

## From Clouds to Aurora to Atmospheric Escape: Highlights from MAVEN's Imaging UltraViolet Spectrograph

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The Mars Atmosphere and Volatile Evolution (MAVEN) mission's Imaging Ultraviolet Spectrograph (IUVS) observes Mars in the far and mid ultraviolet (110-340 nm), investigating lower and upper atmospheric structure and indirectly probing neutral atmospheric escape. The instrument is among the most powerful spectrographs sent to another planet, with several key capabilities: separate Far-UV & Mid-UV channels for stray light control; a high-resolution echelle mode to resolve deuterium and hydrogen emission; internal instrument pointing and scanning capabilities to allow complete mapping and nearly continuous operation; and optimization for airglow studies. After four Earth years in orbit (two Mars years), IUVS has assembled a large quantity of data and provided insights on present-day processes at Mars including dayglow, nightglow, aurora, meteor showers, clouds, and solar-planetary interactions. In this presentation, we will highlight key results obtained by IUVS, including: (1) dust storm and cloud activity from a synoptic perspective; (2) a surprisingly high level of auroral activity of three types; (3) long-term tracking of seasonally-modulated escape of hydrogen. We will present an overview of these results and a discussion of their implications for understanding Mars atmospheric dynamics and evolution.

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