Many researchers have worked on both, African and Asian dust for decades, a few modellers and remote sensing researchers studied both. There are only few comparisons based on field measurements. We are still lacking a sufficient approach to a direct comparison of both, African and Asian mineral dust particles, with the same instrumentation.

In this study, samples of African dust transported to the Cape Verde region west of Africa (results of the Saharan Mineral Dust Experiment) as well as Asian dust samples transported to Amakusa, Japan are compared by using data sets from electron-microscopical analysis. In this study, we compare size resolved relative number abundances of classified particle groups and transmission electron microscopy images. For all samples, mineral dust is the dominant component, and the same typical mineral dust particles are found on both sites. The most abundant particle groups are silicates and mixtures of silicates with sulfate, sea salt and others. But as well differences in chemical composition are observed, for example regarding the sulphate content and its distribution in particles and the existence of coatings. In African dust, aerosol particles of different types of aerosol (e.g. mineral dust, biomass burning, marine) appeared to be more often externally mixed than asian dust particles. For example, Asian dust particles are usually frequently mixed with sea salt while on Cape Verde agglomerates of dust with seasalt are merely not observed.

Mixing state and element indices most probably are affected by different source region and transport circumstances.