ABSTRACT TEMPLATE

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Abstract title: Validation of MISR aerosol geophysical product with AERONET ground-based optical depth and sky radiance measurements

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Abstract: The EOS Multiangle Imaging SpectroRadiometer (MISR) developed by JPL was launched aboard the Terra space platform in December, 1999, and after engineering tests and calibration, has returned global observations of radiance since approximately March, 2000, at nominal view angles 0, 26.1, 45.6, 60.0, and 70.5 deg fore and aft about nadir, and 446, 558, 672, and 866 nm in wavelength. These data are used for calculation of Aerosol Optical Thickness (AOT) at a ground resolution of 17.6 km. Part of the validation effort for the MISR geophysical product involves comparison with data from the AErosol RObotic NETwork (AERONET). AERONET is a collection of CIMEL Electronique solar/sky radiometers, distributed over multiple continents, and includes an associated database that contains time series of retrievals of the spectral AOTs and aerosol models at each location, as well as the sky radiance measurements. The AERONET retrievals are

at a scale O(1 km). AERONET was developed and is maintained under a federation of institutions, and was initiated by EOS MODIS project under initiative of GSFC. Comparisons will be presented between AERONET- and MISR-derived AOTs co-located in space and time at stations in: (1) southern Africa, during and subsequent to the August-September, 2000 SOuthern African Fire Research Initiative (SAFARI-2000), and (2) at stations in the southwestern United States, during the period March, 2000-June, 2001. Preliminary compilations of the data show good overall correlation, but with some systematic spatial and spectral differences. Reasons for these are discussed, and include: (1) undetected cirrus contamination in both the MISR and CIMEL data, (2) both model and algorithm-related biases, and (3) differences in volume of the atmosphere sampled of the MISR vs CIMEL retrievals. In addition to AOT comparisons, the AERONET sky radiances are analyzed for consistency with the MISR aerosol retrievals. Using mathematical inversion techniques attempts are made to assess constraints on local column equivalent single scattering phase function, and local column equivalent single scattering albedo, which, together with the AOT, are primary quantities required for estimating radiative perturbations due to aerosol scattering and absorption.