
M. Pagowski1,2, A. McComiskey3, and J. Augustine3
1 NOAA/Earth System Research Laboratory/Global Systems Division, Boulder, CO
2 Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado, Boulder, CO
3 NOAA/Earth System Research Laboratory/Global Monitoring Division, Boulder, CO

1. AEROSOLS and AOD ASSIMILATION in FV3
   • GOCART scheme: 15 species,
   • simplified gas to aerosol and aerosol to aerosol conversions,
   • emissions from anthropogenic sources,
   • wind-driven dust, and seas-salt emissions,
   • forest fire emissions from MODIS retrievals with plume rise
   • observations are de-biased MODIS AODs at 550 nm from Neural Network Retrieval (NNR) processing,
   • Community Radiative Transfer Model (CRTM) calculates AOD,
   • 20 ensemble members with perturbed meteorology only,
   • Ensemble Kalman Filter (EnKF) calculates increments based on differences between observations and forecasts.

2. AEROSOLS and AOD ASSIMILATION in WRF-Chem
   • similar to FV3 GOCART chemistry scheme,
   • similar emissions except for anthropogenic,
   • 3D-Var assimilation of de-biased MODIS AOD with the Gridpoint Statistical Interpolation (GSI).

3. SURFRAD and AERONET

4. MODEL COMPARISON and STATISTICS

NOAA’s SURFRAD surface radiation budget (SRB) network consists of seven stations that represent a wide range of climate types across the continental U.S. The network began on 1 Jan. 1995 and continues operation today. Its primary measurements are climate-quality upward and downward shortwave and longwave irradiance. Several ancillary measurements and calculations are made to help interpret the SRB observations, including atmospheric state variables, multispectral aerosol optical depth, spectral albedo, 1-min. hemispheric sky images, interpolated NWS soundings to each station location, and RadFlux products (empirically derived equivalent clear-sky irradiance and other quantities). Soon ceilometers will be installed at all stations.