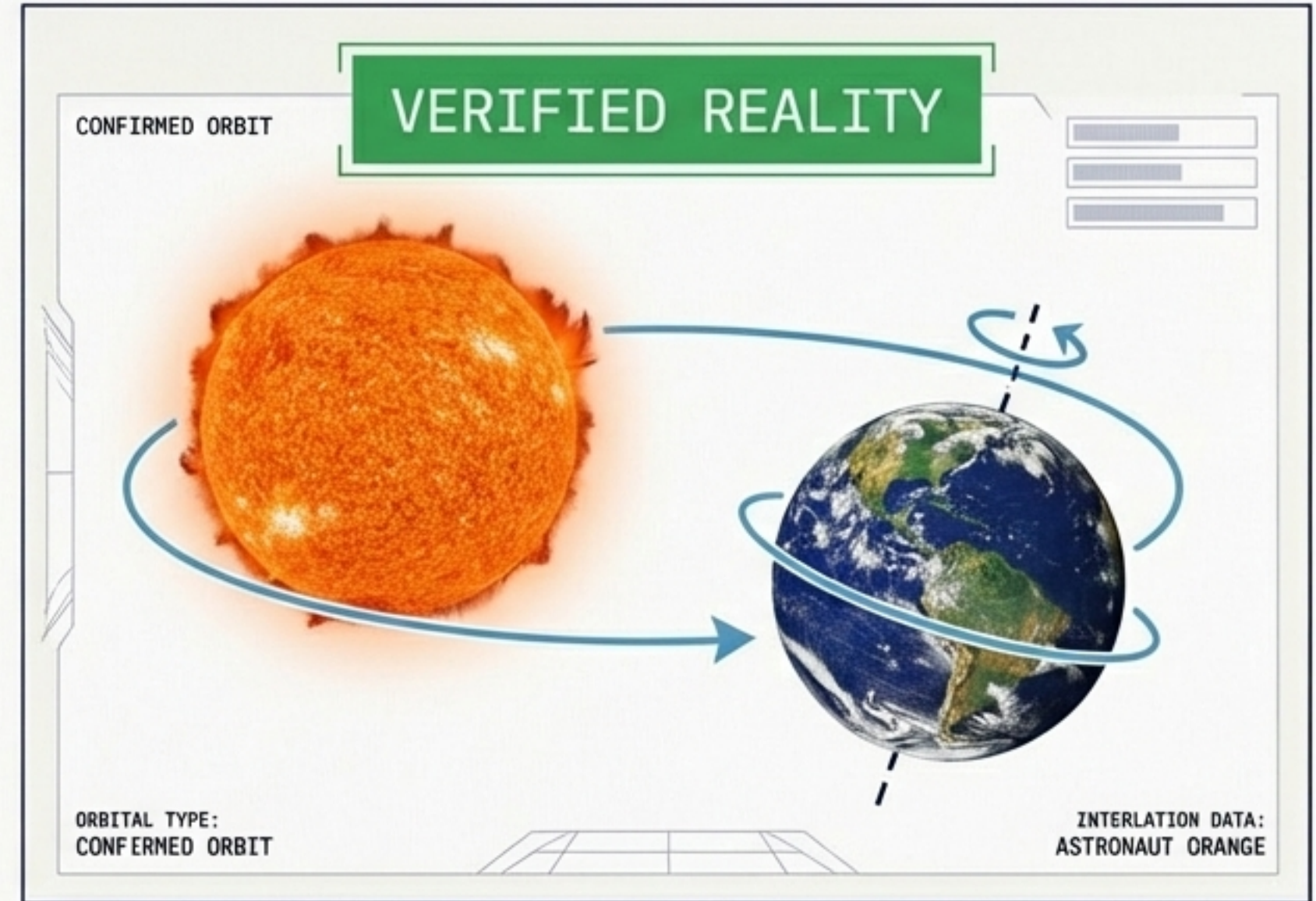
Inter  
Stars, Rocks,  
and Deep Space

# The Great Cosmic Illusion



Inter

For a long time, people thought the Sun moved around the Earth because it appears to travel across the sky from east to west every day.

