

Investigations of wave-induced secular variations of OH nightglow emission and the intensity-weighted temperature in the MLT region

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A 2-dimensional, time-dependent, fully nonlinear OH chemistry-dynamics model is used to investigate secular variations of OH airglow (8,3) band and of the OH intensity-weighted temperature induced by a gravity-wave packet in the Mesosphere Lower Thermosphere region. Atmospheric conditions in the northern hemisphere at three latitudes were chosen for such an investigation. Our results reveal that a dissipative transient wave packet could cause a substantial secular change in the OH nightglow emission and a negligible change in the OH intensity-weighted temperature. The results suggest that OH nightglow emission is more sensitive to the wave forcing than the intensity-weighted temperature. Latitudinal variations of these secular changes will be discussed.