



Whistler mode signals due to Venus lightning: Dispersion observed in Venus ionosphere with the Venus Express magnetometer

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The magnetometer on the Venus Express mission can sample at 128 Hz allowing the detection of whistler mode signals in the Venus ionosphere. Strong signals (~ 1 nT peak-to-peak) are observed at the lowest altitudes. These signals are right-handed and nearly circularly polarized as expected from lightning. Their occurrence is controlled by the direction of the ionospheric magnetic field and observed only when the magnetic field dips into the atmosphere. They have EM energy fluxes similar to signals due to lightning on Earth. They last only on the order of 100 ms, making dispersion analysis difficult. However, studies of the longest and strongest signals show the descending frequency tones expected for lightning. The dispersion seen is indicative of a signal generation region only about 300 km distant, consistent with the signals originating from lightning discharges. In the past, data from the outboard sensors were processed by strongly filtering the lower frequency band to eliminate interfering tones. Recently we have developed a technique using the inboard sensors as well to improve the low frequency noise rejection, and can now analyze a much broader frequency range.