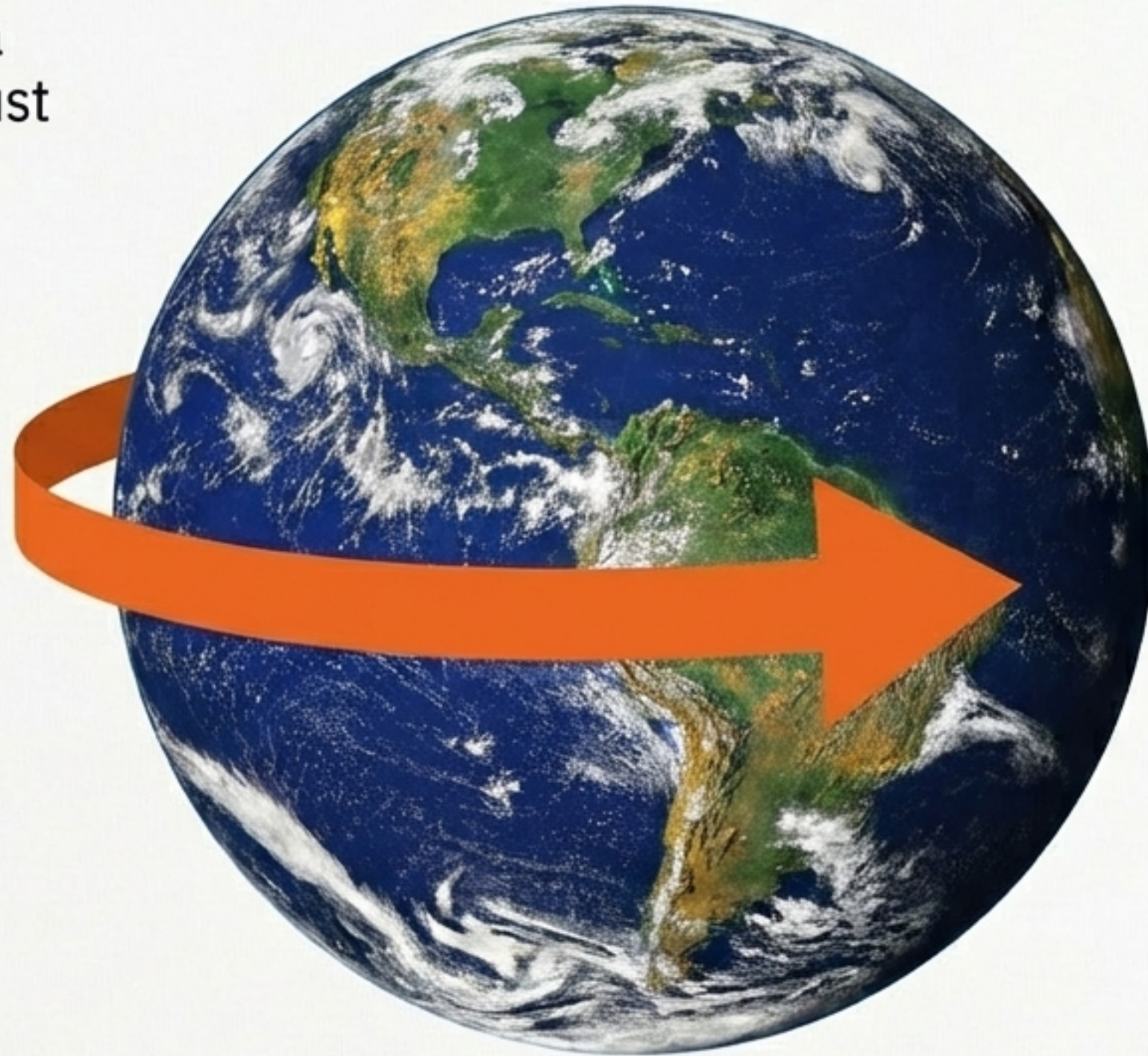


Inter

However, it is actually the Earth that moves!  
The Sun is standing still.

# The Earth's Shape & Spin

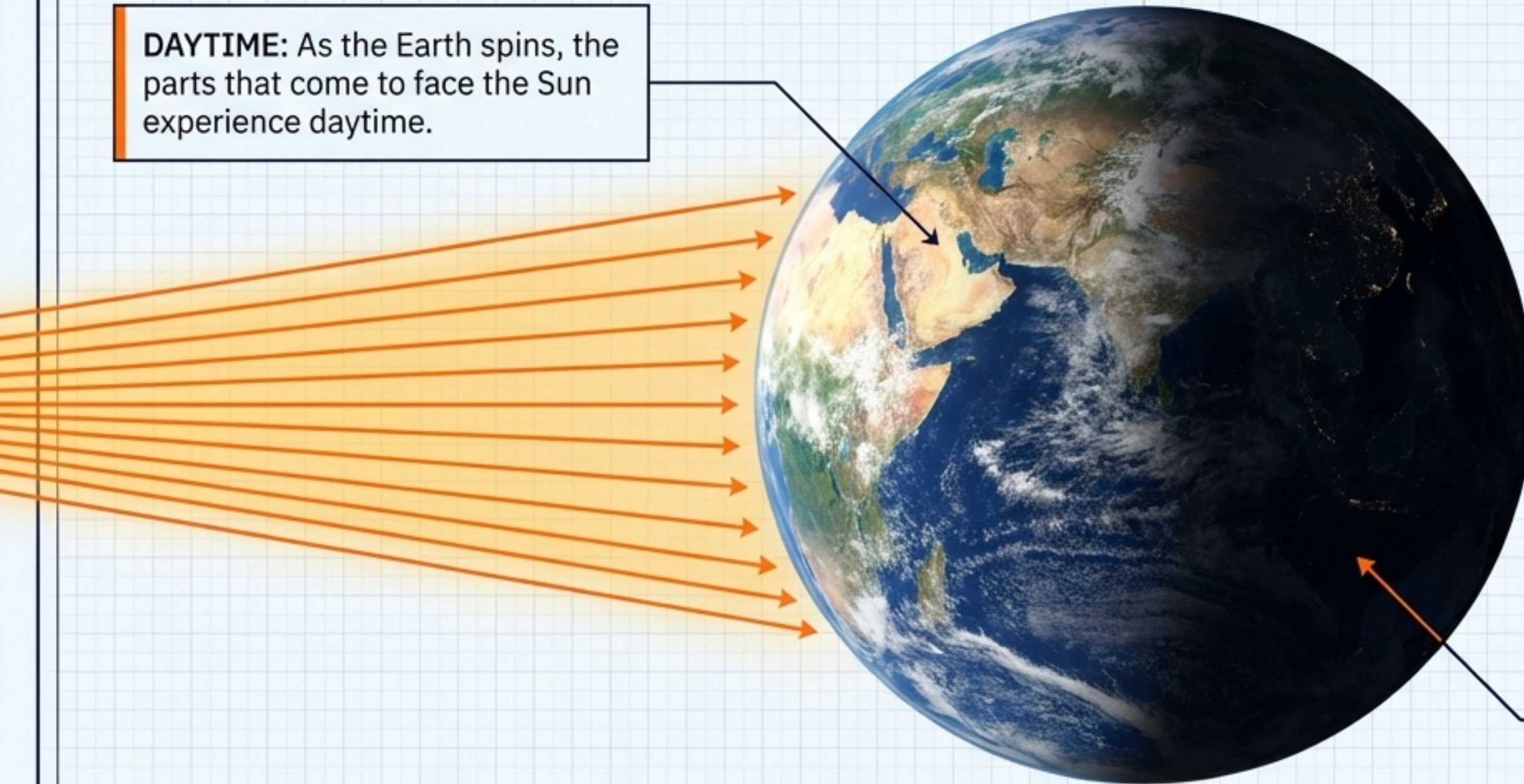
The Earth is shaped like a giant sphere. It doesn't just sit still in space—it is constantly moving.



