



## **Aerosol climatology over two AERONET sites: an overview**

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In the present study an almost 3-year data set from the AERONET radiometers is used to remotely sense the aerosol optical depth (AOD) and the Ångström exponent in two key locations (desert, forest) characterizing different environments. These sites are indicative of the dominance of particular aerosols types, representing biomass smoke and desert particles. The multiyear observations show robust differentiation in both values and spectral dependence of the AOD in the different environments. Higher AODs are depicted in tropical areas directly affected by forest fires, as well as in desert regions under specific dust outbreaks. In both locations significant annual, seasonal and day-to-day variability in AOD and Ångström exponent is observed, which is attributed to the large variability in aerosol source strength, the different air masses affecting each location and the extremely high spatial and temporal aerosol variability. The Ångström exponent exhibits its lowest values over desert areas (0.2-0.4), while it can reach 2.0 or even more under intensive fire events. The seasonal variation of AOD in biomass-burning areas shows a pronounced August-September peak, while in the other months the AOD is low. A clear seasonal pattern with maximum AOD in May-June is observed for the desert region. As regards the Ångström exponent, a clear seasonal variation is depicted in biomass-burning region with a peak in the burning season and in desert areas with a minimum in the months with significant dust loading.