



Frequency-Time Structures of VLF/LF Emissions

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The ICE experiment onboard the DEMETER satellite recorded structured emissions at sub-latitude regions. This experiment provided a survey of the electric field over a wide frequency range. In this work we report on VLF and LF radio emissions observed in a frequency interval between a few kHz and up to 300 kHz. Those emissions appeared on night- and day-sides and are associated, respectively, to up- and down-going satellite half-orbits. The first emission appears as a continuum between a few kHz and 100 kHz. It displays positive and negative frequency drift rates in the southern and northern hemispheres, at latitudes between 40° and 20° . Its frequency bandwidth increases toward the magnetic equatorial plane. The second type of radiation exhibits multiple spaced frequency bands between 50 kHz and 300 kHz, and occasionally harmonic components appear at about 3 MHz. Those bands are recorded near the magnetic equatorial plane with an enhancement in the intensity level when the satellite latitude is between -5° and $+5^\circ$. The origin of the continuum emissions and the spaced frequency bands seems to be different since their spectral patterns are not comparable. We discuss the source locations and the physical mechanisms which seem to be linked to the plasma environment in the vicinity of the magnetic equatorial plane.