**Directional Spin:**  
The Earth spins in an anti-clockwise direction (from west to east).

# Creating Day and Night

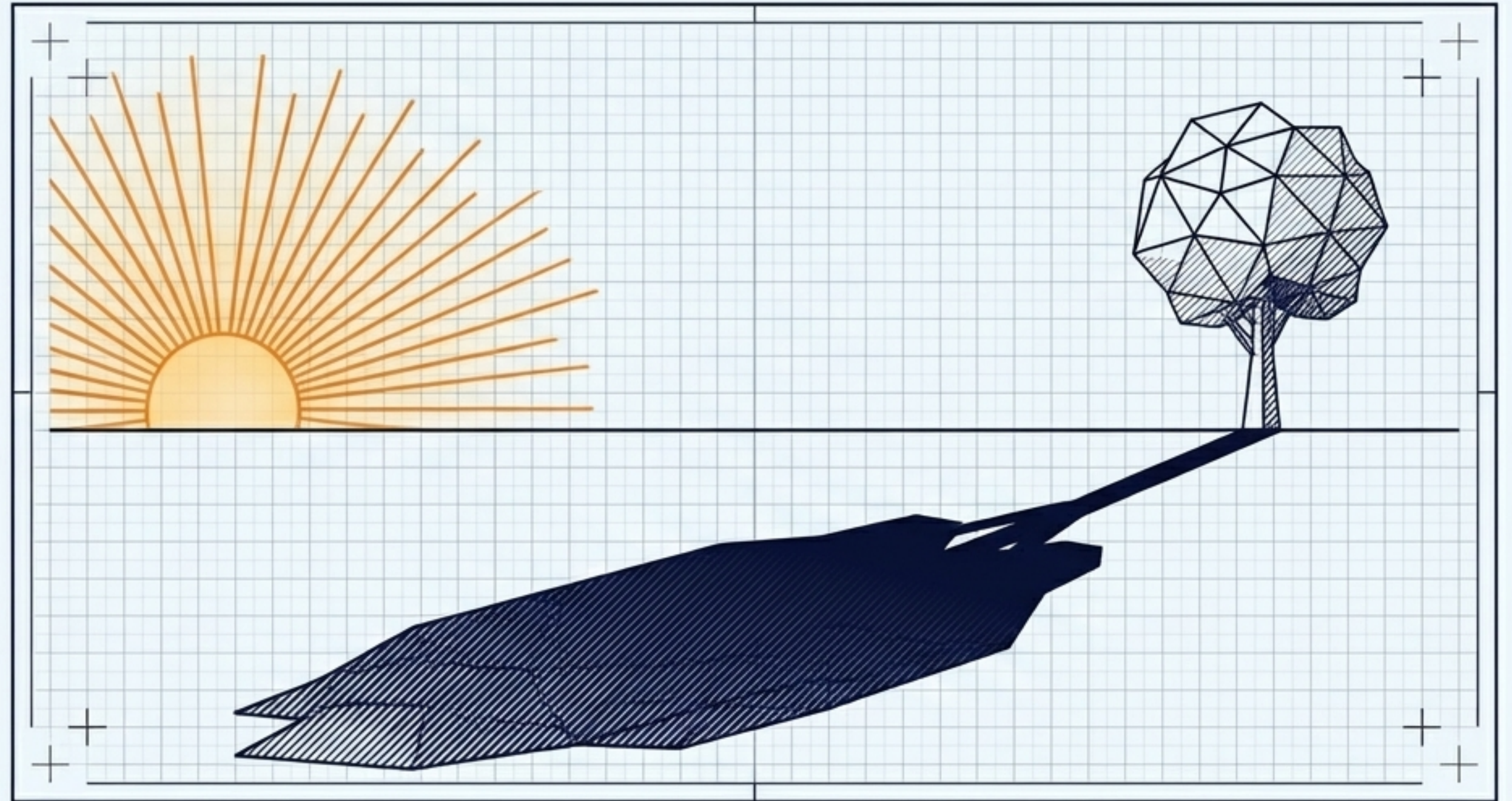
**DAYTIME:** As the Earth spins, the parts that come to face the Sun experience daytime.



**NIGHT-TIME:** At the same time, the countries on the opposite side of the Earth are facing away from the Sun, so they are in darkness and experience night-time.

