SPACE EXPLORATION SYMPOSIUM (A3)
Mars Exploration – Science, Instruments and Technologies (3B)

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EMIRATES MARS MISSION (EMM) INSTRUMENTS DESIGN, OPERATIONS, AND DATA

Abstract

United Arab Emirates has entered the space exploration race with the announcement of Emirates Mars Mission (EMM). Through this mission, UAE is to send an unmanned probe, called Hope probe, to be launched in summer 2020 and reach Mars by 2021. EMM explores the atmospheric dynamics for Mars on a global, sub-seasonal scale, providing the measurements necessary to understand atmospheric properties aligned with the following science objectives: 1. Characterize the state of Mars lower and middle atmosphere (<50 km) on global scales and its geographic, diurnal, and seasonal variability. 2. Correlate rates of thermal photochemical atmospheric escape with conditions in the collisional atmosphere (<200 km). 3. Characterize the spatial structure and variability of Mars exosphere. EMM will collect the information about the Mars atmospheric circulation and connections through a combination of three distinct instruments that image Mars in the visible, thermal infrared and ultraviolet wavelengths and they are the Emirates Exploration Imager (EXI), the Emirates Mars InfraRed Spectrometer (EMIRS), and the EMM Mars Ultraviolet Spectrometer (EMUS). The presentation will explain the instrument current designs, the operation scenarios of the instruments, and the expected result from this mission.