

# Observations of the Thermosphere-Ionosphere System by the Global-scale Observations of the Limb and Disk (GOLD) Mission

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Observations by the Global-scale Observations of the Limb and Disk (GOLD) mission provide fundamental information for understanding the Thermosphere-Ionosphere system. Data from GOLD's two-channel, ultraviolet spectrograph include images taken from geostationary orbit at a 30-minute cadence. The dayside images cover the full disk of Earth. For the first time these data provide simultaneous, synoptic imaging of the composition and temperature near 160 km. The images, and GOLD's limb observations, quantify the global-scale response of the thermosphere to external and internal forcing as it evolves spatially and temporally. Intriguing observations, some of which indicate the presence of coupling of the thermosphere-ionosphere system to the mesosphere, have now been conducted during geomagnetically quiet and storm times as well as during a solar eclipse. These observations are providing significant tests of current models, an essential step to advances in global-scale modeling of the thermosphere and ionosphere system. Examples of these observations, as well as their potential for advancing models of the thermosphere-ionosphere system, will be presented.

Keywords: thermosphere, ionosphere, coupling, forcing