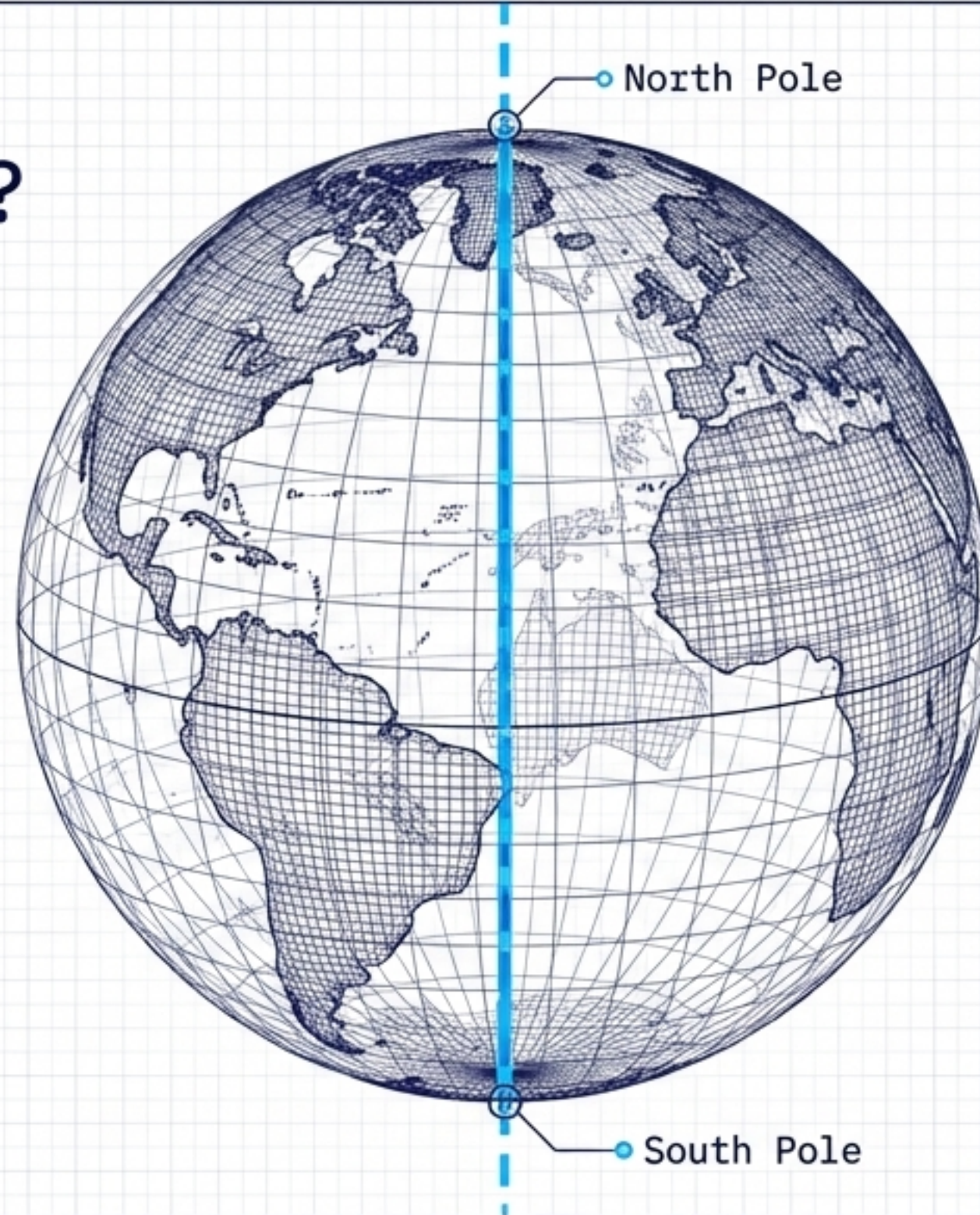
# Shadows on the Horizon

When the Sun seems to rise or sink below the horizon, the extreme angle of the light creates long shadows on the surface of the Earth.



## What is an Axis?

The Earth doesn't just spin randomly; it spins in a very specific way.



### The Axis:

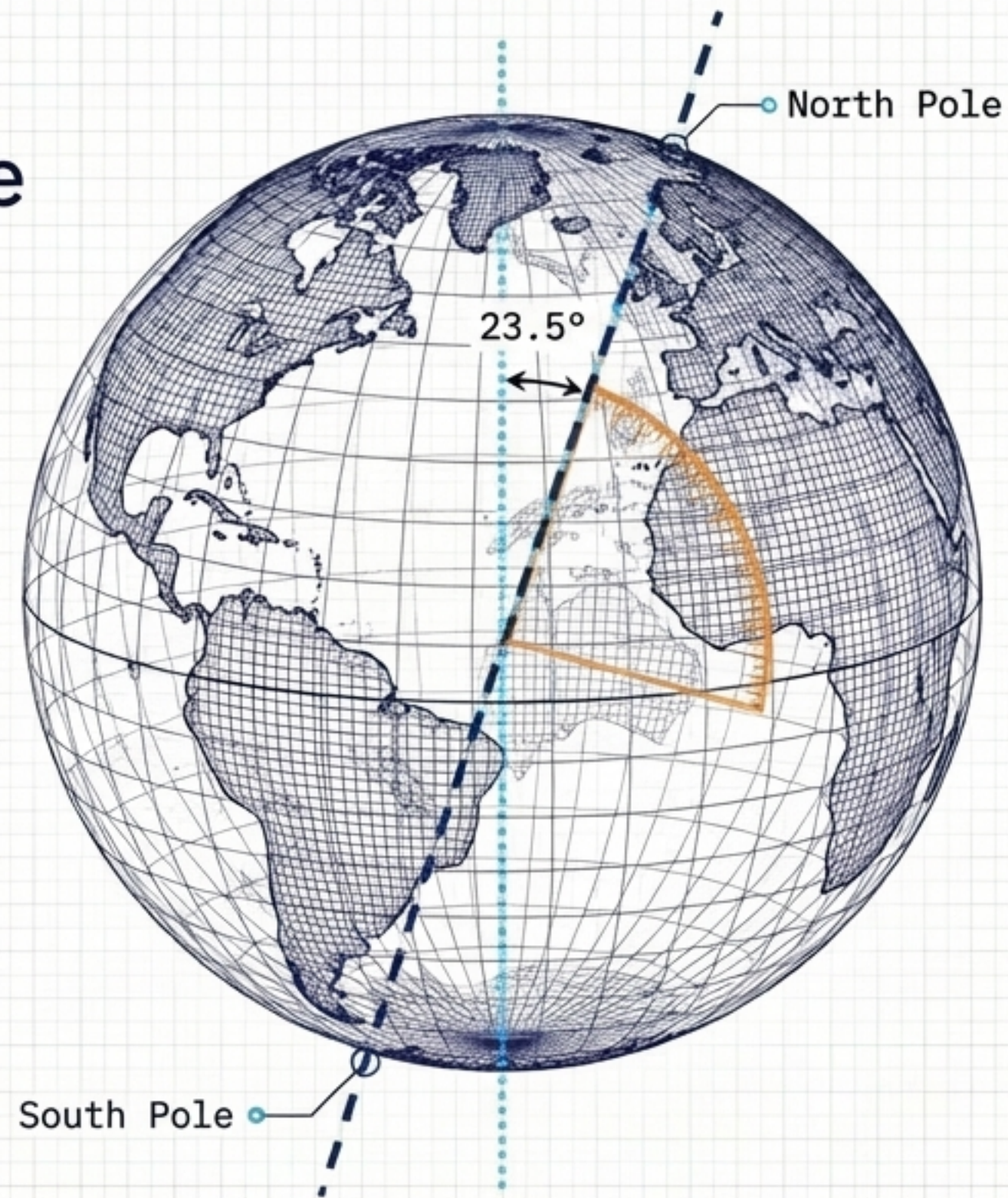
The Earth rotates on its axis, which is an imaginary line that runs straight through the centre of the Earth from the North Pole to the South Pole.

