DEVELOPMENT OF A SEQUENTIAL ESTIMATOR FOR ASSIMILATION OF GROUND- AND SPACE-BASED MESOSPHERIC AND LOWER THERMOSPHERIC WINDS

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Brief Abstract:

A sequential estimator for the assimilation of ground- and satellite-based MLT wind measurements has been developed in support of the science goals of the Thermosphere-Ionosphere-Mesosphere Energetics and Dynamics (TIMED) mission. Preliminary experiments have focused on the retrieval of monochromatic waves sampled by the TIMED satellite, and the ground-based network of medium frequency (MF) and meteor radar winds. Ground-based measurements are found to be a critical compliment to the satellite database for defining the migrating semidiurnal tide. The assimilation algorithm is currently being tested using the NCAR Whole Atmosphere Community Climate Model (WACCM). The sequential estimator is able to describe the variability of nonmigrating diurnal tides on times scales of 7 days and longer.