

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

Author: Mr. Omran Sharaf

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Ms. Sarah Amiri

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Suhail AlDhafri

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Adnan Alrais

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Mohammad Abdularahim Mtaher Mohd Wali

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Zakareyya Husain Saif Alshamsi Al Shamsi

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Ibrahim Al Qasimi

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Ms. Khuloud Alharmoodi

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Ms. Nour Al Teneiji

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Ms. Hessa Al Matroushi

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Ms. Maryam Al Shamsi

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Mohsen Al Awadhi

Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates

Mr. Michael McGrath

Colorado Center for Astrodynamics Research, University of Colorado, United States

Mr. Pete Withnell

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States

Mr. Nicolas Ferrington

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States

Mrs. Heather Reed

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States

Mr. Brett Landin

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States

Mr. Sean Ryan

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States

Mr. Brian Pramann

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States

EMIRATES MARS MISSION (EMM) 2020 OVERVIEW

Abstract

United Arab Emirates (UAE) has entered the space exploration race with the announcement of Emirates Mars Mission (EMM), the first Emirati mission to another planet, in 2014. Through this mission, UAE is to send an unmanned probe, called Hope probe, to be launched in summer 2020 and reach Mars by 2021 to coincide with UAE's 50th anniversary. The mission should be unique, and should aim for novel and significant discoveries that contributed to the ongoing work of the global space science community. EMM has passed its Mission Concept Review (MCR), System Requirements Review (SRR), System Design Review (SDR), and Preliminary Design Review (PDR) phases. The mission is led by the Mohammed Bin Rashid Space Centre (MBRSC), in partnership with the University of Colorado Laboratory for Atmospheric and Space Physics (LASP), University of California Berkeley Space Sciences Lab (SSL), and Arizona State University (ASU) School of Earth and Space Exploration. The mission is designed to answer the following three science questions:

- How does the Martian lower atmosphere respond globally, diurnally, and seasonally to solar forcing?
- How do conditions throughout the Martian atmosphere affect rates of atmospheric escape?
- How does the Martian exosphere behave temporally and spatially?

Each question is aligned with three mission objectives and four investigations that study the Martian atmospheric circulation and connections through measurements done using three instruments that image Mars in the visible, thermal infrared and ultraviolet wavelengths. Data will be collected around Mars for a period of an entire Martian year to provide scientists with valuable understanding of the changes to the Martian atmosphere today. The presentation will focus on the overviews of the mission and science objectives, instruments and spacecraft, as well as the ground and launch segments.