

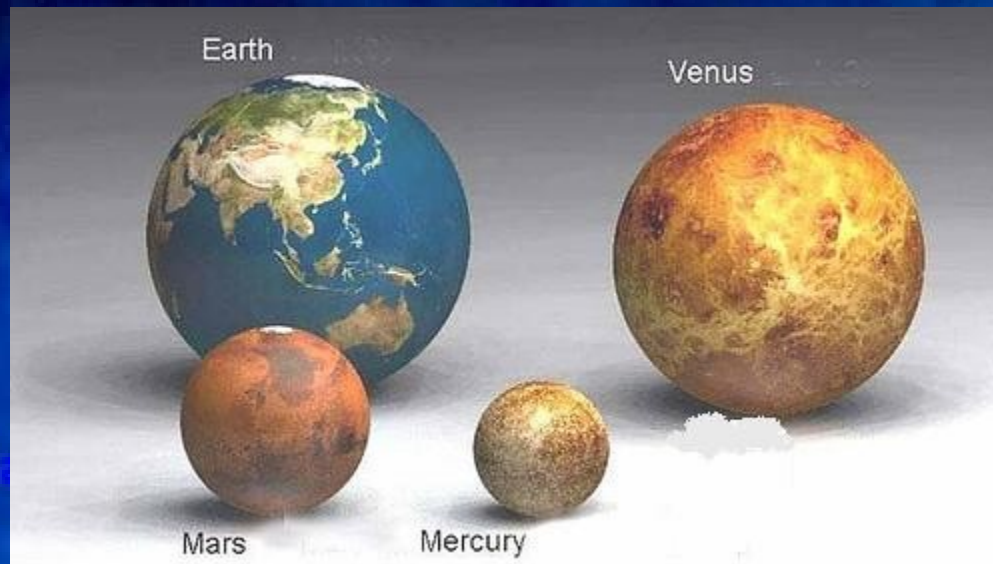
The Inner Planets

Mercury, Venus, Earth, and Mars



The Inner Planets

- The inner planets are the four that are the closest to the sun.
- They have shorter orbits than the Outer Planets.
- They are also called the terrestrial planets.



