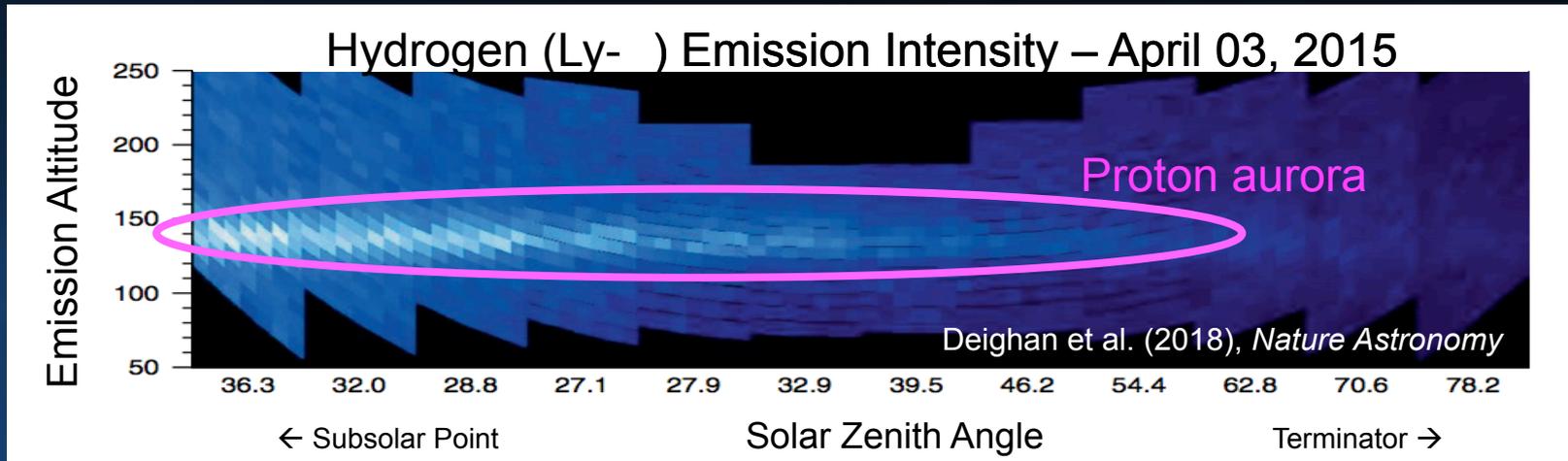


MAVEN Discovers Mars Proton Aurora



- How does the Martian upper atmosphere respond to the Sun and solar wind?
- MAVEN discovered bright transient emission from hydrogen in the Mars upper atmosphere, correlated with abnormally high fluxes of solar-wind protons inside the Martian magnetosphere
- Interpretation: A small fraction of solar-wind protons collide with the extended atmosphere of Mars, become neutral hydrogen, and penetrate to low (~150 km) altitudes. Some of the particles release energy as ultraviolet light as they collide with atmospheric molecules.
- ‘Proton aurora’ are observed at Earth, which has a global magnetic field, but the driving mechanism is different than at unmagnetized Mars. MAVEN’s observations suggest proton aurora could occur at other unmagnetized bodies such as Venus or exoplanets, and could teach us more about how the solar wind deposits energy in their atmospheres.