

The response of the ionosphere to increase of CO₂: simulation results with GAIA model

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We investigated the influence of increasing CO₂ on the ionosphere by conducting two simulations with the atmosphere-ionospheric model of GAIA. This model indicated that trends of F₂ peak ($N_m F_2$ and $H_m F_2$) are negative in most locations under the CO₂ cooling effect. The global averaged magnitude of $N_m F_2$ negative effect is about -0.7%, but a number of positive locations cannot negligible. Trends of $N_m F_2$ are seasonally asymmetry; winter hemisphere tend to have positive trends while summer hemisphere tend to have negative trends during 12LT and 0LT. The trends of $H_m F_2$ are also negative in many locations, which global averaged magnitude is about -0.7km. Trends of $H_m F_2$ have positive only near geomagnetic dip equator.

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