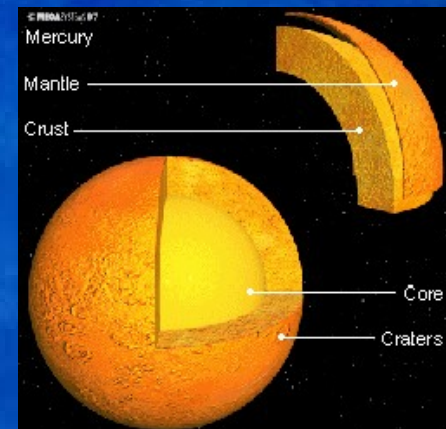
Mercury

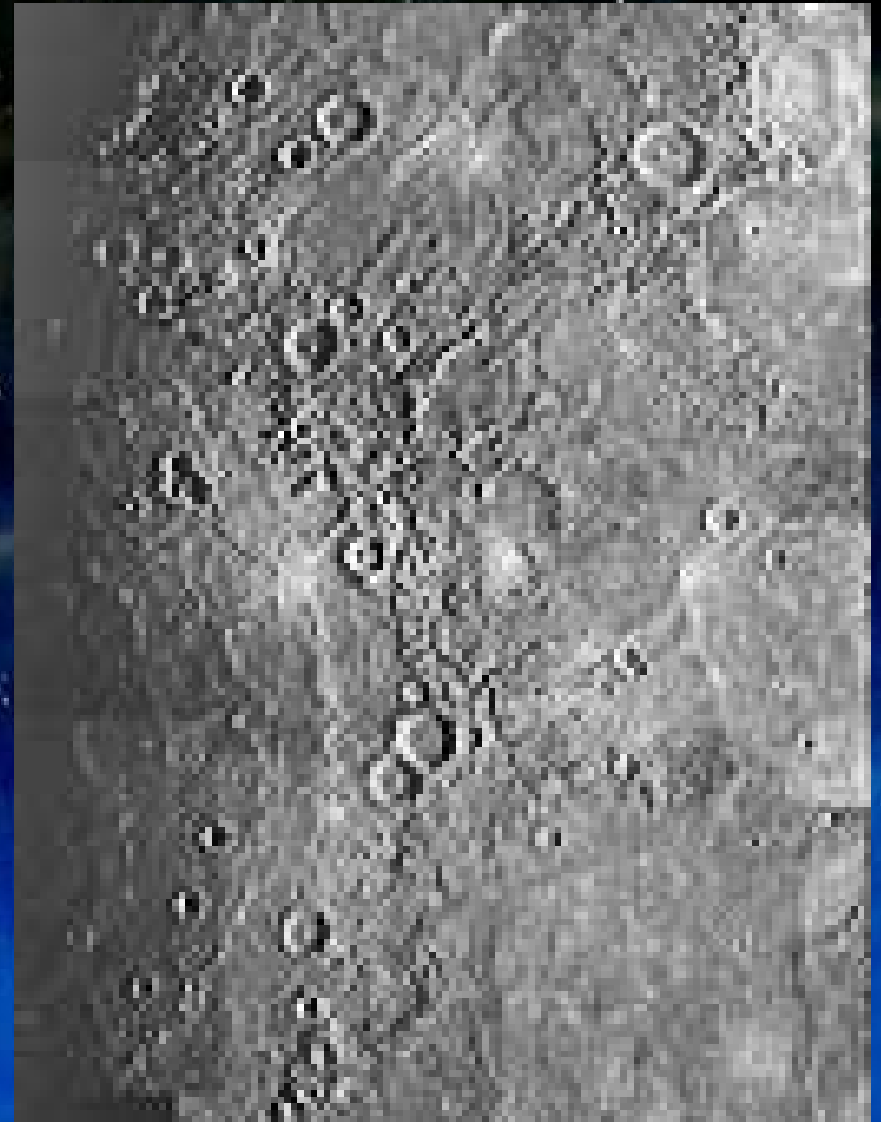
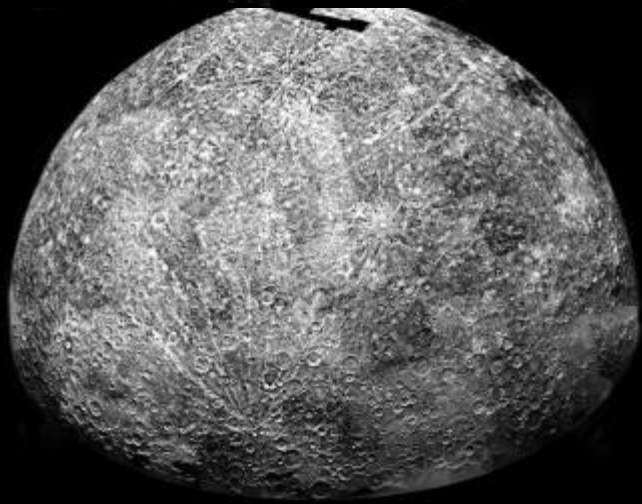


- Diameter: 4,878 km (3,030 mi)
- Mass: 3.3×10^{23}
- Density: 5.427 g/cm^3
- Shape: round, no rings
- Atmosphere: Oxygen (O₂), Sodium (Na), Hydrogen (H₂), Helium (He), Potassium (K), and possible trace amounts of other elements
- Distance from the Sun: 57 million km (36 million miles)

Mercury

- **Orbital Path:** 88 day period, eccentricity of 0.205 (0 is a perfect circle)
- **Moons:** none
- **Surface:** heavily cratered, like our moon. Largest crater is called the Caloris Basin
- **Composition:** thin crust, 60-70% Iron





