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Simulations of the Earth's Ultraviolet Airglow from a Geosynchronous Platform: Implications for Daytime Ionospheric Specification

The Naval Research Laboratory is performing simulations of the Earth's airglow as viewed from geosynchronous platforms with the goals of assessing the required instrumental sensitivity and spatial resolution and determining what types of ionospheric information are amenable to this approach. We focus on UV measurements that occur at wavelengths below the O₂ absorption cut-off at ~180 nm. These measurements are only sensitive to the ionosphere and thermosphere and have no contamination from atmospheric Rayleigh scattering or from terrestrial emissions such as anthropogenic sources, forest fires, and reflected moonlight. Previous papers describing daytime and nightglow simulations from GEO showed that it is possible to extract ionospheric information during both nighttime and daytime. In this work, we discuss our updated software for carrying out the simulations and provide evaluations of the accuracy and applicability of the approach.