

IAF SPACE EXPLORATION SYMPOSIUM (A3)  
Mars Exploration – missions current and future (3A)

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## EMIRATES MARS MISSION (EMM) 2020 OVERVIEW AND STATUS

### Abstract

The Emirates Mars Mission (EMM) is the United Arab Emirates' (UAE) first mission to Mars and is the first Arab mission to another planet. It launched an unmanned observatory called "Hope" into an elliptical orbit around Mars on July 20, 2020 carrying three scientific instruments to study the Martian atmosphere in visible, ultraviolet, and infrared wavelengths. EMM will be the first mission to provide the first truly global picture of the Martian atmosphere, revealing important information about how atmospheric processes drive diurnal variations for a period of one Martian year. This will provide scientists with valuable understanding of the changes to the Martian atmosphere today through the achievement of three scientific objectives:

- A. Characterize the state of the Martian lower atmosphere on global scales and its geographic, diurnal and seasonal variability.
- B. Correlate rates of thermal and photochemical atmospheric escape with conditions in the collisional Martian atmosphere.
- C. Characterize the spatial structure and variability of key constituents in the Martian exosphere.

The mission is led by Emiratis from Mohammed Bin Rashid Space Centre (MBRSC) and is expanding the nation's human capital through knowledge transfer programs set with international partners from the University of Colorado Laboratory for Atmospheric and Space Physics (LASP), Arizona State University (ASU) School of Earth and Space Exploration, and University of California Berkeley Space Sciences Laboratory (SSL). The presentation will focus on the status of the mission after the successful Mars Orbit Insertion (MOI) on Feb 9, 2021 highlighting the science phase operations that will start on May 2021, in addition to the science objectives, instruments, spacecraft, and ground segment.