Development of Ensemble-based Assimilation System for Aerosol Forecasting and Reanalysis at NOAA

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In 2016 NOAA chose the FV3 (Finite Volume) dynamical core as a basis for its future global modeling system. For aerosol modeling this dynamical core was supplemented with GFS (Global Forecast System) physics and coupled through an interface with GOCART (Goddard Global Ozone Chemistry Aerosol Radiation and Transport) parameterization. The assimilation methodology relies on a hybrid variational-ensemble approach within the newly developed model-agnostic JEDI (Joint Effort for Data assimilation Integration) framework. Observations include 550 nm AOD retrievals from VIIRS (Visible Infrared Imaging Radiometer Suite) instruments on polar-orbiting SNPP and NOAA-20 satellites. The system is under development and early its results are compared with NASA'a MERRA-2 and ECMWF's CAMSIRA reanalyses.