

Reformulating and enhancing the NRLMSIS atmospheric model

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We report recent progress toward a major revision of the Mass Spectrometer Incoherent Scatter (MSIS) empirical reference model. The new model will incorporate more than 25 recent satellite- and ground-based data sets. This new database, encompassing temperature, density, and composition measurements of the upper-mesosphere and thermosphere, contains almost 100 times the number of observations as the current version's database (NRLMSISE-00). The model's mathematical formulation is also being renovated to improve the physical selfconsistency among the state variables, enable increased spatiotemporal resolution, and improve the computational efficiency of the end-user client subroutine.

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