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**Discovery of Diffuse Aurora on Mars**

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The Imaging Ultraviolet Spectrograph (IUVS) onboard the MAVEN spacecraft has discovered diffuse aurora in Mars’ northern hemisphere spanning a wide range of geographic latitudes and longitudes. This widespread aurora differs from the small auroral patches discovered by the SPICAM instrument onboard the Mars Express spacecraft (Bertaux *et al.*, 2005) restricted to regions of crustal magnetic fields in the southern hemisphere. Furthermore, the northern diffuse aurora appears to peak at altitudes below 100 km, while the crustal field aurora peaked around 120 km. The source of the energetic particles appears to be the sun, based both on the depth of atmospheric penetration and the timing of a substantial surge in energetic electrons at the onset of the aurora. MAVEN’s s Solar Energetic Particle instrument detected an increase in electrons of ~20 keV energy over the same 5-day period 18-23 December 2014. Electrons of this energy are capable travelling along open field lines and penetrating below 100 km, even without further acceleration mechanisms. A second event of more subdued magnitude was observed in both auroral emission and solar energetic particles on 3 March 2015, confirming the correlation. The observed auroral spectrum resembles Mars dayglow, though the relative strength of spectral features differs due to the different excitation caused by 20 keV electrons vs. solar EUV radiation. MAVEN’s complement of remote sensing and *in situ* instruments may offer the best opportunity to study diffuse auroral processes associated with open field lines, as may occur on unmagnetized or weakly magnetized satellites of the jovian planets.

References: Bertaux *et al.*, Nature 435, p790, 2005.