ABSTRACT

Structure of the UPPER TROPOSPHERE-LOWER STRATOSPHERE (UTLS)
In GEOS-5

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This study examines the structure of the upper troposphere and lower stratosphere in the GEOS-5 data assimilation system. Near-real time analyses, with a horizontal resolution of one-half or one quarter degree and a vertical resolution of about 1km in the tropopause region are examined with an emphasis on spatial structures at and around the tropopause. The contributions of in-situ observations of temperature and microwave and infrared radiances to the analyses are discussed, with some focus on the interplay between these types of observations. For a historical analysis (Merra) performed with GEOS-5, the impacts of changing observations on the assimilation system are examined in some detail – this documents some aspects of the time dependence of analysis that must be taken into account in the isolation of true geophysical trends. Finally, some sensitivities of the ozone analyses to input data and correlated errors between temperature and ozone are discussed.