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

Author: Mr. Omran Sharaf
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, omran.sharaf@mbrsc.ae

Ms. Sarah Amiri
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, sarah.amiri@eiast.ae
Mr. Suhail AlDhafri
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, suhail.aldhafri@mbrsc.ae
Mr. Adnan Alrais
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Adnan.Alrais@mbrsc.ae
Mr. Mohammad Wali
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Mohammad.Wali@mbrsc.ae
Mr. Zakareyya AlShamsi
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Zakareyya.AlShamsi@mbrsc.ae
Mr. Ibrahim AlQasim
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, ibrahim.alqasim@mbrsc.ae
Mrs. Khuloud AlHarmoodi
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Khuloud.Alharmoodi@mbrsc.ae
Ms. Nour Al Teneiji
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Nour.AlTeneiji@mbrsc.ae
Ms. Hessa Al Matroushi
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Hessa.AlMatroushi@mbrsc.ae
Ms. Mariam AlShamsi
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, mariam.alshamsi@mbrsc.ae
Ms. Eman AlTunaiji
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Eman.AlTunaiji@mbrsc.ae
Ms. Fatma Lootah
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Fatma.Lootah@mbrsc.ae
Mr. Khalid Badri
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, khalid.badri@mbrsc.ae
Ms. Hoor AlMazmi
United Arab Emirates Space Agency, United Arab Emirates, H.AlMazmi@space.gov.ae
Ms. Maryam Yousuf
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, maryam.yousuf@mbrsc.ae
Ms. Noora AlMheiri
Mohammed Bin Rashid Space Centre (MBRSC), United Arab Emirates, Noora.ALMehairi@mbrsc.ae
Mr. Michael McGrath
Colorado Center for Astrodynamics Research, University of Colorado, United States,
mcgrath@lasp.colorado.edu
Mr. Pete Withnell
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States,
Pete.Withnell@lasp.colorado.edu
Mr. Nicolas Ferrington

Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, Nicolas.Ferrington@lasp.colorado.edu
Mrs. Heather Reed
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, Heather.Reed@lasp.colorado.edu
Mr. Brett Landin
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, Brett.Landin@lasp.colorado.edu
Mr. Sean Ryan
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, sean.ryan@lasp.colorado.edu
Mr. Brian Pramann
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, brian.pramann@lasp.colorado.edu
Dr. David Brain
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, david.brain@lasp.colorado.edu
Dr. Justin Deighan
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, Justin.Deighan@lasp.colorado.edu
Dr. Michael Chaffin
Laboratory for Atmospheric and Space Physics (LASP) at University of Colorado, United States, Michael.Chaffin@Colorado.EDU
Dr. Christopher Edwards
Northern Arizona University, United States, Christopher.Edwards@nau.edu
Prof. Francois Forget
Institut Pierre-Simon Laplace, France, francois.forget@lmd.jussieu.fr
Dr. Robert Lillis
Space Sciences Laboratory, University of California, CA, USA, United States, rlillis@ssl.berkeley.edu
Dr. Michael Smith
NASA Goddard Space Flight Center Greenbelt MD 20771, United States, michael.d.smith@nasa.gov
Dr. Michael Wolff
Space Science Institute, United States, mjwolff@spacescience.org

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 launches an unmanned observatory called "Hope" into an elliptical orbit around Mars in the summer of 2020 carrying three scientific instruments to study the Martian atmosphere in the visible, ultraviolet, and infrared bands. 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 an entire 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 and its launch, in addition to its science objectives, instruments, spacecraft, and ground segment.