MONITORING THE LOWER IONOSPHERE AT BOTH POLES: THE GLOBAL AARDDVARK NETWORK

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The Antarctic-Arctic Radiation-belt (Dynamic) Deposition - VLF Atmospheric Research Konsortium (AARDDVARK) provides continuous long-range observations of the lower-ionosphere. Since it's development for the IPY it has been operating near-continuously in both poles. The Konsortia sensors detect changes in ionisation levels from ~30-85 km altitude, with the goal of increasing the understanding of energy coupling between the Sun, Space, and the Earth's atmosphere. The global-scale network of sensors monitor fixed-frequency very low frequency (VLF) communications transmitters where ionospheric modifications up to ~85 km altitude lead to changes in the received amplitude and phase. This allows us to undertake remote sensing of the upper atmosphere over large regions because these signals can be received thousands of kilometres from the source. Consequently we use the upper atmosphere as a gigantic energetic particle detector to observe and understand changing energy flows. The AARDDVARK sensor network is well suited to provide observations that are complementary to other ground based and space-based instruments, operating simultaneously in both poles, and in high time-resolution.

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