

Neutral gas composition changes and $\mathbf{E} \times \mathbf{B}$ vertical plasma drift contribution to the daytime equatorial F2-region storm effects

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Abstract. Theoretical model calculations along with ground-based observations from Huancayo ionosonde station and ESRO-4 gas analyzer data, were used to estimate the contribution of neutral gas composition changes and $\mathbf{E} \times \mathbf{B}$ vertical plasma drift to the observed F2-layer storm effects at the geomagnetic equator. Atomic oxygen concentration increase may give the main contribution to the positive NmF2 effect when drift velocity changes are small, but negative storm effects, on the other hand, are related mostly to vertical drift variations.

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