



Dust and volcanic ash heights using a synergy of AIRS radiances and MODIS L2 optical depths

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Perturbations to measured top-of-atmosphere infrared radiances by clouds and aerosols depend primarily on the type, size, amount and height of the scatterers in the atmosphere. We use this dependency to retrieve global daytime dust and volcanic plume heights from Aqua AIRS radiances, by constraining the retrieved infrared optical depths against the colocated Aqua MODIS L2 optical depths. Modifications to retrieve the dust heights in the MODIS sunglint regions, and during nighttime, are also discussed. The daytime retrievals are validated using 30 months of dust centroid heights obtained from Calipso data, and against ash plume heights obtained from the Advanced Along-Track Scanning Radiometer (AATSR) after the Puyehue Cordon Caulle volcanic eruption of June 2011. Comparisons are also made against Goddard Chemistry Aerosol Radiation and Transport (GOCART) climatological aerosol heights.