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Features of the Electromagnetic and Plasma Disturbances Induced at the Altitudes of the Earth's Outer Ionosphere by Modification of the Ionospheric F 2 Region Using High-Power Radio Waves Radiated by the SURA Heating Facility

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Abstract

© 2016, Springer Science+Business Media New York. In this paper we systematize the results of studying the characteristics of the plasma-density ducts, which was conducted in 2005–2010 during the DEMETER-satellite operation. The ducts are formed at altitudes of about 700 km as a result of the ionospheric F2 region modification by high-power high-frequency radio waves radiated by the midlatitude SURA heating facility. All the performed measurements are used as the basis for determining the formation conditions for such ducts, the duct characteristics are studied, and the opportunities for the duct influence on the ionosphere–magnetosphere coupling and propagation of radio waves of various frequency ranges are demonstrated. The results of numerical simulation of the formation of such ducts are presented.

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