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The Venus ionosphere in the northern polar region

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PLASLIFE is a computer simulation which assists in the interpretation of high latitude ionospheric observations and, in this study, is applied to the polar regions of Venus. The Venus Express spacecraft samples the high latitude ionosphere in the northern hemisphere of the planet. On 4 August 2008 it was inserted into a new orbit with pericentre located below 200 km close to 86^o N. The ASPERA-4 instrument on the spacecraft records the first extended in situ data set of the plasma environment in this sector. The observed ionospheric ion and electron populations exhibit significant variation between orbits and, by compensating for the effects of solar zenith angle and altitude, the relative contributions of photoionisation and plasma transport can be investigated. These variations are discussed with respect to parameters including local time and solar flux. Comparisons are drawn with the terrestrial ionosphere.