

One distinctive feature of the atmosphere in the Sahel is an omnipresent layer of dust. Data retrieved from the micropulse lidar (MPL), particle counter, and multifilter rotating shadowband radiometer (MFRSR) from the 2006 wet season in Niamey, Niger shows a surprising amount of dust and biomass burning aerosols despite wet deposition occurring during rainfall events. Previous studies have shown that dust can cause shortwave (SW) heating within the atmosphere and can also change the microphysical properties of clouds, therefore having an indirect effect on the radiation budget. A lack of needed measurements have made it difficult to directly quantify the role of these aerosols on clouds and their impact of on the radiation budget. Using the Rapid Radiation Transfer Model (RRTM), longwave (LW) and SW fluxes were calculated at 32 levels within the atmosphere in addition to the surface, as well as the heating rates. RRTM was run for three different cases: a completely clear column, aerosols, and a combination of aerosols and clouds. Aerosols were inserted based on diffuse SW radiation observations from the MFRSR and the location of the dust based on the MPL. Clouds were inserted into RRTM based on observations made by a 95 GHz cloud radar. The three cases were analyzed to determine the radiative forcing of aerosols and clouds within the atmosphere and how the heating rates change between the different cases.