Solari — a Commercial Data Assimilative Thermospheric Density Model

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Due to the restricted availability of the High Accuracy Satellite Drag Model (HASDM) to the U.S. Government, there is a need for a commercial data assimilation tool that offers real-time nowcast and forecast thermospheric density for satellite operators. Solari addresses this need by integrating various measurement types, such as LeoLabs radar tracking data and Energy Dissipation Rates (EDRs), to correct a background density model, delivering a global thermospheric density solution for commercial use. The initial six-month NASA SBIR Phase I effort for Solari concluded in February 2025, and the two-year Phase II began in August 2025. A completed initial version of Solari is expected by the end of Phase II in August 2027.