

Venus Loses Ocean Via Powerful Electric Winds

06-24-16

A powerful electric field has been discovered in the ionosphere of Venus, capable of helping heavy ions (including Oxygen and all water group ions) overcome gravity and escape into space.

- This field is five times stronger than in Earth's similar ionosphere and can generate enormous outflows of ions entirely through electrical forces. This electric wind also enhances other escape processes, by transporting ions from the ionosphere (150 km, 93 miles), where they normally reside to higher altitudes where solar wind driven mechanisms can take effect.
- The activity of this field challenges our understanding of the evolution of Venus, as it is possible for relatively large planets to lose heavy ions to space entirely through electrical forces in their ionospheres.
- The presence of this process indicates that all atmospheric escape estimates are low, perhaps by an order of magnitude.
- These effects must also be taken into account in any study of atmospheric evolution or planetary habitability as it shows that electric fields can have a much stronger effect on atmosphere escape than previously understood, and creates a new requirement when searching for habitable Exoplanets.

