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Comparison of TIMED Satellite Drag with the Solar EUV Experiment Measurements

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The Solar EUV Experiment (SEE) aboard the Thermosphere Ionosphere Mesosphere Energetics and Dynamics (TIMED) spacecraft measures the solar irradiance from 0.1-193 nm and has been operating from January 2002 to the present. The orientation of TIMED provides a stable, nearly constant view factor to the velocity direction. Together, the TIMED orientation and SEE measurements provide a unique opportunity to correlate the influence of the solar radiation on satellite drag. This high altitude upper atmospheric satellite drag study includes: determining precision orbital changes of the TIMED spacecraft using the onboard global positioning system (GPS), validation of the drag estimate, identifying key wavelength ranges in the solar spectrum that affect the orbit changes using linear regression.