

## 4.011 Provincial & transported size distributed carbonaceous aerosols at Eastern Central India.

Early Career Scientist

Presenting Author:

**MITHLESH MAHILANG**, School of Studies in Chemistry, Pt. Ravishankar Shukla University, Raipur, Chhattisgarh, 492010, India, [mithleshkumarchem@gmail.com](mailto:mithleshkumarchem@gmail.com)

Co-Authors:

**MANAS KANTI DEB**, PT. RAVISHANKAR SHUKLA UNIVERSITY RAIPUR, CHHATTISGARH, INDIA

Abstract:

Carbonaceous components of atmospheric aerosols have taken greater attention of researchers because it takes part in aerosol dynamics and it can be directly from primary sources or product from secondary reactions, affecting human health and also bad environmental effects, like it can disturb earth radiation budget and promotes climate change. Present work reports carbonaceous aerosols in nine size fractions (10.0-0.01 $\mu\text{m}$ ) at eastern central India. Size-distributed carbonaceous aerosols (SDCA) were collected over a year from September 2016 to August 2017 using micro-orifice uniform deposit (MOUDI) Impactor air sampler at eastern central India and these samples were analyzed using thermal/Optical carbon analyzer. We have found that study site has high average mass loading of organic carbon (OC) in comparison with elemental carbon (EC) in  $\text{PM}_{>9.0}$ . The average mass concentration of OC and EC was found to be  $24.5 \pm 9.3 \mu\text{g}/\text{m}^3$  and  $4.1 \pm 1.2 \mu\text{g}/\text{m}^3$ . For the interpretation of air mass trajectories, the air coming in the sampling site were categorized on the basis of their direction i.e., North West (NW), South East (SE), North-South (NS), South East (SE). Air mass trajectories suggest strong possibilities of long-range transport of fine & ultrafine particles. The large value of EC/OC ratio obtained in December to January 2017 which suggests strong biomass burning in study site or nearby areas. Also, the contribution of secondary organic carbon (SOC) is more pronounced in winter because of photochemical reactions and atmospherically favoured conditions. Interestingly we have found EC/OC ratio as  $1.52 \pm 0.43$  in summer indicates study is under the influence of intense vehicular emission.