Caloris Basin



All R

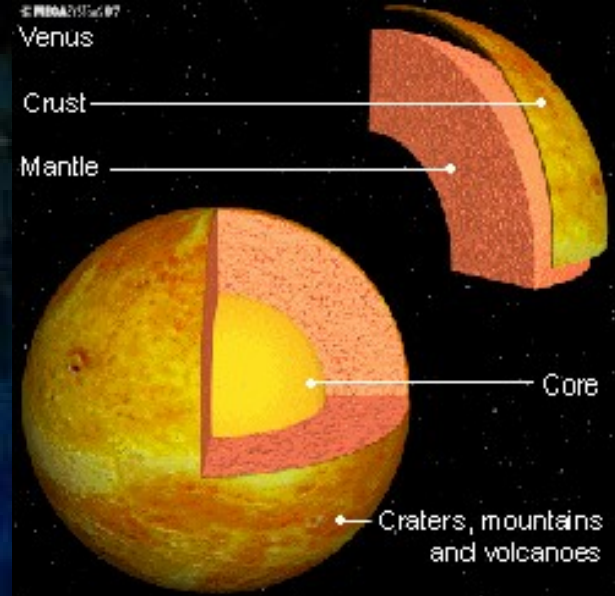
Venus

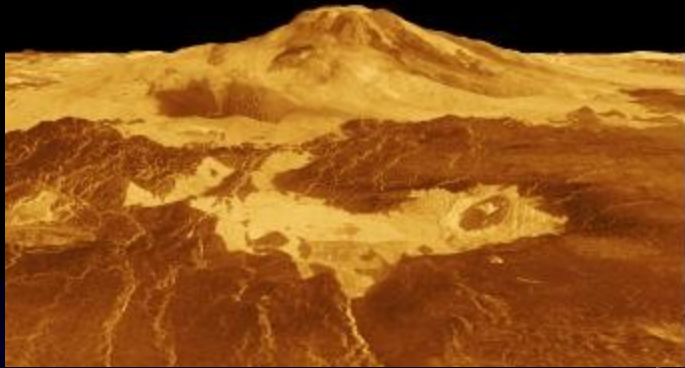
- Diameter: 12,104 km (7,522 miles)
- Mass: 4.869×10^{24} kg
- Shape: round, no rings
- Density: 5.243 g/cm^3
- Atmosphere: 96.5% Carbon Dioxide (CO₂), 3.5% Nitrogen (N₂); trace amounts of other elements
- Distance from the Sun: 108.5 million km (67.5 million miles)



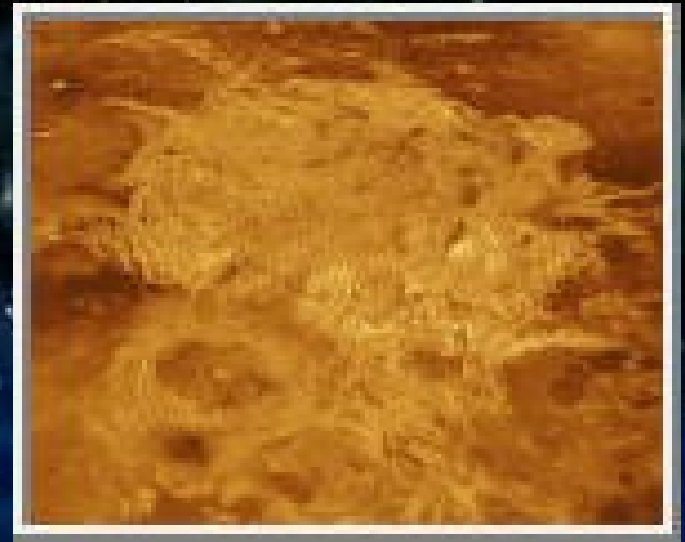
Venus

- Orbital Path: 224.7 day period, eccentricity is 0.007 retrograde motion (looking like it has turned around and gone back)
- Moons: none
- Surface: vast plains covered by lava flows and a few mountain or highland regions deformed by geological activity, numerous craters, 85% covered in volcanic rock
- Composition: similar to Earth, with an iron core about 3000 km in radius with a molten mantle and solid crust

