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## Martian Meteoric Mg<sup>+</sup>: Atmospheric Distribution and Variability from MAVEN/IUVS

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Since the discovery of atmospheric Mg<sup>+</sup> at Mars in 2015 by the Mars Atmosphere and Volatile Evolution (MAVEN) mission, there have been almost continuous observations of this meteoric ion layer in a variety of seasons, local times, and latitudes. Here we present the most comprehensive set of observations of the persistent metal ion layer at Mars, constructing the first grand composite maps of a metallic ion species. These maps demonstrate that Mg<sup>+</sup> appears in almost all conditions when illuminated, with peak values varying between 100 and 500 cm<sup>-3</sup>, dependent on season and local time. There exists significant latitudinal variation within a given season, indicating that Mg<sup>+</sup> is not simply an inert tracer, but instead may be influenced by the meteoric input distribution and/or atmospheric dynamics and chemistry. Geographic maps of latitude and longitude indicate that Mg<sup>+</sup> may be influenced by atmospheric tides, and there is no apparent correlation with remnant crustal magnetic fields. This work also presents counter-intuitive results, such as a reduction of Mg<sup>+</sup> ions in the northern hemisphere during Northern Winter in an apparent correlation with dust aerosols.