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Poster

Satellite drag predictions continue to be one of the main challenges facing operators of satellites in Low Earth Orbit (LEO). One of the main impediments to accurate satellite drag predictions results from uncertainties in the air density of the highly-variable upper atmosphere, also known as the thermosphere. Drag-validated data assimilation (DA) techniques such as IDEA [Sutton 2018], and Dragster [Pilinski et al. 2016] now have the ability to determine the thermospheric model forcing that is most compatible with the observed satellite drag, effectively making a "driver correction" to the atmospheric models at each time step. These methods have been the only ones so far shown to match or outperform the current state of the art in density specification, which is the High Accuracy Satellite Drag Model (HASDM) operated by the Department of Defense. We present the nowcast results from one year of Dragster and IDEA runs and compare these with HASDM as well as a few non-assimilative models. This includes the estimated forcing parameters, their comparison to existing indices and proxies, and the validation of neutral density outputs. We also evaluate several methods of launching forecasts based on these nowcasts. The overall goal is to determine how best to make thermospheric forecasts using the best validated and most operationally ready DA techniques.

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