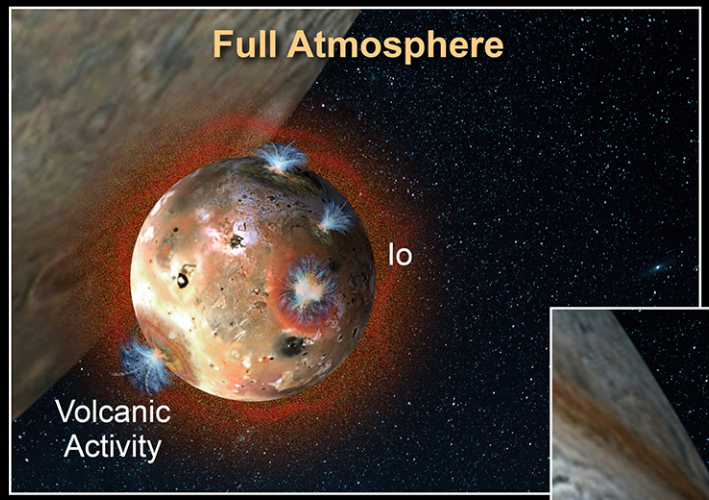
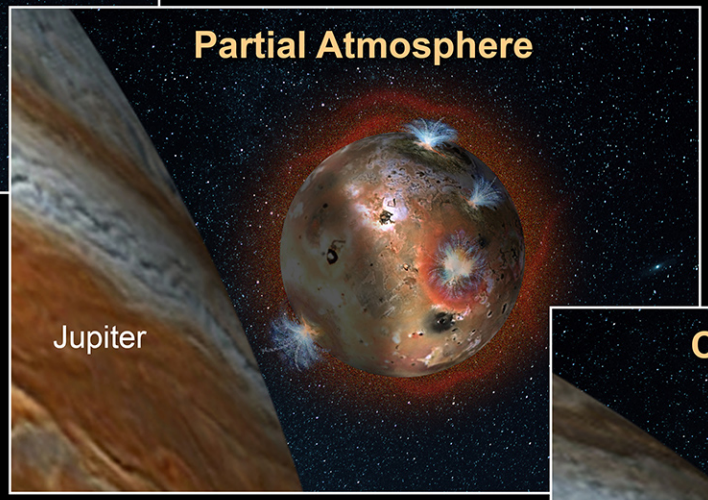
Io's Atmospheric Collapse

The atmosphere on Io, Jupiter's volcanic moon, collapses during daily eclipses.



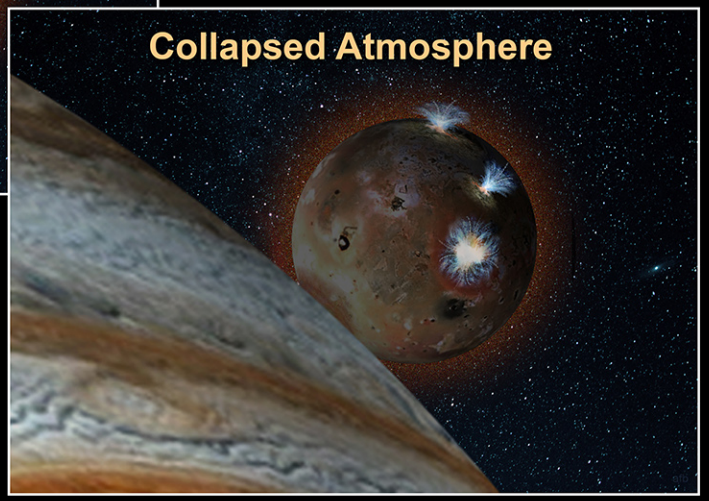
An artist's rendering depicts Io's volcanic plumes creating the atmosphere in sunlight.

Note: illustration is not to scale



For two hours of Io's day (1.7 Earth days), it is eclipsed by Jupiter. The temperature drop freezes sulfur dioxide (SO_2) gas, causing the atmosphere to "deflate."

Actual Image: *This image from the Cassini spacecraft captures Io's volcanoes and atmosphere in the shadow of Jupiter.*



In full eclipse, Io's atmosphere "collapses" as SO_2 gas becomes frost on the moon's surface. The atmosphere redevelops when sunlight returns.

Citation: Tsang et al., 2016, J. Geophys. Res., *In Press*
http://onlinelibrary.wiley.com/doi/10.1002/2016JE005025/abstract