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Identify regions of generation of artificial airglow in the HF-pumped ionosphere by using TEC measurements and intensity of artificial airglow along the trajectory of GPS

Data processing synchronous measurement variations of total electron content and artificial airglow at 630 nm line of atomic oxygen observed within 2010 – 2016 in the several experimental campaigns on Sura facility is presented in this work. In ionospheric HF heating experiments using different HF-pumped modes and orientation the main beam of antenna pattern

Sura facility is known. It is shown that the experiments performed under the conditions $f_oF2/f_0 \geq 1$ and $f_oF2 - f_0 \geq 0.25$

MHz, where f_oF2 - critical frequency F2 layer of ionosphere, f_0 - frequency of pumped wave, under pumped wave on, level of intensity artificial airglow increases, and while of level total electron content is reduced. In this case, regions of generation of artificial airglow located in the region of reduced electron density. In the experiments performed under the conditions

$f_oF2/f_0 \leq 1$ and $f_oF2 - f_0 \leq 0.25$ MHz, we observed opposite situation, however artificial airglow in this case was weak or completely absent. This work was supported by the Russian Foundation for Basic Research (projects 17-05- 01084 and 16-32-60176) and Russian Scientific Foundation (project 14-12- 00706). Experimental data processing with the ionospheric complex cyclon was performed according to the Russian Government Program of Competitive Growth of Kazan Federal University.

Biography

Denis Kogogin received his MS degree in Radiophysics and Electronics from the Kazan Federal University, Kazan, Russia, in 2013. Since 2013, he has been a PhD student at the Department of Radio Electronics, the Kazan Federal University. He has published 4 papers in reputed journals. His research interests include nonlinear interaction of electromagnetic radiation with substance, interaction of waves and flows, active experiments in space plasma, heating experiments on ionosphere.

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