# The 24-Hour Cycle & The Tilt

## The Cycle



It takes the Earth exactly 24 hours (one day) to complete one full rotation on its axis.



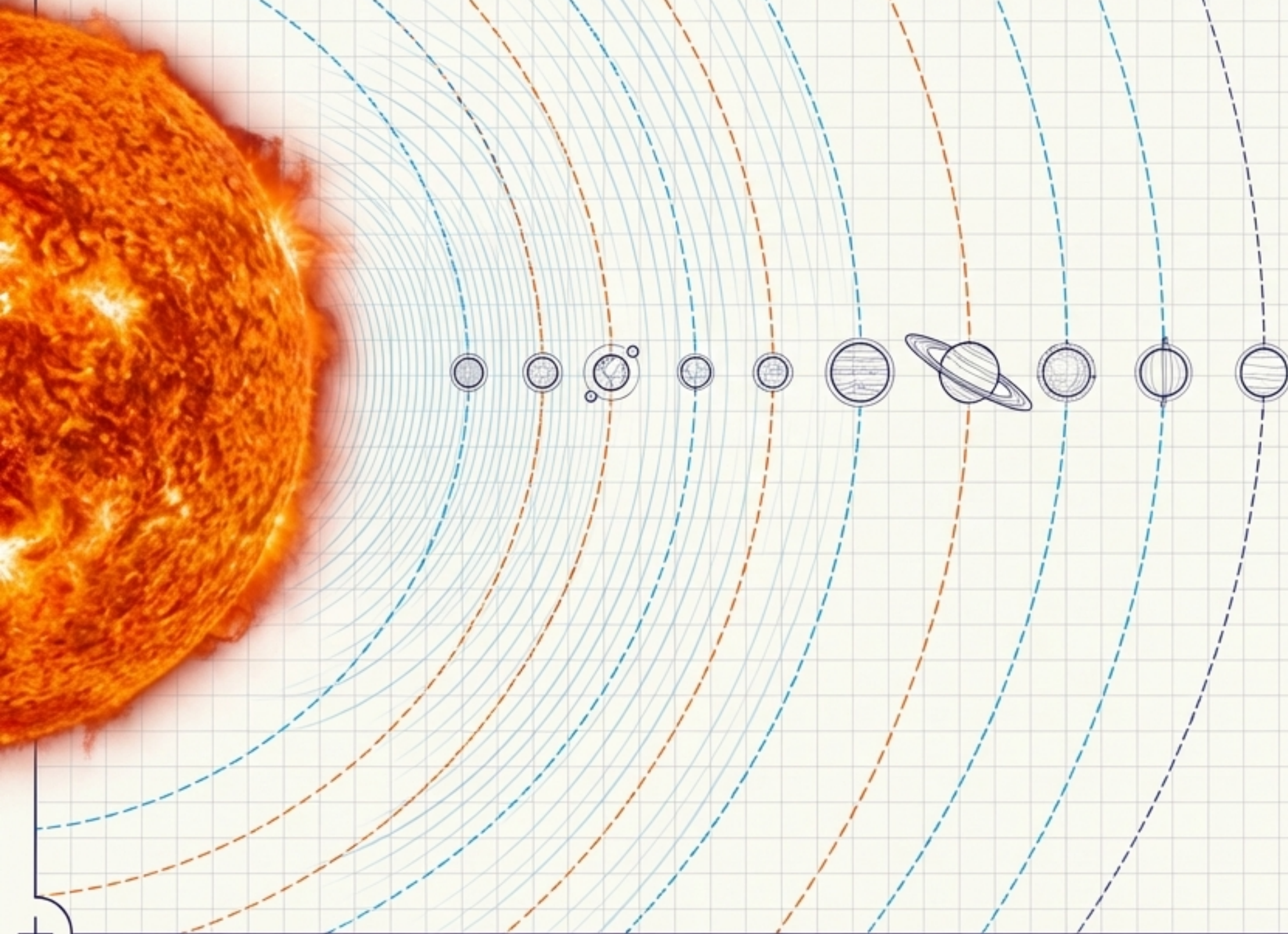
## The Tilt

The Earth's axis is not noemanars as perfectly straight straight up and down; it is permanently tilted at an angle of 23.5 degrees.

## SECTOR 7.3 // THE SOLAR SYSTEM

### The Center of Our Neighborhood

The Earth is just one part of a much larger neighborhood called the Solar System.



