

MAVEN - Mars Atmosphere and Volatile Evolution Mission

Joseph M. Grebowsky¹ and Bruce M. Jakosky²

¹*NASA Goddard Space Flight Center*

²*U. Colorado Boulder, Laboratory for Atmospheric and Space Physics*

NASA's MAVEN mission (to be launched in late 2013) is the first mission to Mars devoted to sampling all of the upper atmosphere neutral and plasma environments, including the well-mixed atmosphere, the exosphere, ionosphere, outer magnetosphere and near-Mars solar wind. It will fill in some measurement gaps remaining from the successful Mars Global Surveyor and the on-going Mars Express missions. The primary science objectives of MAVEN are: 1. Provide a comprehensive picture of the present state of the upper atmosphere and ionosphere of Mars; 2. Understand the processes controlling the present state; and 3. Determine how loss of volatiles to outer space in the present epoch varies with changing solar condition - EUV, solar wind and interplanetary magnetic field measurements will provide the varying solar energy inputs into the system. Knowing how these processes respond to the Sun's energy inputs in the current epoch will provide a framework for projecting atmospheric processes back in time to profile MARS' atmospheric evolution and to explore "where the water went". A description will be given of the science objectives, the instruments, and the current status of the project, emphasizing the value of having collaborations between the MAVEN project and the Mars upper atmosphere science community.