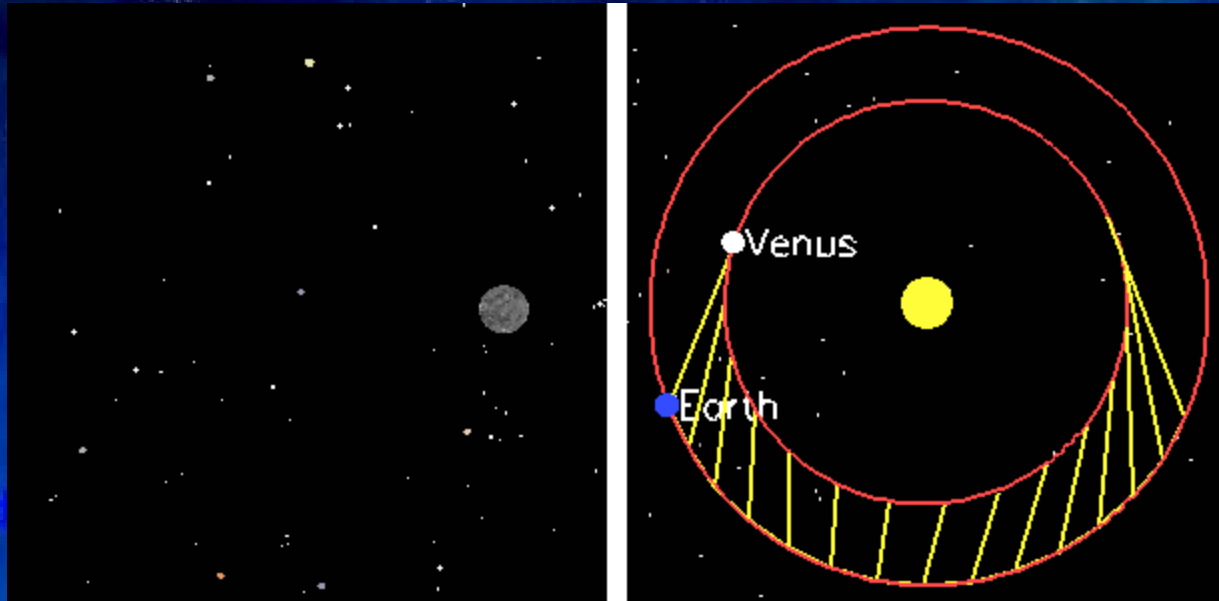




Surface



Retrograde Motion



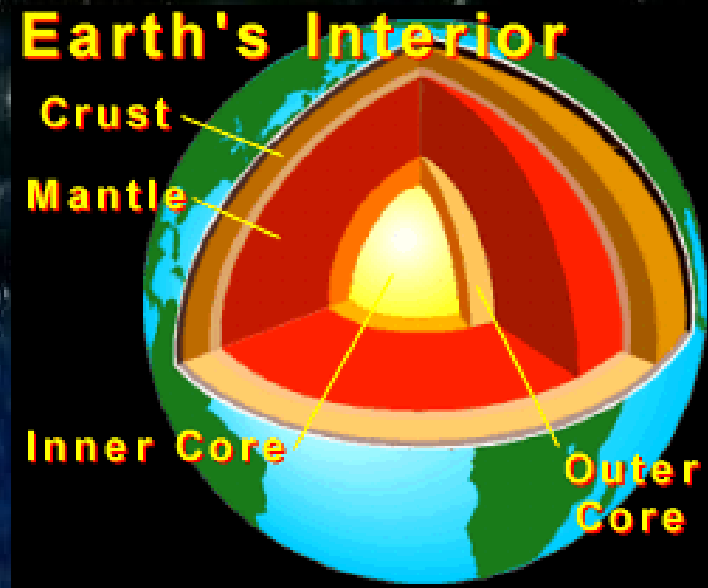
Earth



- Diameter: 12,753 km (7,926 miles)
- Mass: 5.976×10^{24} kg
- Shape: round, no rings
- Density: 5.515 g/cm^3
- Atmosphere: 78.084% Nitrogen (N_2), 20.946% Oxygen (O_2); trace amounts of other elements
- Distance from the Sun: 149 million km (92.8 million miles)

Earth

- Orbital Path: 365.2 day period, eccentricity is 0.017
- Moons: one, no name
- Surface: Earth is 4.5 to 4.6 billion years old, 71% covered in water, many different landforms
- Composition: 34.6% Iron 29.5% Oxygen 15.2% Silicon 12.7% Magnesium 2.4% Nickel 1.9% Sulfur 0.05% Titanium



