

Establishing an aerosol backscatter climatology at .355 and 2.06um for the Global Wind Observing System (GWOS) using CALIPSO data and models

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Recorded Presentation

Abstract

While the inclusion of a space-based Doppler Wind Lidar (DWL) in the suite of global atmospheric observing systems awaits the pending launch of the European ADM and the proposed deployment of a US hybrid (coherent and direct detection) DWL, there remains several questions that can be addressed using existing data. A prime example of this would be the utilization of data being collected by components of the "A Train" currently in orbit. NASA has funded the use of CALIPSO data to establish an aerosol backscatter data set for use in the design of a space-based DWL (especially the coherent subsystem) and in the pre-mission evaluation of the data product utility based upon efforts such as Observing Systems Simulation Experiments (OSSEs). The results of this research effort will be presented with most attention paid to the following: the background mode of aerosols and how very low values of attenuated backscatter were determined from the CALIPSO observations; how the CALIPSO measurements at 532nm were converted to 355 and 2060nm (the wavelength of the proposed Global Wind Observing System (GWOS); and what the global aerosol observations suggest for the vertical and horizontal coverage of both the direct (molecular) and coherent (aerosols) subsystems of NASA's GWOS.