

## Local-time Variabilities of SABER CO<sub>2</sub> in the Mesosphere and Lower Thermosphere Region

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This work presents the local-time variabilities of CO<sub>2</sub> in the Mesosphere and Lower Thermosphere region (MLT region) as observed by the Sounding of the Atmosphere using Broadband Emission Radiometry (SABER) onboard the Thermosphere Ionosphere Mesosphere Energetics and Dynamics Satellite (TIMED Satellite). These are then compared to CO<sub>2</sub> as modeled by the Whole Atmosphere Community Climate Model –eXtended (WACCM-X). Also using WACCM-X, a tendency analysis using the continuity equation is done to explain the local-time variabilities of CO<sub>2</sub> in the MLT region. Finally, consequences of including a significant local-time variability in CO<sub>2</sub> when retrieving SABER temperature profiles are determined.

Keywords: Carbon Dioxide, Mesosphere and Lower Thermosphere Region, Tides