



The ion flow below the magnetic barrier at Venus

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In this study we investigate the properties of ions, more energetic than 10eV, below the magnetosheath boundary of Venus, based on the data collected by the ASPERA 4 plasma analyser flying onboard of the Venus Express Mission. We selected 16 orbits around a special one which was more or less parallel to the Sun-Venus line, from a time interval of +17/-24 days. The magnetosheath boundary was identified approximately from the dropout of magnetospheric electrons and the sharp decrease of the proton speed; these correlated well with the location of the magnetic barrier derived by eyes from magnetometer data. Accordingly, the investigation was limited to orbit sections starting near the terminator and ending in the near-tail, the distance from the centre of Venus was always less than $3 R_V$. Below the magnetosheath boundary the speed of the protons and the oxygen ions did not vary strongly; what changed significantly were the oxygen ion density. The direction of the flow was also under study. We have investigated whether correlation can be established between these changes and the different plasma regions in the tail. We compared the VEX results to the results of previous space missions, keeping in mind that Venera 9&10 and PVO explored more distant tail regions.