

Spatial Distribution of Aerosol Single Scattering Albedo Over Bay-Of-Bengal Inferred from Concurrent Shipboard Measurements

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With a view to characterizing the large heterogeneity (in space and time) over the Bay-of-Bengal (BoB), for reducing the current uncertainties in the values of the climate forcing parameters and to examining the seasonal distinctiveness, the winter phase of the Integrated Campaign for Aerosols, Gases and Radiation budget (W-ICARB) was carried out with a special focus, for the first time, over oceanic region in the far eastern BoB, east off the Andaman and Nicobar island chain during December 2008 to January 2009, using ship and aircraft measurements equipped with state of the art instruments for characterizing physical, chemical and optical properties of aerosols. The most important aspect behind this study was that during winter, confinement and accumulation of aerosols occurs over the Indo Gangetic Plain and East Asia due to low boundary layer and extensive biomass burning activities. These aerosols eventually transported to the BoB and perturb the radiation balance of the region. During the campaign, the collocated measurements of total and hemispheric backscattering coefficients and absorption coefficients, estimated using an integrating nephelometer (Model 3563, TSI, USA) at three wavelengths (450, 550, 700 nm) and an aethalometer at seven wavelengths (370, 470, 520, 590, 660, 880, 950 nm), onboard the ORV Sagar Kanya during its cruise SK#254, were used to deduce the aerosol single scattering albedo (ω) and asymmetry parameter (g). The analysis showed a large spatial distribution of ω with values lying in the range 0.63 to 0.97 at 550 nm (mean value, $\omega \sim 0.88 \pm 0.05$), while g varied from 0.54 to 0.79 (mean value, $g \sim 0.71 \pm 0.03$). The details of the study and its implications will be presented.