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Effects of transionospheric powerful HF waves transition: A case study

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Recently proposed new technique of the Stokes parameters determination of space emission by rotating spacecrafts in case of strong intensity fluctuations is applied to study SURA HF radiation as received by WIND spacecraft WAVES/RAD2 equipment. A case study of SURA-WIND session carried out on July 22, 2006 is presented. During this session SURA transmitted at 8925 kHz with 6 min ordinary ("O") and 4 min extraordinary ("X") circular polarization cycle and effective radiated power of 18 MW. WAVES RAD2 receiver was operated in fixed frequency mode at channel #157 (8925 kHz) with SUM antenna configuration (YZ, YZ+90, Z). Differences between Stokes parameters temporal and spectral behavior of "O" and "X" waves was found. Possible explanations of obtained features are discussed based on transionospheric propagation effects.

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