

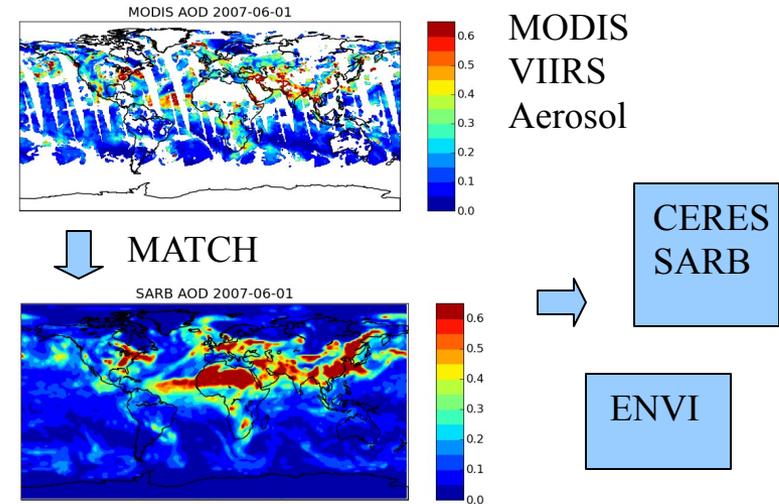
Data Filtering and Assimilation of Satellite Derived Aerosol Optical Depth

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 Contract No: NNX09CF27P

Identification and Significance of Innovation

We propose to extend work on filtering and data assimilation techniques for satellite derived aerosol optical depth based on the wavelet transform. We will focus on aerosol measurements from the Moderate Resolution Imaging Spectroradiometer (MODIS) instruments flying on the Terra and Aqua satellites. An interface to the Model for Atmospheric Transport and Chemistry (MATCH) will be constructed. The aerosol filter and assimilation system will produce datasets for application to Earth radiation budget studies and atmospheric correction methods.

Expected TRL Range at the end of Contract (1-9): 6-7



Technical Objectives

We will complete development of a data filter for global aerosol optical depth observations. Further improved aerosol simulations will be provided to the NASA CERES project, and analyzed fields will be incorporated into the ENVI atmospheric correction packages.

Work Plan

- Task 1: Complete Wavelet Filter
- Task 2: Add prognostic sea-salt module to MATCH
- Task 3: Assimilation of MODIS aerosol size ratio
- Task 4: Assimilation of MODIS water vapor
- Task 5: Assimilation of VIIRS aerosol
- Task 6: Interface to ENVI

NASA Applications

In collaboration with the National Center for Atmospheric Research (NCAR), phase I/II will produce an aerosol dataset for the Clouds and the Earth's Radiant Energy System (CERES) Surface and atmosphere Radiation Budget (SARB) subsystem.

Non-NASA Applications

Phase II will build an atmospheric correction package for the Environment for Visualizing Images (ENVI) geospatial software suite, incorporating smoothed aerosols from MODIS and its successor, the Visible Infrared Imager Radiometer Suite (VIIRS).

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