

Nicholas  
Pedatella

High Altitude Observatory, NCAR & COSMIC Program Office, UCAR

Hanli Liu, High Altitude Observatory, National Center for Atmospheric Research

Dan Marsh, High Altitude Observatory, National Center for Atmospheric Research

Jing Liu, High Altitude Observatory, National Center for Atmospheric Research

Kevin Raeder, Institute for Mathematics Applied to Geosciences, National Center for Atmospheric Research

Jeffrey Anderson, Institute for Mathematics Applied to Geosciences, National Center for Atmospheric Research

Oral

The recently developed Whole Atmosphere Community Climate Model eXtended version (WACCM-X) extends from the surface to the upper thermosphere (~400-700 km), including a fully coupled ionosphere with self-consistent electrodynamics. WACCM-X enables the study of ionosphere-thermosphere variability due to both lower atmosphere as well as solar processes within a self-consistent framework. To study, and possibly predict, the upper atmosphere variability we have added the data assimilation capability to WACCM-X using the Data Assimilation Research Testbed (DART) ensemble Kalman filter. The initial development of WACCMX+DART has focused on the assimilation of observations up to the lower thermosphere (~100 km). Despite only assimilating lower-middle atmosphere observations, we demonstrate that WACCMX+DART is suitable for generating analyses of the ionosphere variability during the 2009 sudden stratosphere warming (SSW) time period. Preliminary results illustrating the use of WACCMX+DART to forecast the ionosphere variability during the 2009 SSW, and the incorporation of COSMIC electron density profile observations into the assimilation will also be presented.

OSTS session

Regional and Global CAL/VAL for Assembling a Climate Data Record

Meeting name

Joint COSMIC Tenth Data Users' Workshop and IROWG-6 Meeting

[Download to PDF](#)