6b.1   Assimilation of MOPITT and IASI CO and O3 compact phase space retrievals (CPSRs) in WRF-Chem/DART

Mizzi, Arthur, *National Center for Atmospheric Research (NCAR)*, Avelino Arellano, *University of Arizona*, David Edwards, and Jeffrey Anderson, *NCAR*

The assimilation of trace gas retrievals for chemical weather forecasting has several challenges: (i) retrieval data sets have large data volume with low information content per observation, (ii) the contribution of retrieval prior profile should not be assimilation, and (iii) retrieval error correlations make use of sequential assimilation algorithms difficult. Prior research has focused on (ii) and (iii), while comparatively little work has been done on (i). This paper introduces "compact phase space retrievals" (CPSRs) to address (i). Our results show that assimilation of trace gas CPSRs produces analyses and forecast that are are least as accurate as those from the assimilation of retrievals but at one-third to one-half the assimilation computational cost. We demonstrate the utility of CPSRs by applying them to the joint assimilation of MOPITT CO, IASI CO, and IASI O3 partial column retrieval profiles with conventional meteorological observations in WRF-Chem/DART for the CONUS in June and July 2008.