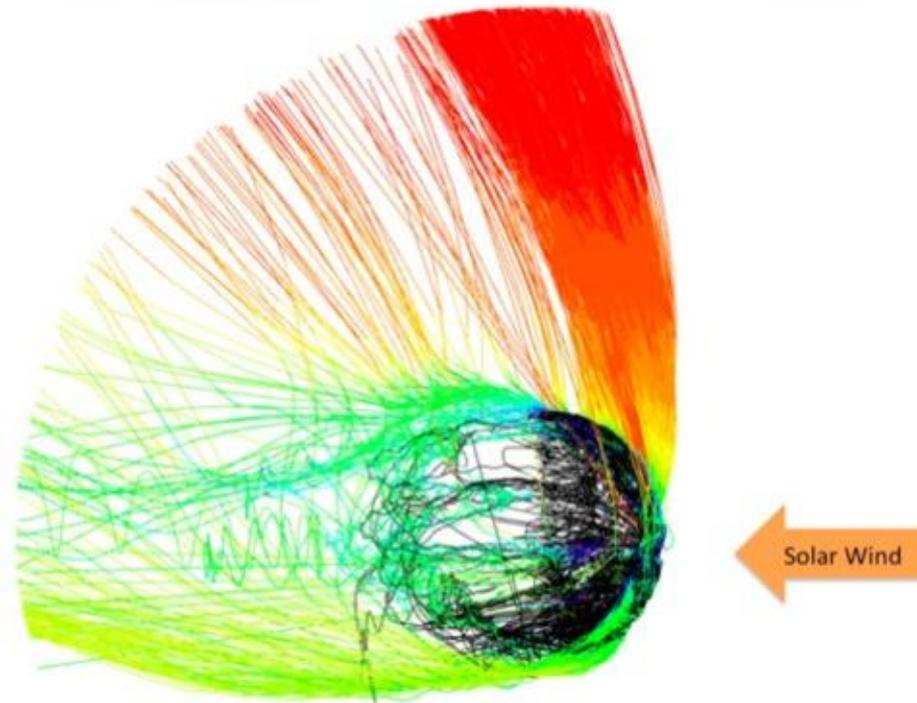


MAVEN Finds Escaping Ions Form “Mohawk” Pattern of Polar Plumes

NASA's Mars Atmosphere and Volatile Evolution (MAVEN) has found that Mars sports a “Mohawk” of escaping atmospheric particles at its poles which may be the major source of gas loss to space.

- MAVEN orbits at different altitudes above Mars' surface. As MAVEN dips down into the atmosphere, the satellite identifies the cold ionosphere at closest approach and, as MAVEN rises back up in altitude, measures the heating of this charged gas to escape velocities.
- Atoms in the Martian upper atmosphere become electrically charged ions after being energized by solar and space radiation. Theoretical models had predicted that the electric field generated by the incoming solar wind could drive ions in the direction of one pole or the other, creating a polar plume of escaping ions. When tracing particle trajectories in the models, the plume looks a bit like a Mohawk hairstyle.
- MAVEN's goal is to discover which mechanisms are most prominent for atmospheric loss, and to estimate the rate at which the Martian atmosphere is being eroded away.



Computer simulation of the interaction of the solar wind with electrically charged particles (ions) in Mars' upper atmosphere. The lines represent the paths of individual ions and the colors represent their energy, and show that the polar plume (red) contains the most-energetic ions.