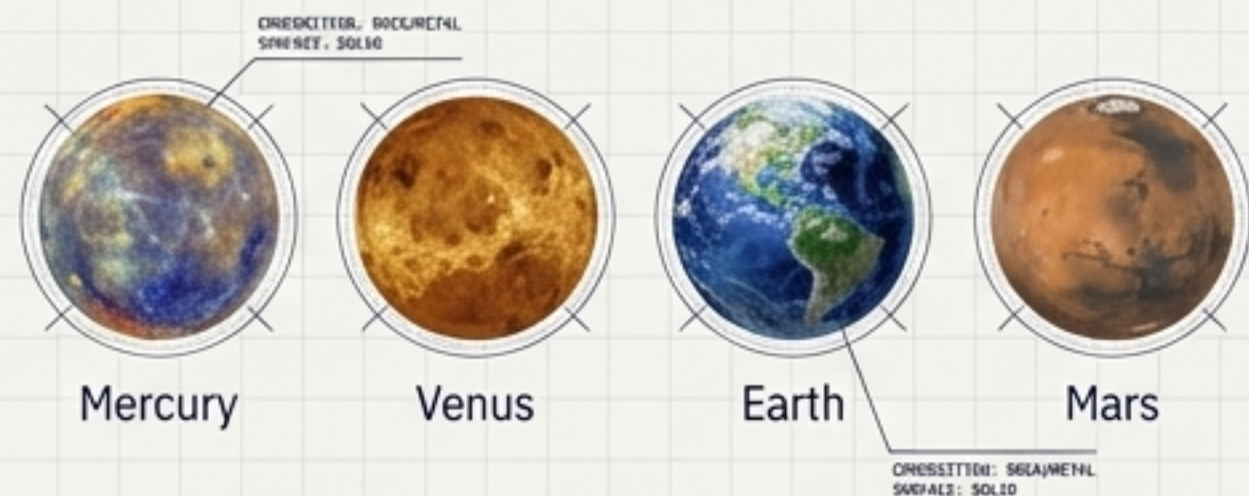
**1. The Sun:** It is at the centre of our Solar System. It is not a planet; it is a star—a huge, hot ball of glowing gas.

**2. Gravity:** The pulling force of the Sun's gravity keeps all the planets safely in their orbits (the path an object takes around something else).

# The 8 Planets

## Inner Planets

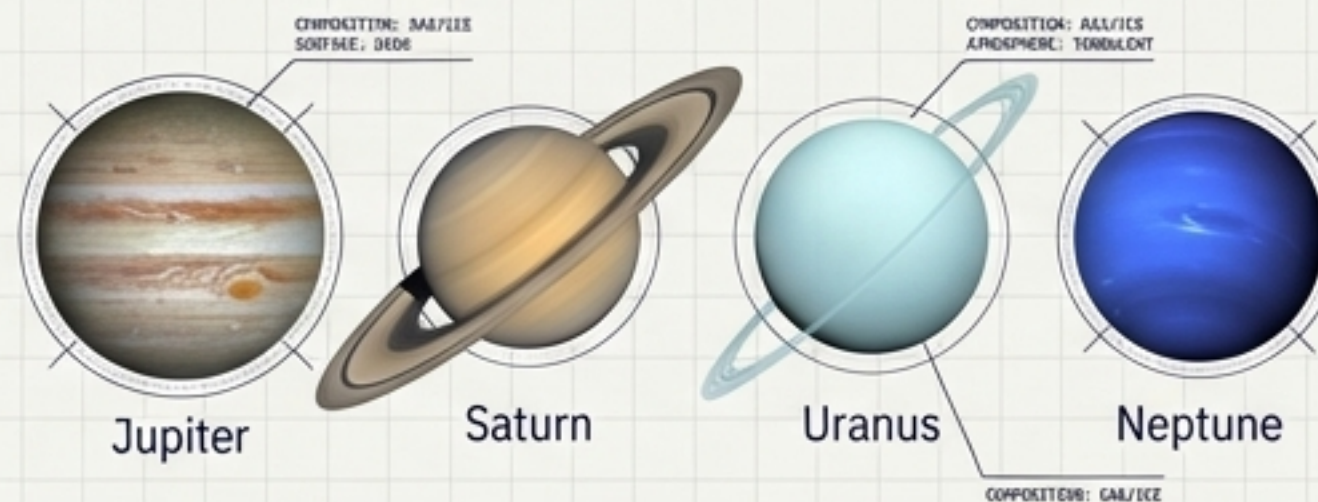
Closest to the Sun



Mercury, Venus, Earth, and Mars.

## Outer Planets

Furthest from the Sun



Jupiter, Saturn, Uranus, and Neptune.

# Why Earth is Special



## 1. The Distance:

Earth is at the perfect distance from the Sun to be warm enough for life.

