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EMIRATES MARS ULTRAVIOLET SPECTROMETER'S (EMUS) OBSERVATION OF THE MARTIAN THERMOSPHERE

Abstract

The Hope Probe, launched by the United Arab Emirates, was aimed at studying the atmosphere on Mars, and the climate in order to obtain a detailed explanation and understanding of the evolution of the Martian atmosphere over the years. The Emirates Mars Mission, in July 2020, used three scientific instruments for the study. One of the instruments used is the Emirates Mars Ultraviolet Spectrometer. The EMUS calculates the amount of carbon monoxide and hydrogen in the atmosphere, from which we can understand the processes that shape the climate of Mars. From this study, the mission aimed to get a broader vision of the field of planetary science. The paper describes the basic software techniques to analyze the data from EMUS. The steps include data processing and calibration, visualization, and spectral analysis to measure the light intensity at different wavelengths. The paper proposes to determine the wavelength indices where CO emissions dominate, sum across the spectral and spatial dimensions to obtain the total detector counts as a function of readout, print the shape of detector images and create an image averaged across disk-only emissions.