

The occurrence and mixing state of black carbon containing aerosols in the South Asian outflow during the dry season in 2016

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Aerosol pollution impacts the lives of billions of people in Asia causing millions of premature deaths annually. Aerosol pollution is not restricted to adverse health effects but can also substantially affect climate. One particularly potent species is black carbon (BC) which is the result of incomplete burning of fossil fuels, burning of crop residue, naturally occurring wildfires, etc. Burning practices and population density in South and East Asia both contribute to the area being pollution hotspots that are laden with BC containing aerosols. BC in the climate system will act as a perturbing agent that detrimentally affect the climate by imposing an effective radiative forcing because BC absorbs sunlight thus converting it into heat. This absorption can significantly be enhanced if the BC aerosols are coated with other aerosol species that do not absorb solar radiation themselves. The occurrence of BC containing aerosols was studied at a receptor site downwind from the pollution sources of South Asia on the small island of Hanimaadhoo, Republic of Maldives. The island hosts the Maldives Climate Observatory of Hanimaadhoo where a Single Particle Soot Photometer (SP²) was operated from 14th of January to 21st of March. Preliminary results show that far from all aerosol particles contain BC, that there are two modes of BC, and that some BC aerosols are occasionally externally mixed (possibly from ships).