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Observations of nonlinear ionopause waves in 32Hz Venus Express Magnetometer data

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The solar wind interacts directly with the ionosphere of Venus. This is due to the lack of an intrinsic planetary magnetic field. This is significantly different to the terrestrial case where the ionosphere is protected by the Earth's magnetic field. The shear velocity profile at the boundary between the solar wind and Venusian ionosphere can lead to the formation of nonlinear waves along the boundary. High temporal resolution (32Hz) magnetic field data collected by Venus Express is used to analyse the structure, location and rate of occurrence of nonlinear waves on the ionopause. The implications of these observations, with respect to mass loading of the solar wind with ionospheric material and the redistribution of dayside ionospheric plasma to maintain the nightside ionosphere are discussed.