



Variations in the light extinction coefficient of elemental carbon in the Indian outflow

August Andersson (1), Rebecca J Sheesley (1), Martin Kruså (1), Elena Kirillova (1), Krishnakant Budhavant (2), P.S.P Rao (2), P.S. Praveen (3), and Örjan Gustafsson (1)

(1) Department of Applied Environmental Science (ITM) and Bert Bolin Climate Research Centre, Stockholm University, Sweden (august.andersson@itm.su.se, fax:+46-8-6747638), (2) Indian Institute for Tropical Meteorology, Pune, India, (3) UN Environmental Programme Asia Pacific, Maldives Climate Observatory, Project Atmospheric Brown Clouds, Hanimaadhoo, Maldives

High wintertime concentrations of black carbon aerosols (BCA) over South Asia and the northern Indian Ocean are thought to have a large impact on the regional climate. Direct absorption of sunlight by BCAs causes heating of the atmosphere and cooling at the surface. To quantify such effects it is important to characterize a number of different properties of the aerosols. Here we report the concentrations of the organic carbon (OC) and elemental carbon (EC) as well as absorptive properties of these aerosols. Samples were collected during a continuous 14-month campaign Dec 2008 – Mar 2009 at Sinaghad in Western India and on Hanimaadhoo, the Northernmost Island in the Maldives. This data set suggests that the absorptive properties of the BCAs are variable, sometimes by a factor of 4 compared to the mean. This observation adds to the complexity of calculating the radiative forcing for BCAs, reinforcing previous observations that parameters such as internal mixing and knowledge about the sources need to be taken into account.