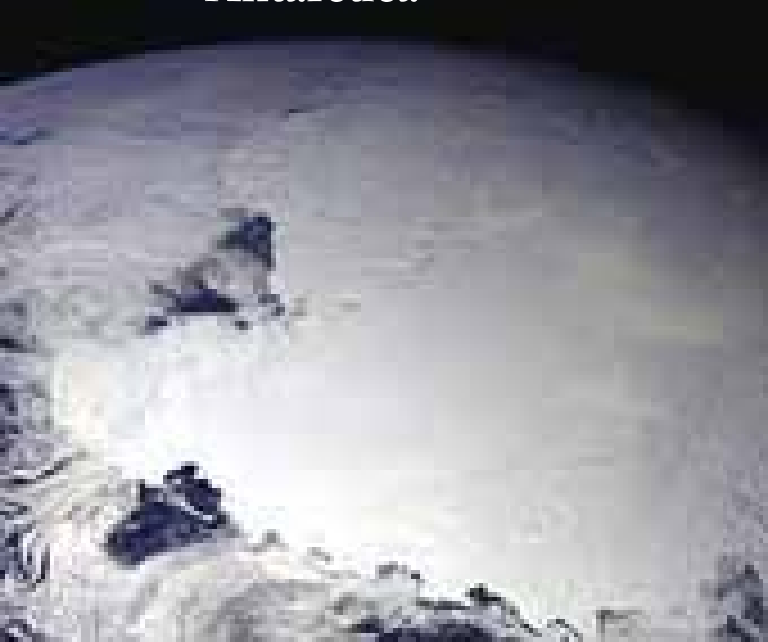


Earth From Space

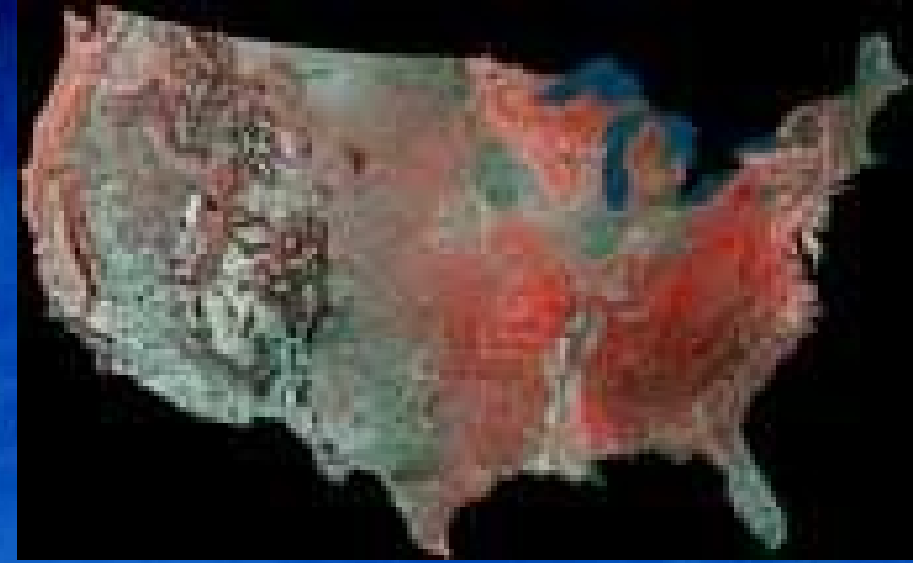


“Moonrise”

Antarctica



Satellite Image of Earth



Mars

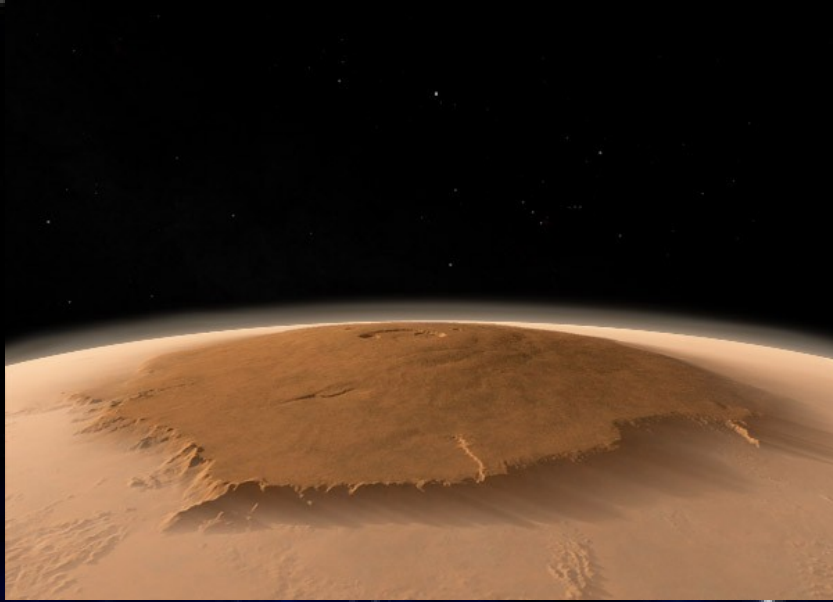


- Diameter: 6,785 km (4,217 miles)
- Mass: 6.421×10^{23} kg
- Shape: round, no rings
- Density: 3.94 g/cm^3
- Atmosphere: Carbon Dioxide (CO₂), Nitrogen (N₂), Argon (Ar), Oxygen (O₂), Carbon Monoxide (CO)
- Distance from the Sun: 227 million km (141.5 million miles)

