

The Moon, Earth's sole natural satellite, is locked in a westward-to-east lunar orbit at an average distance of approximately 384,000 kilometers. These endeavors hold the promise of unlocking further secrets of the cosmos and potentially paving the way for exploration of distant solar systems. Under direct sunlight, the equator can reach scorching highs of 127°C (260°F), while plunging to frigid lows of -173°C (-280°F) during the lunar night. Its composition is primarily rocky, and scientific estimates place its age around 4.6 billion years, making it coeval with Earth's formation. Current space exploration plans envision a lunar base for scientific research and potentially a giant telescope for deeper observation of our solar system and beyond. This stark contrast highlights the absence of an insulating atmosphere on the Moon.