



Preliminary Results on Mars and the Siding Spring Meteor Shower from MAVEN's Imaging UV Spectrograph

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The MAVEN mission to Mars is designed to study the upper atmosphere and its response to external drivers, searching for clues to the cause of long-term atmospheric loss. MAVEN carries the Imaging UV Spectrograph (IUVS) for remote sensing studies of the atmosphere through vertical scans from the limb through the corona, UV imaging of the planet and stellar occultations. Each observational mode has successfully observed the spectral features and spatial distributions as intended, confirming and expanding our understanding of the Mars upper atmosphere as observed by the Mariner spacecraft and Mars Express. Furthermore, IUVS witnessed the aftermath of an intense meteor shower on Mars caused by Comet Siding Spring. For a period of many hours, the planet's UV spectrum was dominated by emission from ionized magnesium deposited by meteor ablation in the upper atmosphere. Initial results from the originally-planned Mars observations include:

- Significant persistent structures in the thermospheric day glow emissions, dependent primarily on solar zenith angle, along with significant variability on daily timescales;
- Nitric oxide nightglow and low-level auroral emissions of substantially greater nightside extent than previously seen;
- Confirmation of N₂ emission in the VK band, as first reported by MEX/SPICAM;
- The first vertical profiles of the D/H ratio in the atmosphere and their evolution with Mars season;
- The most complete maps and vertical profiles of H, C and O in the Mars corona;
- The first global snapshot of the middle atmosphere obtained by a day-long stellar occultation campaign;
- Global ozone maps spanning several months of seasonal evolution.

Other results from the missions's preliminary phases will be included.