## 2. The Surface:

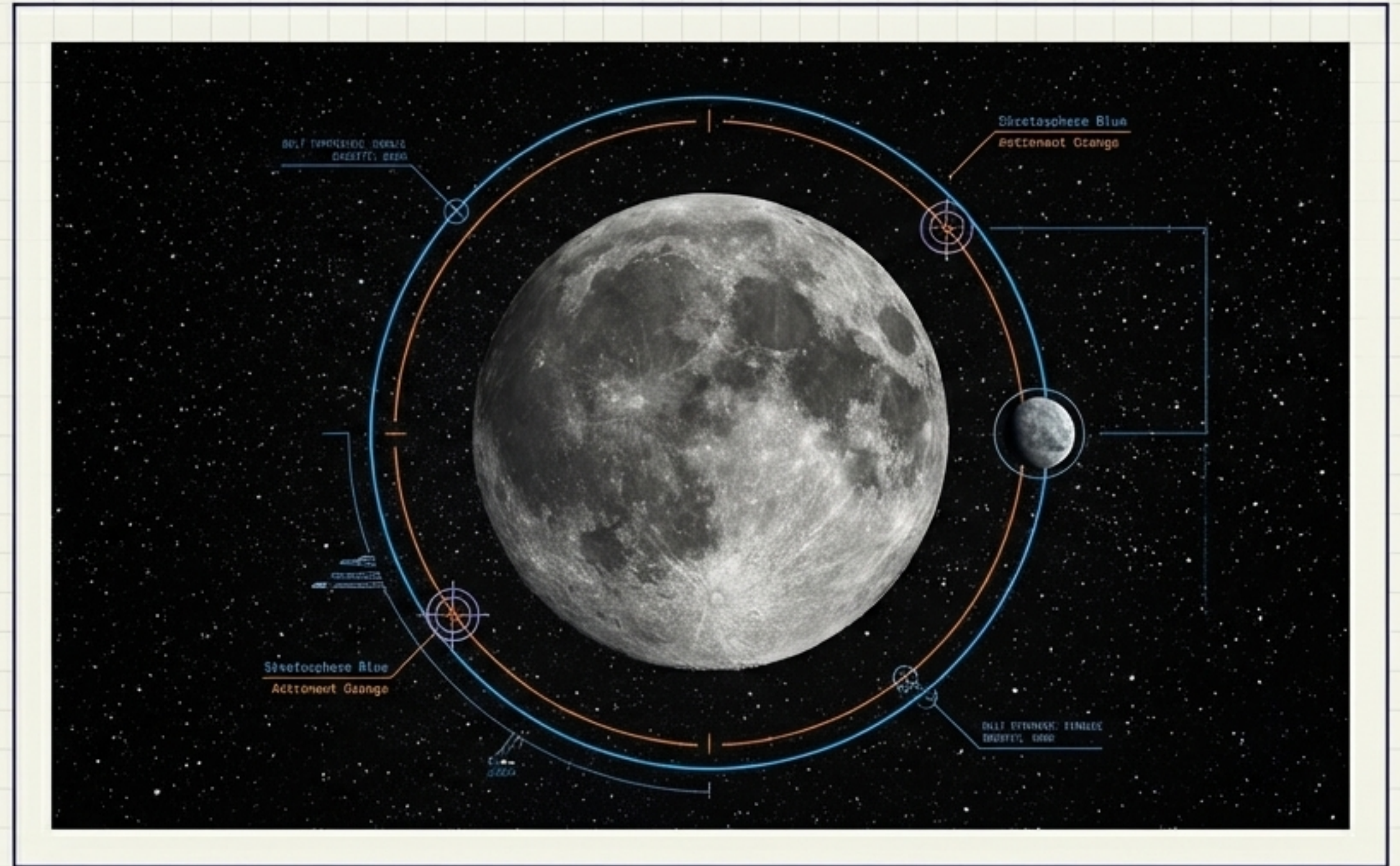
It has liquid water on its surface.

## 3. The Shield:

It has an atmosphere (a mixture of gases) that keeps the heat from escaping into space at night.

# Galaxies and Orbiting Moons

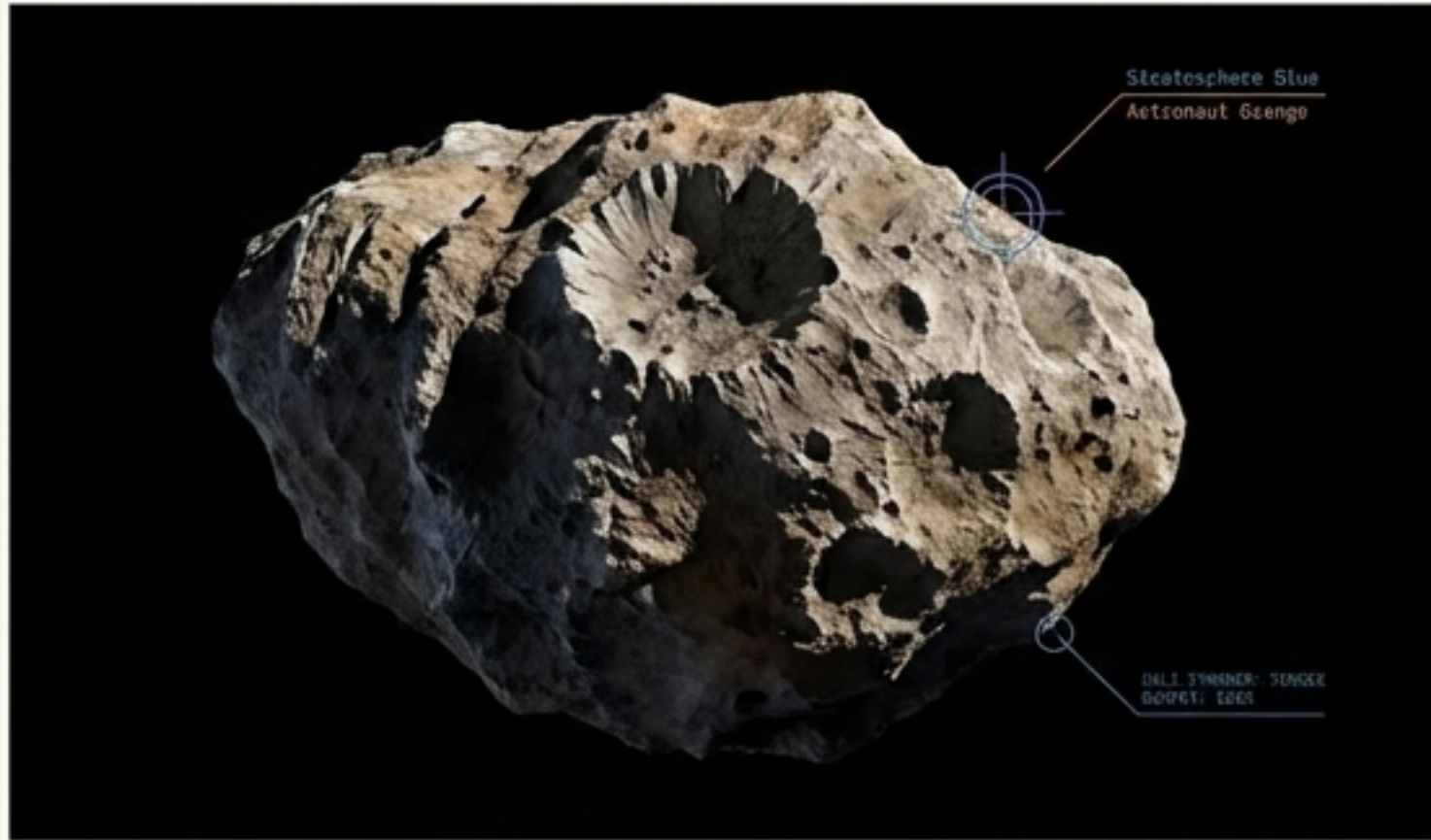
Our Solar System is located inside a massive galaxy called the Milky Way, which is just one of billions of galaxies in the Universe.



