

Chemical Composition of Aerosols in a Heavily Industrialized Region of Turkey, Dilovasi/KOCAELI

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The study area, Dilovasi, is the district of Kocaeli and the center of a highly industrialized area. The district contains several factories working on various sectors such as metal, paint, glass, wood, chemical and petrochemical industries. Transport facilities have enhanced with two motorways, railway and many seaports. As a result of these industrial activities in addition to emissions released from the residential areas and heavy traffic, air pollution is one of the major environmental problems of the region that threatens public health seriously. The previous studies have showed that the cancer became the major cause of death in the region.

In order to evaluate air quality profile of the study area, a sampling station was installed to monitor the particulate and gaseous phase (O₃ and NO_x) pollutants in February 2015. In addition, meteorological parameters including wind speed and direction, temperature, pressure and relative humidity were recorded with high time resolution. Daily PM_{2.5} samples were collected on pre-fired quartz filters and thereafter were analyzed in terms of EC and OC using thermal optical analyzer (Sunset Lab, USA). Carbonate carbon (CC) correction was also performed for the samples as described by Pio et al. (1994).

The variation of EC, OC and TC (EC+OC) between February and June 2015 were depicted in Figure 1. The average concentrations were determined for EC, OC and TC, respectively, as 2.74 ± 2.40 , 6.29 ± 3.13 , and 9.03 ± 3.54 $\mu\text{g}/\text{m}^3$ during the study period. The variability of gaseous

precursors were also evaluated herein. A decreasing trend was observed for NO_x concentrations towards summer months, which could be attributed both to increase of mixing layer depth in summer and decrease of traffic intensity around the sampling location due to vacation season. As expected, the ozone concentration increased in summer season in conjunction with the elevated solar radiation, which is typical for Mediterranean climate.

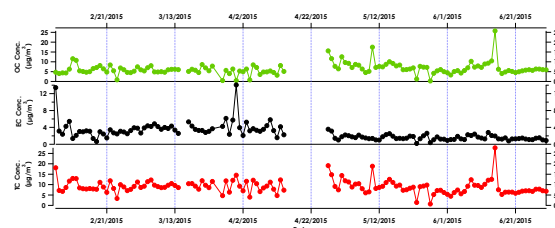


Figure 1. Time evolution of OC, EC and TC between February and June, 2015

Pio, C. A., Castro, L. M., and Ramos, M. O. 1994. Differentiated determination of organic and elemental carbon in atmospheric aerosol particles by a thermal-optical method, in: Proceedings of the Sixth European Symposium: Physico-Chemical Behaviour of Atmospheric Pollutants, edited by: Angeletti, G. and Restelli, G., Report EUR 15609/2 EN, European Commission, 706–711.

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