

1.134 Chemical characterization and source apportioning of Particulate Matter(PM10 and PM2.5) during winter fog season(2015-2016) in the three megacities of Pakistan.

Early Career Scientist

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Abstract:

The Asian region over the last decade have undergone rapid economic development along with urbanization, motorization and extensive energy use. As a result air pollution emerged as serious threat to the environment and population health in the region (Gurjar et al. 2008)(Hopke et al. 2008). According to different studies 865,000 premature deaths caused every year by air pollution and about 60% of these deaths found to be occurred in Asia (WorldHealth2007). Pakistan in the region is among the countries effected more by air pollution. The hazardous impacts of air pollution becomes worse during the winters due to dense persistent fog especially in the months of December January and February (DJF). It has been reported that the average concentration of both PM10 and PM2.5 increased about two times during intense fog days. Many parts of Pakistan experienced severe fog and haze during the months of DJF that lead to significant social and economic problems specially the Disruptions of road and air traffic. A three months long land campaign was undertaken in three megacities of Pakistan namely Lahore, Sheikhopora and Faisalabad. The selection of these cities were based on the fact that these cities are always more vulnerable to winter Fog, and every year lots of accidents and economic losses reported from these regions. The main objective of this study was to evaluate the concentrations and chemical characterization of particulate matter during winter Fog season. Aerosols were collected at different locations by using High/low volume samplers. For elemental composition ED-XRF was used. In next step AAS was used to quantify different metals detected by ED-XRF. Positive Matrix Factorization (PMF) model is an effective source apportionment receptor model that was used to find out the possible sources of PM 10 and PM2.5. For better analysis and validate sources, back trajectories were also calculated.