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Statistical study of solar wind ion precipitation on Venus

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Solar wind ions are known to precipitate onto the atmosphere of Mars. The large gyroradii of hot particles in the magnetosheath compared to the size of the induced magnetosphere/magnetic barrier make it possible for the ions to gyrate through the barrier. Venus interacts with the solar wind in a similar way and an induced magnetosphere is formed around the planet. However, the scale-sizes are different and precipitation of solar ions onto the atmosphere of Venus is not frequently occurring. We use ion data from ASPERA-4 on Venus Express to investigate how often precipitation of protons and alpha-particles occurs on Venus. With a statistical approach we also estimate the net inflow of solar wind ions onto the ionosphere of Venus. We highlight the differences between solar wind ion precipitation at Mars and Venus and suggest possible explanations for the observed differences.