

Development of the Joint NOAA-NASA Aerosol Reanalysis. Progress and Plans
By M. Pagowski (NOAA/ESRL/GSD and CIRES/CU, Boulder), A. da Silva
(NASA/GMAO), S. Lu and W. Shih-Wei (SUNY Albany)

A joint NOAA, NASA, and SUNY Albany team was awarded a three-year NOAA/CPO/MAPP grant to develop a new global aerosol assimilation system with the purpose to produce aerosol reanalysis.

The system relies on the following components: NASA's extension to Goddard Global Ozone Chemistry Aerosol Radiation and Transport (GOCART) aerosol parameterization that includes nitrates; assimilation of multi-channel Aerosol Optical Depth (AOD) derived from Moderate Resolution Imaging Spectroradiometer (MODIS) and Visible Infrared Imaging Radiometer Suite (VIIRS) satellites, and AEROSOL ROBOTIC NETWORK (AERONET) direct sun measurements; new Ensemble Kalman Filter (EnKF) methodology using a chemical model with stochastic perturbations to emissions, chemical backgrounds and parameters/tendencies. Chemical model is the FV3 coupled with GOCART through NUOPC interface. Aerosol data assimilation is based on an extension of the meteorological Ensemble Kalman Filter (EnKF). Software development is coordinated with the Joint Effort for Data assimilation Integration (JEDI) so that it adheres to the architecture and object oriented framework emerging from this initiative.

We will present the results so far and outline future steps towards producing aerosol reanalysis.