

DETECTION OF MAGNETOSPHERICALLY DUCTED VLF SIGNALS GEOMAGNETICALLY CONJUGATE TO A RUSSIAN ALPHA TRANSMITTER AT L=1.9

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Abstract

The Russian 'Alpha' transmitters broadcast alternating pulses between 11-15 kHz for navigation. A fraction of the VLF energy escapes into the magnetosphere, is guided by ducts, amplified by interaction with radiation belt particles, and observed at the geomagnetic conjugate point. We analyze VLF data from Adelaide, Australia, conjugate to Komsomolsk transmitter. An automated detection scheme separates the subionospheric and magnetospheric signals. We track availability of ducts at L=1.9 and find them present often. We correlate to geomagnetic conditions and assess the role of wave growth and triggering from wave-particle interactions, and compare to DEMETER satellite measurements.