Dust aerosol layer altitude from AIRS (01/2003 to 11/2007) and from Calipso (06/2006 to 11/2007): a comparison

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Mean infrared (10 µm) dust aerosol layer optical depth and altitude are retrieved over the tropics (30°S–30°N) for five years of Atmospheric Infrared Sounder (AIRS) observations covering the period January 2003 to December 2007. Retrieved optical depths show a very good correlation with the Moderate resolution Imaging Spectroradiometer (MODIS-Aqua) retrieved visible optical depths during the dust season. AIRS simultaneously retrieved mean dust layer altitude are then compared to Cloud-Aerosol Lidar with Orthogonal Polarization (CALIOP/CALIPSO) aerosol layer retrieved altitude for the period June 2006 to November 2007. Results for a region of the north tropical Atlantic downwind of the Sahara show a remarkably good agreement between the two products and demonstrate the capability of passive infrared sounders to accurately retrieve the mean dust layer altitude. An interesting conclusion is the fact that if the AOD clearly decreases from Africa to Caribbean as a result of transport and dilution, altitude does not exhibit a significant regular decrease. This is in agreement with in situ measurements made during the Puerto Rico Dust Experiment (PRIDE) campaign.
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