## Moons:

Natural objects that orbit around planets. Earth, Mars, Jupiter, Saturn, and Neptune all have orbiting moons.

# Asteroids vs. Comets



## Asteroids

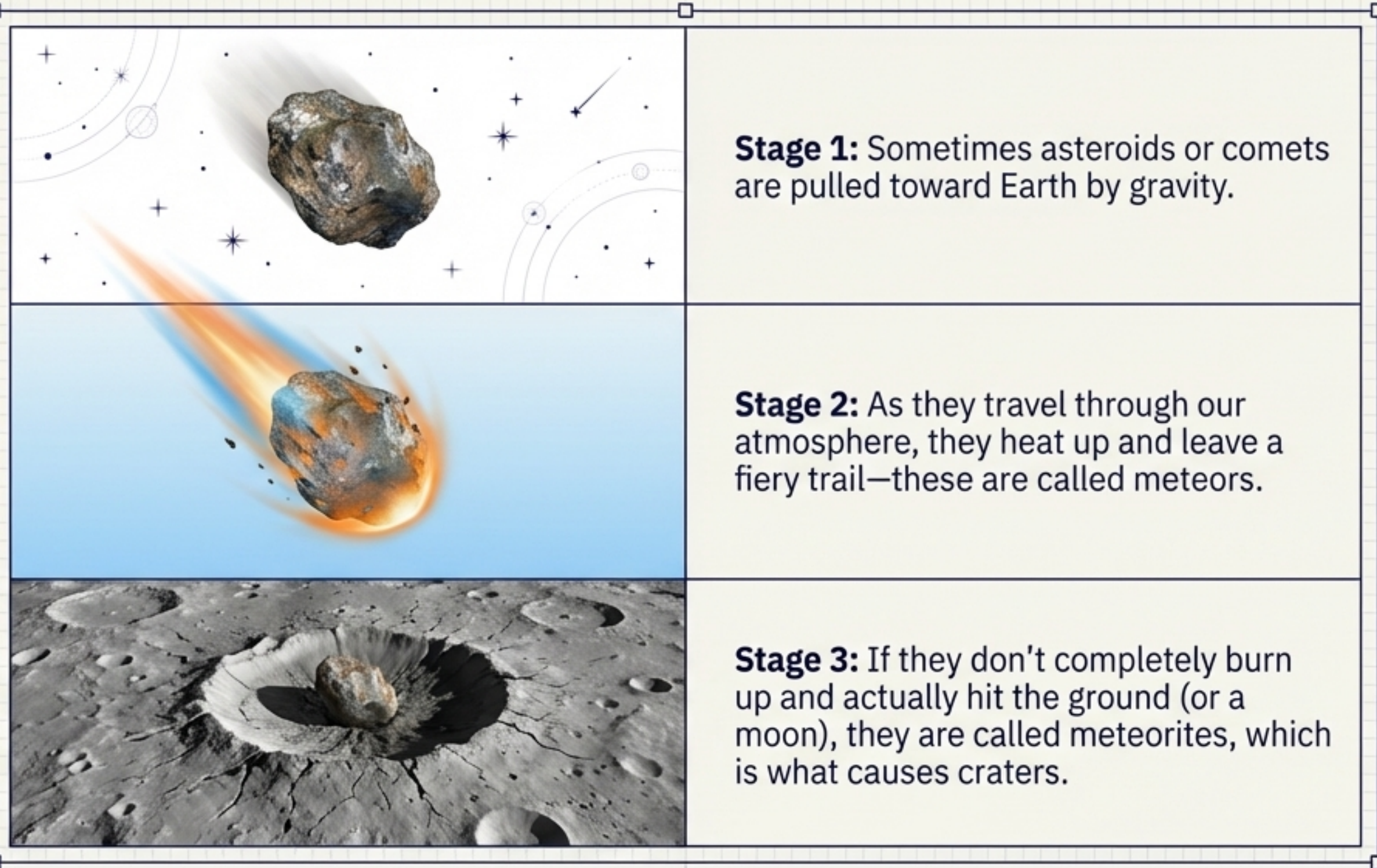
Uneven chunks of rock and metal. Most of them orbit the Sun in a special "belt" located between Mars and Jupiter.



## Comets

Chunks of ice and rock that orbit the Sun. When a comet gets close to the hot Sun, the ice melts and forms a beautiful tail of gases.

# The Journey of a Space Rock



**Stage 1:** Sometimes asteroids or comets are pulled toward Earth by gravity.

**Stage 2:** As they travel through our atmosphere, they heat up and leave a fiery trail—these are called meteors.

**Stage 3:** If they don't completely burn up and actually hit the ground (or a moon), they are called meteorites, which is what causes craters.

Descent paths  
Velocity  
1532 m/s/h

Descent paths  
Velocity  
15.0 506M/Ah/h  
Astronut Pasis

Stratosphere  
entry our  
atmosphere,  
they heats up

Atmosphere  
10.9821h  
Stratosphere Blue

MISSION DEBRIEF // DATA LOG

# Teacher's Quick Review Challenge!

Let's see what you've learned from today's space mission.

Does the Sun move around the Earth, or does the Earth move around the Sun?

[Decrypted]  
The Earth moves around the Sun!

How long does it take for the Earth to complete one rotation on its axis?

[Decrypted]  
24 hours, or one day!

What do we call the imaginary line running from the North Pole to the South Pole?

[Decrypted]  
The axis!

What happens to a comet when it gets close to the Sun?

[Decrypted]  
Its ice melts and forms a tail of gases!