

Observation of ULF-ELF Waves in the 1-500 Hz band at Syowa Station, Antarctica: Initial Results

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Continuous observation of waveforms of ULF-ELF waves in the frequency range 1-500 Hz started at Syowa station(69.0S, 39.9E), Antarctica in February 2000. The observation system consists of X and Y search coil sensors with a flat frequency response for this frequency range, a 16-bit A/D converter with a 1000-Hz sampling rate, and a digital recorder. The purpose of this observation is to investigate the generation and propagation mechanisms of ULF-ELF waves excited by upward lightning discharges and also to clarify the electromagnetic coupling processes between the atmosphere and the ionosphere in a global scale. The obtained data showed a high signal-to-noise ratio due to an extremely low noise level of electric power line radiation. Distinct Schumann resonances and Q bursts were observed.