A three-dimensional coupled climate-aerosol microphysical sectional model (CAM3/CARMA2.3) is used to simulate the properties of Asian and Saharan dust and its radiation effects. The simulated dust vertical distributions of Saharan and Asian dust are constrained by CALIPSO (lidar) measurements in 2006 and 2007. The size distributions and single scatter albedo of Saharan and Asian dust are validated by AERONET data in May and July 2007. The observation contrasts with studies suggesting the descent of Saharan dust is due to sedimentation of the particles, and suggests instead it is dominated by meteorology. While we find the size distributions of Asian and African dust are similar for similar distances from the source, the imaginary parts of the refractive indexes are different. Some preliminary results of the radiation effects of dust aerosols on precipitation and surface temperature by using the newly coupled climate-microphysical model (CAM5/CARMA3.0) in Asian area will be presented. This study is a step towards a global understanding of dust and its properties.