

# Observation of global electromagnetic resonances by low-orbiting satellites

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Penetration of Schumann resonances energy from the Earth-ionosphere resonance cavity into the circum-terrestrial space is examined. This study focuses on estimates of Alfvén wave amplitude and spectra in the frequency range of 7-50 Hz which can be observed by low-orbiting satellites. Differences in Schumann resonances observation conditions between the nighttime and sunlit sides of the ionosphere are analyzed. Particular emphasis has been placed on the ionospheric Alfvén resonator (IAR) excited by both the global thunderstorm activity and individual lightning discharges. IAR spectra in the frequency range of 0.5-10 Hz are calculated for ionospheric altitudes. The calculated spectral amplitudes of IAR and Schumann resonances are compatible with C/NOFS satellite observations. To explain a shift of IAR resonant frequencies observed during C/NOFS satellite passage through terminator region, the IAR model is developed in which an interference of Alfvén waves reflected from the ionospheric E-layer and the IAR upper boundary is taken into account.

## Presentation type

Section talk (10+5 min)

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