

LOW IONOSPHERE AS A SOURCE OF REMOTE SENSING

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One of the fundamental problems of remote sensing is to establish the nature of the source of decimeter microwave radiation, taking into account the dependence of its intensity on the current state of the atmosphere and to determine the interfering factors of radiation propagation (charged aerosol layers, their hydration, etc.). This leads to uncontrolled behavior of the measured intensity and to difficulties in calibrating the receiving equipment.

It was previously assumed that this source has a cosmic origin and corresponds to the radiation of a hydrogen radio line observed at radio telescopes with a wavelength of 21 cm and a transition frequency of 1.4204 GHz. The estimates show that the power of the flux of cosmic radiation arriving at the radiometer is several orders of magnitude lower than the flux density of its own incoherent microwave radiation D and E of the layers of the ionosphere in the decimeter range. Therefore, incoherent super background decimeter radiation, which is formed at an altitude of 80–110 km due to the population of Rydberg states, is the main source.

Since the source is located below the orbiting satellites, a fundamentally new method for making the necessary measurements is proposed.

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