Mars



- **Orbital Path:** 687 day period, eccentricity is 0.094
- **Moons:** 2, Phobos and Deimos
- **Surface:** some of the most highly varied and interesting terrain of any of the inner planets;
 - **Olympus Mons:** the largest mountain in the Solar System rising 24 km
 - **Valles Marineris:** a system of canyons 4000 km long and from 2 to 7 km deep
 - Other remarkable landmarks
- **Composition:** not much is known, most likely a VERY dense core; dense molten mantle, and thin crust



Olympus Mons

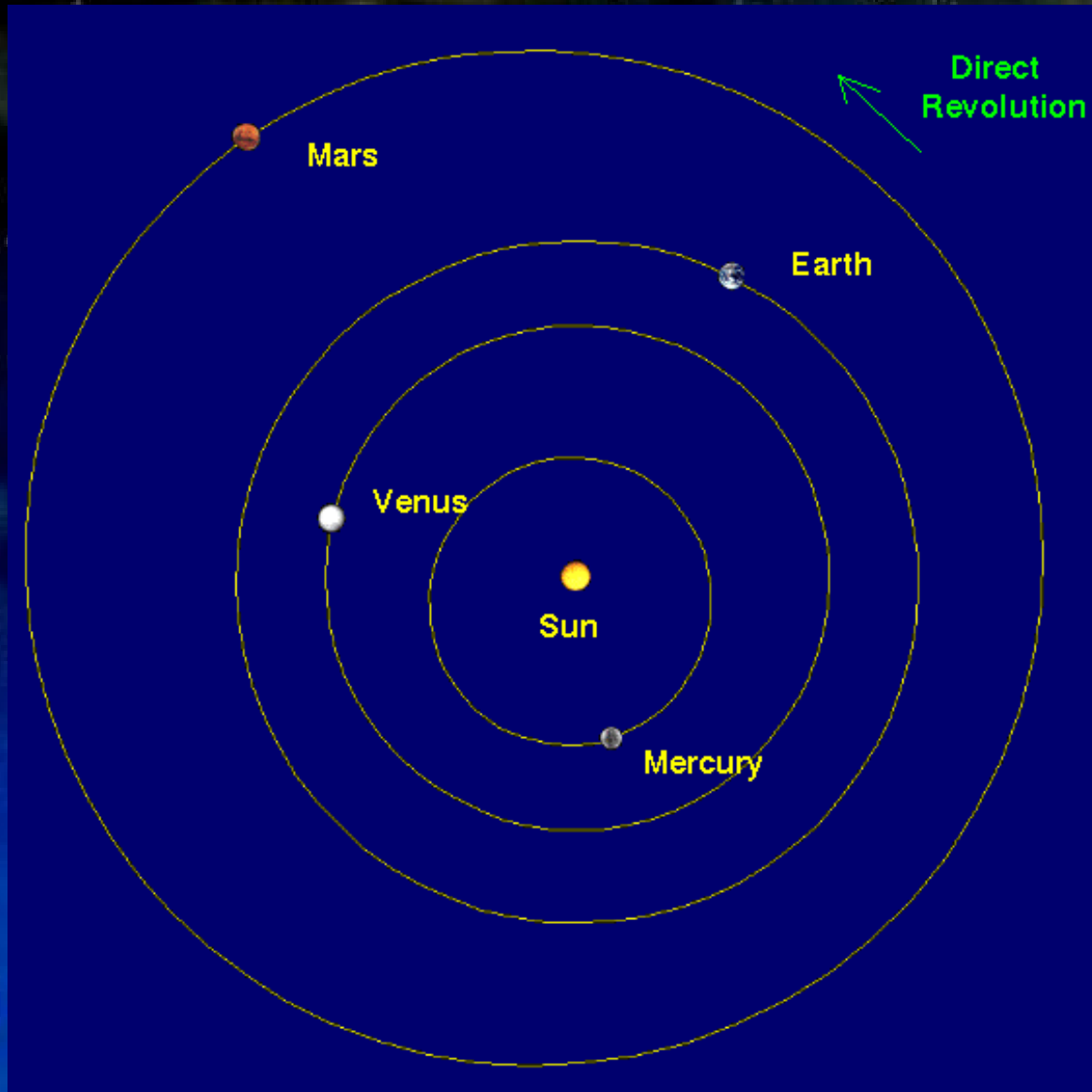


Mars with Moons, Phobos and Deimos

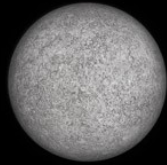


Surface

Inner Planet Orbit



Earth Compared to Inner Planets



Earth and Mercury



Earth and Venus



Earth and Mars

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