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QUANTIFYING CARBON DEPLETION IN THE MARTIAN ATMOSPHERE THROUGH ULTRAVIOLET RADIATION ANALYSIS: INSIGHTS FROM EMIRATES MARS MISSION (EMM) DATA ON CARBON MONOXIDE (CO) LEVELS

Abstract

The Emirates Mars Mission's Hope Probe is to study the Martian atmosphere, weather, and climate and provide a comprehensive understanding of the Red Planet's atmospheric dynamics. The primary objective of the mission is to assess Carbon losses in the Martian atmosphere by analyzing Carbon Monoxide (CO) levels and tracking Ultraviolet (UV) radiation. The Martian atmosphere is composed of various gases, including Hydrogen (H), Carbon Dioxide (CO2), Carbon Monoxide (CO), Nitrogen (N2), and Oxygen (O2). When solar UV radiation interacts with CO2, it is converted to CO, leading to Carbon depletion. The depletion of Carbon in the atmosphere can have significant implications for the planet's climate, surface chemistry, and overall habitability . This paper analyze data collected by the Emirates Mars Ultraviolet Spectrometer (EMUS) and other instruments using spectroscopy software to determine the UV radiation levels in the Martian atmosphere and assess the extent of Carbon loss. Accurately assessing the extent of Carbon loss in the Martian atmosphere is essential for gaining insights into the planet's geological history and evaluating its potential habitability for future human exploration