Geophysical Research Abstracts,
Vol. 11, EGU2009-5344, 2009
EGU General Assembly 2009

Aerosol optical characteristics over the Arabian Sea during pre-monsoon 2006

D. G. Kaskaoutis (2), M.C.R. Kalapureddy (1), P. C. S. Devara (1), H. D. Kambezidis (2), P. G. Kosmopoulos (3), and P. T. Nastos (3)

(1) Indian Institute of Tropical Meteorology, Pahan, Pune 411008, India (madhucomcom@rediffmail.com), (2) Atmospheric Research Team, Institute for Environmental Research and Sustainable Development, National Observatory of Athens, Lofos Nymphon, P.O. Box 20048, GR-11810 Athens, Greece, (3) Department of Geology and Geoenvironment, University of Athens, University campus GR-15784 Athens, Greece

Ship-borne Aerosol Optical Depth (AOD) measurements obtained by a sunphotometer have been used to retrieve the Ångström wavelength exponent (α). These measurements were obtained in the Arabian Sea (AS), where the surrounded arid-region influence is expected, during the second leg of the Integration Campaign for Aerosols, gases and Radiation Budget (ICARB) campaign in the pre-monsoon season of April-May 2006. Spectral variation of α is typically considered in this study. On certain cases significant uncertainties reveal in the linear as well as in the polynomial fit of the AOD spectral distribution. Such uncertainties are expected especially under low turbid conditions above pristine oceanic regions. It is found that the polynomial fit becomes more accurate in the wavelength band 340-1020 nm rather than the 340-870 nm. Positive and negative curvatures in the $\ln\tau_\alpha$ versus $\ln\lambda$, indicative of coarse-and fine-mode aerosols, respectively, are obtained all over the AS. The coarse-mode aerosols are mainly depicted in the Northern part of the AS closely associated with the nearby arid areas. The fine-mode aerosols are mainly observed over the far AS and on certain days with significant transport of urban/industrial aerosols from the Indian subcontinent. In the study period the mean AOD at 500 nm is 0.246±0.114 and the $\alpha_{340-1020}$ is 0.904±0.186. The $\alpha_{340-870}$ exhibits similar values (0.924±0.179), while significant differences revealed for the constant terms of the polynomial fit (a_1 and a_2) proportionally to the wavelength band used for their determination. This work is in further progress and the complete outcome in due course will be discussed in the forthcoming EGU-2009 conference.

Keywords: Aerosol optical properties; spatial distribution; cruise measurements; Arabian Sea; ICARB; pre-monsoon period.