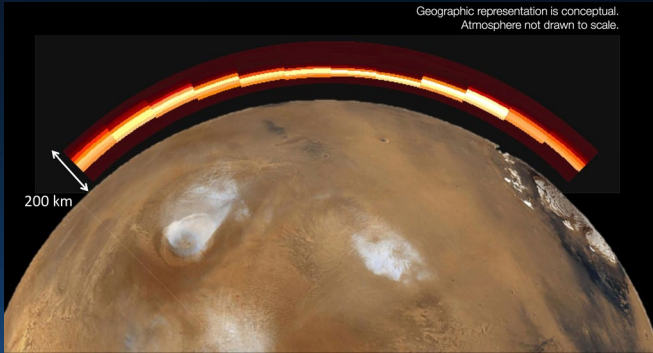




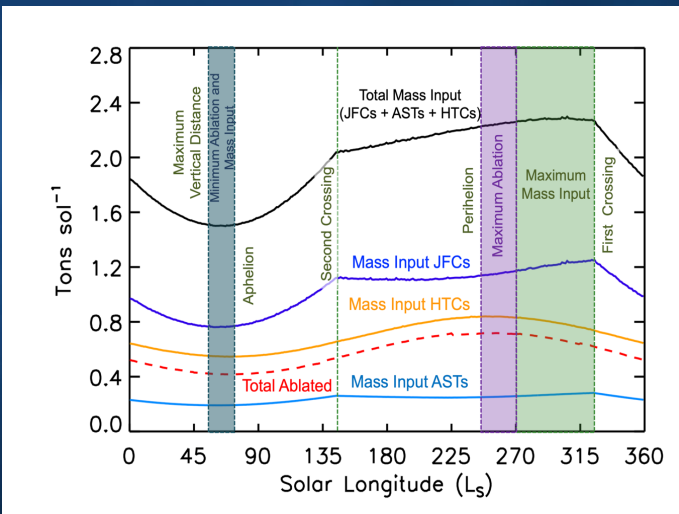
How does seasonal and latitudinal variability affect meteoric ablation in Mars's upper atmosphere?



Mg⁺ distribution after a meteor shower on Oct. 19, 2014. Credit: NASA/Univ. of Colorado

This study shows for the first time that there is a significant shift of the ablation peak altitude at high latitudes as Mars moves through its orbit. This finding helps us better understand MAVEN/IUVS observations.

- Several atmospheric studies of Mars have explored in detail the distribution of meteoric metal layers, assuming that the orbital parameters of the meteoroid environment is uniform throughout the planet's orbit. However, this approximation is limited!



Variability of the total mass influx and the total ablated mass with Mars' orbit

- We have combined two models to characterize the size and velocity distributions of the most relevant meteoroid populations with the orbital position of Mars, and to quantify the injection rates of 10 chemical species.
- The results show a marked midnight-to-noon enhancement at equatorial latitudes, although this enhancement becomes attenuated at high-latitudes.
- Recent MAVEN/IUVS observations of the sporadic background of Mg⁺ at Mars indicate that there is a strong equatorial dawnside enhancement, in agreement with this study.