

Contribution of Non Fossil-Fuel Sources in Aerosol Absorption Coefficient in a Typical Rural Atmosphere in India

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A bulk of the Indian population lives in villages, where vehicular traffic and industrialization is very less. People in villages rely mostly on agricultural activity for their livelihood. They use quite often fire to get rid of agricultural waste. Also, they use biomass as a cooking fuel. Smoke emitted during biomass burning contains high amount of soot particles along with other organic material, which are harmful to women who cook food for the house. Speculations are made that the smoke emitted during agricultural waste burning and biomass burning during cooking could be a very significantly source of aerosols over regional scale.

Soot particles emitted during biomass burning have distinct spectral absorption coefficient compare to soot particles emitted during fossil fuel burning by auto mobiles. We have used spectral aerosol absorption coefficient to separate contribution of fossil fuel sources from non-fossil fuel sources [1]. On average, we found that non-fossil fuel sources contribute nearly 40% in absorption coefficient in mid visible wavelength (Figure 1). The significance of non-fossil fuel soot particles to radiative forcing is studied.

Keywords: soot, absorption-coefficient, aethalometer

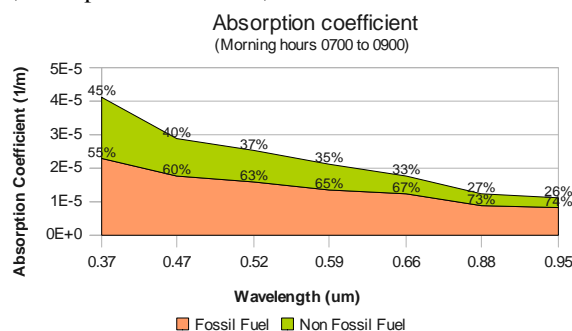


Figure 1. Fractionation of aerosol absorption coefficient between aerosol originated from fossil-fuel and non-fossil fuel sources.

References

- [1] H. Gadhave and A. Jayaraman, *Annales Geophys.*, **28**, 103-111 (2010).